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CALCULATED IN-AIR LEAKAGE SPECTRA AND POWER LEVELS FOR THE ANSI STANDARD MINIMUM ACCIDENT OF CONCERN

Billy L. Lee, Jr.
M. Christian Dobelbower
Robert W. Tayloe, Jr.

Battelle

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505 KING AVENUE, COLUMBUS, OHIO 43201 USA

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FINAL REPORT

Calculated In-Air Leakage Spectra and Power Levels for the ANSI Standard Minimum Accident of Concern

July 1995

by

Billy L. Lee, Jr.
M. Christian Dobelbower
Robert W. Tayloe, Jr.
Battelle

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M. C. Dobelbower
R. Tayloe

B. Lee

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Abstract

This document represents Phase I of a two-phase project. The entire project consists of determining a series of minimum accidents of concern and their associated neutron and photon leakage spectra that may be used to determine Criticality Accident Alarm (CAS) compliance with ANSI/ANS-8.3. The inadvertent assembly of a critical mass of material presents a multitude of unknown quantities (i.e., the moderation level, the ^{235}U enrichment, the system geometry, and fissile material). Depending on the particular process, one can make an educated guess as to fissile material. In a gaseous diffusion cascade, this material is typically assumed to be uranyl fluoride, UO_2F_2. However, educated assumptions cannot be readily made for the other variables. The range of a particular parameter, such as enrichment, can often be narrowed down but reliable estimates generally cannot be made.

Phase I of this project is determining a bounding minimum accident of concern and its associated neutron and photon leakage spectra for use in Phase II. To determine the composition of the bounding minimum accident of concern, work was done to determine the effects of geometry, moderation level, and enrichment on the leakage spectra of a critical assembly. The minimum accident of concern is defined in ANSI/ANS-8.3 as the accident that "may be assumed to deliver the equivalent of an absorbed dose in free air of 20 rad at a distance of 2 meters from the reacting material within 60 seconds."

To determine this absorbed dose, an analyst must make an assumption and choose an appropriate flux to dose response function. The power level required of a critical assembly to constitute a minimum accident of concern depends heavily on the response function chosen. The first step in determining the leakage spectra was to attempt to isolate the effects of geometry, after which all calculations were conducted on critical spheres. The moderation level and enrichment of the spheres were varied and their leakage spectra calculated. These spectra were then multiplied by three different response functions: the Henderson Flux to

Dose conversion factors, the ICRU 44 Kerma in Air, and the MCNP Heating Detector. Based on the calculated responses, the power level required to produce a minimum accident of concern was calculated for each combination. The composition corresponding to the minimum power level obtained was assumed to be the bounding composition.

Currently CAS detectors in the X-326 building are located approximately 5 meters off the cell floor. Phase II of this project will consist of using the bounding minimum accident of concern as defined in this report and its associated leakage spectrum to quantify the effect of their relocation to approximately 1 meter off the cell floor.

1.0 Introduction

This work was conducted in addition to work previously reported[1], which analyzed the effect of relocating Criticality Alarm System (CAS) detectors from their current height of approximately 5 meters to a height of approximately 1 meter. This earlier work was based on criticality accidents occurring in low enriched (5% ^{235}U) material and was limited to the X-333 and the X-330 facilities at the Portsmouth Gaseous Diffusion Plant (PORTS). It did not apply to the X-326 facility at PORTS, which was the high enrichment process building.

To analyze the effect of changing the detector height for highly enriched systems, the expected neutron and photon leakage spectra must first be characterized. It is expected that the fissile material in a uranium enrichment diffusion cascade will be moderated to some extent, but the exact degree of moderation is unknown. Additionally, the ^{235}U enrichment is relatively unknown as well. Both of these variables will have an impact on the leakage spectrum from a critical system and will consequentially change the dose rate that may be received from an accident of given power.

ANSI/ANS-8.3[2] does not specifically address the choice of response function to convert the resulting leakage spectra from terms of a neutron and gamma ray flux to one of absorbed dose. Depending on the choice of response function, the calculated dose per leaking particle can vary significantly, and will consequentially affect the power level of the minimum accident of concern, as defined in ANSI/ANS-8.3. Phase I of this report compares these differences and illustrates the importance of proper response function choice. Phase II, when completed, will use the determined "bounding" minimum accident of concern and its corresponding response function to analyze the effect of changing criticality detector location.

2.0 Methodology

To determine the bounding minimum accident of concern, a bounding criterion must first be selected. Ideally, the bounding minimum accident of concern is the accident in which a dose rate of 20 rad/min. can be obtained at a distance of 2 meters from the surface of the reacting material while producing a minimum response at a criticality detector. In order to make this determination, it is necessary to know the reaction materials, the orientation of all pertinent shielding materials, and the response function of the criticality detector. Because of the large number of variables in reaction material, shielding, and detector response functions, it is not possible to have a single bounding minimum accident of concern for all causes. This is due to the differing neutron energy spectrums that may arrive at the detector, without knowing the exact composition of the reacting material and the exact placement of intervening shielding materials, the neutron spectrum arriving at the detector cannot be predicted. Because of this difficulty, the bounding minimum accident of concern for this report will be defined to be "that accident which generates the minimum accident of concern at a minimum power level." Although it is true that it is possible to find another minimum accident of concern that produces a small detector response, this "bounding" minimum accident can provide the investigator with a first estimate where some information may not be known. It is important to stress that this "bounding" minimum accident may not be the best choice for a given reaction material, shielding configuration, and detector response function. The investigator should still take care to choose an appropriate minimum accident for each given situation.

Given the criterion of minimum power for the "bounding" minimum accident of concern as described above, the methodology for determining the "bounding" minimum accident is outlined below.

2.1 Calculational Code Comparison

The first step in determining the two meter neutron and gamma flux was to decide which of two computer codes, XSDRNPM-S and MCNP[5], should be used for this analysis. The XSDRNPM-S code is part of the SCALE-4.2[4] package of computer codes available from the Radiation Shielding Information Center (RSIC) in Oak Ridge, Tennessee. SCALE-4.2 is a modularized suite of computer codes useful for conducting calculations in a variety of nuclear safety areas, such as radiation shielding and particle transport, criticality, etc. XSDRNPM-S is a one-dimensional neutron and photon transport code. MCNP is also available from RSIC and is a general n-particle three-dimensional monte carlo transport code.

To determine leakage spectra of a critical mass, the calculational sequence executed under SCALE consisted of activating three of the SCALE functional modules, with the results of one module being passed to its successor for a continuation of the calculation. The three modules activated were BONAMI, NITAWL, and XSDRNPM-S. BONAMI and NITAWL are both cross section processing codes that perform resonance self-shielding calculations using the AMPX master cross sections and produce an AMPX working format cross section library specific to the current problem. The XSDRNPM-S code is then activated to perform the transport calculation. All calculations performed with the SCALE codes used the coupled 27 group neutron, 18 group photon ENDFB/IV cross section set distributed with the SCALE package. The MCNP calculations were conducted with the ENDFB5 cross sections distributed in the MCNP package.

Initially, this analysis compared results obtained with XSDRNPM-S and MCNP to measured data. Three critical assemblies were modeled for this comparison, Jezebel, Godiva, and Sheba[6,7]. These systems were chosen for their differences in enrichment, moderation, and fissile material. Jezebel and Godiva were originally critical spheres of plutonium and enriched uranium, respectively. Alternatively, Sheba was a critical cylinder

of a slightly enriched uranyl fluoride solution. For consistency through the initial calculations, Sheba was modeled as an equivalent critical sphere.

2.2 Selection of Base Geometry

The geometry that fissile material might assume during a criticality accident is a definite unknown. Even though these calculations were based on spherical geometry, it was still unknown at this point how much of an effect differences in the basic system geometry might have on a given spectrum. A brief series of calculations was then conducted, comparing leakage spectra from critical systems based on spherical, slab, cylindrical, and cubic geometries. The spherical system used for these calculations was the exact same system used in the calculations discussed in the preceding paragraph for the Sheba assembly, that is, a critical sphere of slightly enriched uranyl fluoride solution identical in composition to the Sheba reactor. The same composition was then used for the slab, cylindrical, and cubic systems, with their physical dimensions being calculated using the same geometric buckling as in the spherical case. Results and comparisons of these basic system geometries are given in section 3.2.

2.3 Basic MCNP Model

The MCNP model used to calculate the leakage spectra was fairly straight-forward because the geometry was assumed to be spherical. The basic geometry consisted of three concentric spheres in an infinite void. The inner most sphere was the critical assembly itself. The critical assembly is surrounded by a spherical shell of air, approximately 20 meters in radius. This spherical shell of air provides an effectively "infinite media" of air for the dose calculations. The spherical shell of air is surrounded by a spherical shell of void, as recommended by the code developers. The spherical shell of air has a 1 cm thick subdivided region with an outer radius 2 meters beyond the surface of the critical assembly. This subdivided region is used for the MCNP Heating Detector, one of the response functions that

will be used in the dose calculations. All space outside this last shell of void is also void and constitutes the remainder of the MCNP universe.

The fissile material chosen for the critical assembly was an aqueous UO_2F_2 solution. As discussed earlier, the shape of the fissile assembly was spherical and all fissile material number densities were calculated with NUMDEN[8]. The critical radii of the assemblies were calculated with XSDRNPM-S. The number densities for the air regions were calculated based on a composition of 78.084% N_2, 20.946% O_2, and 0.934% Ar, with an overall density of 1.293 mg/cc[9].

MCNP was executed using the KCODE card option (used for modeling critical assemblies) and transported only neutrons and photons. It is important to note that delayed photons were not accounted for or modeled. This approximation is valid because the time scale of the first pulse, the pulse that will presumably actuate the criticality accident alarm system in a criticality accident, has historically been very short.

2.4 Discussion of 2 Meter Flux Verses Leakage

The calculated neutron and photon spectra are, in actuality, the 2-meter neutron and gamma flux. The neutron and gamma flux in a void is identical to the leakage spectrum for the chosen geometry with a point source. The difference between the system leakage spectra and the 2-meter flux for the chosen geometry is small and arises primarily from particle interactions with the intervening air.

2.5 Discussion of Calculational Method

The calculation of the power level for a minimum accident of concern is a three step process. The first step is the determination of the critical assembly size and material composition. The second step is the calculation of the 2-meter neutron and gamma flux

using MCNP. The final step is the application of a response function to the flux spectrum and the calculation of the required power level of the minimum accident of concern.

2.5.1 Calculation of Critical Size and Composition

The material composition and critical radius of an assembly were calculated using the computer codes, NUMDEN and XSDRNPM-S. For each of the different values of H/U and enrichment, the values of H/U and enrichment were entered and the corresponding number densities were computed. The following assumptions were made in all cases:

1. Uranium fuel was in the form $UO_2F_2 \bullet H_2O$.
2. No ^{233}U or ^{234}U was present in the fuel.

The number densities of ^{235}U, ^{238}U, H, O, and F were then used in the one-dimensional transport code XSDRNPM-S to obtain the critical radius for the assembly in question.

2.5.2 Calculation of the 2-Meter Neutron and Gamma Flux

The calculation of the 2-meter neutron and gamma flux was performed using MCNP. The MCNP geometry consists of three regions modeled as concentric spheres centered at the origin. The first region was modeled as a critical sphere of fissile material. The number densities for this sphere were the same number densities used in XSDRNPM-S calculated from the NUMDEN code. The radius of the critical sphere was the critical radius generated from the XSDRNPM-S code.

The second region modeled was a concentric sphere of air surrounding the critical sphere. The region of air surrounding the critical sphere was several meters in radius to approximate an infinite air media. The air was modeled as 78.084% N_2, 20.946% O_2, 0.934% Ar at a density of 1.293e-3 g/cc[9]. The final region was modeled as an infinite void

surrounding the concentric spheres of air and fissile material. The infinite void is included as a requirement of the Monte Carlo code.

Two types of MCNP detectors were used in the model. The first type was a surface crossing detector, which was a sphere 2 meters past the edge of the critical assembly. The second was a track length detector. The volume used for the track length detector was the region between the sphere located 2 meters beyond the boundary of the critical assembly and a similar sphere of radius 1 cm less. This volume is a 1-cm thick spherical shell with the outer radius 2 meters beyond the edge of the critical assembly. Choosing the detector volume just inside the 2 meter distance will give flux values slightly larger than at 2 meters, thus giving a conservative value for the minimum accident of concern. Each of the two detectors had a 27 neutron, 18 gamma group structure. This structure was chosen for consistency with previous work.[1]

Output from each of the detectors was given on a per fission neutron basis. The spectra were then converted to flux per watt for ease of use. Assuming 180 MeV per fission, the conversion of the spectra to a flux per watt spectrum was performed as follows:

$$\Phi\left(\frac{1}{cm^2\text{-sec-}watt}\right)=\phi\left(\frac{1}{cm^2\text{-}srcN}\right)\ 2.45\left(\frac{srcN}{fission}\right)3.467*10^{10}\left(\frac{fissions}{watt\text{-sec}}\right)$$

2.5.3 Application of Response Functions

Once the flux spectrum from the critical assembly has been determined, the spectrum is multiplied by a response function to determine the dose rate per watt. Three response functions were chosen and applied to the flux spectra to show variations in calculated dose rate per watt. The response functions chosen were the Henderson Free-in-Air Tissue flux to dose conversion factor,[7] neutron and gamma kerma factors as defined by ICRU 44,[10] and

the MCNP heating detector response.[5] The multiplication of the spectra by the response functions was performed in MCNP for consistency through the different response functions and assemblies.

The first response function is the Henderson Free-in-Air Tissue flux to dose conversion factor. The Henderson response function is a 27 group neutron, 18 group gamma first collision estimator of dose rate. The response function is shown in Appendix A. The flux spectrum from the surface crossing detector is multiplied, on a bin by bin basis, by the response function, which gives the results in terms of rads/sec/watt.

The second response function is the neutron and gamma kerma factors in air as defined by ICRU 44. These kerma factors are defined pointwise in ICRU 44 from 0.00253 eV to 29.0 MeV for neutrons and 0.01 MeV to 100 MeV for photons. The values of the response function are calculated using a log-log interpolation of the points of the response function to more accurately evaluate the response function. The flux spectrum from the surface crossing detector is multiplied by the response function on a particle-by-particle basis and presented in the 27 neutron, 18 gamma bin structure for comparison to the other responses.

The third response function is the MCNP heating detector response. The MCNP heating detector is a track length estimator of energy deposition per unit mass (absorbed dose) in units of MeV/g. The heating response is given by:

$$H(E)=\sigma_t(E)*H_{ave}(E)$$

where $\sigma_t(E)$ is the total neutron cross section as a function of energy, and $H_{ave}(E)$ is calculated differently for neutrons and photons as shown below.

For Neutrons:

$$H_{ave}(E)=E-\sum p_i(\bar{E})[E_{out_i}-Q_i+\overline{E_{\gamma i}}(E)]$$

where

σ_t = total neutron cross section

E = incident neutron energy

$p_i(E)$ = probability of reaction i

$E_{out,i}$ = average exiting neutron energy from reaction i

Q_i = Q value of reaction i

$E_{\gamma,i}$ = average energy of exiting gammas for reaction i

and for photons

$$H_{ave}(E)=\sum p_i(E)*(E-\overline{E_{out}})$$

where

i = 1 compton scattering with form factors

i = 2 pair production (E_{out} = 1.022016 = $2m_0c^2$)

i = 3 photoelectric

The MCNP heating detector gives results in MeV/g per fission neutron, which can be converted to rads/(min.-watt). The results are again binned in the 27 group neutron, 18 group gamma structure for comparison to the other responses.

Once the response functions have been applied to the flux spectrum, calculation of the power level of the corresponding minimum accident of concern can easily be accomplished by:

$$P(watts) = \frac{20 \frac{rads}{\min}}{R \frac{rads}{\min - watts}}$$

where

$$R = \sum_{i=1}^{27} R_{i_n} + \sum_{i=1}^{18} R_{i_p}$$

and

$R_{i,n}$ = response of neutron energy bin i

$R_{i,p}$ = response of photon energy bin i

3.0 Results

3.1 Calculational Code Comparison

The results from the comparison of the codes XSDRNPM-S and MCNP are shown in Figures 1 through 3. Each of these figures shows the calculated and measured neutron flux from a different critical assembly. From Figures 1 through 3, it can be seen that both codes adequately calculated the system leakage; however, MCNP was able to duplicate the SHEBA spectrum slightly better than XSDRNPM-S.

This slight difference alone does not provide sufficient basis to choose MCNP over XSDRNPM-S. However, the additional flexibility of the three-dimensional modeling capability of MCNP for expansion to future applications does. XSDRNPM-S is strictly a one-dimensional transport code, unlike MCNP, which is a three-dimensional code. The use of a three-dimensional code allows for expansion to very intricate geometry models that will be required in Phase II of this study while retaining consistency with this phase. MCNP was selected for all spectral calculations on the basis of its good agreement with measured data and the flexibility of its modeling capability. Even though XSDRNPM-S was not used for the spectral calculations, it was used extensively to determine the critical radius of spherical systems modeled in MCNP.

3.2 Selection of Base Geometry

The configurations used in these calculations were based on spherical, slab, cylindrical, and cubic geometries as described in Section 2.2. Results from the calculations comparing different base geometries for the Sheba reactor are shown in Figures 4 and 5 below. As Figures 4 and 5 show, the calculated spectra compare very well for both neutrons and photons. Following these calculations, all succeeding calculations were conducted based on spherical geometry.

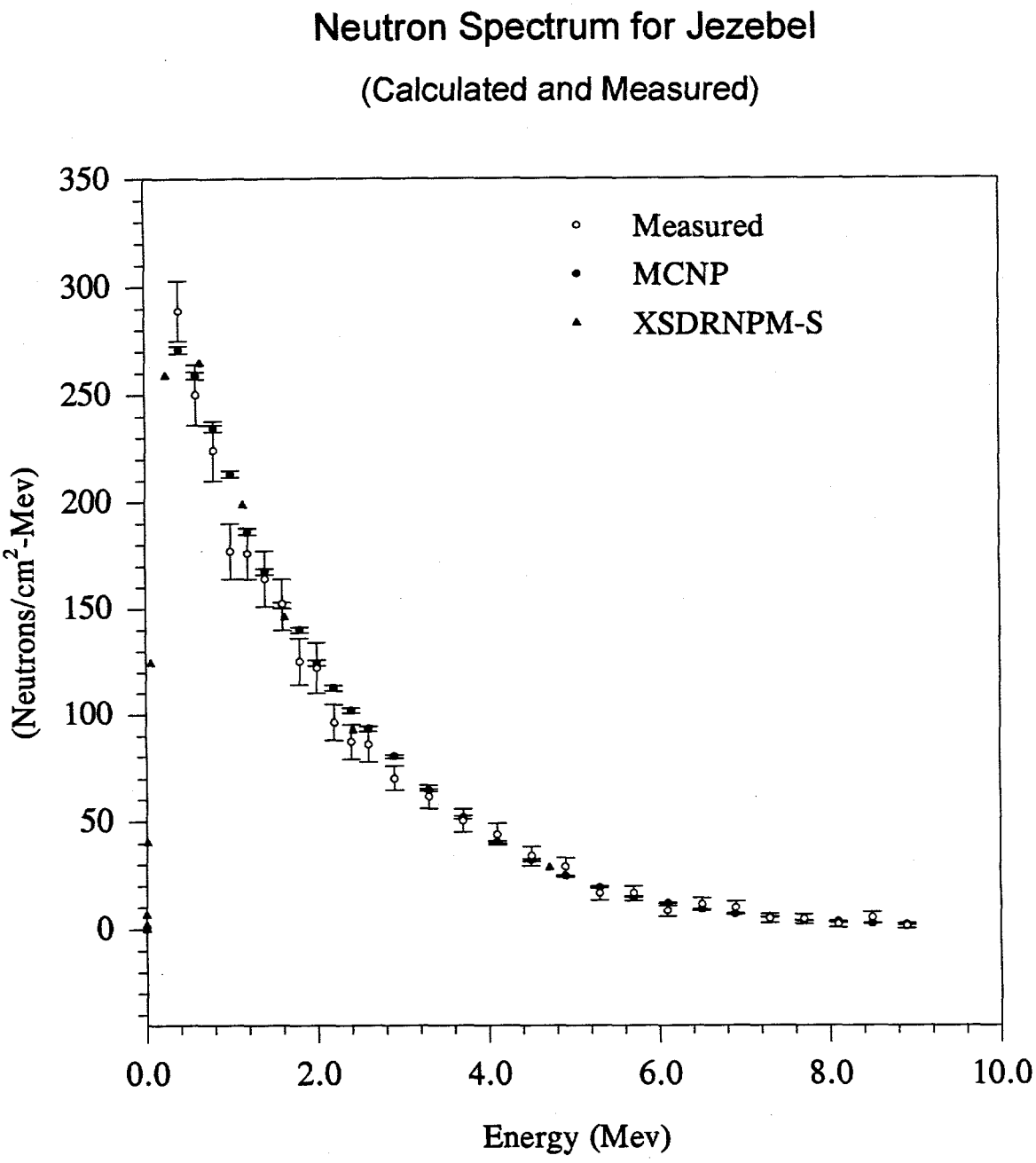

Figure 1. Neutron Spectra for the Jezebel Assembly

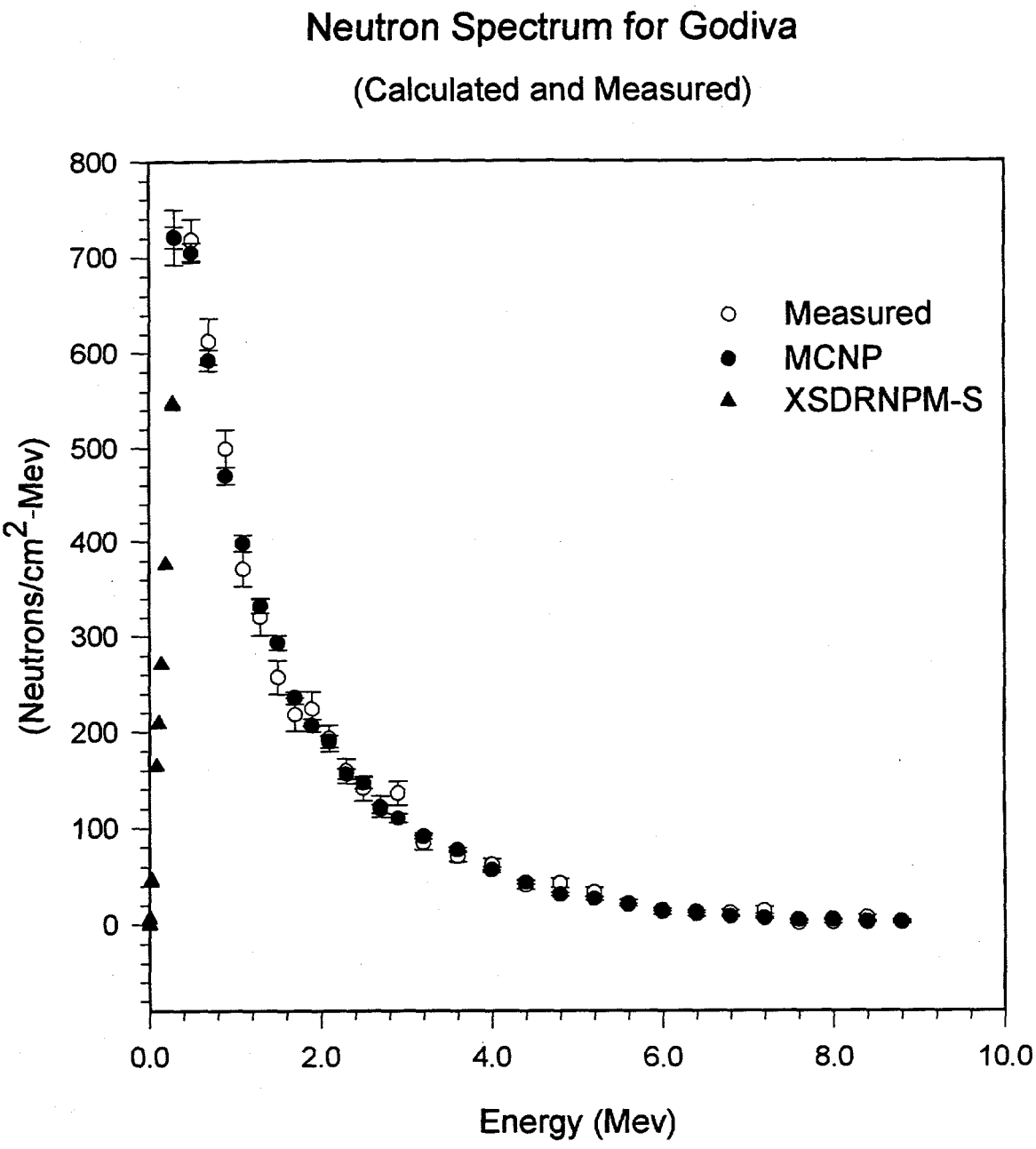

Figure 2. Neutron Spectra for the Godiva Assembly

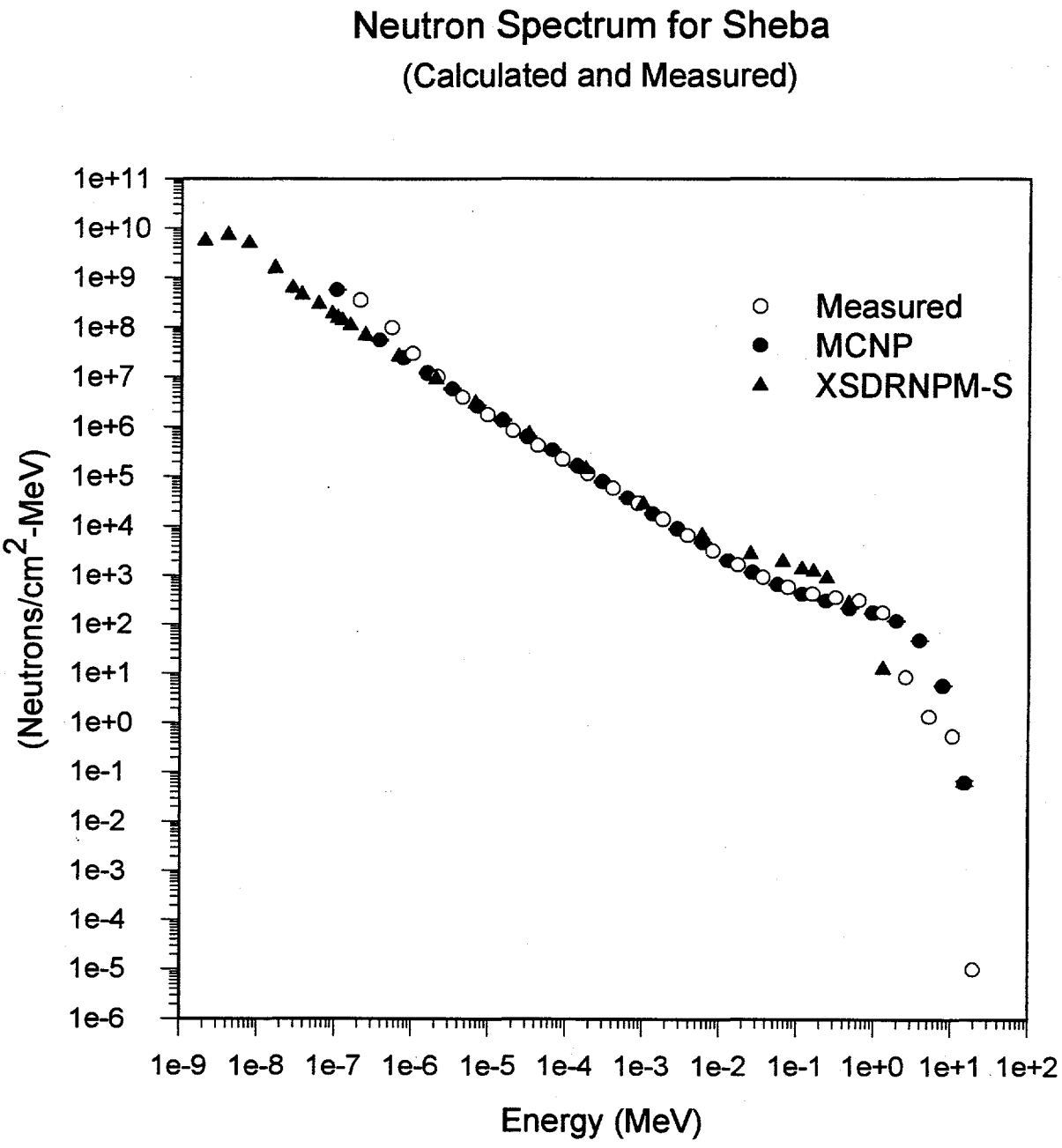

Figure 3. Neutron Spectra for the Sheba Assembly

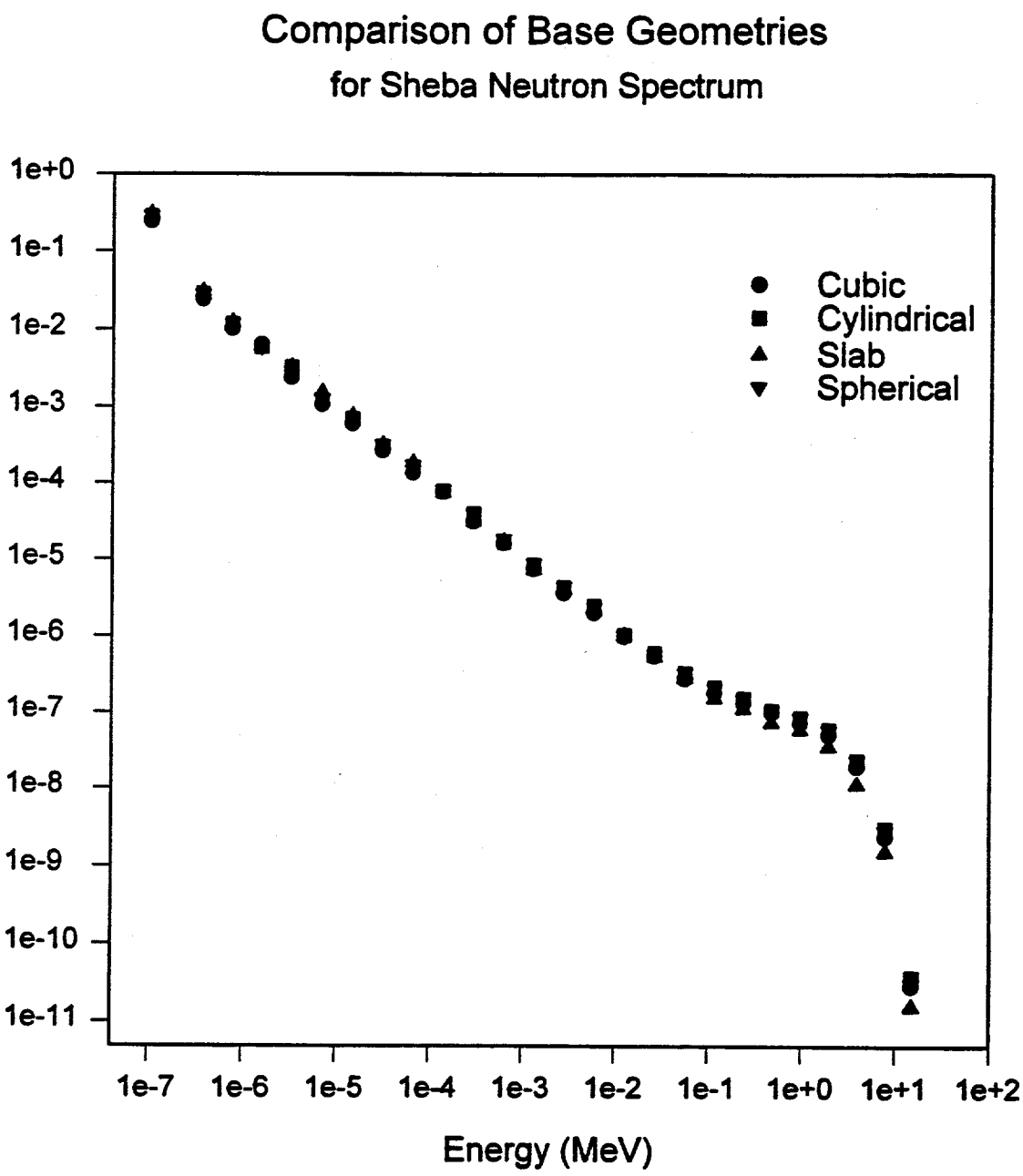

Figure 4. Neutron Spectra for Various Simple Geometries

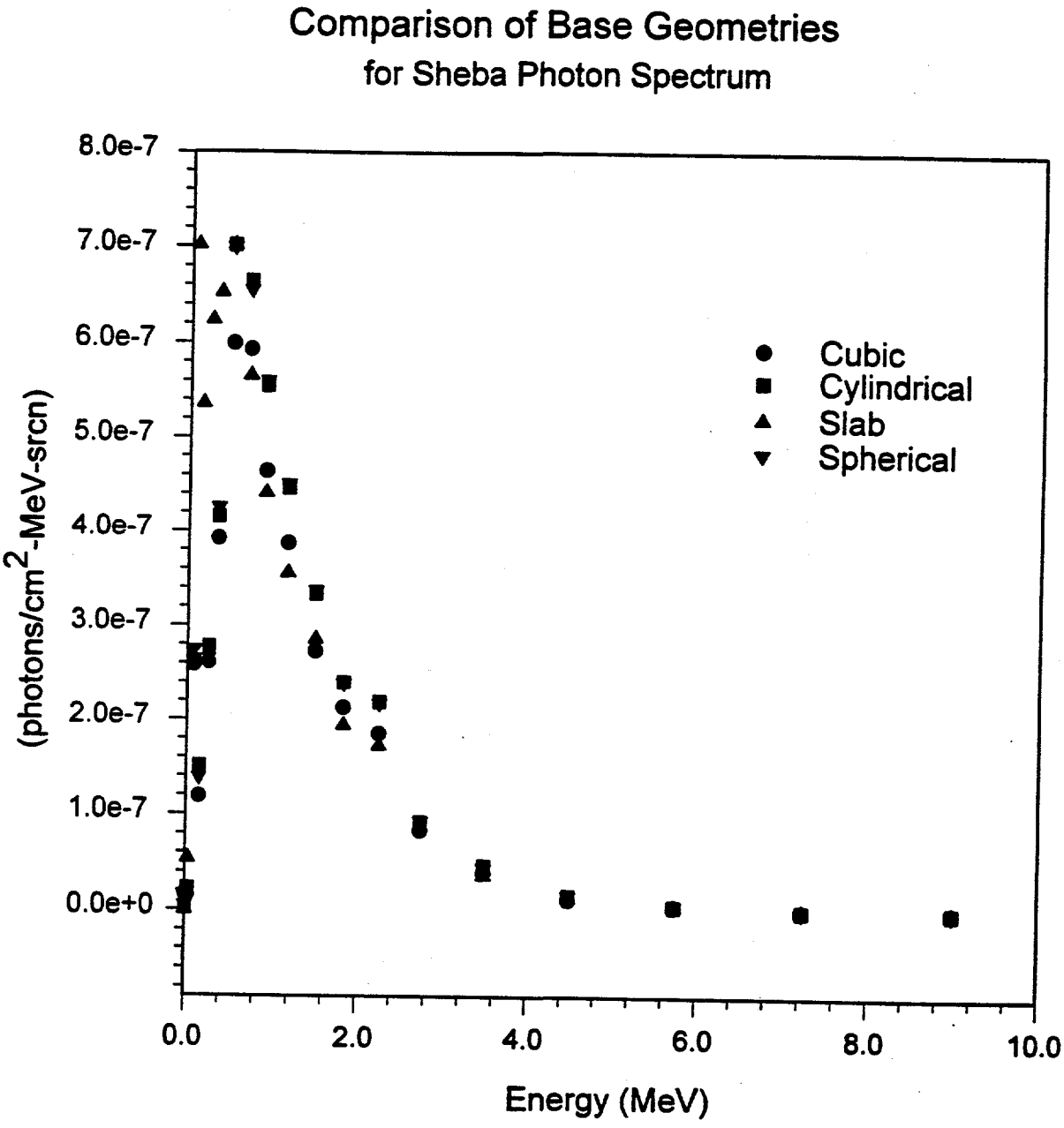

Figure 5. Photon Spectra for Various Simple Geometries

3.3 Comparison of 2-Meter Flux and Leakage

The neutron and photon spectra obtained are, in actuality, the 2-meter neutron and gamma flux. As discussed in Section 2.4, the major difference between the system leakage spectra and the 2-meter flux arises primarily from particle interaction with the intervening air. For all practical purposes this difference is small, as illustrated in Figures 6 through 9. These figures show leakage and flux spectra for neutron and photons from both the Godiva assembly and the Sheba assembly. Calculations using two assemblies with very different spectra determined if any spectral effects might be found. Based on the close agreement of 2-meter flux with leakage, Phase II of these calculations will use the 2-meter flux rather than leakage spectra.

3.4 Calculated Leakage Spectra

All leakage spectra calculated during this analysis are tabulated in Appendix D. Table 1 shows the power levels corresponding to a minimum accident of concern calculated by application of the three response functions. Table 2 shows the calculated neutron to gamma dose ratios.

A graph of the power corresponding to the minimum accident of concern and neutron to gamma dose ratio vs H/U for the 100% enriched case with the Henderson response function applied is given in Figure 10. From Figure 10 it can be seen that the neutron to gamma dose ratio and the power level corresponding to the minimum accident of concern would each indicate a significantly different bounding minimum accident of concern. The graph indicates that the bounding minimum accident of concern based on power would occur at an H/U value of 120 (for the Henderson response function only) while the neutron to gamma ratio would indicate a higher H/U value for neutron sensitive detectors and a lower H/U value for gamma sensitive detectors. This observation is consistent with the discussion in section 2.0.

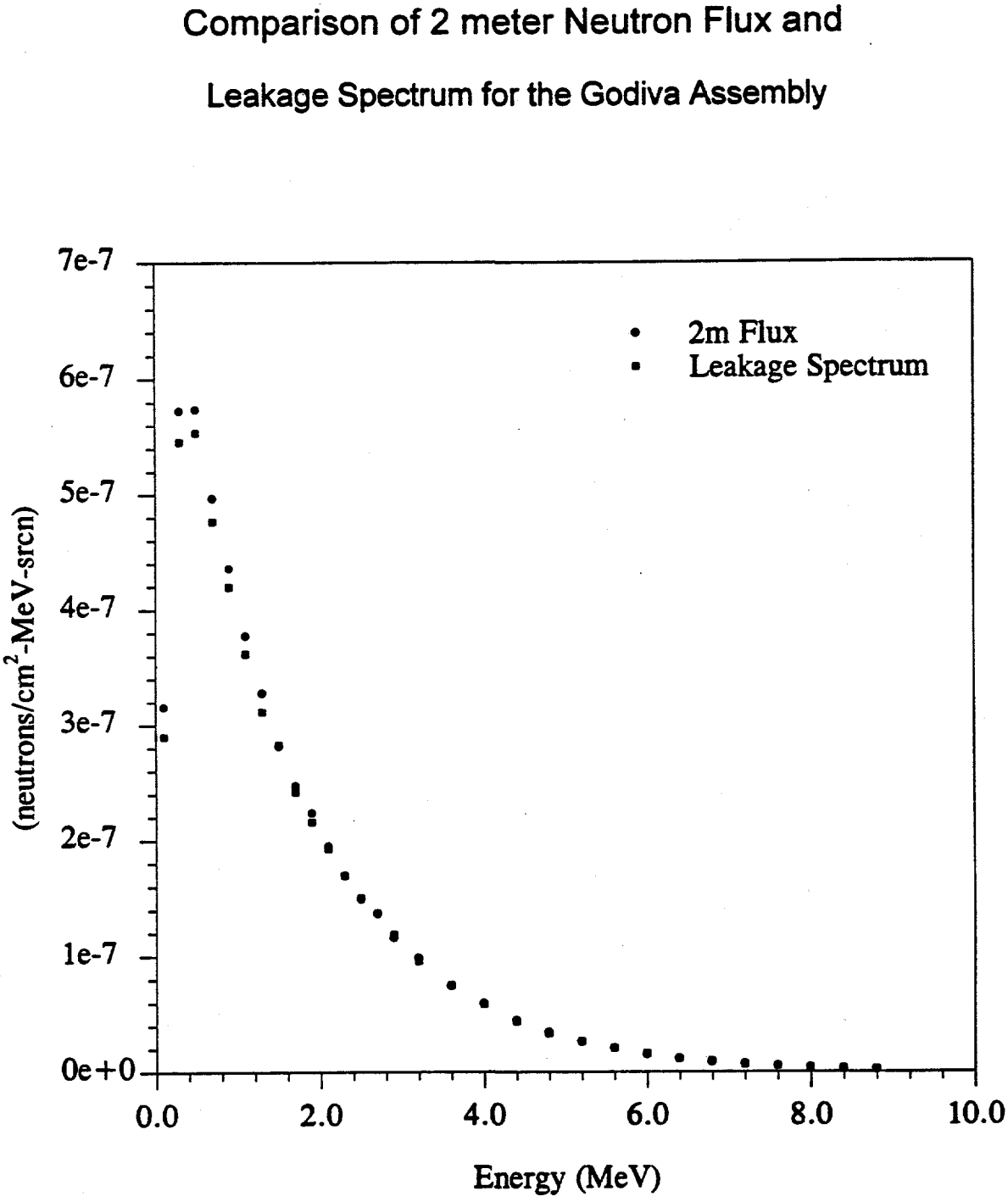

Figure 6. 2-Meter Neutron Flux and Leakage Spectrum for the Godiva Assembly

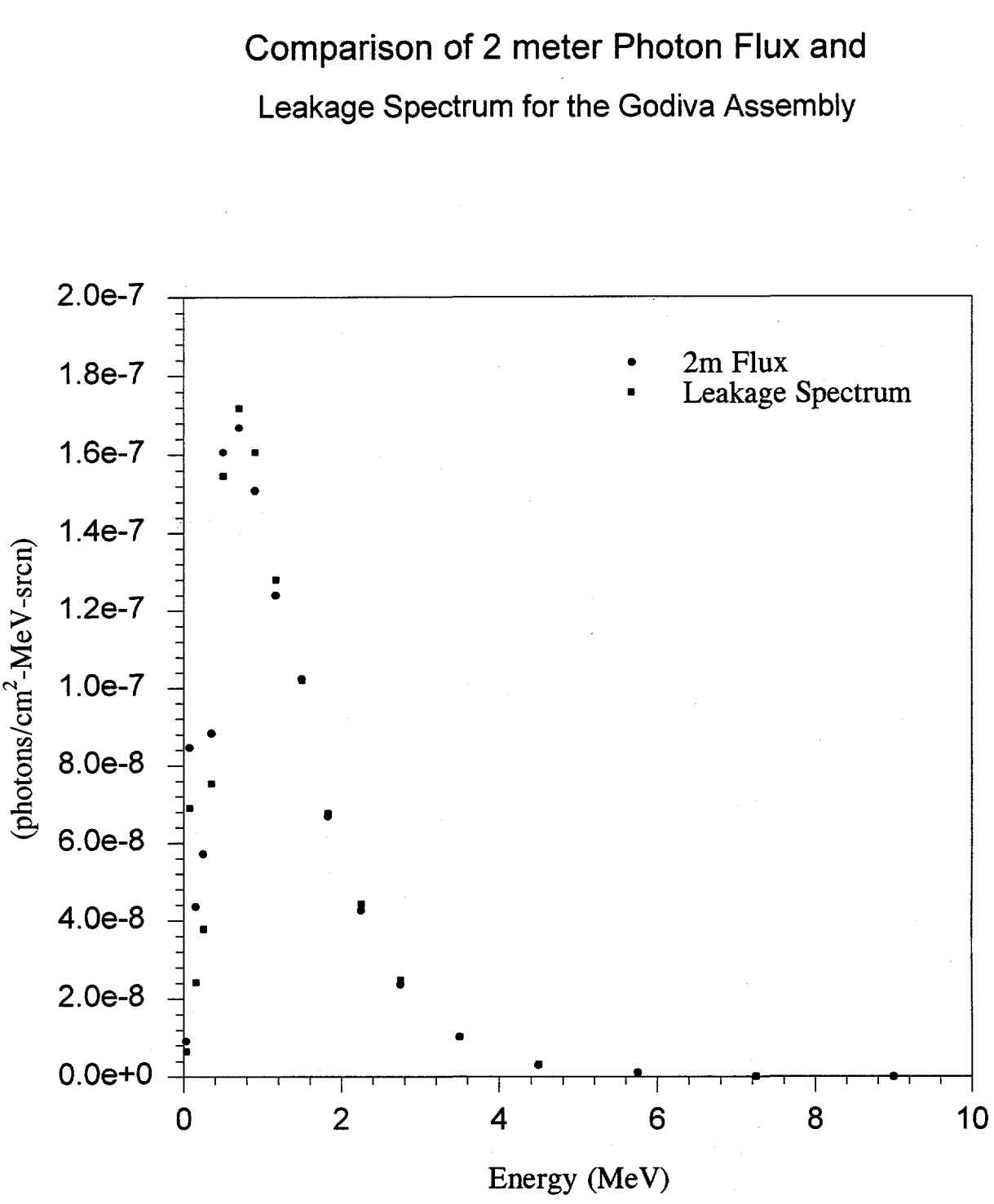

Figure 7. 2-Meter Photon Flux and Leakage Spectrum for the Godiva Assembly

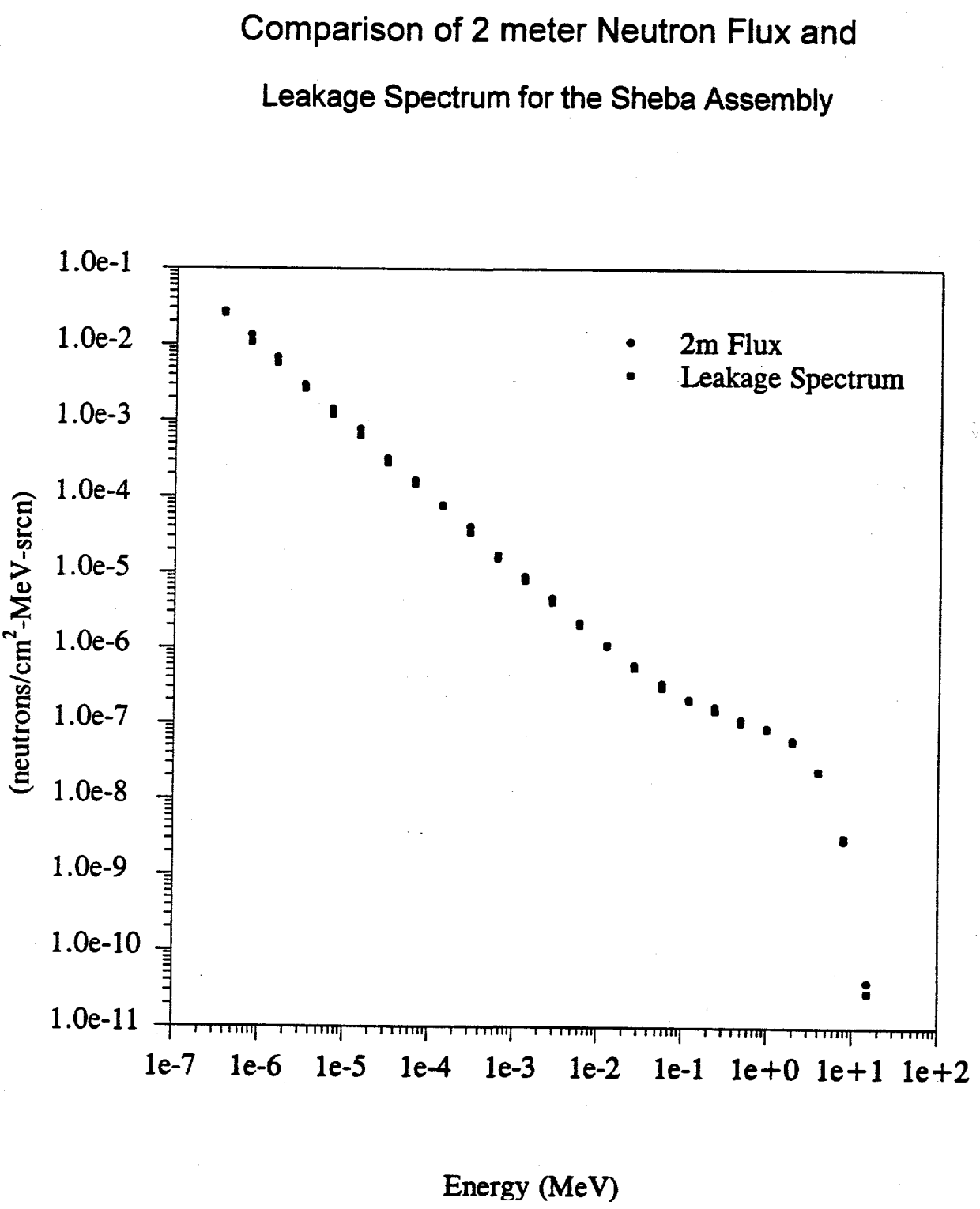

Figure 8. 2-Meter Neutron Flux and Leakage Spectrum for the Sheba Assembly

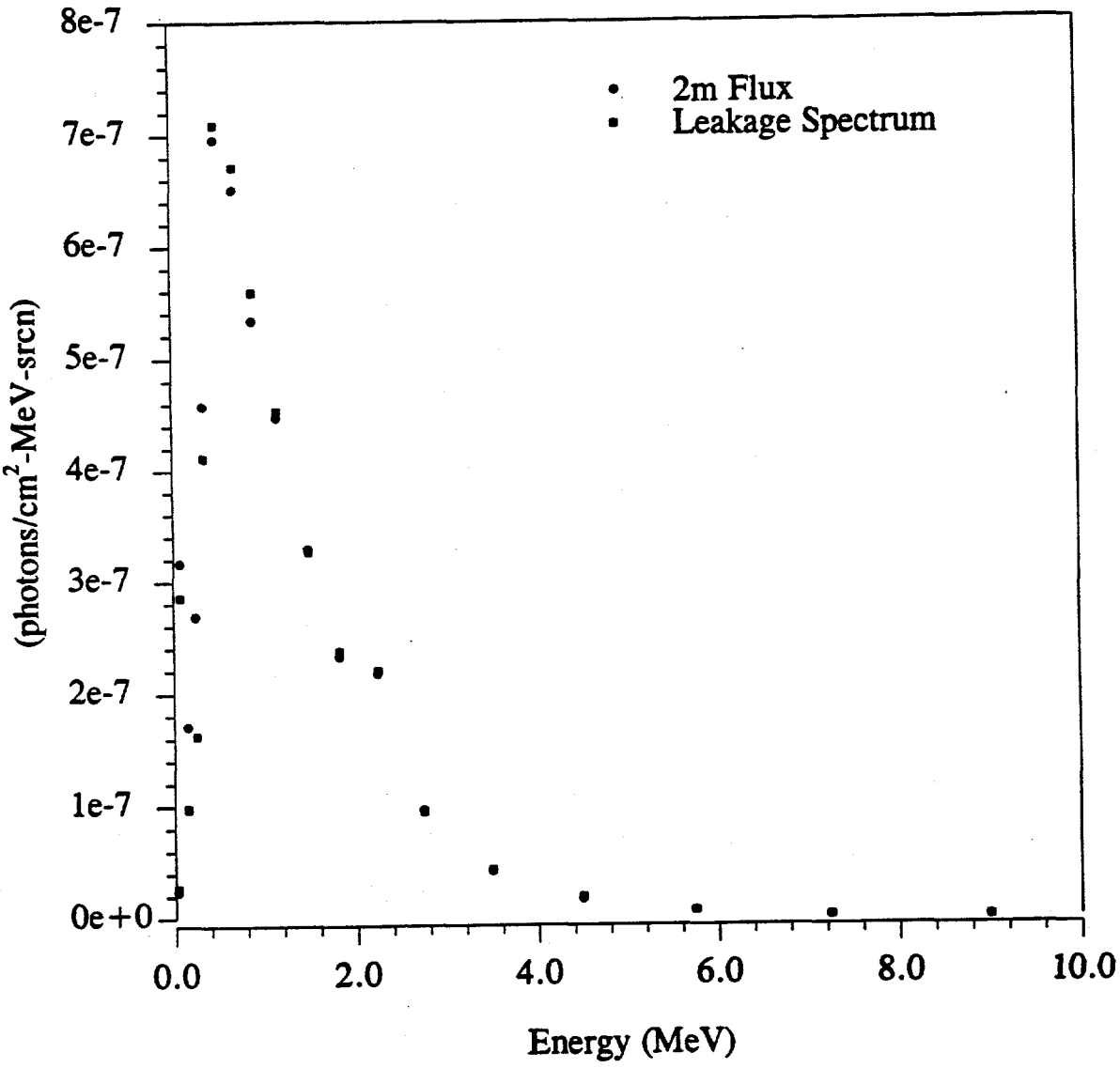

Figure 9. 2-Meter Photon Flux and Leakage Spectrum for the Sheba Assembly

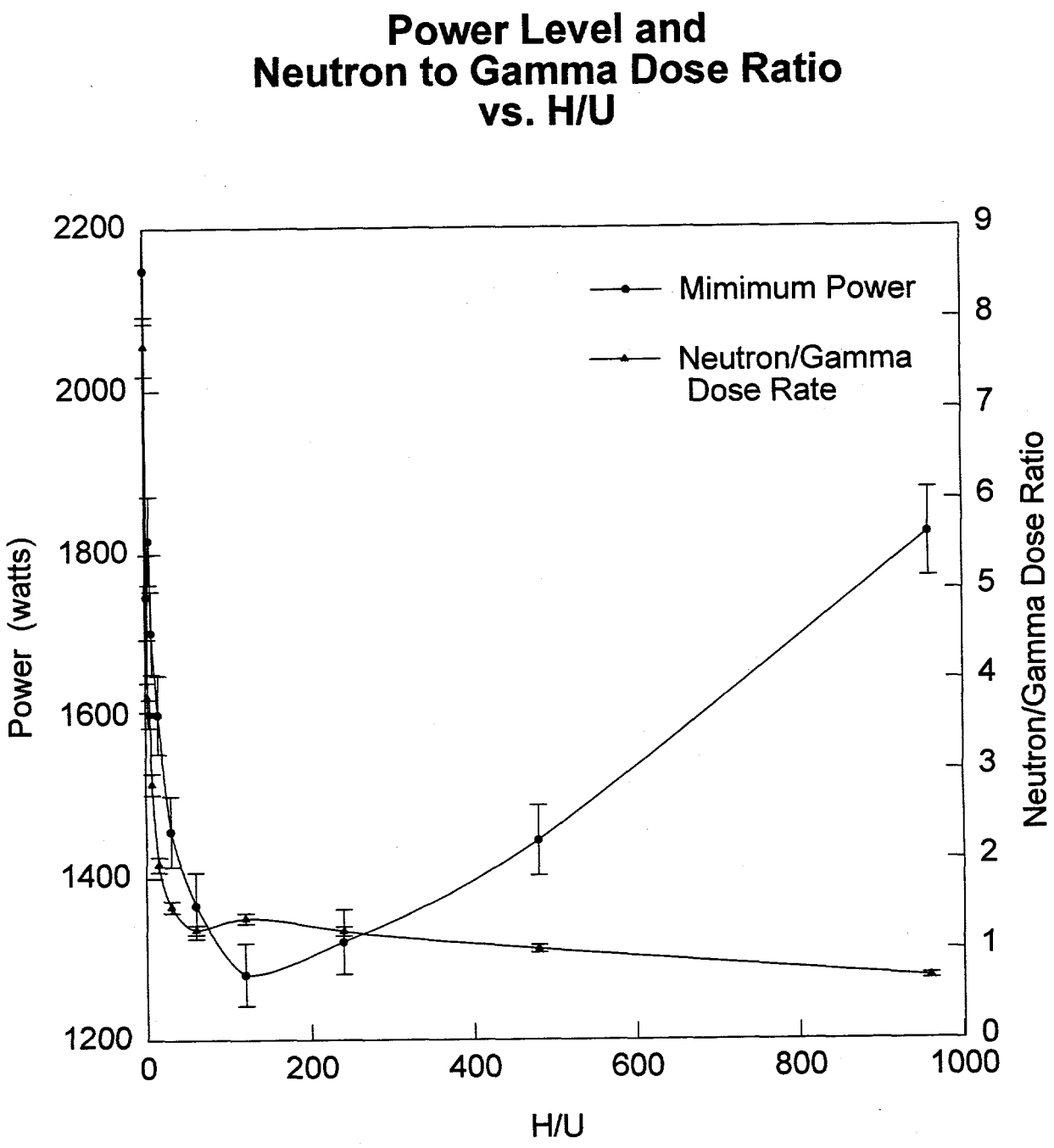

Figure 10. Power Level and Neutron to Gamma Dose Ratio vs H/U

3.5 Calculated Power Levels

The power levels corresponding to the minimum accident of concern for each of the cases studied are given in Table 1 and shown graphically in Figures 11-13. As the table shows, the configuration of 100% enrichment and an H/U value of 120 (0.210 b/cc ^{235}U) gives the lowest power level corresponding to a minimum accident of concern when the Henderson response function is applied. When the ICRU 44 kerma factors or the MCNP heating response function is applied, the lowest power level corresponding to a minimum accident of concern is from the 100% enrichment and H/U = 240 (0.1067 g/cc ^{235}U) configuration.

Power Level vs. H/U for Minimum Accident of Concern

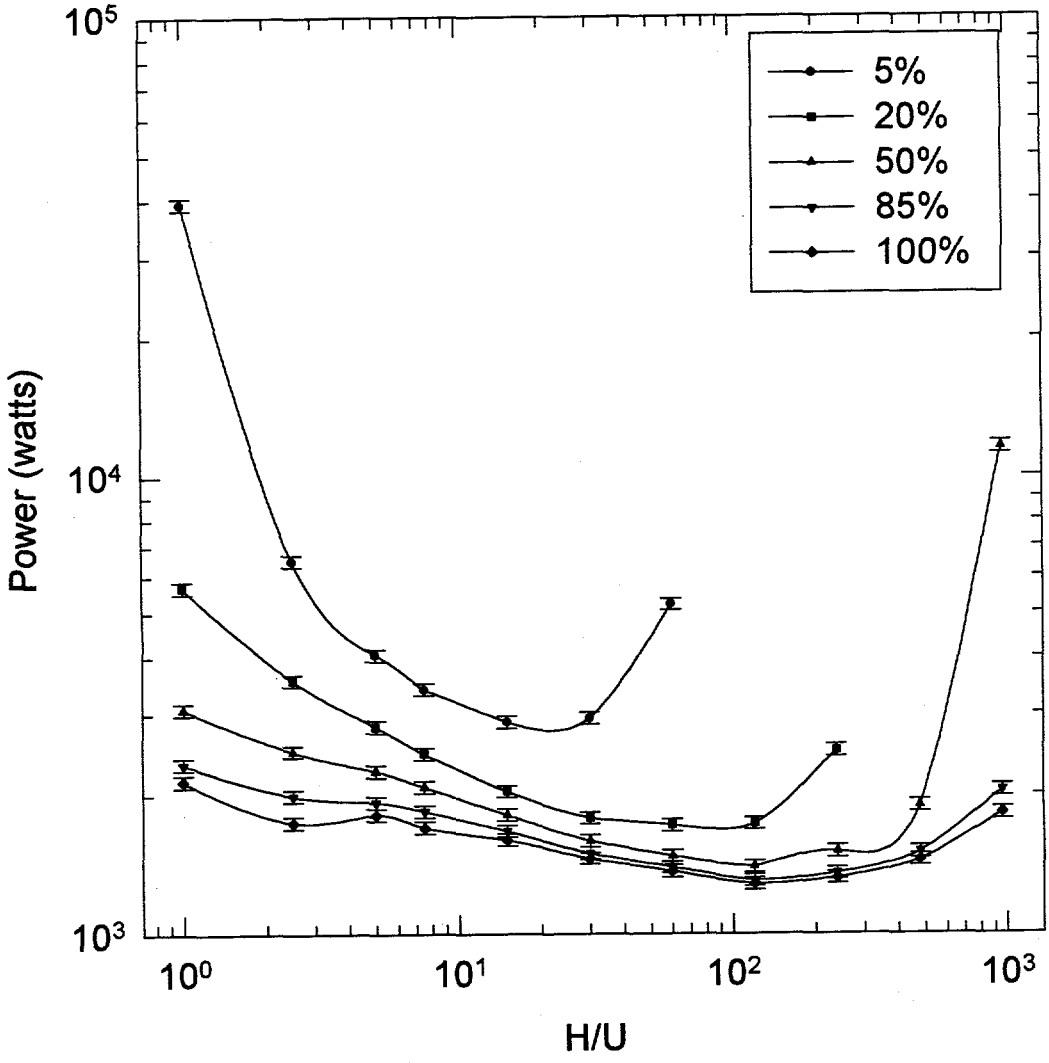

Figure 11. Power Level vs H/U for Minimum Accident of Concern, Calculated Using Henderson Flux to Dose Conversion Factors

Power Level vs. H/U for Minimum Accident of Concern

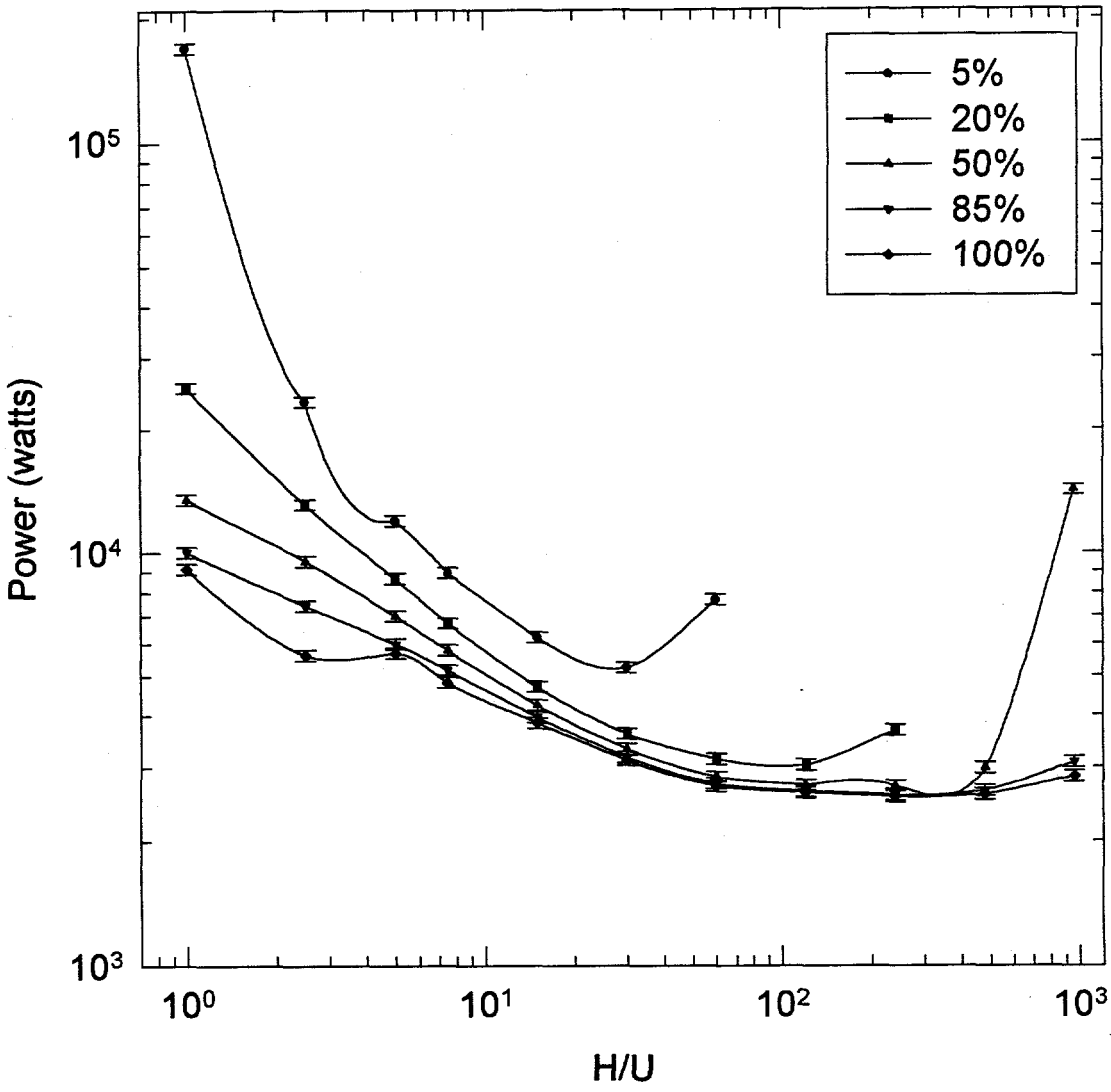

Figure 12. Power Level vs H/U for Minimum Accident of Concern, Calculated Using ICRU 44 KERMA Factors in Air

Power Level vs. H/U for Minimum Accident of Concern

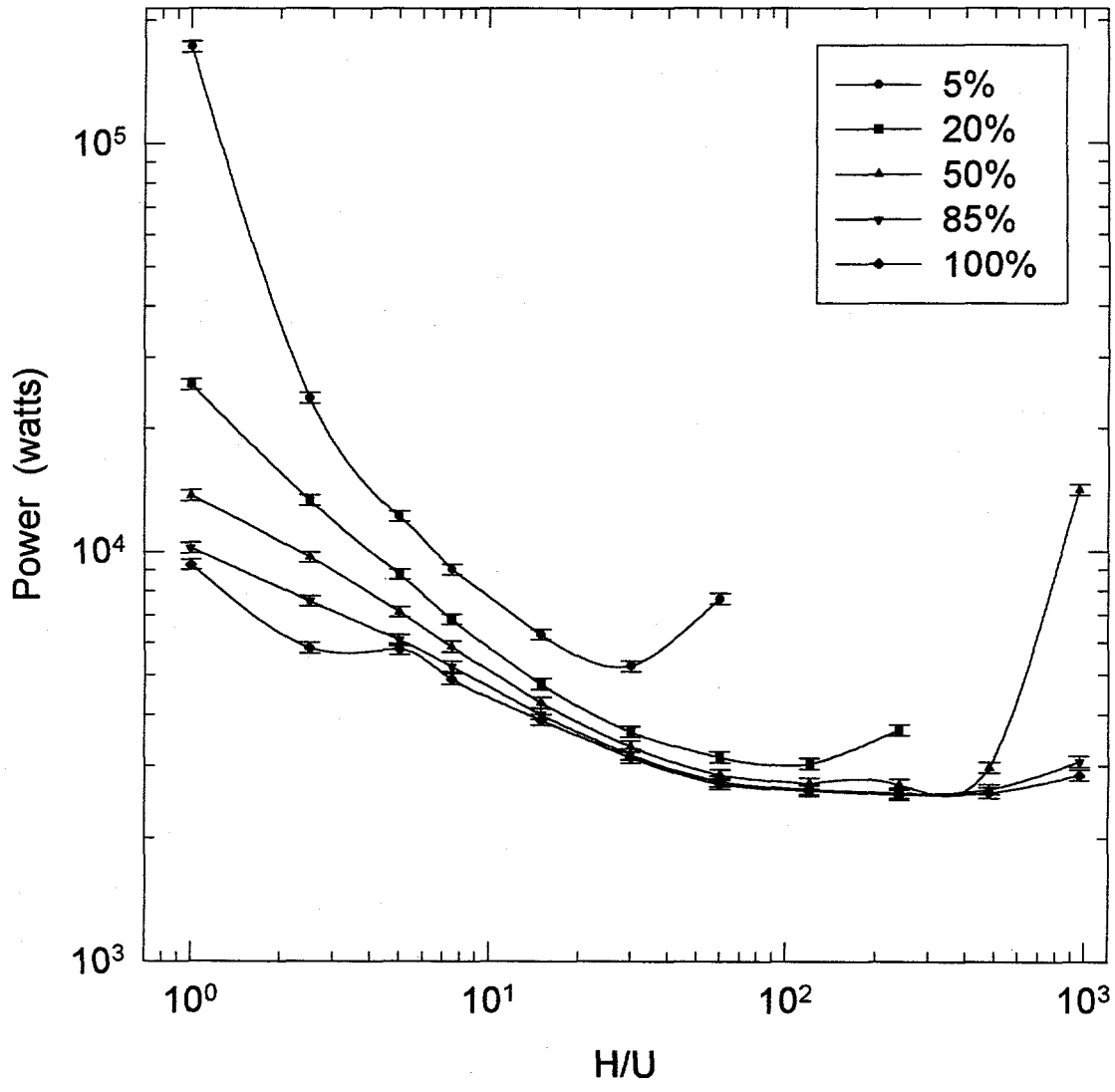

Figure 13. Power Level vs H/U for Minimum Accident of Concern, Calculated Using the MCNP Heating Detectors

Table 1. Minimum Critical Accidents of Concern (Watts)

Calculated using Henderson flux to dose conversion factors:

Enrichment (%)	H/U										
	1	2.5	5	7.5	15	30	60	120	240	480	960
5	39355	6505	4047	3400	2881	2931	5212	***	***	***	***
20	5680	3563	2817	2457	2041	1785	1722	1735	2491	***	***
50	3071	2489	2253	2087	1815	1594	1477	1397	1508	1892	11512
85	2331	1997	1933	1847	1675	1498	1395	1304	1351	1505	2042
100	2148	1747	1817	1703	1602	1458	1366	1281	1321	1446	1825

Calculated using ICRU 44 KERMA factors in air:

Enrichment (%)	H/U										
	1	2.5	5	7.5	15	30	60	120	240	480	960
5	169079	23381	11991	8943	6215	5241	7671	***	***	***	***
20	25279	13116	8666	6744	4708	3617	3144	3041	3684	***	***
50	13460	9549	7019	5789	4251	3328	2849	2721	2705	2984	14191
85	10034	7441	6003	5180	3979	3178	2742	2625	2574	2636	3083
100	9134	5638	5700	4827	3853	3125	2708	2607	2550	2586	2855

Calculated using the MCNP neutron and photon heating detectors:

Enrichment (%)	H/U										
	1	2.5	5	7.5	15	30	60	120	240	480	960
5	172679	23784	12161	9038	6255	5251	7657	***	***	***	***
20	25780	13332	8787	6820	4739	3626	3143	3033	3667	***	***
50	13719	9685	7116	5855	4279	3337	2849	2717	2696	2969	14115
85	10222	7566	6081	5236	4006	3188	2744	2624	2568	2626	3065
100	9306	5818	5775	4879	3882	3137	2709	2605	2544	2576	2841

*** Not calculated due to sub-criticality

Note: All errors associated with the Monte Carlo technique are less than 3%.

Table 2. Neutron to Gamma Dose Ratios

Calculated using Henderson flux to dose conversion factors:

Enrichment (%)	H/U										
	1	2.5	5	7.5	15	30	60	120	240	480	960
5	***	5.1728	3.3860	2.5842	1.6455	1.0284	0.5552	***	***	***	***
20	5.2112	5.2893	3.4843	2.7037	1.8169	1.3419	1.0367	0.9724	0.5674	***	***
50	8.0909	5.8493	3.5455	2.7175	1.8490	1.4038	1.1598	1.1645	1.0202	0.7123	0.2151
85	7.8496	5.4516	3.5249	2.7736	1.8986	1.4510	1.2026	1.3202	1.1739	0.9608	0.6103
100	7.6957	3.8077	3.6296	2.8462	1.9499	1.4814	1.2272	1.3529	1.2075	1.0080	0.6892

Calculated using ICRU 44 KERMA factors in air:

	H/U										
Enrichment (%)	1	2.5	5	7.5	15	30	60	120	240	480	960
5	***	0.8622	0.6026	0.4793	0.3263	0.2270	0.1403	***	***	***	***
20	1.2573	0.8416	0.5798	0.4556	0.3193	0.2484	0.2063	0.2121	0.1429	***	***
50	1.2222	0.9342	0.5773	0.4493	0.3158	0.2469	0.2107	0.2376	0.2136	0.1696	0.0624
85	1.2124	0.8692	0.5699	0.4556	0.3175	0.2500	0.2121	0.2407	0.2300	0.2063	0.1521
100	1.1930	0.6051	0.5949	0.4684	0.3280	0.2531	0.2151	0.2453	0.2300	0.2136	0.1655

Calculated using the MCNP neutron and photon Heating Detectors:

	H/U										
Enrichment (%)	1	2.5	5	7.5	15	30	60	120	240	480	960
5	***	0.8382	0.5848	0.4663	0.3193	0.2240	0.1403	***	***	***	***
20	1.2272	0.8215	0.5674	0.4451	0.3106	0.2407	0.2005	0.2063	0.1403	***	***
50	1.1978	0.9084	0.5601	0.4368	0.3038	0.2376	0.2034	0.2300	0.2092	0.1669	0.0622
85	1.1834	0.8450	0.5601	0.4472	0.3089	0.2407	0.2063	0.2346	0.2225	0.2019	0.1494
100	1.1739	0.5625	0.5723	0.4599	0.3158	0.2438	0.2092	0.2361	0.2240	0.2063	0.1628

*** Not calculated due to sub-criticality

Note: All errors associated with the Monte Carlo technique are less than 4.25%

4.0 Conclusions

This report develops a method to calculate neutron and photon flux spectra resulting from minimum accidents of concern. This method involves using XSDRNPM-S to calculate critical system radii, and MCNP to calculate the neutron and photon flux spectra. The spectra calculated using this method are shown to compare well with neutron and photon spectra from known critical assemblies.

Also given in this report are neutron and photon flux spectra resulting from a wide variety of minimum accidents of concern. These minimum accidents of concern range in enrichment from 5% to 100% and H/U ratios of 1 to 960. Additionally, with each combination of enrichment and H/U value, three different response functions are applied. Also with each combination of enrichment, H/U ratio, and response function is a tabulated power level and neutron to gamma dose ratio corresponding to the minimum accident of concern. The "bounding" minimum accident of concern was chosen to be the accident that produced the required 20 rads in 60 seconds with the lowest power level. This accident corresponds to the case of 100% enrichment, an H/U ratio of 120 with the Henderson flux to dose conversion factors. This configuration gives the minimum accident of concern with a power level of 1281 watts.

The previously mentioned configuration for the "bounding" minimum accident of concern and its associated power level will be used as the assumed criticality event for Phase II of this study, which will determine the effects of relocating the CAS detectors in the X-326 building.

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Appendix A

Henderson Flux to Dose Conversion Factors

Henderson Flux to Dose Conversion Factors

Neutron Response

Group #	Max.Energy (eV)	Response (rads/(n/cm^2))
1	2.00E7	4.72E-9
2	6.43E6	4.18E-9
3	3.00E6	3.22E-9
4	1.85E6	2.79E-9
5	1.40E6	2.44E-9
6	9.00E5	1.79E-9
7	4.00E5	1.08E-9
8	1.00E5	3.12E-10
9	1.70E4	7.20E-11
10	3.00E3	1.35E-11
11	5.50E2	2.46E-12
12	1.00E2	5.43E-13
13	3.00E1	1.70E-13
14	1.00E1	5.46E-14
15	3.05	2.20E-14
16	1.77	1.42E-14
17	1.30	1.13E-14
18	1.13	9.93E-15
19	1.00	8.37E-15
20	8.00E-1	5.39E-15
21	4.00E-1	3.37E-15
22	3.25E-1	2.54E-15
23	2.25E-1	1.40E-15
24	1.00E-1	6.52E-16
25	5.00E-2	3.69E-16
26	3.00E-2	2.46E-16
27	1.00E-2	6.03E-17
	1.00E-5	

Henderson Flux to Dose Conversion Factors

Photon Response

Group #	Max.Energy (eV)	Response (rads/(n/cm^2))
1	1.00E7	2.47E-9
2	8.00E6	2.03E-9
3	6.50E6	1.71E-9
4	5.00E6	1.44E-9
5	4.00E6	1.20E-9
6	3.00E6	1.01E-9
7	2.50E6	8.70E-10
8	2.00E6	7.47E-10
9	1.66E6	6.49E-10
10	1.33E6	5.33E-10
11	1.00E6	4.31E-10
12	8.00E5	3.49E-10
13	6.00E5	2.56E-10
14	4.00E5	1.79E-10
15	3.00E5	1.24E-10
16	2.00E5	6.86E-10
17	1.00E5	3.64E-11
18	5.00E4	1.76E-10
	1.00E4	

Appendix B

Sample XSDRNPM-S Input

```
=csasn
h/u = 15  85% enriched
27n-18couple  infh
U-235    1  0.0  2.96939e-3          end
U-238    1  0.0  5.17392e-4          end
O        1  0.0  3.31244e-2          end
F        1  0.0  6.97357e-3          end
H        1  0.0  5.23018e-2          end
end comp
end
=xsdrn
h/u = 15  85% enriched
0$$ a3 4 e
1$$ 3 1 50 1 0 1 5 8 3 4 a12 100 e
2$$ -2 -1 e
3$$ a12 1 e
5** 1.0e-5 1.0e-5 1. 0 -1 a10 1.0 e 1t
13$$ 1            1            1            1            1
14$$ 92235        92238        9019         8016         1001
15** 2.96939e-3  5.17392e-4  6.97357e-3  3.31244e-2  5.23018e-2
2t
33## f1.  4t
35** 49i0. 20.0
36$$ 50r1
39$$   1
41**   1 5t
end
```

Appendix C

Sample MCNP Input

```
     this is a model to determine the neut. and gamma flux from
     c  h2u = 15 at 85% enrichment
     c
     c
     c
     c       ****************************************
     c                      cell cards go here
     c       ****************************************
10   10    9.58866e-2  -10          $ this is the criticasolution
20   20    -1.293e-3   10 -15       $ air next to assembly
25   20    -1.293e-3   15 -20       $ detector volume
30   20    -1.293e-3   20 -30       $ air beyond detection plane
40   0                 30 -40       $ inner void

c       ****************************************
c                    surface cards here
c       ****************************************
c
     10   so    15.8062              $ this is the surface of the critical
     c                               assembly
     15   so    214.8062             $ inner edge of heating detector
     20   so    215.8062             $ surface for flux tallying
     30   so    2000.0             $ inner void
     40   so    2002.0             $ edge of the universe
     c

     c
     c
     c       ****************************************
     c                    run type cards
     c       ****************************************
     c
     c
     mode  n p
     imp:n    1 1 1 1 0
     imp:p    1 1 1 1 0
     c
     c
     c       ****************************************
     c                   source cards
     c       ****************************************
     c
     c
     kcode   2000  1  5  0
     ksrc    0  0  0
     c
     c
     c       ****************************************
     c                   tally cards
     c       ****************************************
     c
     c
     fc6    this tally is just outside the critical vol in a void
     c      and will use the   energy group structure
```

```
f6:n   25
f16:p  25
e6     1.0e-11 1.00e-8 3.00e-8 5.00e-8 1.00e-7 2.25e-7 3.25e-7
       4.00e-7 8.00e-7 1.00e-6 1.13e-6 1.30e-6 1.77e-6
       3.05e-6
       1.00e-5 3.00e-5 1.00e-4 5.50e-4 3.00e-3 1.70e-2
       1.00e-1
       4.00e-1 9.00e-1 1.40e0 1.85e0 3.00e0 6.43e0 2.00e1
e16    1.00e-2 5.00e-2 1.00e-1 2.00e-1 3.00e-1 4.00e-1 6.00e-1
       8.00e-1 1.00 1.33 1.66 2.00 2.50 3.00
       4.00 5.00 6.50 8.00 1.00e1
fc2   this tally is for the ICRU dose in air (tally 2 and 12)
f2:n   20
f12:p  20
fc22   this tally is for henderson flux to dose (tally 22 and 32)
f22:n  20
f32:p  20
e2     1.0e-11 1.00e-8 3.00e-8 5.00e-8 1.00e-7 2.25e-7 3.25e-7
       4.00e-7 8.00e-7 1.00e-6 1.13e-6 1.30e-6 1.77e-6 3.05e-6
       1.00e-5 3.00e-5 1.00e-4 5.50e-4 3.00e-3 1.70e-2
       1.00e-1 4.00e-1 9.00e-1 1.40e0 1.85e0 3.00e0 6.43e0 2.00e1
de2     2.53e-8 3.60e-8 6.30e-8 1.10e-7 2.00e-7
       3.60e-7 6.30e-7 1.10e-6 2.00e-6 3.60e-6
       6.30e-6 1.10e-5 2.00e-5 3.60e-5 6.30e-5
       1.10e-4 2.00e-4 3.60e-4 6.30e-4 1.10e-3
       2.00e-3 3.60e-3 6.30e-3 1.10e-2 2.00e-2
       3.60e-2 6.30e-2 8.20e-2 8.60e-2 9.00e-2
       9.40e-2 9.80e-2 1.05e-1 1.15e-1 1.25e-1
       1.35e-1 1.45e-1 1.55e-1 1.65e-1 1.75e-1
       1.85e-1 1.95e-1 2.10e-1 2.30e-1 2.50e-1
       2.70e-1 2.90e-1 3.10e-1 3.30e-1 3.50e-1
       3.70e-1 3.90e-1 4.20e-1 4.60e-1 5.00e-1
       5.40e-1 5.80e-1 6.20e-1 6.60e-1 7.00e-1
       7.40e-1 7.80e-1 8.20e-1 8.60e-1 9.00e-1
       9.40e-1 9.80e-1 1.05e00 1.15e00 1.25e00
       1.35e00 1.45e00 1.55e00 1.65e00 1.75e00
       1.85e00 1.95e00 2.10e00 2.30e00 2.50e00
       2.70e00 2.90e00 3.10e00 3.30e00 3.50e00
       3.70e00 3.90e00 4.20e00 4.60e00 5.00e00
       5.40e00 5.80e00 6.20e00 6.60e00 7.00e00
       7.40e00 7.80e00 8.20e00 8.60e00 9.00e00
       9.40e00 9.80e00 1.05e01 1.15e01 1.25e01
       1.35e01 1.45e01 1.55e01 1.65e01 1.75e01
       1.85e01 1.95e01 2.10e01 2.30e01 2.50e01
       2.70e01 2.90e01
df2    5.93e-16 5.02e-16 3.79e-16 2.87e-16 2.13e-16
       1.59e-16 1.20e-16 9.06e-17 6.75e-17 5.02e-17
       3.79e-17 2.87e-17 2.14e-17 1.59e-17 1.20e-17
       9.14e-18 6.88e-18 5.26e-18 4.20e-18 3.57e-18
       3.36e-18 3.70e-18 4.76e-18 6.88e-18 1.08e-17
       1.70e-17 2.55e-17 3.07e-17 3.18e-17 3.28e-17
       3.38e-17 3.48e-17 3.67e-17 3.94e-17 4.19e-17
       4.45e-17 4.71e-17 4.95e-17 5.20e-17 5.44e-17
       5.68e-17 5.92e-17 6.27e-17 6.74e-17 7.20e-17
```

```
        7.64e-17 8.09e-17 8.56e-17 9.08e-17 9.65e-17
        1.04e-16 1.16e-16 1.67e-16 1.33e-16 1.43e-16
        9.81e-17 9.98e-17 1.54e-16 2.30e-16 1.66e-16
        1.48e-16 1.40e-16 1.36e-16 1.33e-16 1.33e-16
        1.41e-16 2.03e-16 2.51e-16 1.93e-16 1.94e-16
        3.78e-16 3.56e-16 2.91e-16 2.85e-16 3.85e-16
        3.41e-16 2.99e-16 3.28e-16 3.92e-16 4.06e-16
        5.83e-16 6.77e-16 8.51e-16 9.77e-16 1.16e-15
        1.10e-15 1.26e-15 1.41e-15 1.11e-15 9.90e-16
        8.59e-16 8.51e-16 9.84e-16 8.20e-16 9.44e-16
        1.20e-15 1.11e-15 1.04e-15 1.08e-15 1.13e-15
        1.18e-15 1.31e-15 1.47e-15 1.74e-15 1.96e-15
        2.19e-15 2.39e-15 2.54e-15 2.65e-15 2.78e-15
        2.94e-15 3.10e-15 3.28e-15 3.41e-15 3.48e-15
        3.56e-15 3.59e-15
e12     1.00e-2 5.00e-2 1.00e-1 2.00e-1 3.00e-1 4.00e-1 6.00e-1
        8.00e-1 1.00 1.33 1.66 2.00 2.50 3.00
        4.00 5.00 6.50 8.00 1.00e1
de12     0.01 0.015 0.02 0.03 0.04 0.05 0.06 0.08 0.1
           0.15 0.2 0.3 0.4 0.5 0.6 0.8 1 1.5 2 3 4 5 6 8 10
           15 20 30 40 50 60 80 100
df12    7.4493e-10 3.1239e-10 1.6885e-10 7.209e-11
             4.2998e-11 3.23604e-11 2.89321e-11 3.07584e-11
             3.71644e-11 5.98347e-11 8.55468e-11 1.37932e-10
             1.89036e-10 2.37897e-10 2.83554e-10 3.69101e-10
             4.46958e-10 6.10362e-10 7.49736e-10 9.85230e-10
             1.19830e-9 1.39374e-9 1.57637e-9 1.94803e-9
             2.3229e-9 3.24405e-9 4.19724e-9 6.15168e-9
             8.01e-9 9.9324e-9 1.17266e-8 1.53792e-8 1.90638e-8
e22      1.0e-11 1.00e-8 3.00e-8 5.00e-8 1.00e-7 2.25e-7 3.25e-7
        4.00e-7 8.00e-7 1.00e-6 1.13e-6 1.30e-6 1.77e-6 3.05e-6
        1.00e-5 3.00e-5 1.00e-4 5.50e-4 3.00e-3 1.70e-2
        1.00e-1 4.00e-1 9.00e-1 1.40e0 1.85e0 3.00e0 6.43e0 2.00e1
e32     1.00e-2 5.00e-2 1.00e-1 2.00e-1 3.00e-1 4.00e-1 6.00e-1
        8.00e-1 1.00 1.33 1.66 2.00 2.50 3.00
        4.00 5.00 6.50 8.00 1.00e1
em22     0 6.03e-17 2.46e-16 3.69e-16 6.52e-16 1.40e-15
        2.54e-15 3.37e-15 5.39e-15 8.37e-15 9.93e-15
        1.13e-14 1.42e-14 2.20e-14 5.46e-14 1.70e-13
        5.43e-13 2.46e-12 1.35e-11 7.20e-11 3.12e-10
        1.08e-9 1.79e-9 2.44e-9 2.79e-9 3.22e-9
        4.18e-9 4.72e-9
em32    0 1.76e-10 3.64e-11 6.86e-11 1.24e-10 1.79e-10
        2.56e-10 3.49e-10 4.31e-10 5.33e-10 6.49e-10
        7.47e-10 8.70e-10 1.01e-9 1.20e-9 1.44e-9
        1.71e-9 2.03e-9 2.47e-9
fc52    this is the flux per source n
f42:n    20
f52:p    20
e42      1.0e-11 1.00e-8 3.00e-8 5.00e-8 1.00e-7 2.25e-7 3.25e-7
        4.00e-7 8.00e-7 1.00e-6 1.13e-6 1.30e-6 1.77e-6 3.05e-6
        1.00e-5 3.00e-5 1.00e-4 5.50e-4 3.00e-3 1.70e-2
        1.00e-1 4.00e-1 9.00e-1 1.40e0 1.85e0 3.00e0 6.43e0 2.00e1
e52     1.00e-2 5.00e-2 1.00e-1 2.00e-1 3.00e-1 4.00e-1 6.00e-1
```

```
      8.00e-1 1.00 1.33 1.66 2.00 2.50 3.00
      4.00 5.00 6.50 8.00 1.00e1
c
c
c
c     ****************************************
c                  material cards
c     ****************************************
c
c
m10   1001.50c  5.23018e-2   $ solution
      8016.50c  3.31244e-2
      9019.50c  6.97357e-3
      92235.50c 2.96939e-3
      92238.50c  5.17392e-4
m20   7014.50c  0.755       $ air
      8016.50c  0.232
      18000.35c 0.013
c
c
c
c     ****************************************
c                  peripherals
c     ****************************************
c
nps  567097
ctme 60
print
```

Appendix D

Neutron and Photon Flux Spectra and Responses for Various Critical Spheres

Neutron Data H/U = 1.0 5% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	4.17E+01	1.18E-05	2.63E-06	2.58E-06
6.43E+00	4.01E+02	1.00E-04	2.53E-05	2.45E-05
3.00E+00	5.10E+02	9.85E-05	1.34E-05	1.28E-05
1.85E+00	2.75E+02	4.60E-05	5.50E-06	5.42E-06
1.40E+00	3.74E+02	5.48E-05	5.05E-06	5.03E-06
9.00E-01	7.68E+02	8.25E-05	6.61E-06	6.52E-06
4.00E-01	6.69E+02	4.33E-05	2.64E-06	2.60E-06
1.00E-01	5.77E+02	1.08E-05	7.06E-07	6.80E-07
1.70E-02	4.42E+02	1.91E-06	1.52E-07	1.45E-07
3.00E-03	4.04E+02	3.27E-07	8.94E-08	8.38E-08
5.50E-04	3.17E+02	4.68E-08	1.23E-07	1.14E-07
1.00E-04	1.61E+02	5.24E-09	1.26E-07	1.19E-07
3.00E-05	1.05E+02	1.07E-09	1.48E-07	1.40E-07
1.00E-05	7.91E+01	2.59E-10	1.94E-07	1.83E-07
3.05E-06	4.09E+01	5.40E-11	1.54E-07	1.45E-07
1.77E-06	2.25E+01	1.92E-11	1.04E-07	9.87E-08
1.30E-06	8.82E+00	5.98E-12	4.54E-08	4.31E-08
1.13E-06	7.35E+00	4.38E-12	4.07E-08	3.87E-08
1.00E-06	1.23E+01	6.20E-12	7.47E-08	7.02E-08
8.00E-07	4.43E+01	1.43E-11	3.36E-07	3.17E-07
4.00E-07	9.71E+00	1.96E-12	9.11E-08	7.98E-08
3.25E-07	1.10E+01	1.67E-12	1.21E-07	1.14E-07
2.25E-07	3.25E+01	2.73E-12	4.67E-07	4.33E-07
1.00E-07	1.11E+01	4.35E-13	2.37E-07	2.24E-07
5.00E-08	4.17E+00	9.23E-14	1.16E-07	1.09E-07
3.00E-08	4.96E+00	7.32E-14	1.74E-07	1.87E-07
1.00E-08	3.04E-01	1.10E-15	1.08E-08	1.89E-08
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	5.33E+03	4.51E-04	6.47E-05	6.28E-05

Photon Data H/U = 1.0 5% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	2.11E+00	2.55E-07	2.20E-07	2.26E-07
6.50E+00	1.44E+01	1.47E-06	1.29E-06	1.32E-06
5.00E+00	3.15E+01	2.70E-06	2.38E-06	2.42E-06
4.00E+00	8.43E+01	6.03E-06	5.42E-06	5.51E-06
3.00E+00	8.04E+01	4.84E-06	4.43E-06	4.48E-06
2.50E+00	1.62E+02	8.41E-06	7.84E-06	7.90E-06
2.00E+00	1.49E+02	6.64E-06	6.30E-06	6.25E-06
1.66E+00	1.92E+02	7.41E-06	6.92E-06	6.83E-06
1.33E+00	2.59E+02	8.23E-06	7.80E-06	7.64E-06
1.00E+00	1.65E+02	4.23E-06	4.02E-06	3.91E-06
8.00E-01	1.65E+02	3.44E-06	3.24E-06	3.08E-06
6.00E-01	1.91E+02	2.92E-06	2.80E-06	2.69E-06
4.00E-01	4.88E+01	5.21E-07	4.83E-07	4.35E-07
3.00E-01	3.50E+01	2.59E-07	2.42E-07	2.16E-07
2.00E-01	3.39E+01	1.39E-07	1.26E-07	1.12E-07
1.00E-01	2.52E+01	5.47E-08	5.15E-08	2.68E-08
5.00E-02	2.08E+00	2.18E-08	3.29E-08	1.46E-08
1.00E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	1.64E+03	5.76E-05	5.36E-05	5.31E-05

Neutron Data H/U = 2.5 5% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	2.86E+02	8.10E-05	1.83E-05	1.79E-05
6.43E+00	2.51E+03	6.29E-04	1.59E-04	1.54E-04
3.00E+00	3.14E+03	6.06E-04	8.29E-05	7.90E-05
1.85E+00	1.69E+03	2.84E-04	3.37E-05	3.28E-05
1.40E+00	2.19E+03	3.21E-04	2.96E-05	2.94E-05
9.00E-01	3.72E+03	4.00E-04	3.22E-05	3.17E-05
4.00E-01	3.16E+03	2.04E-04	1.28E-05	1.25E-05
1.00E-01	2.36E+03	4.43E-05	2.94E-06	2.86E-06
1.70E-02	1.74E+03	7.50E-06	5.98E-07	5.70E-07
3.00E-03	1.48E+03	1.20E-06	3.26E-07	3.04E-07
5.50E-04	1.30E+03	1.93E-07	5.11E-07	4.83E-07
1.00E-04	7.93E+02	2.58E-08	6.16E-07	5.84E-07
3.00E-05	6.09E+02	6.21E-09	8.40E-07	7.92E-07
1.00E-05	4.90E+02	1.60E-09	1.20E-06	1.13E-06
3.05E-06	2.52E+02	3.33E-10	9.46E-07	8.96E-07
1.77E-06	1.63E+02	1.39E-10	7.54E-07	7.14E-07
1.30E-06	6.48E+01	4.39E-11	3.36E-07	3.17E-07
1.13E-06	4.94E+01	2.95E-11	2.74E-07	2.59E-07
1.00E-06	9.79E+01	4.92E-11	5.91E-07	5.59E-07
8.00E-07	2.80E+02	9.05E-11	2.14E-06	2.03E-06
4.00E-07	7.25E+01	1.47E-11	6.92E-07	6.55E-07
3.25E-07	1.32E+02	2.02E-11	1.46E-06	1.38E-06
2.25E-07	2.57E+02	2.16E-11	3.83E-06	3.62E-06
1.00E-07	2.02E+02	7.89E-12	4.33E-06	4.16E-06
5.00E-08	8.54E+01	1.89E-12	2.45E-06	2.31E-06
3.00E-08	6.82E+01	1.01E-12	2.39E-06	2.63E-06
1.00E-08	1.06E+01	3.83E-14	3.77E-07	7.85E-07
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	2.72E+04	2.58E-03	3.96E-04	3.85E-04

Photon Data H/U = 2.5 5% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	1.36E+01	1.65E-06	1.42E-06	1.46E-06
6.50E+00	1.20E+02	1.24E-05	1.08E-05	1.11E-05
5.00E+00	2.62E+02	2.26E-05	1.98E-05	2.00E-05
4.00E+00	6.80E+02	4.89E-05	4.38E-05	4.45E-05
3.00E+00	7.81E+02	4.73E-05	4.33E-05	4.37E-05
2.50E+00	1.36E+03	7.12E-05	6.60E-05	6.64E-05
2.00E+00	1.28E+03	5.73E-05	5.38E-05	5.40E-05
1.66E+00	1.70E+03	6.60E-05	6.15E-05	6.11E-05
1.33E+00	2.10E+03	6.70E-05	6.32E-05	6.26E-05
1.00E+00	1.49E+03	3.85E-05	3.64E-05	3.56E-05
8.00E-01	1.53E+03	3.21E-05	3.00E-05	2.87E-05
6.00E-01	1.51E+03	2.31E-05	2.17E-05	2.06E-05
4.00E-01	4.09E+02	4.40E-06	4.06E-06	3.71E-06
3.00E-01	3.19E+02	2.37E-06	2.15E-06	1.93E-06
2.00E-01	2.43E+02	9.99E-07	9.12E-07	7.92E-07
1.00E-01	1.88E+02	4.11E-07	3.91E-07	3.15E-07
5.00E-02	1.01E+01	1.07E-07	8.88E-08	8.97E-09
1.00E-02	4.01E-01	0.00E+00	1.79E-08	0.00E+00
Total	1.40E+04	4.97E-04	4.59E-04	4.56E-04

Neutron Data H/U = 5.0 5% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	4.46E+02	1.26E-04	2.86E-05	2.79E-05
6.43E+00	4.04E+03	1.01E-03	2.57E-04	2.50E-04
3.00E+00	4.78E+03	9.24E-04	1.27E-04	1.21E-04
1.85E+00	2.50E+03	4.19E-04	4.98E-05	4.85E-05
1.40E+00	3.12E+03	4.57E-04	4.27E-05	4.27E-05
9.00E-01	4.96E+03	5.33E-04	4.27E-05	4.21E-05
4.00E-01	4.27E+03	2.77E-04	1.75E-05	1.72E-05
1.00E-01	2.94E+03	5.50E-05	3.72E-06	3.62E-06
1.70E-02	2.14E+03	9.26E-06	7.29E-07	6.96E-07
3.00E-03	1.90E+03	1.54E-06	4.17E-07	3.93E-07
5.50E-04	1.79E+03	2.65E-07	7.08E-07	6.61E-07
1.00E-04	1.14E+03	3.72E-08	8.78E-07	8.22E-07
3.00E-05	8.75E+02	8.92E-09	1.21E-06	1.14E-06
1.00E-05	8.39E+02	2.75E-09	2.09E-06	1.97E-06
3.05E-06	3.89E+02	5.14E-10	1.48E-06	1.38E-06
1.77E-06	2.30E+02	1.96E-10	1.07E-06	1.01E-06
1.30E-06	9.67E+01	6.55E-11	5.00E-07	4.73E-07
1.13E-06	9.74E+01	5.80E-11	5.39E-07	5.20E-07
1.00E-06	1.62E+02	8.16E-11	9.79E-07	9.06E-07
8.00E-07	4.94E+02	1.60E-10	3.76E-06	3.55E-06
4.00E-07	1.57E+02	3.17E-11	1.50E-06	1.36E-06
3.25E-07	2.34E+02	3.57E-11	2.58E-06	2.41E-06
2.25E-07	5.99E+02	5.03E-11	9.00E-06	8.42E-06
1.00E-07	5.48E+02	2.15E-11	1.18E-05	1.12E-05
5.00E-08	3.04E+02	6.73E-12	8.79E-06	8.32E-06
3.00E-08	2.25E+02	3.32E-12	7.90E-06	8.66E-06
1.00E-08	3.44E+01	1.25E-13	1.22E-06	2.35E-06
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	3.93E+04	3.82E-03	6.26E-04	6.09E-04

Photon Data H/U = 5.0 5% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	1.63E+00	2.41E-07	1.96E-07	2.05E-07
8.00E+00	4.17E+01	5.07E-06	4.41E-06	4.54E-06
6.50E+00	2.92E+02	2.99E-05	2.64E-05	2.71E-05
5.00E+00	5.37E+02	4.64E-05	4.08E-05	4.15E-05
4.00E+00	1.54E+03	1.11E-04	9.96E-05	1.01E-04
3.00E+00	1.68E+03	1.02E-04	9.29E-05	9.36E-05
2.50E+00	3.13E+03	1.63E-04	1.51E-04	1.52E-04
2.00E+00	2.86E+03	1.28E-04	1.20E-04	1.20E-04
1.66E+00	3.68E+03	1.43E-04	1.34E-04	1.33E-04
1.33E+00	4.86E+03	1.55E-04	1.46E-04	1.45E-04
1.00E+00	3.45E+03	8.92E-05	8.43E-05	8.25E-05
8.00E-01	3.66E+03	7.66E-05	7.17E-05	6.97E-05
6.00E-01	3.66E+03	5.62E-05	5.28E-05	5.05E-05
4.00E-01	1.03E+03	1.11E-05	1.03E-05	9.19E-06
3.00E-01	6.20E+02	4.61E-06	4.17E-06	3.59E-06
2.00E-01	4.00E+02	1.65E-06	1.39E-06	1.15E-06
1.00E-01	4.26E+02	9.30E-07	8.87E-07	7.27E-07
5.00E-02	5.06E+01	5.34E-07	4.11E-07	1.11E-07
1.00E-02	2.95E+00	0.00E+00	1.32E-07	0.00E+00
Total	3.19E+04	1.13E-03	1.04E-03	1.04E-03

Neutron Data H/U = 7.5 5% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	5.44E+02	1.54E-04	3.46E-05	3.39E-05
6.43E+00	4.66E+03	1.17E-03	2.96E-04	2.86E-04
3.00E+00	5.38E+03	1.04E-03	1.43E-04	1.36E-04
1.85E+00	2.75E+03	4.61E-04	5.47E-05	5.33E-05
1.40E+00	3.41E+03	4.99E-04	4.66E-05	4.64E-05
9.00E-01	5.29E+03	5.68E-04	4.54E-05	4.49E-05
4.00E-01	4.43E+03	2.87E-04	1.82E-05	1.78E-05
1.00E-01	3.13E+03	5.85E-05	3.96E-06	3.84E-06
1.70E-02	2.30E+03	9.95E-06	7.99E-07	7.62E-07
3.00E-03	1.97E+03	1.60E-06	4.35E-07	4.08E-07
5.50E-04	1.86E+03	2.75E-07	7.33E-07	6.91E-07
1.00E-04	1.20E+03	3.92E-08	9.37E-07	8.83E-07
3.00E-05	1.02E+03	1.04E-08	1.41E-06	1.32E-06
1.00E-05	9.39E+02	3.08E-09	2.31E-06	2.18E-06
3.05E-06	4.46E+02	5.88E-10	1.67E-06	1.58E-06
1.77E-06	2.40E+02	2.05E-10	1.12E-06	1.06E-06
1.30E-06	1.09E+02	7.40E-11	5.65E-07	5.34E-07
1.13E-06	8.82E+01	5.26E-11	4.88E-07	4.64E-07
1.00E-06	1.73E+02	8.66E-11	1.04E-06	9.88E-07
8.00E-07	5.03E+02	1.63E-10	3.87E-06	3.65E-06
4.00E-07	1.32E+02	2.67E-11	1.26E-06	1.19E-06
3.25E-07	2.69E+02	4.11E-11	2.96E-06	2.82E-06
2.25E-07	7.64E+02	6.42E-11	1.15E-05	1.10E-05
1.00E-07	8.63E+02	3.37E-11	1.86E-05	1.76E-05
5.00E-08	5.08E+02	1.12E-11	1.46E-05	1.39E-05
3.00E-08	4.08E+02	6.02E-12	1.43E-05	1.57E-05
1.00E-08	6.68E+01	2.42E-13	2.38E-06	5.06E-06
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	4.35E+04	4.25E-03	7.23E-04	7.05E-04

Photon Data H/U = 7.5 5% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	4.76E+01	5.79E-06	5.02E-06	5.16E-06
6.50E+00	3.94E+02	4.04E-05	3.55E-05	3.64E-05
5.00E+00	8.39E+02	7.25E-05	6.37E-05	6.50E-05
4.00E+00	2.21E+03	1.59E-04	1.43E-04	1.45E-04
3.00E+00	2.37E+03	1.44E-04	1.31E-04	1.33E-04
2.50E+00	4.68E+03	2.44E-04	2.26E-04	2.28E-04
2.00E+00	4.02E+03	1.80E-04	1.69E-04	1.70E-04
1.66E+00	5.15E+03	2.00E-04	1.86E-04	1.86E-04
1.33E+00	7.19E+03	2.30E-04	2.16E-04	2.14E-04
1.00E+00	4.95E+03	1.28E-04	1.21E-04	1.19E-04
8.00E-01	5.63E+03	1.18E-04	1.10E-04	1.07E-04
6.00E-01	5.57E+03	8.55E-05	8.03E-05	7.73E-05
4.00E-01	1.54E+03	1.65E-05	1.52E-05	1.40E-05
3.00E-01	1.08E+03	8.06E-06	7.26E-06	6.45E-06
2.00E-01	6.09E+02	2.50E-06	2.15E-06	1.77E-06
1.00E-01	5.73E+02	1.25E-06	1.20E-06	1.05E-06
5.00E-02	3.62E+01	3.82E-07	2.89E-07	9.95E-08
1.00E-02	3.22E+00	0.00E+00	1.44E-07	0.00E+00
Total	4.69E+04	1.64E-03	1.51E-03	1.51E-03

Neutron Data H/U = 15.0 5% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	6.11E+02	1.73E-04	3.90E-05	3.82E-05
6.43E+00	4.90E+03	1.23E-03	3.10E-04	3.00E-04
3.00E+00	5.56E+03	1.08E-03	1.47E-04	1.41E-04
1.85E+00	2.72E+03	4.55E-04	5.39E-05	5.27E-05
1.40E+00	3.40E+03	4.98E-04	4.63E-05	4.60E-05
9.00E-01	5.07E+03	5.45E-04	4.39E-05	4.33E-05
4.00E-01	4.36E+03	2.82E-04	1.80E-05	1.78E-05
1.00E-01	2.96E+03	5.55E-05	3.71E-06	3.62E-06
1.70E-02	2.18E+03	9.42E-06	7.45E-07	7.13E-07
3.00E-03	1.82E+03	1.48E-06	4.02E-07	3.74E-07
5.50E-04	1.68E+03	2.48E-07	6.62E-07	6.25E-07
1.00E-04	1.18E+03	3.84E-08	9.14E-07	8.67E-07
3.00E-05	1.03E+03	1.05E-08	1.42E-06	1.33E-06
1.00E-05	9.48E+02	3.11E-09	2.34E-06	2.20E-06
3.05E-06	4.73E+02	6.24E-10	1.78E-06	1.69E-06
1.77E-06	2.53E+02	2.15E-10	1.18E-06	1.12E-06
1.30E-06	1.04E+02	7.05E-11	5.38E-07	5.09E-07
1.13E-06	8.59E+01	5.12E-11	4.75E-07	4.51E-07
1.00E-06	1.74E+02	8.73E-11	1.05E-06	9.94E-07
8.00E-07	5.54E+02	1.79E-10	4.22E-06	4.00E-06
4.00E-07	1.62E+02	3.27E-11	1.54E-06	1.46E-06
3.25E-07	3.00E+02	4.57E-11	3.31E-06	3.15E-06
2.25E-07	1.04E+03	8.77E-11	1.60E-05	1.51E-05
1.00E-07	1.50E+03	5.88E-11	3.25E-05	3.07E-05
5.00E-08	9.71E+02	2.15E-11	2.80E-05	2.66E-05
3.00E-08	8.00E+02	1.18E-11	2.81E-05	3.08E-05
1.00E-08	1.46E+02	5.28E-13	5.19E-06	1.04E-05
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	4.50E+04	4.32E-03	7.93E-04	7.75E-04

Photon Data H/U = 15.0 5% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	8.79E+01	1.07E-05	9.31E-06	9.58E-06
6.50E+00	6.85E+02	7.03E-05	6.18E-05	6.35E-05
5.00E+00	1.25E+03	1.08E-04	9.55E-05	9.71E-05
4.00E+00	3.29E+03	2.37E-04	2.12E-04	2.15E-04
3.00E+00	3.58E+03	2.17E-04	1.99E-04	2.01E-04
2.50E+00	7.56E+03	3.95E-04	3.65E-04	3.68E-04
2.00E+00	6.19E+03	2.78E-04	2.61E-04	2.62E-04
1.66E+00	8.27E+03	3.22E-04	2.99E-04	2.99E-04
1.33E+00	1.12E+04	3.57E-04	3.36E-04	3.34E-04
1.00E+00	8.40E+03	2.17E-04	2.05E-04	2.03E-04
8.00E-01	9.68E+03	2.03E-04	1.89E-04	1.86E-04
6.00E-01	9.92E+03	1.52E-04	1.43E-04	1.39E-04
4.00E-01	2.95E+03	3.16E-05	2.93E-05	2.75E-05
3.00E-01	1.82E+03	1.35E-05	1.22E-05	1.11E-05
2.00E-01	1.16E+03	4.77E-06	4.21E-06	3.53E-06
1.00E-01	1.02E+03	2.22E-06	2.14E-06	1.93E-06
5.00E-02	6.45E+01	6.81E-07	5.64E-07	1.98E-07
1.00E-02	6.17E+00	0.00E+00	2.76E-07	0.00E+00
Total	7.71E+04	2.62E-03	2.43E-03	2.42E-03

Neutron Data H/U = 30.0 5% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	5.64E+02	1.60E-04	3.59E-05	3.51E-05
6.43E+00	3.97E+03	9.94E-04	2.52E-04	2.44E-04
3.00E+00	4.47E+03	8.64E-04	1.19E-04	1.13E-04
1.85E+00	2.18E+03	3.65E-04	4.32E-05	4.23E-05
1.40E+00	2.73E+03	3.99E-04	3.71E-05	3.69E-05
9.00E-01	3.80E+03	4.08E-04	3.26E-05	3.24E-05
4.00E-01	3.38E+03	2.19E-04	1.40E-05	1.37E-05
1.00E-01	2.32E+03	4.34E-05	2.93E-06	2.84E-06
1.70E-02	1.72E+03	7.41E-06	5.95E-07	5.64E-07
3.00E-03	1.43E+03	1.16E-06	3.14E-07	2.94E-07
5.50E-04	1.34E+03	1.98E-07	5.31E-07	5.03E-07
1.00E-04	9.39E+02	3.06E-08	7.35E-07	6.94E-07
3.00E-05	8.64E+02	8.81E-09	1.19E-06	1.10E-06
1.00E-05	8.07E+02	2.64E-09	1.98E-06	1.87E-06
3.05E-06	3.80E+02	5.01E-10	1.43E-06	1.35E-06
1.77E-06	2.28E+02	1.94E-10	1.05E-06	9.60E-07
1.30E-06	1.19E+02	8.07E-11	6.14E-07	5.54E-07
1.13E-06	8.77E+01	5.23E-11	4.86E-07	4.60E-07
1.00E-06	1.67E+02	8.40E-11	1.01E-06	9.53E-07
8.00E-07	5.00E+02	1.62E-10	3.85E-06	3.68E-06
4.00E-07	1.36E+02	2.75E-11	1.30E-06	1.22E-06
3.25E-07	2.55E+02	3.89E-11	2.81E-06	2.65E-06
2.25E-07	1.16E+03	9.74E-11	1.79E-05	1.69E-05
1.00E-07	2.11E+03	8.24E-11	4.57E-05	4.30E-05
5.00E-08	1.33E+03	2.95E-11	3.84E-05	3.65E-05
3.00E-08	1.19E+03	1.76E-11	4.20E-05	4.63E-05
1.00E-08	2.02E+02	7.32E-13	7.20E-06	1.48E-05
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	3.84E+04	3.46E-03	7.06E-04	6.95E-04

Photon Data H/U = 30.0 5% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	7.68E-01	1.14E-07	9.98E-08	1.04E-07
8.00E+00	1.27E+02	1.55E-05	1.34E-05	1.38E-05
6.50E+00	7.95E+02	8.16E-05	7.17E-05	7.35E-05
5.00E+00	1.57E+03	1.36E-04	1.19E-04	1.22E-04
4.00E+00	4.06E+03	2.92E-04	2.63E-04	2.67E-04
3.00E+00	4.33E+03	2.62E-04	2.40E-04	2.43E-04
2.50E+00	1.12E+04	5.87E-04	5.43E-04	5.48E-04
2.00E+00	7.23E+03	3.24E-04	3.04E-04	3.06E-04
1.66E+00	1.01E+04	3.91E-04	3.64E-04	3.65E-04
1.33E+00	1.36E+04	4.36E-04	4.10E-04	4.09E-04
1.00E+00	1.06E+04	2.73E-04	2.58E-04	2.56E-04
8.00E-01	1.25E+04	2.62E-04	2.44E-04	2.42E-04
6.00E-01	1.41E+04	2.17E-04	2.02E-04	1.98E-04
4.00E-01	4.70E+03	5.05E-05	4.66E-05	4.47E-05
3.00E-01	2.98E+03	2.22E-05	2.03E-05	1.87E-05
2.00E-01	1.55E+03	6.38E-06	5.53E-06	5.01E-06
1.00E-01	1.57E+03	3.42E-06	3.28E-06	2.95E-06
5.00E-02	7.81E+01	8.25E-07	8.51E-07	2.96E-07
1.00E-02	1.34E+01	0.00E+00	6.00E-07	0.00E+00
Total	1.01E+05	3.36E-03	3.11E-03	3.11E-03

Neutron Data H/U = 60.0 5% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	2.48E+02	7.02E-05	1.58E-05	1.56E-05
6.43E+00	1.58E+03	3.95E-04	1.00E-04	9.70E-05
3.00E+00	1.75E+03	3.39E-04	4.68E-05	4.45E-05
1.85E+00	8.44E+02	1.41E-04	1.68E-05	1.65E-05
1.40E+00	1.07E+03	1.57E-04	1.48E-05	1.47E-05
9.00E-01	1.52E+03	1.63E-04	1.31E-05	1.29E-05
4.00E-01	1.27E+03	8.25E-05	5.27E-06	5.19E-06
1.00E-01	8.21E+02	1.54E-05	1.02E-06	9.90E-07
1.70E-02	6.04E+02	2.61E-06	2.06E-07	1.97E-07
3.00E-03	6.09E+02	4.93E-07	1.34E-07	1.22E-07
5.50E-04	5.64E+02	8.32E-08	2.21E-07	2.09E-07
1.00E-04	3.48E+02	1.13E-08	2.74E-07	2.58E-07
3.00E-05	3.42E+02	3.49E-09	4.81E-07	4.56E-07
1.00E-05	3.13E+02	1.02E-09	7.81E-07	7.38E-07
3.05E-06	1.66E+02	2.19E-10	6.24E-07	5.88E-07
1.77E-06	9.35E+01	7.97E-11	4.31E-07	4.13E-07
1.30E-06	3.91E+01	2.65E-11	2.02E-07	1.91E-07
1.13E-06	3.92E+01	2.33E-11	2.16E-07	2.05E-07
1.00E-06	5.40E+01	2.71E-11	3.25E-07	3.07E-07
8.00E-07	2.02E+02	6.54E-11	1.53E-06	1.45E-06
4.00E-07	6.58E+01	1.33E-11	6.25E-07	5.93E-07
3.25E-07	1.41E+02	2.16E-11	1.58E-06	1.50E-06
2.25E-07	6.41E+02	5.38E-11	9.94E-06	9.43E-06
1.00E-07	1.33E+03	5.18E-11	2.88E-05	2.73E-05
5.00E-08	8.85E+02	1.96E-11	2.55E-05	2.42E-05
3.00E-08	8.72E+02	1.29E-11	3.07E-05	3.36E-05
1.00E-08	1.48E+02	5.35E-13	5.26E-06	1.06E-05
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	1.66E+04	1.37E-03	3.21E-04	3.20E-04

Photon Data H/U =60.0 5% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	8.63E+01	1.05E-05	9.03E-06	9.28E-06
6.50E+00	5.40E+02	5.54E-05	4.84E-05	4.96E-05
5.00E+00	1.04E+03	9.01E-05	7.97E-05	8.10E-05
4.00E+00	2.67E+03	1.92E-04	1.73E-04	1.75E-04
3.00E+00	2.80E+03	1.70E-04	1.56E-04	1.57E-04
2.50E+00	1.01E+04	5.30E-04	4.90E-04	4.94E-04
2.00E+00	5.02E+03	2.25E-04	2.11E-04	2.13E-04
1.66E+00	6.84E+03	2.66E-04	2.48E-04	2.49E-04
1.33E+00	9.42E+03	3.01E-04	2.83E-04	2.83E-04
1.00E+00	7.49E+03	1.94E-04	1.83E-04	1.82E-04
8.00E-01	9.20E+03	1.93E-04	1.80E-04	1.79E-04
6.00E-01	1.09E+04	1.68E-04	1.55E-04	1.54E-04
4.00E-01	4.32E+03	4.63E-05	4.26E-05	4.15E-05
3.00E-01	2.65E+03	1.97E-05	1.80E-05	1.74E-05
2.00E-01	1.62E+03	6.65E-06	5.72E-06	5.18E-06
1.00E-01	1.39E+03	3.03E-06	2.89E-06	2.75E-06
5.00E-02	4.86E+01	5.13E-07	6.10E-07	4.54E-07
1.00E-02	4.57E+00	0.00E+00	2.04E-07	0.00E+00
Total	7.62E+04	2.47E-03	2.29E-03	2.29E-03

Neutron Data H/U = 1.0 20% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	2.88E+02	8.15E-05	1.82E-05	1.78E-05
6.43E+00	2.82E+03	7.08E-04	1.80E-04	1.74E-04
3.00E+00	3.62E+03	7.00E-04	9.59E-05	9.13E-05
1.85E+00	1.92E+03	3.22E-04	3.82E-05	3.72E-05
1.40E+00	2.70E+03	3.95E-04	3.65E-05	3.64E-05
9.00E-01	5.32E+03	5.72E-04	4.60E-05	4.54E-05
4.00E-01	4.42E+03	2.86E-04	1.76E-05	1.73E-05
1.00E-01	3.63E+03	6.80E-05	4.55E-06	4.42E-06
1.70E-02	2.48E+03	1.07E-05	8.67E-07	8.22E-07
3.00E-03	1.84E+03	1.49E-06	4.02E-07	3.77E-07
5.50E-04	1.17E+03	1.73E-07	4.47E-07	4.23E-07
1.00E-04	4.37E+02	1.42E-08	3.28E-07	3.07E-07
3.00E-05	2.35E+02	2.40E-09	3.24E-07	3.06E-07
1.00E-05	1.79E+02	5.87E-10	4.37E-07	4.14E-07
3.05E-06	8.20E+01	1.08E-10	3.03E-07	2.84E-07
1.77E-06	4.27E+01	3.63E-11	1.98E-07	1.88E-07
1.30E-06	1.09E+01	7.37E-12	5.63E-08	5.33E-08
1.13E-06	7.71E+00	4.59E-12	4.26E-08	4.04E-08
1.00E-06	1.68E+01	8.44E-12	1.02E-07	9.59E-08
8.00E-07	4.55E+01	1.47E-11	3.45E-07	3.29E-07
4.00E-07	8.68E+00	1.76E-12	8.30E-08	7.85E-08
3.25E-07	9.27E+00	1.41E-12	1.02E-07	9.70E-08
2.25E-07	7.80E+00	6.55E-13	1.16E-07	1.09E-07
1.00E-07	2.38E+00	9.29E-14	5.04E-08	4.76E-08
5.00E-08	6.77E-01	1.50E-14	2.00E-08	1.89E-08
3.00E-08	1.35E-01	2.00E-15	4.82E-09	6.22E-09
1.00E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	3.13E+04	3.14E-03	4.41E-04	4.28E-04

Photon Data H/U = 1.0 20% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	1.03E+01	1.25E-06	1.09E-06	1.12E-06
6.50E+00	9.79E+01	9.98E-06	8.79E-06	9.02E-06
5.00E+00	1.96E+02	1.68E-05	1.48E-05	1.52E-05
4.00E+00	5.29E+02	3.78E-05	3.42E-05	3.46E-05
3.00E+00	6.06E+02	3.65E-05	3.36E-05	3.38E-05
2.50E+00	9.52E+02	4.94E-05	4.61E-05	4.60E-05
2.00E+00	9.60E+02	4.28E-05	4.04E-05	4.04E-05
1.66E+00	1.32E+03	5.12E-05	4.79E-05	4.77E-05
1.33E+00	1.64E+03	5.21E-05	4.93E-05	4.88E-05
1.00E+00	1.11E+03	2.85E-05	2.71E-05	2.65E-05
8.00E-01	1.22E+03	2.55E-05	2.39E-05	2.32E-05
6.00E-01	1.21E+03	1.84E-05	1.73E-05	1.65E-05
4.00E-01	3.03E+02	3.23E-06	2.99E-06	2.73E-06
3.00E-01	2.32E+02	1.72E-06	1.52E-06	1.34E-06
2.00E-01	1.87E+02	7.66E-07	6.66E-07	5.72E-07
1.00E-01	1.49E+02	3.24E-07	3.16E-07	2.45E-07
5.00E-02	1.23E+01	1.29E-07	1.12E-07	1.04E-07
1.00E-02	1.13E+00	0.00E+00	5.03E-08	0.00E+00
Total	1.07E+04	3.76E-04	3.50E-04	3.48E-04

Neutron Data H/U = 2.5 20% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	5.12E+02	1.45E-04	3.23E-05	3.16E-05
6.43E+00	4.71E+03	1.18E-03	2.99E-04	2.90E-04
3.00E+00	5.79E+03	1.12E-03	1.53E-04	1.46E-04
1.85E+00	3.03E+03	5.07E-04	6.02E-05	5.88E-05
1.40E+00	4.01E+03	5.87E-04	5.45E-05	5.44E-05
9.00E-01	6.80E+03	7.30E-04	5.85E-05	5.79E-05
4.00E-01	5.57E+03	3.61E-04	2.26E-05	2.22E-05
1.00E-01	4.00E+03	7.48E-05	5.06E-06	4.91E-06
1.70E-02	2.94E+03	1.27E-05	1.01E-06	9.64E-07
3.00E-03	2.38E+03	1.93E-06	5.24E-07	4.92E-07
5.50E-04	1.81E+03	2.67E-07	6.98E-07	6.56E-07
1.00E-04	9.05E+02	2.95E-08	6.93E-07	6.53E-07
3.00E-05	6.17E+02	6.30E-09	8.49E-07	8.04E-07
1.00E-05	4.91E+02	1.61E-09	1.21E-06	1.15E-06
3.05E-06	2.30E+02	3.03E-10	8.62E-07	8.14E-07
1.77E-06	1.36E+02	1.16E-10	6.28E-07	5.98E-07
1.30E-06	5.31E+01	3.60E-11	2.74E-07	2.61E-07
1.13E-06	3.70E+01	2.21E-11	2.04E-07	2.06E-07
1.00E-06	6.77E+01	3.40E-11	4.09E-07	3.86E-07
8.00E-07	1.78E+02	5.74E-11	1.35E-06	1.28E-06
4.00E-07	4.05E+01	8.18E-12	3.87E-07	3.65E-07
3.25E-07	4.86E+01	7.40E-12	5.32E-07	5.03E-07
2.25E-07	7.30E+01	6.14E-12	1.06E-06	1.00E-06
1.00E-07	3.90E+01	1.53E-12	8.20E-07	8.02E-07
5.00E-08	1.37E+01	3.04E-13	3.89E-07	3.68E-07
3.00E-08	7.77E+00	1.15E-13	2.74E-07	3.05E-07
1.00E-08	4.33E-01	1.57E-15	1.54E-08	2.93E-08
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	4.45E+04	4.72E-03	6.97E-04	6.77E-04

Photon Data H/U = 2.5 20% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	2.11E+01	2.57E-06	2.24E-06	2.31E-06
6.50E+00	2.78E+02	2.85E-05	2.50E-05	2.56E-05
5.00E+00	4.73E+02	4.09E-05	3.59E-05	3.66E-05
4.00E+00	1.27E+03	9.15E-05	8.22E-05	8.33E-05
3.00E+00	1.37E+03	8.32E-05	7.60E-05	7.67E-05
2.50E+00	2.33E+03	1.22E-04	1.13E-04	1.13E-04
2.00E+00	2.17E+03	9.71E-05	9.11E-05	9.11E-05
1.66E+00	3.01E+03	1.17E-04	1.09E-04	1.09E-04
1.33E+00	3.87E+03	1.24E-04	1.16E-04	1.15E-04
1.00E+00	2.65E+03	6.85E-05	6.47E-05	6.37E-05
8.00E-01	2.88E+03	6.03E-05	5.63E-05	5.44E-05
6.00E-01	2.85E+03	4.38E-05	4.11E-05	3.95E-05
4.00E-01	7.91E+02	8.49E-06	7.87E-06	7.11E-06
3.00E-01	5.45E+02	4.05E-06	3.65E-06	3.18E-06
2.00E-01	4.88E+02	2.01E-06	1.79E-06	1.55E-06
1.00E-01	3.24E+02	7.08E-07	6.73E-07	5.70E-07
5.00E-02	3.23E+01	3.41E-07	3.77E-07	1.86E-07
1.00E-02	1.76E+00	0.00E+00	7.89E-08	0.00E+00
Total	2.54E+04	8.95E-04	8.28E-04	8.23E-04

Neutron Data H/U = 5.0 20% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	6.63E+02	1.88E-04	4.22E-05	4.13E-05
6.43E+00	5.83E+03	1.46E-03	3.71E-04	3.60E-04
3.00E+00	6.89E+03	1.33E-03	1.82E-04	1.74E-04
1.85E+00	3.63E+03	6.07E-04	7.20E-05	7.02E-05
1.40E+00	4.61E+03	6.75E-04	6.30E-05	6.30E-05
9.00E-01	7.20E+03	7.73E-04	6.22E-05	6.14E-05
4.00E-01	6.02E+03	3.90E-04	2.46E-05	2.42E-05
1.00E-01	4.22E+03	7.90E-05	5.31E-06	5.15E-06
1.70E-02	3.00E+03	1.29E-05	1.02E-06	9.75E-07
3.00E-03	2.56E+03	2.07E-06	5.63E-07	5.29E-07
5.50E-04	2.15E+03	3.18E-07	8.46E-07	7.99E-07
1.00E-04	1.18E+03	3.85E-08	9.13E-07	8.63E-07
3.00E-05	9.16E+02	9.34E-09	1.27E-06	1.20E-06
1.00E-05	7.72E+02	2.53E-09	1.91E-06	1.80E-06
3.05E-06	3.86E+02	5.10E-10	1.45E-06	1.37E-06
1.77E-06	2.25E+02	1.92E-10	1.04E-06	1.00E-06
1.30E-06	7.98E+01	5.41E-11	4.13E-07	3.94E-07
1.13E-06	5.99E+01	3.57E-11	3.31E-07	3.14E-07
1.00E-06	1.34E+02	6.74E-11	8.13E-07	7.57E-07
8.00E-07	3.43E+02	1.11E-10	2.62E-06	2.48E-06
4.00E-07	9.00E+01	1.82E-11	8.56E-07	8.07E-07
3.25E-07	1.26E+02	1.92E-11	1.39E-06	1.31E-06
2.25E-07	2.30E+02	1.93E-11	3.37E-06	3.18E-06
1.00E-07	1.43E+02	5.60E-12	3.05E-06	2.91E-06
5.00E-08	4.56E+01	1.01E-12	1.31E-06	1.24E-06
3.00E-08	3.35E+01	4.95E-13	1.18E-06	1.29E-06
1.00E-08	4.00E+00	1.45E-14	1.42E-07	2.65E-07
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	5.15E+04	5.52E-03	8.47E-04	8.22E-04

Photon Data H/U = 5.0 20% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	4.01E+01	4.88E-06	4.21E-06	4.33E-06
6.50E+00	4.35E+02	4.46E-05	3.92E-05	4.03E-05
5.00E+00	7.98E+02	6.90E-05	6.09E-05	6.21E-05
4.00E+00	2.25E+03	1.62E-04	1.46E-04	1.47E-04
3.00E+00	2.47E+03	1.49E-04	1.37E-04	1.38E-04
2.50E+00	3.99E+03	2.08E-04	1.93E-04	1.94E-04
2.00E+00	3.80E+03	1.70E-04	1.60E-04	1.60E-04
1.66E+00	5.22E+03	2.03E-04	1.89E-04	1.88E-04
1.33E+00	6.89E+03	2.20E-04	2.07E-04	2.05E-04
1.00E+00	4.86E+03	1.26E-04	1.19E-04	1.17E-04
8.00E-01	5.32E+03	1.11E-04	1.04E-04	1.01E-04
6.00E-01	5.36E+03	8.24E-05	7.72E-05	7.41E-05
4.00E-01	1.47E+03	1.58E-05	1.45E-05	1.32E-05
3.00E-01	9.84E+02	7.32E-06	6.58E-06	5.75E-06
2.00E-01	6.59E+02	2.71E-06	2.36E-06	1.98E-06
1.00E-01	5.90E+02	1.29E-06	1.24E-06	1.01E-06
5.00E-02	4.92E+01	5.20E-07	5.05E-07	1.67E-07
1.00E-02	1.48E+00	0.00E+00	6.60E-08	0.00E+00
Total	4.52E+04	1.58E-03	1.46E-03	1.45E-03

Neutron Data H/U = 7.5 20% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	7.76E+02	2.20E-04	4.92E-05	4.80E-05
6.43E+00	6.45E+03	1.62E-03	4.09E-04	3.97E-04
3.00E+00	7.44E+03	1.44E-03	1.97E-04	1.88E-04
1.85E+00	3.90E+03	6.53E-04	7.75E-05	7.52E-05
1.40E+00	4.96E+03	7.26E-04	6.77E-05	6.75E-05
9.00E-01	7.31E+03	7.85E-04	6.29E-05	6.20E-05
4.00E-01	6.22E+03	4.03E-04	2.56E-05	2.52E-05
1.00E-01	4.20E+03	7.86E-05	5.31E-06	5.16E-06
1.70E-02	3.10E+03	1.34E-05	1.07E-06	1.02E-06
3.00E-03	2.67E+03	2.16E-06	5.87E-07	5.49E-07
5.50E-04	2.34E+03	3.46E-07	9.22E-07	8.67E-07
1.00E-04	1.34E+03	4.37E-08	1.05E-06	9.92E-07
3.00E-05	1.06E+03	1.09E-08	1.48E-06	1.40E-06
1.00E-05	9.63E+02	3.16E-09	2.40E-06	2.27E-06
3.05E-06	4.44E+02	5.86E-10	1.68E-06	1.58E-06
1.77E-06	2.48E+02	2.11E-10	1.15E-06	1.09E-06
1.30E-06	1.12E+02	7.61E-11	5.81E-07	5.52E-07
1.13E-06	9.39E+01	5.59E-11	5.19E-07	4.92E-07
1.00E-06	1.57E+02	7.89E-11	9.50E-07	8.97E-07
8.00E-07	4.61E+02	1.49E-10	3.51E-06	3.31E-06
4.00E-07	1.24E+02	2.50E-11	1.18E-06	1.11E-06
3.25E-07	1.73E+02	2.63E-11	1.90E-06	1.79E-06
2.25E-07	3.92E+02	3.29E-11	5.75E-06	5.44E-06
1.00E-07	2.38E+02	9.30E-12	5.10E-06	4.74E-06
5.00E-08	1.00E+02	2.21E-12	2.87E-06	2.73E-06
3.00E-08	6.72E+01	9.92E-13	2.37E-06	2.59E-06
1.00E-08	7.99E+00	2.89E-14	2.84E-07	5.31E-07
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	5.54E+04	5.94E-03	9.30E-04	9.02E-04

Photon Data H/U = 7.5 20% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	6.57E-01	9.74E-08	8.17E-08	8.48E-08
8.00E+00	7.74E+01	9.43E-06	8.19E-06	8.42E-06
6.50E+00	6.66E+02	6.84E-05	6.01E-05	6.17E-05
5.00E+00	1.15E+03	9.94E-05	8.76E-05	8.94E-05
4.00E+00	3.03E+03	2.18E-04	1.95E-04	1.98E-04
3.00E+00	3.21E+03	1.95E-04	1.78E-04	1.80E-04
2.50E+00	5.42E+03	2.83E-04	2.62E-04	2.64E-04
2.00E+00	5.23E+03	2.34E-04	2.20E-04	2.20E-04
1.66E+00	7.26E+03	2.83E-04	2.63E-04	2.63E-04
1.33E+00	9.78E+03	3.13E-04	2.94E-04	2.92E-04
1.00E+00	6.87E+03	1.78E-04	1.68E-04	1.65E-04
8.00E-01	7.63E+03	1.60E-04	1.49E-04	1.46E-04
6.00E-01	7.83E+03	1.20E-04	1.13E-04	1.09E-04
4.00E-01	2.15E+03	2.31E-05	2.13E-05	1.99E-05
3.00E-01	1.46E+03	1.08E-05	9.67E-06	8.60E-06
2.00E-01	9.89E+02	4.07E-06	3.57E-06	2.97E-06
1.00E-01	7.95E+02	1.74E-06	1.67E-06	1.36E-06
5.00E-02	6.05E+01	6.39E-07	5.03E-07	2.22E-07
1.00E-02	1.44E+00	0.00E+00	6.43E-08	0.00E+00
Total	6.36E+04	2.20E-03	2.04E-03	2.03E-03

Neutron Data H/U = 15.0 20% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	8.54E+02	2.42E-04	5.44E-05	5.32E-05
6.43E+00	7.06E+03	1.77E-03	4.48E-04	4.35E-04
3.00E+00	8.00E+03	1.55E-03	2.12E-04	2.02E-04
1.85E+00	4.16E+03	6.96E-04	8.26E-05	8.07E-05
1.40E+00	5.15E+03	7.55E-04	7.06E-05	7.04E-05
9.00E-01	7.40E+03	7.94E-04	6.37E-05	6.30E-05
4.00E-01	6.50E+03	4.21E-04	2.69E-05	2.62E-05
1.00E-01	4.21E+03	7.88E-05	5.30E-06	5.14E-06
1.70E-02	3.11E+03	1.34E-05	1.07E-06	1.02E-06
3.00E-03	2.61E+03	2.11E-06	5.74E-07	5.40E-07
5.50E-04	2.40E+03	3.54E-07	9.38E-07	8.81E-07
1.00E-04	1.49E+03	4.86E-08	1.17E-06	1.09E-06
3.00E-05	1.21E+03	1.24E-08	1.69E-06	1.59E-06
1.00E-05	1.16E+03	3.80E-09	2.87E-06	2.71E-06
3.05E-06	5.67E+02	7.49E-10	2.14E-06	2.02E-06
1.77E-06	3.01E+02	2.56E-10	1.40E-06	1.32E-06
1.30E-06	1.32E+02	8.98E-11	6.85E-07	6.50E-07
1.13E-06	1.17E+02	6.96E-11	6.46E-07	6.15E-07
1.00E-06	2.09E+02	1.05E-10	1.26E-06	1.18E-06
8.00E-07	6.48E+02	2.10E-10	4.93E-06	4.68E-06
4.00E-07	1.62E+02	3.27E-11	1.54E-06	1.45E-06
3.25E-07	3.19E+02	4.86E-11	3.52E-06	3.24E-06
2.25E-07	6.86E+02	5.76E-11	1.02E-05	9.66E-06
1.00E-07	5.90E+02	2.31E-11	1.26E-05	1.20E-05
5.00E-08	2.96E+02	6.56E-12	8.52E-06	8.08E-06
3.00E-08	2.15E+02	3.17E-12	7.57E-06	8.33E-06
1.00E-08	3.88E+01	1.40E-13	1.38E-06	3.07E-06
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	5.96E+04	6.32E-03	1.03E-03	1.00E-03

Photon Data H/U = 15.0 20% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	3.31E-01	4.91E-08	3.99E-08	4.14E-08
8.00E+00	1.47E+02	1.79E-05	1.55E-05	1.60E-05
6.50E+00	1.07E+03	1.10E-04	9.66E-05	9.91E-05
5.00E+00	1.72E+03	1.49E-04	1.32E-04	1.34E-04
4.00E+00	4.56E+03	3.28E-04	2.95E-04	3.00E-04
3.00E+00	4.85E+03	2.94E-04	2.69E-04	2.72E-04
2.50E+00	8.37E+03	4.37E-04	4.05E-04	4.08E-04
2.00E+00	7.82E+03	3.51E-04	3.29E-04	3.31E-04
1.66E+00	1.10E+04	4.29E-04	3.99E-04	4.00E-04
1.33E+00	1.53E+04	4.90E-04	4.61E-04	4.60E-04
1.00E+00	1.14E+04	2.95E-04	2.78E-04	2.76E-04
8.00E-01	1.36E+04	2.85E-04	2.66E-04	2.62E-04
6.00E-01	1.41E+04	2.16E-04	2.02E-04	1.98E-04
4.00E-01	4.23E+03	4.54E-05	4.19E-05	4.00E-05
3.00E-01	2.70E+03	2.01E-05	1.82E-05	1.66E-05
2.00E-01	1.66E+03	6.85E-06	6.08E-06	5.29E-06
1.00E-01	1.50E+03	3.27E-06	3.13E-06	2.71E-06
5.00E-02	8.58E+01	9.06E-07	7.47E-07	3.58E-07
1.00E-02	4.06E+00	0.00E+00	1.81E-07	0.00E+00
Total	1.04E+05	3.48E-03	3.22E-03	3.22E-03

Neutron Data H/U = 30.0 20% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	9.14E+02	2.59E-04	5.81E-05	5.68E-05
6.43E+00	7.32E+03	1.84E-03	4.65E-04	4.50E-04
3.00E+00	8.14E+03	1.57E-03	2.16E-04	2.06E-04
1.85E+00	4.18E+03	6.99E-04	8.29E-05	8.09E-05
1.40E+00	5.21E+03	7.62E-04	7.12E-05	7.10E-05
9.00E-01	7.21E+03	7.75E-04	6.20E-05	6.12E-05
4.00E-01	6.42E+03	4.16E-04	2.65E-05	2.61E-05
1.00E-01	4.30E+03	8.04E-05	5.42E-06	5.27E-06
1.70E-02	3.06E+03	1.32E-05	1.05E-06	1.00E-06
3.00E-03	2.68E+03	2.17E-06	5.88E-07	5.48E-07
5.50E-04	2.42E+03	3.57E-07	9.53E-07	8.92E-07
1.00E-04	1.60E+03	5.22E-08	1.24E-06	1.18E-06
3.00E-05	1.30E+03	1.32E-08	1.80E-06	1.70E-06
1.00E-05	1.30E+03	4.25E-09	3.19E-06	3.01E-06
3.05E-06	6.06E+02	7.99E-10	2.29E-06	2.15E-06
1.77E-06	3.54E+02	3.01E-10	1.65E-06	1.56E-06
1.30E-06	1.70E+02	1.15E-10	8.80E-07	7.91E-07
1.13E-06	1.44E+02	8.55E-11	7.93E-07	7.54E-07
1.00E-06	2.36E+02	1.19E-10	1.43E-06	1.35E-06
8.00E-07	7.49E+02	2.42E-10	5.72E-06	5.37E-06
4.00E-07	2.13E+02	4.31E-11	2.03E-06	1.92E-06
3.25E-07	3.67E+02	5.59E-11	4.05E-06	3.83E-06
2.25E-07	1.09E+03	9.17E-11	1.65E-05	1.55E-05
1.00E-07	1.23E+03	4.81E-11	2.65E-05	2.49E-05
5.00E-08	6.74E+02	1.49E-11	1.94E-05	1.84E-05
3.00E-08	5.42E+02	8.00E-12	1.91E-05	2.08E-05
1.00E-08	9.96E+01	3.60E-13	3.54E-06	7.35E-06
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	6.25E+04	6.42E-03	1.10E-03	1.07E-03

Photon Data H/U = 30.0 20% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	1.78E+02	2.17E-05	1.88E-05	1.93E-05
6.50E+00	1.39E+03	1.43E-04	1.26E-04	1.29E-04
5.00E+00	2.29E+03	1.98E-04	1.75E-04	1.78E-04
4.00E+00	5.84E+03	4.20E-04	3.77E-04	3.83E-04
3.00E+00	6.27E+03	3.80E-04	3.48E-04	3.52E-04
2.50E+00	1.17E+04	6.09E-04	5.64E-04	5.69E-04
2.00E+00	9.90E+03	4.44E-04	4.16E-04	4.19E-04
1.66E+00	1.48E+04	5.77E-04	5.37E-04	5.40E-04
1.33E+00	2.04E+04	6.53E-04	6.14E-04	6.14E-04
1.00E+00	1.64E+04	4.23E-04	3.99E-04	3.98E-04
8.00E-01	2.03E+04	4.26E-04	3.97E-04	3.95E-04
6.00E-01	2.31E+04	3.54E-04	3.30E-04	3.26E-04
4.00E-01	7.96E+03	8.55E-05	7.90E-05	7.66E-05
3.00E-01	4.79E+03	3.56E-05	3.25E-05	3.09E-05
2.00E-01	2.95E+03	1.22E-05	1.06E-05	9.80E-06
1.00E-01	2.38E+03	5.20E-06	5.02E-06	4.64E-06
5.00E-02	1.49E+02	1.57E-06	1.47E-06	8.02E-07
1.00E-02	1.10E+01	0.00E+00	4.92E-07	0.00E+00
Total	1.51E+05	4.79E-03	4.43E-03	4.44E-03

Neutron Data H/U = 60.0 20% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	8.56E+02	2.42E-04	5.48E-05	5.35E-05
6.43E+00	6.84E+03	1.72E-03	4.33E-04	4.20E-04
3.00E+00	7.43E+03	1.44E-03	1.97E-04	1.88E-04
1.85E+00	3.89E+03	6.51E-04	7.71E-05	7.51E-05
1.40E+00	4.74E+03	6.94E-04	6.48E-05	6.46E-05
9.00E-01	6.66E+03	7.16E-04	5.73E-05	5.66E-05
4.00E-01	5.67E+03	3.67E-04	2.35E-05	2.31E-05
1.00E-01	3.81E+03	7.14E-05	4.85E-06	4.71E-06
1.70E-02	2.77E+03	1.20E-05	9.54E-07	9.15E-07
3.00E-03	2.41E+03	1.95E-06	5.32E-07	4.98E-07
5.50E-04	2.27E+03	3.35E-07	8.91E-07	8.41E-07
1.00E-04	1.52E+03	4.95E-08	1.19E-06	1.12E-06
3.00E-05	1.25E+03	1.27E-08	1.74E-06	1.65E-06
1.00E-05	1.30E+03	4.26E-09	3.20E-06	3.04E-06
3.05E-06	5.72E+02	7.55E-10	2.15E-06	2.03E-06
1.77E-06	3.31E+02	2.82E-10	1.54E-06	1.46E-06
1.30E-06	1.40E+02	9.52E-11	7.27E-07	6.89E-07
1.13E-06	1.39E+02	8.30E-11	7.69E-07	7.30E-07
1.00E-06	2.44E+02	1.22E-10	1.47E-06	1.40E-06
8.00E-07	7.40E+02	2.39E-10	5.65E-06	5.37E-06
4.00E-07	2.29E+02	4.63E-11	2.19E-06	2.07E-06
3.25E-07	3.83E+02	5.84E-11	4.22E-06	3.98E-06
2.25E-07	1.38E+03	1.16E-10	2.11E-05	1.99E-05
1.00E-07	1.97E+03	7.73E-11	4.28E-05	4.05E-05
5.00E-08	1.24E+03	2.75E-11	3.57E-05	3.39E-05
3.00E-08	1.11E+03	1.63E-11	3.89E-05	4.23E-05
1.00E-08	1.80E+02	6.51E-13	6.40E-06	1.31E-05
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	6.01E+04	5.91E-03	1.09E-03	1.06E-03

Photon Data H/U = 60.0 20% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	1.28E+00	1.90E-07	1.60E-07	1.67E-07
8.00E+00	2.40E+02	2.93E-05	2.54E-05	2.61E-05
6.50E+00	1.63E+03	1.67E-04	1.47E-04	1.51E-04
5.00E+00	2.47E+03	2.14E-04	1.89E-04	1.93E-04
4.00E+00	6.41E+03	4.62E-04	4.15E-04	4.21E-04
3.00E+00	6.76E+03	4.10E-04	3.74E-04	3.79E-04
2.50E+00	1.48E+04	7.74E-04	7.17E-04	7.24E-04
2.00E+00	1.11E+04	4.95E-04	4.65E-04	4.68E-04
1.66E+00	1.63E+04	6.35E-04	5.91E-04	5.95E-04
1.33E+00	2.39E+04	7.65E-04	7.18E-04	7.20E-04
1.00E+00	1.92E+04	4.97E-04	4.68E-04	4.68E-04
8.00E-01	2.60E+04	5.45E-04	5.08E-04	5.07E-04
6.00E-01	3.10E+04	4.76E-04	4.41E-04	4.38E-04
4.00E-01	1.33E+04	1.42E-04	1.31E-04	1.29E-04
3.00E-01	8.76E+03	6.52E-05	5.93E-05	5.71E-05
2.00E-01	4.76E+03	1.96E-05	1.71E-05	1.62E-05
1.00E-01	4.30E+03	9.39E-06	9.02E-06	8.81E-06
5.00E-02	1.78E+02	1.88E-06	1.99E-06	9.36E-07
1.00E-02	1.04E+01	0.00E+00	4.65E-07	0.00E+00
Total	1.91E+05	5.71E-03	5.28E-03	5.30E-03

Neutron Data H/U = 120.0 20% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	8.43E+02	2.39E-04	5.40E-05	5.28E-05
6.43E+00	6.61E+03	1.66E-03	4.20E-04	4.07E-04
3.00E+00	7.25E+03	1.40E-03	1.93E-04	1.84E-04
1.85E+00	3.74E+03	6.26E-04	7.41E-05	7.22E-05
1.40E+00	4.36E+03	6.39E-04	5.99E-05	6.01E-05
9.00E-01	6.37E+03	6.84E-04	5.47E-05	5.40E-05
4.00E-01	5.63E+03	3.65E-04	2.33E-05	2.29E-05
1.00E-01	3.67E+03	6.86E-05	4.63E-06	4.51E-06
1.70E-02	2.54E+03	1.10E-05	8.77E-07	8.39E-07
3.00E-03	2.35E+03	1.90E-06	5.17E-07	4.84E-07
5.50E-04	2.21E+03	3.27E-07	8.69E-07	8.15E-07
1.00E-04	1.51E+03	4.93E-08	1.19E-06	1.12E-06
3.00E-05	1.30E+03	1.32E-08	1.80E-06	1.70E-06
1.00E-05	1.33E+03	4.35E-09	3.27E-06	3.09E-06
3.05E-06	6.31E+02	8.34E-10	2.38E-06	2.27E-06
1.77E-06	3.31E+02	2.82E-10	1.53E-06	1.45E-06
1.30E-06	1.29E+02	8.75E-11	6.70E-07	6.35E-07
1.13E-06	1.14E+02	6.79E-11	6.31E-07	5.98E-07
1.00E-06	2.21E+02	1.11E-10	1.34E-06	1.26E-06
8.00E-07	7.34E+02	2.37E-10	5.65E-06	5.24E-06
4.00E-07	2.44E+02	4.94E-11	2.34E-06	2.19E-06
3.25E-07	4.31E+02	6.57E-11	4.77E-06	4.44E-06
2.25E-07	1.77E+03	1.49E-10	2.73E-05	2.58E-05
1.00E-07	3.25E+03	1.27E-10	7.07E-05	6.71E-05
5.00E-08	2.13E+03	4.72E-11	6.15E-05	5.82E-05
3.00E-08	1.89E+03	2.79E-11	6.64E-05	7.33E-05
1.00E-08	3.61E+02	1.31E-12	1.28E-05	2.62E-05
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	6.19E+04	5.69E-03	1.15E-03	1.13E-03

Photon Data H/U = 120.0 20% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	4.89E-01	7.21E-08	5.90E-08	6.11E-08
8.00E+00	2.31E+02	2.80E-05	2.45E-05	2.52E-05
6.50E+00	1.50E+03	1.53E-04	1.35E-04	1.39E-04
5.00E+00	2.33E+03	2.00E-04	1.79E-04	1.82E-04
4.00E+00	6.18E+03	4.43E-04	4.00E-04	4.05E-04
3.00E+00	6.05E+03	3.65E-04	3.36E-04	3.40E-04
2.50E+00	1.79E+04	9.30E-04	8.67E-04	8.76E-04
2.00E+00	1.06E+04	4.73E-04	4.47E-04	4.51E-04
1.66E+00	1.60E+04	6.20E-04	5.79E-04	5.83E-04
1.33E+00	2.31E+04	7.35E-04	6.93E-04	6.96E-04
1.00E+00	1.93E+04	4.97E-04	4.71E-04	4.72E-04
8.00E-01	2.64E+04	5.49E-04	5.14E-04	5.15E-04
6.00E-01	3.40E+04	5.18E-04	4.81E-04	4.81E-04
4.00E-01	1.72E+04	1.84E-04	1.69E-04	1.68E-04
3.00E-01	1.30E+04	9.59E-05	8.77E-05	8.68E-05
2.00E-01	7.59E+03	3.11E-05	2.74E-05	2.63E-05
1.00E-01	6.45E+03	1.40E-05	1.34E-05	1.36E-05
5.00E-02	1.62E+02	1.70E-06	1.97E-06	1.25E-06
1.00E-02	5.08E+00	0.00E+00	2.27E-07	0.00E+00
Total	2.08E+05	5.84E-03	5.43E-03	5.46E-03

Neutron Data H/U = 240.0 20% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	4.77E+02	1.35E-04	3.02E-05	2.94E-05
6.43E+00	3.35E+03	8.39E-04	2.13E-04	2.06E-04
3.00E+00	3.84E+03	7.41E-04	1.02E-04	9.67E-05
1.85E+00	1.93E+03	3.23E-04	3.84E-05	3.74E-05
1.40E+00	2.27E+03	3.33E-04	3.10E-05	3.08E-05
9.00E-01	2.99E+03	3.21E-04	2.58E-05	2.56E-05
4.00E-01	2.75E+03	1.78E-04	1.14E-05	1.12E-05
1.00E-01	1.92E+03	3.59E-05	2.37E-06	2.31E-06
1.70E-02	1.41E+03	6.09E-06	4.88E-07	4.68E-07
3.00E-03	1.13E+03	9.19E-07	2.49E-07	2.34E-07
5.50E-04	1.09E+03	1.62E-07	4.32E-07	4.07E-07
1.00E-04	7.19E+02	2.34E-08	5.66E-07	5.34E-07
3.00E-05	6.99E+02	7.13E-09	9.82E-07	9.29E-07
1.00E-05	7.44E+02	2.44E-09	1.79E-06	1.68E-06
3.05E-06	3.46E+02	4.57E-10	1.32E-06	1.24E-06
1.77E-06	1.84E+02	1.57E-10	8.51E-07	8.05E-07
1.30E-06	8.86E+01	6.01E-11	4.59E-07	4.35E-07
1.13E-06	8.10E+01	4.82E-11	4.46E-07	4.23E-07
1.00E-06	1.35E+02	6.78E-11	8.13E-07	7.72E-07
8.00E-07	3.95E+02	1.28E-10	3.04E-06	2.87E-06
4.00E-07	1.28E+02	2.60E-11	1.23E-06	1.16E-06
3.25E-07	2.28E+02	3.47E-11	2.51E-06	2.23E-06
2.25E-07	1.35E+03	1.14E-10	2.10E-05	1.98E-05
1.00E-07	2.79E+03	1.09E-10	6.08E-05	5.75E-05
5.00E-08	1.92E+03	4.25E-11	5.54E-05	5.22E-05
3.00E-08	1.74E+03	2.57E-11	6.13E-05	6.70E-05
1.00E-08	3.17E+02	1.15E-12	1.13E-05	2.33E-05
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	3.50E+04	2.91E-03	6.78E-04	6.73E-04

Photon Data H/U = 240.0 20% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	2.03E+02	2.46E-05	2.14E-05	2.20E-05
6.50E+00	1.20E+03	1.23E-04	1.09E-04	1.11E-04
5.00E+00	2.01E+03	1.73E-04	1.53E-04	1.56E-04
4.00E+00	4.76E+03	3.41E-04	3.08E-04	3.13E-04
3.00E+00	4.80E+03	2.89E-04	2.66E-04	2.69E-04
2.50E+00	1.99E+04	1.03E-03	9.63E-04	9.72E-04
2.00E+00	8.85E+03	3.94E-04	3.72E-04	3.75E-04
1.66E+00	1.29E+04	4.98E-04	4.66E-04	4.69E-04
1.33E+00	1.87E+04	5.95E-04	5.61E-04	5.64E-04
1.00E+00	1.56E+04	4.02E-04	3.80E-04	3.81E-04
8.00E-01	2.11E+04	4.38E-04	4.10E-04	4.10E-04
6.00E-01	2.98E+04	4.55E-04	4.21E-04	4.20E-04
4.00E-01	1.69E+04	1.81E-04	1.66E-04	1.65E-04
3.00E-01	1.47E+04	1.08E-04	9.82E-05	9.72E-05
2.00E-01	1.01E+04	4.12E-05	3.65E-05	3.63E-05
1.00E-01	8.14E+03	1.77E-05	1.68E-05	1.70E-05
5.00E-02	2.00E+02	2.10E-06	2.30E-06	1.71E-06
1.00E-02	1.56E+01	0.00E+00	6.96E-07	0.00E+00
Total	1.90E+05	5.12E-03	4.75E-03	4.78E-03

Neutron Data H/U = 1.0 50% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	5.46E+02	1.55E-04	3.45E-05	3.36E-05
6.43E+00	5.25E+03	1.32E-03	3.34E-04	3.24E-04
3.00E+00	7.05E+03	1.36E-03	1.86E-04	1.77E-04
1.85E+00	3.86E+03	6.46E-04	7.68E-05	7.52E-05
1.40E+00	5.07E+03	7.42E-04	6.88E-05	6.87E-05
9.00E-01	9.18E+03	9.86E-04	7.93E-05	7.80E-05
4.00E-01	7.22E+03	4.68E-04	2.90E-05	2.85E-05
1.00E-01	5.56E+03	1.04E-04	7.02E-06	6.80E-06
1.70E-02	3.41E+03	1.47E-05	1.19E-06	1.14E-06
3.00E-03	2.09E+03	1.69E-06	4.55E-07	4.25E-07
5.50E-04	8.78E+02	1.30E-07	3.22E-07	3.05E-07
1.00E-04	2.43E+02	7.93E-09	1.80E-07	1.71E-07
3.00E-05	1.20E+02	1.23E-09	1.63E-07	1.53E-07
1.00E-05	7.81E+01	2.56E-10	1.90E-07	1.70E-07
3.05E-06	2.59E+01	3.42E-11	9.65E-08	9.01E-08
1.77E-06	1.49E+01	1.27E-11	6.88E-08	6.98E-08
1.30E-06	4.45E+00	3.02E-12	2.29E-08	2.17E-08
1.13E-06	2.21E+00	1.32E-12	1.22E-08	1.16E-08
1.00E-06	3.77E+00	1.90E-12	2.28E-08	2.15E-08
8.00E-07	8.16E+00	2.64E-12	5.80E-08	5.52E-08
4.00E-07	1.36E+00	2.74E-13	1.28E-08	1.20E-08
3.25E-07	1.14E+00	1.74E-13	1.26E-08	1.19E-08
2.25E-07	1.11E+00	9.35E-14	1.51E-08	1.42E-08
1.00E-07	2.96E-01	1.16E-14	6.35E-09	6.00E-09
5.00E-08	2.10E-01	4.64E-15	5.84E-09	5.52E-09
3.00E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.00E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	5.06E+04	5.80E-03	8.18E-04	7.95E-04

Photon Data H/U = 1.0 50% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	2.78E+01	3.37E-06	2.98E-06	3.07E-06
6.50E+00	2.10E+02	2.15E-05	1.90E-05	1.95E-05
5.00E+00	3.61E+02	3.10E-05	2.76E-05	2.81E-05
4.00E+00	9.65E+02	6.91E-05	6.25E-05	6.32E-05
3.00E+00	1.10E+03	6.64E-05	6.11E-05	6.16E-05
2.50E+00	1.78E+03	9.21E-05	8.62E-05	8.63E-05
2.00E+00	1.70E+03	7.57E-05	7.16E-05	7.17E-05
1.66E+00	2.49E+03	9.66E-05	9.03E-05	9.00E-05
1.33E+00	3.27E+03	1.04E-04	9.83E-05	9.72E-05
1.00E+00	2.18E+03	5.60E-05	5.35E-05	5.23E-05
8.00E-01	2.46E+03	5.12E-05	4.81E-05	4.68E-05
6.00E-01	2.38E+03	3.63E-05	3.43E-05	3.30E-05
4.00E-01	6.78E+02	7.24E-06	6.74E-06	6.07E-06
3.00E-01	4.58E+02	3.39E-06	3.10E-06	2.71E-06
2.00E-01	3.96E+02	1.62E-06	1.41E-06	1.22E-06
1.00E-01	2.92E+02	6.34E-07	6.12E-07	4.91E-07
5.00E-02	2.01E+01	2.11E-07	1.68E-07	8.23E-08
1.00E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	2.08E+04	7.16E-04	6.68E-04	6.63E-04

Neutron Data H/U = 2.5 50% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.00E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3.00E-08	8.90E-01	1.31E-14	3.11E-08	3.06E-08
5.00E-08	1.04E+00	2.31E-14	2.95E-08	2.78E-08
1.00E-07	4.91E+00	1.92E-13	1.05E-07	9.90E-08
2.25E-07	1.16E+01	9.78E-13	1.70E-07	1.57E-07
3.25E-07	8.51E+00	1.30E-12	9.31E-08	8.77E-08
4.00E-07	9.22E+00	1.87E-12	8.74E-08	8.23E-08
8.00E-07	6.65E+01	2.15E-11	4.98E-07	4.54E-07
1.00E-06	3.29E+01	1.65E-11	1.97E-07	1.92E-07
1.13E-06	1.52E+01	9.07E-12	8.39E-08	7.96E-08
1.30E-06	1.97E+01	1.33E-11	1.02E-07	9.62E-08
1.77E-06	6.11E+01	5.21E-11	2.83E-07	2.68E-07
3.05E-06	1.29E+02	1.71E-10	4.88E-07	4.57E-07
1.00E-05	2.93E+02	9.60E-10	7.24E-07	6.91E-07
3.00E-05	3.84E+02	3.92E-09	5.19E-07	4.87E-07
1.00E-04	6.31E+02	2.06E-08	4.80E-07	4.54E-07
5.50E-04	1.75E+03	2.58E-07	6.67E-07	6.23E-07
3.00E-03	2.68E+03	2.17E-06	5.86E-07	5.47E-07
1.70E-02	3.58E+03	1.55E-05	1.24E-06	1.19E-06
1.00E-01	5.43E+03	1.02E-04	6.88E-06	6.68E-06
4.00E-01	7.70E+03	4.99E-04	3.13E-05	3.08E-05
9.00E-01	9.61E+03	1.03E-03	8.30E-05	8.20E-05
1.40E+00	5.92E+03	8.67E-04	8.05E-05	8.02E-05
1.85E+00	4.59E+03	7.69E-04	9.14E-05	8.92E-05
3.00E+00	8.52E+03	1.65E-03	2.26E-04	2.15E-04
6.43E+00	6.89E+03	1.73E-03	4.38E-04	4.25E-04
2.00E+01	7.29E+02	2.07E-04	4.60E-05	4.49E-05
Total	5.91E+04	6.86E-03	1.01E-03	9.80E-04

Photon Data H/U = 2.5 50% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	3.25E+01	3.95E-06	3.42E-06	3.52E-06
6.50E+00	3.09E+02	3.17E-05	2.79E-05	2.84E-05
5.00E+00	5.06E+02	4.37E-05	3.88E-05	3.96E-05
4.00E+00	1.41E+03	1.01E-04	9.09E-05	9.22E-05
3.00E+00	1.55E+03	9.38E-05	8.58E-05	8.68E-05
2.50E+00	2.56E+03	1.34E-04	1.24E-04	1.25E-04
2.00E+00	2.67E+03	1.20E-04	1.13E-04	1.13E-04
1.66E+00	4.05E+03	1.58E-04	1.46E-04	1.47E-04
1.33E+00	5.56E+03	1.78E-04	1.68E-04	1.68E-04
1.00E+00	4.03E+03	1.04E-04	9.85E-05	9.76E-05
8.00E-01	4.83E+03	1.01E-04	9.44E-05	9.32E-05
6.00E-01	4.82E+03	7.40E-05	6.93E-05	6.76E-05
4.00E-01	1.48E+03	1.59E-05	1.47E-05	1.40E-05
3.00E-01	9.09E+02	6.76E-06	6.12E-06	5.59E-06
2.00E-01	8.03E+02	3.30E-06	2.93E-06	2.67E-06
1.00E-01	5.94E+02	1.30E-06	1.25E-06	1.13E-06
5.00E-02	3.89E+01	4.10E-07	3.61E-07	1.56E-07
1.00E-02	1.36E+00	0.00E+00	6.09E-08	0.00E+00
Total	3.61E+04	1.17E-03	1.08E-03	1.08E-03

Neutron Data H/U = 5.0 50% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	8.13E+02	2.30E-04	5.12E-05	5.00E-05
6.43E+00	7.32E+03	1.84E-03	4.65E-04	4.51E-04
3.00E+00	8.77E+03	1.69E-03	2.32E-04	2.21E-04
1.85E+00	4.69E+03	7.85E-04	9.33E-05	9.13E-05
1.40E+00	5.81E+03	8.51E-04	7.91E-05	7.88E-05
9.00E-01	8.84E+03	9.49E-04	7.63E-05	7.55E-05
4.00E-01	7.28E+03	4.72E-04	2.98E-05	2.93E-05
1.00E-01	4.89E+03	9.15E-05	6.14E-06	5.97E-06
1.70E-02	3.41E+03	1.47E-05	1.17E-06	1.12E-06
3.00E-03	2.76E+03	2.24E-06	6.05E-07	5.69E-07
5.50E-04	2.13E+03	3.14E-07	8.20E-07	7.69E-07
1.00E-04	9.93E+02	3.24E-08	7.64E-07	7.27E-07
3.00E-05	6.91E+02	7.05E-09	9.51E-07	8.99E-07
1.00E-05	5.16E+02	1.69E-09	1.28E-06	1.21E-06
3.05E-06	2.47E+02	3.27E-10	9.30E-07	8.89E-07
1.77E-06	1.31E+02	1.12E-10	6.11E-07	5.78E-07
1.30E-06	5.32E+01	3.61E-11	2.75E-07	2.60E-07
1.13E-06	2.75E+01	1.64E-11	1.53E-07	1.44E-07
1.00E-06	6.81E+01	3.42E-11	4.11E-07	3.89E-07
8.00E-07	1.85E+02	5.98E-11	1.38E-06	1.30E-06
4.00E-07	3.75E+01	7.58E-12	3.56E-07	3.35E-07
3.25E-07	4.44E+01	6.77E-12	4.83E-07	4.56E-07
2.25E-07	6.46E+01	5.43E-12	9.39E-07	8.87E-07
1.00E-07	3.45E+01	1.35E-12	7.19E-07	6.43E-07
5.00E-08	5.03E+00	1.11E-13	1.41E-07	1.33E-07
3.00E-08	3.75E+00	5.53E-14	1.32E-07	1.48E-07
1.00E-08	7.10E-01	2.57E-15	2.53E-08	4.45E-08
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	5.98E+04	6.93E-03	1.04E-03	1.01E-03

Photon Data H/U = 5.0 50% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	5.78E+01	7.04E-06	6.08E-06	6.26E-06
6.50E+00	6.00E+02	6.16E-05	5.40E-05	5.54E-05
5.00E+00	1.05E+03	9.05E-05	8.01E-05	8.16E-05
4.00E+00	2.62E+03	1.89E-04	1.69E-04	1.71E-04
3.00E+00	3.03E+03	1.84E-04	1.68E-04	1.70E-04
2.50E+00	4.74E+03	2.48E-04	2.30E-04	2.31E-04
2.00E+00	4.64E+03	2.08E-04	1.95E-04	1.95E-04
1.66E+00	6.55E+03	2.55E-04	2.37E-04	2.37E-04
1.33E+00	8.63E+03	2.76E-04	2.60E-04	2.57E-04
1.00E+00	5.99E+03	1.55E-04	1.46E-04	1.44E-04
8.00E-01	6.73E+03	1.41E-04	1.32E-04	1.28E-04
6.00E-01	6.64E+03	1.02E-04	9.56E-05	9.16E-05
4.00E-01	1.88E+03	2.02E-05	1.87E-05	1.71E-05
3.00E-01	1.20E+03	8.96E-06	8.08E-06	7.02E-06
2.00E-01	7.61E+02	3.13E-06	2.74E-06	2.28E-06
1.00E-01	8.09E+02	1.77E-06	1.69E-06	1.39E-06
5.00E-02	6.46E+01	6.82E-07	5.45E-07	2.15E-07
1.00E-02	2.83E+00	0.00E+00	1.27E-07	0.00E+00
Total	5.60E+04	1.95E-03	1.80E-03	1.80E-03

Neutron Data H/U = 7.5 50% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	8.86E+02	2.51E-04	5.61E-05	5.47E-05
6.43E+00	7.58E+03	1.90E-03	4.81E-04	4.66E-04
3.00E+00	8.85E+03	1.71E-03	2.34E-04	2.23E-04
1.85E+00	4.66E+03	7.79E-04	9.26E-05	9.01E-05
1.40E+00	5.84E+03	8.56E-04	7.97E-05	7.94E-05
9.00E-01	8.62E+03	9.26E-04	7.44E-05	7.34E-05
4.00E-01	7.30E+03	4.73E-04	3.01E-05	2.96E-05
1.00E-01	4.84E+03	9.07E-05	6.11E-06	5.95E-06
1.70E-02	3.37E+03	1.45E-05	1.17E-06	1.11E-06
3.00E-03	2.82E+03	2.28E-06	6.17E-07	5.77E-07
5.50E-04	2.23E+03	3.29E-07	8.66E-07	8.19E-07
1.00E-04	1.17E+03	3.83E-08	9.03E-07	8.48E-07
3.00E-05	8.23E+02	8.39E-09	1.14E-06	1.07E-06
1.00E-05	7.06E+02	2.31E-09	1.76E-06	1.65E-06
3.05E-06	3.15E+02	4.16E-10	1.19E-06	1.11E-06
1.77E-06	1.96E+02	1.67E-10	9.07E-07	8.58E-07
1.30E-06	8.22E+01	5.57E-11	4.24E-07	4.03E-07
1.13E-06	4.77E+01	2.84E-11	2.64E-07	2.51E-07
1.00E-06	1.12E+02	5.64E-11	6.79E-07	6.43E-07
8.00E-07	2.80E+02	9.06E-11	2.14E-06	2.01E-06
4.00E-07	5.94E+01	1.20E-11	5.68E-07	5.36E-07
3.25E-07	7.74E+01	1.18E-11	8.52E-07	8.03E-07
2.25E-07	1.22E+02	1.03E-11	1.76E-06	1.67E-06
1.00E-07	5.03E+01	1.97E-12	1.06E-06	1.00E-06
5.00E-08	2.02E+01	4.48E-13	5.84E-07	5.52E-07
3.00E-08	1.20E+01	1.77E-13	4.20E-07	4.51E-07
1.00E-08	1.73E+00	6.24E-15	6.14E-08	1.28E-07
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	6.11E+04	7.00E-03	1.07E-03	1.04E-03

Photon Data H/U = 7.5 50% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	7.78E+01	9.48E-06	8.20E-06	8.43E-06
6.50E+00	8.63E+02	8.85E-05	7.75E-05	7.95E-05
5.00E+00	1.35E+03	1.16E-04	1.03E-04	1.05E-04
4.00E+00	3.68E+03	2.65E-04	2.38E-04	2.41E-04
3.00E+00	3.81E+03	2.31E-04	2.12E-04	2.14E-04
2.50E+00	6.13E+03	3.20E-04	2.97E-04	2.98E-04
2.00E+00	6.02E+03	2.70E-04	2.53E-04	2.54E-04
1.66E+00	8.38E+03	3.26E-04	3.03E-04	3.03E-04
1.33E+00	1.13E+04	3.62E-04	3.41E-04	3.38E-04
1.00E+00	8.12E+03	2.10E-04	1.98E-04	1.96E-04
8.00E-01	9.04E+03	1.89E-04	1.77E-04	1.73E-04
6.00E-01	9.21E+03	1.41E-04	1.33E-04	1.28E-04
4.00E-01	2.69E+03	2.89E-05	2.67E-05	2.47E-05
3.00E-01	1.63E+03	1.21E-05	1.10E-05	9.81E-06
2.00E-01	1.11E+03	4.56E-06	4.00E-06	3.34E-06
1.00E-01	9.62E+02	2.10E-06	2.02E-06	1.71E-06
5.00E-02	6.67E+01	7.05E-07	6.14E-07	1.95E-07
1.00E-02	3.00E+00	0.00E+00	1.34E-07	0.00E+00
Total	7.45E+04	2.58E-03	2.38E-03	2.38E-03

Neutron Data H/U = 15.0 50% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	9.38E+02	2.66E-04	5.98E-05	5.86E-05
6.43E+00	8.03E+03	2.01E-03	5.11E-04	4.96E-04
3.00E+00	9.06E+03	1.75E-03	2.41E-04	2.30E-04
1.85E+00	4.70E+03	7.88E-04	9.33E-05	9.11E-05
1.40E+00	5.84E+03	8.55E-04	7.95E-05	7.92E-05
9.00E-01	8.42E+03	9.04E-04	7.28E-05	7.20E-05
4.00E-01	7.25E+03	4.70E-04	2.99E-05	2.95E-05
1.00E-01	4.73E+03	8.86E-05	6.00E-06	5.82E-06
1.70E-02	3.35E+03	1.45E-05	1.15E-06	1.10E-06
3.00E-03	2.87E+03	2.32E-06	6.30E-07	5.87E-07
5.50E-04	2.45E+03	3.61E-07	9.51E-07	8.96E-07
1.00E-04	1.51E+03	4.93E-08	1.17E-06	1.10E-06
3.00E-05	1.06E+03	1.08E-08	1.47E-06	1.38E-06
1.00E-05	1.01E+03	3.32E-09	2.50E-06	2.36E-06
3.05E-06	4.72E+02	6.23E-10	1.77E-06	1.67E-06
1.77E-06	2.54E+02	2.17E-10	1.18E-06	1.12E-06
1.30E-06	1.04E+02	7.04E-11	5.38E-07	5.10E-07
1.13E-06	9.29E+01	5.54E-11	5.15E-07	4.88E-07
1.00E-06	1.68E+02	8.43E-11	1.01E-06	9.57E-07
8.00E-07	4.75E+02	1.54E-10	3.61E-06	3.36E-06
4.00E-07	1.06E+02	2.15E-11	1.01E-06	9.59E-07
3.25E-07	1.73E+02	2.64E-11	1.90E-06	1.80E-06
2.25E-07	3.51E+02	2.95E-11	5.20E-06	4.93E-06
1.00E-07	2.03E+02	7.94E-12	4.34E-06	4.02E-06
5.00E-08	8.25E+01	1.83E-12	2.37E-06	2.24E-06
3.00E-08	5.11E+01	7.55E-13	1.80E-06	1.92E-06
1.00E-08	9.14E+00	3.31E-14	3.25E-07	6.27E-07
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	6.38E+04	7.15E-03	1.13E-03	1.09E-03

Photon Data H/U = 15.0 50% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	2.97E-01	4.41E-08	3.77E-08	3.92E-08
8.00E+00	1.42E+02	1.73E-05	1.49E-05	1.54E-05
6.50E+00	1.29E+03	1.33E-04	1.17E-04	1.20E-04
5.00E+00	1.98E+03	1.71E-04	1.52E-04	1.54E-04
4.00E+00	5.09E+03	3.67E-04	3.29E-04	3.34E-04
3.00E+00	5.40E+03	3.27E-04	2.99E-04	3.02E-04
2.50E+00	8.87E+03	4.63E-04	4.30E-04	4.33E-04
2.00E+00	8.74E+03	3.92E-04	3.67E-04	3.69E-04
1.66E+00	1.22E+04	4.77E-04	4.43E-04	4.44E-04
1.33E+00	1.73E+04	5.52E-04	5.19E-04	5.17E-04
1.00E+00	1.27E+04	3.28E-04	3.10E-04	3.07E-04
8.00E-01	1.50E+04	3.13E-04	2.92E-04	2.89E-04
6.00E-01	1.58E+04	2.42E-04	2.26E-04	2.21E-04
4.00E-01	4.85E+03	5.21E-05	4.81E-05	4.61E-05
3.00E-01	2.95E+03	2.19E-05	1.98E-05	1.82E-05
2.00E-01	1.79E+03	7.38E-06	6.48E-06	5.70E-06
1.00E-01	1.62E+03	3.53E-06	3.40E-06	3.03E-06
5.00E-02	1.15E+02	1.22E-06	1.22E-06	5.49E-07
1.00E-02	3.66E+00	0.00E+00	1.63E-07	0.00E+00
Total	1.16E+05	3.87E-03	3.58E-03	3.58E-03

Neutron Data H/U = 30.0 50% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	1.02E+03	2.89E-04	6.49E-05	6.33E-05
6.43E+00	8.29E+03	2.08E-03	5.27E-04	5.11E-04
3.00E+00	9.35E+03	1.81E-03	2.48E-04	2.37E-04
1.85E+00	4.78E+03	8.00E-04	9.49E-05	9.27E-05
1.40E+00	5.95E+03	8.72E-04	8.15E-05	8.13E-05
9.00E-01	8.39E+03	9.01E-04	7.23E-05	7.14E-05
4.00E-01	7.32E+03	4.74E-04	3.03E-05	2.98E-05
1.00E-01	4.80E+03	8.98E-05	6.05E-06	5.88E-06
1.70E-02	3.42E+03	1.48E-05	1.17E-06	1.12E-06
3.00E-03	2.89E+03	2.34E-06	6.36E-07	5.94E-07
5.50E-04	2.67E+03	3.95E-07	1.05E-06	9.88E-07
1.00E-04	1.60E+03	5.21E-08	1.24E-06	1.17E-06
3.00E-05	1.33E+03	1.35E-08	1.85E-06	1.75E-06
1.00E-05	1.29E+03	4.21E-09	3.15E-06	2.97E-06
3.05E-06	6.01E+02	7.93E-10	2.27E-06	2.08E-06
1.77E-06	3.21E+02	2.74E-10	1.49E-06	1.41E-06
1.30E-06	1.36E+02	9.19E-11	7.03E-07	6.66E-07
1.13E-06	1.30E+02	7.77E-11	7.21E-07	6.92E-07
1.00E-06	2.37E+02	1.19E-10	1.43E-06	1.36E-06
8.00E-07	6.48E+02	2.10E-10	4.96E-06	4.69E-06
4.00E-07	1.81E+02	3.66E-11	1.73E-06	1.62E-06
3.25E-07	2.94E+02	4.48E-11	3.25E-06	3.06E-06
2.25E-07	6.91E+02	5.81E-11	1.02E-05	9.43E-06
1.00E-07	4.94E+02	1.93E-11	1.06E-05	1.00E-05
5.00E-08	2.56E+02	5.67E-12	7.34E-06	6.82E-06
3.00E-08	1.97E+02	2.90E-12	6.91E-06	7.48E-06
1.00E-08	2.93E+01	1.06E-13	1.04E-06	2.03E-06
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	6.73E+04	7.33E-03	1.19E-03	1.15E-03

Photon Data H/U =30.0 50% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	2.02E+02	2.46E-05	2.14E-05	2.21E-05
6.50E+00	1.62E+03	1.66E-04	1.46E-04	1.49E-04
5.00E+00	2.47E+03	2.14E-04	1.90E-04	1.93E-04
4.00E+00	6.54E+03	4.71E-04	4.23E-04	4.29E-04
3.00E+00	6.74E+03	4.08E-04	3.74E-04	3.78E-04
2.50E+00	1.15E+04	5.99E-04	5.55E-04	5.60E-04
2.00E+00	1.07E+04	4.81E-04	4.51E-04	4.54E-04
1.66E+00	1.60E+04	6.23E-04	5.80E-04	5.82E-04
1.33E+00	2.30E+04	7.36E-04	6.91E-04	6.93E-04
1.00E+00	1.82E+04	4.70E-04	4.43E-04	4.42E-04
8.00E-01	2.25E+04	4.72E-04	4.40E-04	4.38E-04
6.00E-01	2.53E+04	3.89E-04	3.61E-04	3.57E-04
4.00E-01	9.23E+03	9.91E-05	9.15E-05	8.91E-05
3.00E-01	5.56E+03	4.14E-05	3.76E-05	3.60E-05
2.00E-01	3.40E+03	1.40E-05	1.23E-05	1.11E-05
1.00E-01	2.84E+03	6.19E-06	5.98E-06	5.70E-06
5.00E-02	1.42E+02	1.50E-06	1.47E-06	7.10E-07
1.00E-02	7.53E+00	0.00E+00	3.37E-07	0.00E+00
Total	1.66E+05	5.21E-03	4.82E-03	4.84E-03

Neutron Data H/U = 60.0 50% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	1.01E+03	2.87E-04	6.49E-05	6.33E-05
6.43E+00	8.34E+03	2.09E-03	5.30E-04	5.14E-04
3.00E+00	9.28E+03	1.79E-03	2.46E-04	2.34E-04
1.85E+00	4.74E+03	7.94E-04	9.39E-05	9.17E-05
1.40E+00	5.90E+03	8.63E-04	8.05E-05	8.06E-05
9.00E-01	8.11E+03	8.71E-04	6.98E-05	6.89E-05
4.00E-01	7.18E+03	4.65E-04	2.98E-05	2.92E-05
1.00E-01	4.66E+03	8.72E-05	5.85E-06	5.67E-06
1.70E-02	3.34E+03	1.44E-05	1.15E-06	1.10E-06
3.00E-03	2.84E+03	2.30E-06	6.26E-07	5.87E-07
5.50E-04	2.70E+03	3.99E-07	1.07E-06	1.01E-06
1.00E-04	1.75E+03	5.70E-08	1.36E-06	1.29E-06
3.00E-05	1.39E+03	1.42E-08	1.94E-06	1.83E-06
1.00E-05	1.42E+03	4.65E-09	3.51E-06	3.32E-06
3.05E-06	6.78E+02	8.94E-10	2.56E-06	2.39E-06
1.77E-06	3.84E+02	3.27E-10	1.78E-06	1.68E-06
1.30E-06	1.74E+02	1.18E-10	9.02E-07	8.49E-07
1.13E-06	1.33E+02	7.90E-11	7.33E-07	6.91E-07
1.00E-06	2.66E+02	1.34E-10	1.61E-06	1.52E-06
8.00E-07	7.91E+02	2.56E-10	6.04E-06	5.64E-06
4.00E-07	2.27E+02	4.59E-11	2.16E-06	2.04E-06
3.25E-07	3.53E+02	5.38E-11	3.89E-06	3.65E-06
2.25E-07	1.04E+03	8.71E-11	1.56E-05	1.47E-05
1.00E-07	1.08E+03	4.22E-11	2.32E-05	2.20E-05
5.00E-08	5.55E+02	1.23E-11	1.60E-05	1.51E-05
3.00E-08	4.54E+02	6.70E-12	1.60E-05	1.73E-05
1.00E-08	7.23E+01	2.62E-13	2.57E-06	5.20E-06
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	6.89E+04	7.27E-03	1.22E-03	1.19E-03

Photon Data H/U = 60.0 50% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	2.57E+02	3.13E-05	2.71E-05	2.79E-05
6.50E+00	1.78E+03	1.83E-04	1.61E-04	1.65E-04
5.00E+00	2.78E+03	2.41E-04	2.13E-04	2.18E-04
4.00E+00	7.42E+03	5.35E-04	4.81E-04	4.88E-04
3.00E+00	7.57E+03	4.59E-04	4.20E-04	4.25E-04
2.50E+00	1.39E+04	7.26E-04	6.73E-04	6.79E-04
2.00E+00	1.20E+04	5.37E-04	5.03E-04	5.07E-04
1.66E+00	1.83E+04	7.12E-04	6.62E-04	6.66E-04
1.33E+00	2.67E+04	8.55E-04	8.02E-04	8.04E-04
1.00E+00	2.22E+04	5.73E-04	5.40E-04	5.41E-04
8.00E-01	2.90E+04	6.08E-04	5.65E-04	5.65E-04
6.00E-01	3.48E+04	5.35E-04	4.95E-04	4.93E-04
4.00E-01	1.55E+04	1.66E-04	1.52E-04	1.51E-04
3.00E-01	1.02E+04	7.57E-05	6.89E-05	6.75E-05
2.00E-01	5.76E+03	2.37E-05	2.09E-05	1.96E-05
1.00E-01	4.88E+03	1.07E-05	1.03E-05	1.00E-05
5.00E-02	2.03E+02	2.14E-06	2.30E-06	1.58E-06
1.00E-02	1.12E+01	0.00E+00	5.01E-07	0.00E+00
Total	2.13E+05	6.27E-03	5.80E-03	5.83E-03

Neutron Data H/U = 120.0 50% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	1.11E+03	3.14E-04	7.10E-05	6.95E-05
6.43E+00	9.08E+03	2.28E-03	5.77E-04	5.59E-04
3.00E+00	1.01E+04	1.95E-03	2.67E-04	2.55E-04
1.85E+00	5.21E+03	8.71E-04	1.03E-04	1.01E-04
1.40E+00	6.42E+03	9.40E-04	8.78E-05	8.74E-05
9.00E-01	8.95E+03	9.62E-04	7.70E-05	7.62E-05
4.00E-01	7.77E+03	5.04E-04	3.24E-05	3.18E-05
1.00E-01	5.05E+03	9.45E-05	6.39E-06	6.21E-06
1.70E-02	3.60E+03	1.55E-05	1.24E-06	1.19E-06
3.00E-03	3.12E+03	2.53E-06	6.85E-07	6.43E-07
5.50E-04	2.88E+03	4.25E-07	1.14E-06	1.07E-06
1.00E-04	1.92E+03	6.26E-08	1.51E-06	1.42E-06
3.00E-05	1.69E+03	1.72E-08	2.35E-06	2.21E-06
1.00E-05	1.72E+03	5.64E-09	4.22E-06	3.98E-06
3.05E-06	8.13E+02	1.07E-09	3.06E-06	2.89E-06
1.77E-06	4.31E+02	3.67E-10	2.00E-06	1.91E-06
1.30E-06	1.92E+02	1.30E-10	9.94E-07	9.43E-07
1.13E-06	1.66E+02	9.87E-11	9.16E-07	8.42E-07
1.00E-06	3.17E+02	1.59E-10	1.92E-06	1.80E-06
8.00E-07	9.69E+02	3.13E-10	7.39E-06	6.93E-06
4.00E-07	2.65E+02	5.37E-11	2.53E-06	2.38E-06
3.25E-07	4.91E+02	7.48E-11	5.42E-06	5.09E-06
2.25E-07	1.62E+03	1.36E-10	2.47E-05	2.31E-05
1.00E-07	2.12E+03	8.28E-11	4.59E-05	4.33E-05
5.00E-08	1.32E+03	2.93E-11	3.82E-05	3.62E-05
3.00E-08	1.10E+03	1.62E-11	3.87E-05	4.23E-05
1.00E-08	2.08E+02	7.53E-13	7.41E-06	1.50E-05
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	7.86E+04	7.93E-03	1.41E-03	1.38E-03

Photon Data H/U = 120.0 50% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	7.04E-01	1.04E-07	9.15E-08	9.54E-08
8.00E+00	2.28E+02	2.76E-05	2.41E-05	2.48E-05
6.50E+00	1.78E+03	1.81E-04	1.60E-04	1.64E-04
5.00E+00	2.65E+03	2.28E-04	2.03E-04	2.07E-04
4.00E+00	6.88E+03	4.92E-04	4.45E-04	4.52E-04
3.00E+00	6.95E+03	4.19E-04	3.86E-04	3.91E-04
2.50E+00	1.50E+04	7.78E-04	7.26E-04	7.33E-04
2.00E+00	1.16E+04	5.16E-04	4.87E-04	4.91E-04
1.66E+00	1.77E+04	6.84E-04	6.40E-04	6.45E-04
1.33E+00	2.65E+04	8.43E-04	7.95E-04	7.99E-04
1.00E+00	2.24E+04	5.75E-04	5.45E-04	5.47E-04
8.00E-01	3.09E+04	6.43E-04	6.01E-04	6.02E-04
6.00E-01	3.96E+04	6.04E-04	5.60E-04	5.60E-04
4.00E-01	2.09E+04	2.23E-04	2.06E-04	2.05E-04
3.00E-01	1.60E+04	1.19E-04	1.08E-04	1.07E-04
2.00E-01	9.34E+03	3.82E-05	3.39E-05	3.36E-05
1.00E-01	7.84E+03	1.70E-05	1.64E-05	1.65E-05
5.00E-02	2.49E+02	2.62E-06	2.61E-06	2.11E-06
1.00E-02	5.35E+00	0.00E+00	2.39E-07	0.00E+00
Total	2.36E+05	6.39E-03	5.94E-03	5.98E-03

Neutron Data H/U = 240.0 50% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	9.48E+02	2.69E-04	6.05E-05	5.90E-05
6.43E+00	7.71E+03	1.93E-03	4.89E-04	4.74E-04
3.00E+00	8.62E+03	1.67E-03	2.29E-04	2.19E-04
1.85E+00	4.41E+03	7.38E-04	8.75E-05	8.55E-05
1.40E+00	5.33E+03	7.81E-04	7.27E-05	7.27E-05
9.00E-01	7.42E+03	7.97E-04	6.37E-05	6.30E-05
4.00E-01	6.55E+03	4.24E-04	2.70E-05	2.65E-05
1.00E-01	4.28E+03	8.01E-05	5.44E-06	5.29E-06
1.70E-02	3.07E+03	1.33E-05	1.04E-06	9.95E-07
3.00E-03	2.73E+03	2.21E-06	6.01E-07	5.58E-07
5.50E-04	2.60E+03	3.84E-07	1.03E-06	9.72E-07
1.00E-04	1.74E+03	5.66E-08	1.36E-06	1.28E-06
3.00E-05	1.51E+03	1.54E-08	2.10E-06	1.96E-06
1.00E-05	1.55E+03	5.09E-09	3.81E-06	3.59E-06
3.05E-06	6.65E+02	8.78E-10	2.51E-06	2.38E-06
1.77E-06	3.99E+02	3.40E-10	1.85E-06	1.75E-06
1.30E-06	1.75E+02	1.18E-10	9.08E-07	8.60E-07
1.13E-06	1.63E+02	9.71E-11	9.01E-07	8.49E-07
1.00E-06	2.81E+02	1.41E-10	1.69E-06	1.60E-06
8.00E-07	9.01E+02	2.91E-10	6.90E-06	6.53E-06
4.00E-07	2.56E+02	5.18E-11	2.44E-06	2.31E-06
3.25E-07	4.95E+02	7.54E-11	5.46E-06	5.16E-06
2.25E-07	1.95E+03	1.64E-10	3.00E-05	2.84E-05
1.00E-07	3.15E+03	1.23E-10	6.84E-05	6.46E-05
5.00E-08	2.08E+03	4.61E-11	6.01E-05	5.65E-05
3.00E-08	1.88E+03	2.77E-11	6.60E-05	7.27E-05
1.00E-08	3.56E+02	1.29E-12	1.27E-05	2.59E-05
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	7.12E+04	6.70E-03	1.30E-03	1.28E-03

Photon Data H/U = 240.0 50% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	2.57E+02	3.11E-05	2.71E-05	2.79E-05
6.50E+00	1.72E+03	1.76E-04	1.55E-04	1.59E-04
5.00E+00	2.40E+03	2.06E-04	1.84E-04	1.88E-04
4.00E+00	6.54E+03	4.68E-04	4.23E-04	4.29E-04
3.00E+00	6.76E+03	4.07E-04	3.75E-04	3.80E-04
2.50E+00	1.80E+04	9.36E-04	8.73E-04	8.82E-04
2.00E+00	1.13E+04	5.05E-04	4.77E-04	4.81E-04
1.66E+00	1.71E+04	6.62E-04	6.20E-04	6.24E-04
1.33E+00	2.57E+04	8.17E-04	7.70E-04	7.74E-04
1.00E+00	2.21E+04	5.68E-04	5.38E-04	5.40E-04
8.00E-01	3.08E+04	6.40E-04	5.98E-04	6.01E-04
6.00E-01	4.12E+04	6.29E-04	5.82E-04	5.82E-04
4.00E-01	2.37E+04	2.53E-04	2.33E-04	2.32E-04
3.00E-01	2.20E+04	1.62E-04	1.47E-04	1.46E-04
2.00E-01	1.57E+04	6.44E-05	5.78E-05	5.74E-05
1.00E-01	1.21E+04	2.63E-05	2.50E-05	2.55E-05
5.00E-02	3.78E+02	3.96E-06	4.92E-06	4.18E-06
1.00E-02	9.96E+00	0.00E+00	4.45E-07	0.00E+00
Total	2.58E+05	6.56E-03	6.09E-03	6.13E-03

Neutron Data H/U = 480.0 50% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	6.69E+02	1.90E-04	4.26E-05	4.16E-05
6.43E+00	5.15E+03	1.29E-03	3.27E-04	3.17E-04
3.00E+00	5.59E+03	1.08E-03	1.49E-04	1.43E-04
1.85E+00	2.87E+03	4.80E-04	5.69E-05	5.55E-05
1.40E+00	3.47E+03	5.08E-04	4.73E-05	4.72E-05
9.00E-01	4.75E+03	5.10E-04	4.07E-05	4.01E-05
4.00E-01	4.27E+03	2.76E-04	1.78E-05	1.74E-05
1.00E-01	2.79E+03	5.22E-05	3.51E-06	3.41E-06
1.70E-02	1.96E+03	8.48E-06	6.73E-07	6.45E-07
3.00E-03	1.71E+03	1.38E-06	3.76E-07	3.54E-07
5.50E-04	1.74E+03	2.56E-07	6.84E-07	6.45E-07
1.00E-04	1.14E+03	3.72E-08	8.94E-07	8.45E-07
3.00E-05	9.62E+02	9.81E-09	1.33E-06	1.26E-06
1.00E-05	1.02E+03	3.33E-09	2.52E-06	2.38E-06
3.05E-06	4.95E+02	6.53E-10	1.86E-06	1.75E-06
1.77E-06	2.86E+02	2.44E-10	1.33E-06	1.26E-06
1.30E-06	1.28E+02	8.70E-11	6.64E-07	6.28E-07
1.13E-06	1.13E+02	6.75E-11	6.26E-07	5.94E-07
1.00E-06	2.05E+02	1.03E-10	1.23E-06	1.17E-06
8.00E-07	6.09E+02	1.97E-10	4.66E-06	4.40E-06
4.00E-07	2.05E+02	4.15E-11	1.96E-06	1.86E-06
3.25E-07	3.50E+02	5.33E-11	3.84E-06	3.62E-06
2.25E-07	1.82E+03	1.53E-10	2.83E-05	2.68E-05
1.00E-07	3.58E+03	1.40E-10	7.79E-05	7.36E-05
5.00E-08	2.38E+03	5.26E-11	6.85E-05	6.49E-05
3.00E-08	2.21E+03	3.26E-11	7.77E-05	8.56E-05
1.00E-08	3.99E+02	1.44E-12	1.42E-05	2.92E-05
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	5.08E+04	4.40E-03	9.74E-04	9.66E-04

Photon Data H/U = 480.0 50% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	1.26E+00	1.86E-07	1.52E-07	1.58E-07
8.00E+00	2.35E+02	2.85E-05	2.48E-05	2.55E-05
6.50E+00	1.39E+03	1.42E-04	1.25E-04	1.29E-04
5.00E+00	2.14E+03	1.84E-04	1.65E-04	1.68E-04
4.00E+00	5.63E+03	4.03E-04	3.64E-04	3.70E-04
3.00E+00	5.84E+03	3.51E-04	3.24E-04	3.27E-04
2.50E+00	2.14E+04	1.11E-03	1.04E-03	1.05E-03
2.00E+00	1.01E+04	4.51E-04	4.26E-04	4.30E-04
1.66E+00	1.49E+04	5.77E-04	5.40E-04	5.44E-04
1.33E+00	2.27E+04	7.20E-04	6.79E-04	6.82E-04
1.00E+00	1.93E+04	4.96E-04	4.70E-04	4.71E-04
8.00E-01	2.70E+04	5.61E-04	5.25E-04	5.27E-04
6.00E-01	3.79E+04	5.78E-04	5.33E-04	5.33E-04
4.00E-01	2.36E+04	2.52E-04	2.30E-04	2.30E-04
3.00E-01	2.54E+04	1.88E-04	1.69E-04	1.69E-04
2.00E-01	2.21E+04	9.04E-05	8.01E-05	8.00E-05
1.00E-01	1.62E+04	3.51E-05	3.28E-05	3.38E-05
5.00E-02	4.18E+02	4.38E-06	4.04E-06	3.74E-06
1.00E-02	1.40E+01	0.00E+00	6.24E-07	0.00E+00
Total	2.56E+05	6.17E-03	5.73E-03	5.77E-03

Neutron Data H/U = 960.0 50% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	6.71E+01	1.90E-05	4.21E-06	4.09E-06
6.43E+00	3.91E+02	9.81E-05	2.47E-05	2.38E-05
3.00E+00	3.50E+02	6.76E-05	9.16E-06	8.65E-06
1.85E+00	1.90E+02	3.18E-05	3.79E-06	3.71E-06
1.40E+00	2.25E+02	3.30E-05	3.16E-06	3.22E-06
9.00E-01	3.28E+02	3.52E-05	2.83E-06	2.82E-06
4.00E-01	2.73E+02	1.77E-05	1.12E-06	1.10E-06
1.00E-01	1.95E+02	3.66E-06	2.48E-07	2.41E-07
1.70E-02	1.28E+02	5.53E-07	4.22E-08	4.03E-08
3.00E-03	1.18E+02	9.55E-08	2.57E-08	2.47E-08
5.50E-04	1.14E+02	1.68E-08	4.43E-08	4.18E-08
1.00E-04	7.68E+01	2.50E-09	6.01E-08	5.67E-08
3.00E-05	5.37E+01	5.48E-10	7.45E-08	7.01E-08
1.00E-05	7.77E+01	2.54E-10	1.83E-07	1.77E-07
3.05E-06	4.07E+01	5.38E-11	1.53E-07	1.45E-07
1.77E-06	2.01E+01	1.72E-11	9.41E-08	8.89E-08
1.30E-06	4.78E+00	3.24E-12	2.49E-08	2.36E-08
1.13E-06	7.90E+00	4.71E-12	4.40E-08	4.16E-08
1.00E-06	1.13E+01	5.67E-12	6.82E-08	6.43E-08
8.00E-07	3.52E+01	1.14E-11	2.66E-07	2.51E-07
4.00E-07	1.52E+01	3.08E-12	1.46E-07	1.37E-07
3.25E-07	2.41E+01	3.68E-12	2.70E-07	2.54E-07
2.25E-07	1.74E+02	1.46E-11	2.69E-06	2.56E-06
1.00E-07	4.18E+02	1.63E-11	9.08E-06	8.63E-06
5.00E-08	2.91E+02	6.44E-12	8.41E-06	7.87E-06
3.00E-08	2.87E+02	4.24E-12	1.01E-05	1.09E-05
1.00E-08	5.47E+01	1.98E-13	1.95E-06	3.74E-06
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	3.97E+03	3.07E-04	8.29E-05	8.28E-05

Photon Data H/U = 960.0 50% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	7.93E+01	9.60E-06	8.25E-06	8.48E-06
6.50E+00	3.07E+02	3.13E-05	2.77E-05	2.84E-05
5.00E+00	4.71E+02	4.05E-05	3.61E-05	3.68E-05
4.00E+00	1.25E+03	8.96E-05	8.12E-05	8.25E-05
3.00E+00	1.23E+03	7.40E-05	6.82E-05	6.90E-05
2.50E+00	6.07E+03	3.15E-04	2.93E-04	2.95E-04
2.00E+00	2.59E+03	1.15E-04	1.09E-04	1.10E-04
1.66E+00	3.43E+03	1.33E-04	1.24E-04	1.25E-04
1.33E+00	4.80E+03	1.53E-04	1.44E-04	1.45E-04
1.00E+00	4.00E+03	1.03E-04	9.75E-05	9.77E-05
8.00E-01	5.39E+03	1.12E-04	1.05E-04	1.05E-04
6.00E-01	7.71E+03	1.18E-04	1.09E-04	1.09E-04
4.00E-01	4.92E+03	5.25E-05	4.79E-05	4.78E-05
3.00E-01	6.31E+03	4.67E-05	4.15E-05	4.05E-05
2.00E-01	6.35E+03	2.60E-05	2.29E-05	2.27E-05
1.00E-01	5.26E+03	1.14E-05	1.05E-05	1.09E-05
5.00E-02	1.07E+02	1.12E-06	9.44E-07	8.57E-07
1.00E-02	9.40E-01	0.00E+00	4.20E-08	0.00E+00
Total	6.03E+04	1.43E-03	1.33E-03	1.33E-03

Neutron Data H/U = 1.0 85% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	7.51E+02	2.13E-04	4.71E-05	4.59E-05
6.43E+00	7.25E+03	1.82E-03	4.62E-04	4.48E-04
3.00E+00	9.45E+03	1.83E-03	2.48E-04	2.36E-04
1.85E+00	5.19E+03	8.68E-04	1.03E-04	1.01E-04
1.40E+00	6.72E+03	9.84E-04	9.12E-05	9.08E-05
9.00E-01	1.13E+04	1.21E-03	9.77E-05	9.65E-05
4.00E-01	8.67E+03	5.62E-04	3.51E-05	3.44E-05
1.00E-01	6.10E+03	1.14E-04	7.79E-06	7.56E-06
1.70E-02	3.36E+03	1.45E-05	1.19E-06	1.14E-06
3.00E-03	1.68E+03	1.36E-06	3.63E-07	3.39E-07
5.50E-04	5.43E+02	8.02E-08	1.99E-07	1.87E-07
1.00E-04	1.28E+02	4.16E-09	9.67E-08	9.26E-08
3.00E-05	5.97E+01	6.09E-10	7.84E-08	7.46E-08
1.00E-05	3.34E+01	1.09E-10	8.29E-08	7.83E-08
3.05E-06	1.06E+01	1.39E-11	3.87E-08	3.65E-08
1.77E-06	4.13E+00	3.51E-12	1.93E-08	1.82E-08
1.30E-06	2.54E+00	1.72E-12	1.31E-08	1.24E-08
1.13E-06	7.86E-01	4.68E-13	4.40E-09	4.16E-09
1.00E-06	7.97E-01	4.00E-13	4.82E-09	4.56E-09
8.00E-07	1.87E+00	6.04E-13	1.35E-08	1.28E-08
4.00E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3.25E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2.25E-07	1.99E-01	1.67E-14	2.49E-09	2.35E-09
1.00E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5.00E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3.00E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.00E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	6.13E+04	7.62E-03	1.09E-03	1.06E-03

Photon Data H/U = 1.0 85% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	3.10E+01	3.75E-06	3.24E-06	3.34E-06
6.50E+00	2.72E+02	2.77E-05	2.45E-05	2.51E-05
5.00E+00	4.88E+02	4.19E-05	3.74E-05	3.81E-05
4.00E+00	1.32E+03	9.45E-05	8.55E-05	8.64E-05
3.00E+00	1.41E+03	8.47E-05	7.80E-05	7.86E-05
2.50E+00	2.33E+03	1.21E-04	1.13E-04	1.14E-04
2.00E+00	2.34E+03	1.04E-04	9.86E-05	9.89E-05
1.66E+00	3.40E+03	1.31E-04	1.23E-04	1.22E-04
1.33E+00	4.36E+03	1.39E-04	1.31E-04	1.30E-04
1.00E+00	3.07E+03	7.90E-05	7.51E-05	7.33E-05
8.00E-01	3.36E+03	6.99E-05	6.58E-05	6.41E-05
6.00E-01	3.31E+03	5.05E-05	4.76E-05	4.55E-05
4.00E-01	9.34E+02	9.97E-06	9.28E-06	8.30E-06
3.00E-01	6.37E+02	4.71E-06	4.27E-06	3.74E-06
2.00E-01	4.66E+02	1.90E-06	1.65E-06	1.42E-06
1.00E-01	3.70E+02	8.02E-07	7.78E-07	6.66E-07
5.00E-02	2.45E+01	2.57E-07	1.90E-07	7.19E-08
1.00E-02	1.62E+00	0.00E+00	7.23E-08	0.00E+00
Total	2.81E+04	9.65E-04	8.99E-04	8.94E-04

Neutron Data H/U = 2.5 85% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	9.44E+02	2.67E-04	5.98E-05	5.85E-05
6.43E+00	8.64E+03	2.17E-03	5.49E-04	5.33E-04
3.00E+00	1.07E+04	2.07E-03	2.82E-04	2.68E-04
1.85E+00	5.78E+03	9.68E-04	1.15E-04	1.12E-04
1.40E+00	7.28E+03	1.07E-03	9.93E-05	9.91E-05
9.00E-01	1.13E+04	1.21E-03	9.72E-05	9.61E-05
4.00E-01	9.02E+03	5.84E-04	3.69E-05	3.62E-05
1.00E-01	6.09E+03	1.14E-04	7.70E-06	7.45E-06
1.70E-02	3.83E+03	1.65E-05	1.34E-06	1.28E-06
3.00E-03	2.56E+03	2.07E-06	5.58E-07	5.25E-07
5.50E-04	1.34E+03	1.97E-07	5.00E-07	4.67E-07
1.00E-04	4.38E+02	1.43E-08	3.30E-07	3.07E-07
3.00E-05	2.25E+02	2.30E-09	3.05E-07	2.90E-07
1.00E-05	1.56E+02	5.11E-10	3.82E-07	3.63E-07
3.05E-06	6.96E+01	9.18E-11	2.58E-07	2.40E-07
1.77E-06	3.36E+01	2.86E-11	1.57E-07	1.51E-07
1.30E-06	1.80E+01	1.22E-11	9.41E-08	1.04E-07
1.13E-06	5.12E+00	3.05E-12	2.84E-08	2.72E-08
1.00E-06	1.19E+01	5.96E-12	7.00E-08	6.94E-08
8.00E-07	2.66E+01	8.59E-12	1.97E-07	1.86E-07
4.00E-07	2.55E+00	5.16E-13	2.41E-08	2.30E-08
3.25E-07	1.60E+00	2.44E-13	1.74E-08	1.68E-08
2.25E-07	3.75E+00	3.15E-13	5.53E-08	5.27E-08
1.00E-07	1.02E+00	4.00E-14	2.05E-08	1.95E-08
5.00E-08	4.97E-01	1.10E-14	1.52E-08	1.45E-08
3.00E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.00E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	6.84E+04	8.46E-03	1.25E-03	1.21E-03

Photon Data H/U = 2.5 85% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	4.56E+01	5.56E-06	4.76E-06	4.89E-06
6.50E+00	4.82E+02	4.94E-05	4.33E-05	4.44E-05
5.00E+00	7.46E+02	6.45E-05	5.73E-05	5.85E-05
4.00E+00	2.12E+03	1.53E-04	1.37E-04	1.39E-04
3.00E+00	2.28E+03	1.38E-04	1.27E-04	1.27E-04
2.50E+00	3.71E+03	1.94E-04	1.80E-04	1.81E-04
2.00E+00	3.68E+03	1.65E-04	1.55E-04	1.55E-04
1.66E+00	5.40E+03	2.10E-04	1.95E-04	1.95E-04
1.33E+00	6.96E+03	2.23E-04	2.10E-04	2.07E-04
1.00E+00	5.05E+03	1.30E-04	1.23E-04	1.21E-04
8.00E-01	5.21E+03	1.09E-04	1.02E-04	9.92E-05
6.00E-01	5.24E+03	8.05E-05	7.57E-05	7.25E-05
4.00E-01	1.52E+03	1.63E-05	1.52E-05	1.39E-05
3.00E-01	1.00E+03	7.45E-06	6.63E-06	5.78E-06
2.00E-01	7.28E+02	3.00E-06	2.67E-06	2.37E-06
1.00E-01	6.19E+02	1.35E-06	1.29E-06	1.06E-06
5.00E-02	3.63E+01	3.84E-07	3.56E-07	1.69E-07
1.00E-02	2.83E+00	0.00E+00	1.26E-07	0.00E+00
Total	4.48E+04	1.55E-03	1.44E-03	1.43E-03

Neutron Data H/U = 5.0 85% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	9.69E+02	2.74E-04	6.18E-05	6.04E-05
6.43E+00	8.52E+03	2.14E-03	5.41E-04	5.25E-04
3.00E+00	1.03E+04	1.99E-03	2.72E-04	2.59E-04
1.85E+00	5.47E+03	9.16E-04	1.09E-04	1.06E-04
1.40E+00	6.87E+03	1.01E-03	9.39E-05	9.37E-05
9.00E-01	1.01E+04	1.08E-03	8.69E-05	8.59E-05
4.00E-01	8.25E+03	5.34E-04	3.39E-05	3.33E-05
1.00E-01	5.51E+03	1.03E-04	7.00E-06	6.78E-06
1.70E-02	3.78E+03	1.63E-05	1.31E-06	1.25E-06
3.00E-03	2.84E+03	2.30E-06	6.23E-07	5.86E-07
5.50E-04	1.94E+03	2.87E-07	7.43E-07	6.98E-07
1.00E-04	7.90E+02	2.58E-08	6.02E-07	5.71E-07
3.00E-05	4.80E+02	4.90E-09	6.59E-07	6.22E-07
1.00E-05	3.85E+02	1.26E-09	9.35E-07	8.82E-07
3.05E-06	1.49E+02	1.97E-10	5.58E-07	5.27E-07
1.77E-06	9.10E+01	7.76E-11	4.24E-07	4.01E-07
1.30E-06	2.28E+01	1.55E-11	1.19E-07	1.13E-07
1.13E-06	1.78E+01	1.06E-11	9.74E-08	9.24E-08
1.00E-06	3.96E+01	1.99E-11	2.40E-07	2.27E-07
8.00E-07	9.33E+01	3.02E-11	7.00E-07	6.61E-07
4.00E-07	1.33E+01	2.68E-12	1.28E-07	1.20E-07
3.25E-07	1.63E+01	2.48E-12	1.75E-07	1.65E-07
2.25E-07	2.04E+01	1.71E-12	2.85E-07	2.69E-07
1.00E-07	7.67E+00	3.00E-13	1.57E-07	1.48E-07
5.00E-08	1.44E+00	3.19E-14	4.11E-08	3.88E-08
3.00E-08	9.18E-01	1.36E-14	3.29E-08	3.36E-08
1.00E-08	1.43E-01	5.17E-16	5.20E-09	9.27E-09
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	6.66E+04	8.06E-03	1.21E-03	1.18E-03

Photon Data H/U = 5.0 85% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	7.96E+01	9.69E-06	8.38E-06	8.62E-06
6.50E+00	8.47E+02	8.69E-05	7.62E-05	7.82E-05
5.00E+00	1.27E+03	1.09E-04	9.73E-05	9.92E-05
4.00E+00	3.16E+03	2.28E-04	2.05E-04	2.07E-04
3.00E+00	3.32E+03	2.01E-04	1.84E-04	1.85E-04
2.50E+00	5.36E+03	2.80E-04	2.60E-04	2.61E-04
2.00E+00	5.31E+03	2.38E-04	2.23E-04	2.23E-04
1.66E+00	7.60E+03	2.96E-04	2.75E-04	2.75E-04
1.33E+00	1.03E+04	3.28E-04	3.09E-04	3.06E-04
1.00E+00	7.20E+03	1.86E-04	1.76E-04	1.73E-04
8.00E-01	7.92E+03	1.66E-04	1.55E-04	1.52E-04
6.00E-01	7.90E+03	1.21E-04	1.14E-04	1.09E-04
4.00E-01	2.17E+03	2.33E-05	2.16E-05	1.98E-05
3.00E-01	1.42E+03	1.06E-05	9.51E-06	8.35E-06
2.00E-01	9.40E+02	3.87E-06	3.43E-06	2.87E-06
1.00E-01	8.95E+02	1.95E-06	1.88E-06	1.54E-06
5.00E-02	4.54E+01	4.79E-07	4.72E-07	1.39E-07
1.00E-02	1.29E+00	0.00E+00	5.75E-08	0.00E+00
Total	6.57E+04	2.29E-03	2.12E-03	2.11E-03

Neutron Data H/U = 7.5 85% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	1.01E+03	2.87E-04	6.43E-05	6.32E-05
6.43E+00	8.59E+03	2.15E-03	5.45E-04	5.29E-04
3.00E+00	1.02E+04	1.97E-03	2.68E-04	2.56E-04
1.85E+00	5.35E+03	8.96E-04	1.06E-04	1.04E-04
1.40E+00	6.64E+03	9.71E-04	9.05E-05	9.03E-05
9.00E-01	9.67E+03	1.04E-03	8.33E-05	8.22E-05
4.00E-01	8.19E+03	5.31E-04	3.39E-05	3.33E-05
1.00E-01	5.34E+03	9.99E-05	6.77E-06	6.57E-06
1.70E-02	3.64E+03	1.57E-05	1.25E-06	1.20E-06
3.00E-03	2.90E+03	2.35E-06	6.37E-07	5.99E-07
5.50E-04	2.15E+03	3.17E-07	8.29E-07	7.80E-07
1.00E-04	1.01E+03	3.28E-08	7.73E-07	7.28E-07
3.00E-05	6.63E+02	6.76E-09	9.04E-07	8.55E-07
1.00E-05	5.43E+02	1.78E-09	1.35E-06	1.28E-06
3.05E-06	2.39E+02	3.15E-10	9.00E-07	8.41E-07
1.77E-06	1.23E+02	1.05E-10	5.70E-07	5.41E-07
1.30E-06	4.38E+01	2.97E-11	2.26E-07	2.09E-07
1.13E-06	3.39E+01	2.02E-11	1.88E-07	1.80E-07
1.00E-06	5.77E+01	2.90E-11	3.48E-07	3.30E-07
8.00E-07	1.58E+02	5.12E-11	1.19E-06	1.12E-06
4.00E-07	2.96E+01	5.99E-12	2.82E-07	2.59E-07
3.25E-07	4.10E+01	6.25E-12	4.53E-07	4.28E-07
2.25E-07	5.17E+01	4.34E-12	7.49E-07	7.14E-07
1.00E-07	2.05E+01	8.02E-13	4.29E-07	4.02E-07
5.00E-08	4.89E+00	1.08E-13	1.42E-07	1.23E-07
3.00E-08	3.02E+00	4.45E-14	1.04E-07	1.08E-07
1.00E-08	5.92E-01	2.14E-15	2.11E-08	8.28E-08
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	6.67E+04	7.96E-03	1.21E-03	1.18E-03

Photon Data H/U = 7.5 85% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	9.11E+01	1.11E-05	9.57E-06	9.84E-06
6.50E+00	1.01E+03	1.03E-04	9.04E-05	9.28E-05
5.00E+00	1.47E+03	1.27E-04	1.13E-04	1.15E-04
4.00E+00	4.04E+03	2.91E-04	2.61E-04	2.65E-04
3.00E+00	4.26E+03	2.58E-04	2.36E-04	2.39E-04
2.50E+00	6.61E+03	3.45E-04	3.20E-04	3.22E-04
2.00E+00	6.49E+03	2.91E-04	2.73E-04	2.73E-04
1.66E+00	9.30E+03	3.62E-04	3.37E-04	3.36E-04
1.33E+00	1.27E+04	4.08E-04	3.84E-04	3.81E-04
1.00E+00	9.29E+03	2.40E-04	2.27E-04	2.24E-04
8.00E-01	1.03E+04	2.15E-04	2.01E-04	1.97E-04
6.00E-01	1.04E+04	1.60E-04	1.50E-04	1.45E-04
4.00E-01	2.99E+03	3.21E-05	2.97E-05	2.77E-05
3.00E-01	1.90E+03	1.42E-05	1.27E-05	1.14E-05
2.00E-01	1.23E+03	5.05E-06	4.41E-06	3.75E-06
1.00E-01	1.04E+03	2.26E-06	2.18E-06	1.85E-06
5.00E-02	7.57E+01	7.99E-07	8.05E-07	3.67E-07
1.00E-02	2.54E+00	0.00E+00	1.13E-07	0.00E+00
Total	8.32E+04	2.87E-03	2.65E-03	2.64E-03

Neutron Data H/U = 15.0 85% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	1.03E+03	2.93E-04	6.57E-05	6.44E-05
6.43E+00	8.70E+03	2.18E-03	5.53E-04	5.36E-04
3.00E+00	9.98E+03	1.93E-03	2.64E-04	2.52E-04
1.85E+00	5.25E+03	8.79E-04	1.04E-04	1.02E-04
1.40E+00	6.42E+03	9.40E-04	8.78E-05	8.78E-05
9.00E-01	9.13E+03	9.81E-04	7.85E-05	7.77E-05
4.00E-01	7.83E+03	5.08E-04	3.24E-05	3.18E-05
1.00E-01	5.10E+03	9.55E-05	6.43E-06	6.25E-06
1.70E-02	3.57E+03	1.54E-05	1.22E-06	1.17E-06
3.00E-03	2.99E+03	2.42E-06	6.56E-07	6.15E-07
5.50E-04	2.46E+03	3.64E-07	9.60E-07	9.03E-07
1.00E-04	1.33E+03	4.34E-08	1.03E-06	9.78E-07
3.00E-05	9.44E+02	9.63E-09	1.31E-06	1.24E-06
1.00E-05	8.41E+02	2.76E-09	2.09E-06	1.98E-06
3.05E-06	4.10E+02	5.41E-10	1.54E-06	1.46E-06
1.77E-06	2.19E+02	1.86E-10	1.01E-06	9.62E-07
1.30E-06	9.53E+01	6.46E-11	4.94E-07	4.50E-07
1.13E-06	7.17E+01	4.27E-11	3.96E-07	3.80E-07
1.00E-06	1.19E+02	5.97E-11	7.18E-07	6.80E-07
8.00E-07	3.50E+02	1.13E-10	2.66E-06	2.50E-06
4.00E-07	7.08E+01	1.43E-11	6.74E-07	6.35E-07
3.25E-07	1.15E+02	1.76E-11	1.26E-06	1.19E-06
2.25E-07	1.92E+02	1.61E-11	2.79E-06	2.56E-06
1.00E-07	8.25E+01	3.23E-12	1.75E-06	1.65E-06
5.00E-08	3.13E+01	6.93E-13	9.06E-07	8.66E-07
3.00E-08	2.88E+01	4.25E-13	9.94E-07	1.01E-06
1.00E-08	2.82E+00	1.02E-14	1.00E-07	2.03E-07
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	6.74E+04	7.82E-03	1.21E-03	1.18E-03

Photon Data H/U = 15.0 85% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	2.67E-01	3.96E-08	3.39E-08	3.52E-08
8.00E+00	1.47E+02	1.79E-05	1.54E-05	1.59E-05
6.50E+00	1.45E+03	1.49E-04	1.31E-04	1.34E-04
5.00E+00	2.11E+03	1.82E-04	1.62E-04	1.65E-04
4.00E+00	5.52E+03	3.98E-04	3.57E-04	3.63E-04
3.00E+00	5.76E+03	3.49E-04	3.19E-04	3.22E-04
2.50E+00	9.13E+03	4.77E-04	4.42E-04	4.45E-04
2.00E+00	8.84E+03	3.96E-04	3.72E-04	3.73E-04
1.66E+00	1.32E+04	5.14E-04	4.78E-04	4.79E-04
1.33E+00	1.83E+04	5.84E-04	5.49E-04	5.48E-04
1.00E+00	1.38E+04	3.56E-04	3.36E-04	3.33E-04
8.00E-01	1.62E+04	3.39E-04	3.16E-04	3.13E-04
6.00E-01	1.71E+04	2.63E-04	2.45E-04	2.39E-04
4.00E-01	5.41E+03	5.81E-05	5.38E-05	5.14E-05
3.00E-01	3.39E+03	2.52E-05	2.28E-05	2.11E-05
2.00E-01	1.92E+03	7.92E-06	6.89E-06	5.98E-06
1.00E-01	1.73E+03	3.77E-06	3.64E-06	3.29E-06
5.00E-02	1.07E+02	1.13E-06	9.36E-07	4.38E-07
1.00E-02	6.63E+00	0.00E+00	2.96E-07	0.00E+00
Total	1.24E+05	4.12E-03	3.81E-03	3.81E-03

Neutron Data H/U = 30.0 85% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	1.08E+03	3.05E-04	6.87E-05	6.72E-05
6.43E+00	8.95E+03	2.25E-03	5.69E-04	5.52E-04
3.00E+00	1.01E+04	1.95E-03	2.67E-04	2.55E-04
1.85E+00	5.23E+03	8.75E-04	1.04E-04	1.01E-04
1.40E+00	6.46E+03	9.45E-04	8.83E-05	8.81E-05
9.00E-01	9.00E+03	9.66E-04	7.74E-05	7.64E-05
4.00E-01	7.85E+03	5.08E-04	3.25E-05	3.19E-05
1.00E-01	5.05E+03	9.45E-05	6.34E-06	6.15E-06
1.70E-02	3.58E+03	1.55E-05	1.23E-06	1.17E-06
3.00E-03	3.06E+03	2.48E-06	6.74E-07	6.33E-07
5.50E-04	2.67E+03	3.93E-07	1.05E-06	9.91E-07
1.00E-04	1.61E+03	5.26E-08	1.25E-06	1.18E-06
3.00E-05	1.26E+03	1.28E-08	1.75E-06	1.66E-06
1.00E-05	1.20E+03	3.92E-09	2.95E-06	2.74E-06
3.05E-06	5.45E+02	7.19E-10	2.05E-06	1.94E-06
1.77E-06	3.07E+02	2.62E-10	1.43E-06	1.35E-06
1.30E-06	1.38E+02	9.33E-11	7.14E-07	6.81E-07
1.13E-06	1.17E+02	6.96E-11	6.46E-07	5.89E-07
1.00E-06	2.06E+02	1.04E-10	1.25E-06	1.18E-06
8.00E-07	5.72E+02	1.85E-10	4.36E-06	4.13E-06
4.00E-07	1.58E+02	3.20E-11	1.51E-06	1.41E-06
3.25E-07	2.11E+02	3.22E-11	2.32E-06	2.18E-06
2.25E-07	4.63E+02	3.89E-11	6.81E-06	6.49E-06
1.00E-07	2.62E+02	1.02E-11	5.54E-06	5.26E-06
5.00E-08	1.21E+02	2.68E-12	3.46E-06	3.14E-06
3.00E-08	7.75E+01	1.14E-12	2.72E-06	2.92E-06
1.00E-08	1.02E+01	3.71E-14	3.65E-07	6.96E-07
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	7.02E+04	7.90E-03	1.26E-03	1.22E-03

Photon Data H/U = 30.0 85% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	1.97E+02	2.39E-05	2.07E-05	2.13E-05
6.50E+00	1.81E+03	1.86E-04	1.63E-04	1.67E-04
5.00E+00	2.64E+03	2.28E-04	2.03E-04	2.06E-04
4.00E+00	6.96E+03	5.01E-04	4.50E-04	4.57E-04
3.00E+00	7.11E+03	4.31E-04	3.94E-04	3.99E-04
2.50E+00	1.15E+04	5.98E-04	5.55E-04	5.59E-04
2.00E+00	1.11E+04	4.96E-04	4.65E-04	4.68E-04
1.66E+00	1.64E+04	6.40E-04	5.95E-04	5.98E-04
1.33E+00	2.41E+04	7.70E-04	7.23E-04	7.24E-04
1.00E+00	1.91E+04	4.93E-04	4.65E-04	4.64E-04
8.00E-01	2.39E+04	5.00E-04	4.66E-04	4.64E-04
6.00E-01	2.66E+04	4.09E-04	3.80E-04	3.76E-04
4.00E-01	9.80E+03	1.05E-04	9.71E-05	9.45E-05
3.00E-01	5.82E+03	4.33E-05	3.96E-05	3.78E-05
2.00E-01	3.65E+03	1.50E-05	1.32E-05	1.21E-05
1.00E-01	3.03E+03	6.61E-06	6.37E-06	5.99E-06
5.00E-02	1.44E+02	1.52E-06	1.45E-06	6.58E-07
1.00E-02	7.88E+00	0.00E+00	3.52E-07	0.00E+00
Total	1.74E+05	5.45E-03	5.04E-03	5.06E-03

Neutron Data H/U = 60.0 85% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	1.12E+03	3.16E-04	7.13E-05	6.98E-05
6.43E+00	8.91E+03	2.23E-03	5.66E-04	5.49E-04
3.00E+00	9.99E+03	1.93E-03	2.66E-04	2.53E-04
1.85E+00	5.17E+03	8.66E-04	1.03E-04	1.00E-04
1.40E+00	6.27E+03	9.18E-04	8.58E-05	8.55E-05
9.00E-01	8.91E+03	9.57E-04	7.68E-05	7.58E-05
4.00E-01	7.68E+03	4.97E-04	3.18E-05	3.13E-05
1.00E-01	5.01E+03	9.38E-05	6.30E-06	6.11E-06
1.70E-02	3.59E+03	1.55E-05	1.23E-06	1.17E-06
3.00E-03	2.99E+03	2.42E-06	6.56E-07	6.17E-07
5.50E-04	2.80E+03	4.14E-07	1.10E-06	1.03E-06
1.00E-04	1.74E+03	5.66E-08	1.35E-06	1.28E-06
3.00E-05	1.46E+03	1.49E-08	2.02E-06	1.91E-06
1.00E-05	1.47E+03	4.80E-09	3.64E-06	3.43E-06
3.05E-06	6.74E+02	8.90E-10	2.54E-06	2.37E-06
1.77E-06	4.24E+02	3.61E-10	1.97E-06	1.85E-06
1.30E-06	1.48E+02	1.00E-10	7.67E-07	7.28E-07
1.13E-06	1.38E+02	8.24E-11	7.66E-07	7.30E-07
1.00E-06	2.35E+02	1.18E-10	1.42E-06	1.34E-06
8.00E-07	7.36E+02	2.38E-10	5.63E-06	5.31E-06
4.00E-07	1.95E+02	3.93E-11	1.85E-06	1.75E-06
3.25E-07	3.49E+02	5.32E-11	3.84E-06	3.64E-06
2.25E-07	7.98E+02	6.70E-11	1.19E-05	1.13E-05
1.00E-07	6.55E+02	2.56E-11	1.40E-05	1.32E-05
5.00E-08	3.27E+02	7.24E-12	9.37E-06	8.86E-06
3.00E-08	2.93E+02	4.33E-12	1.03E-05	1.11E-05
1.00E-08	4.18E+01	1.51E-13	1.49E-06	3.18E-06
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	7.21E+04	7.83E-03	1.28E-03	1.25E-03

Photon Data H/U = 60.0 85% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	2.52E+02	3.06E-05	2.65E-05	2.72E-05
6.50E+00	2.04E+03	2.09E-04	1.84E-04	1.89E-04
5.00E+00	2.94E+03	2.54E-04	2.26E-04	2.30E-04
4.00E+00	7.72E+03	5.56E-04	4.99E-04	5.06E-04
3.00E+00	7.81E+03	4.73E-04	4.33E-04	4.38E-04
2.50E+00	1.33E+04	6.97E-04	6.46E-04	6.52E-04
2.00E+00	1.23E+04	5.52E-04	5.18E-04	5.22E-04
1.66E+00	1.89E+04	7.36E-04	6.84E-04	6.88E-04
1.33E+00	2.82E+04	9.01E-04	8.45E-04	8.48E-04
1.00E+00	2.31E+04	5.98E-04	5.63E-04	5.64E-04
8.00E-01	3.06E+04	6.41E-04	5.96E-04	5.96E-04
6.00E-01	3.67E+04	5.64E-04	5.22E-04	5.20E-04
4.00E-01	1.62E+04	1.74E-04	1.60E-04	1.58E-04
3.00E-01	1.07E+04	7.97E-05	7.25E-05	7.07E-05
2.00E-01	6.12E+03	2.52E-05	2.21E-05	2.11E-05
1.00E-01	5.28E+03	1.15E-05	1.11E-05	1.09E-05
5.00E-02	2.21E+02	2.33E-06	2.17E-06	1.32E-06
1.00E-02	7.45E+00	0.00E+00	3.33E-07	0.00E+00
Total	2.22E+05	6.50E-03	6.01E-03	6.04E-03

Neutron Data H/U = 120.0 85% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	1.21E+03	3.44E-04	7.75E-05	7.57E-05
6.43E+00	1.00E+04	2.51E-03	6.36E-04	6.16E-04
3.00E+00	1.11E+04	2.14E-03	2.93E-04	2.80E-04
1.85E+00	5.74E+03	9.61E-04	1.14E-04	1.11E-04
1.40E+00	7.07E+03	1.03E-03	9.65E-05	9.63E-05
9.00E-01	9.92E+03	1.07E-03	8.55E-05	8.45E-05
4.00E-01	8.59E+03	5.57E-04	3.55E-05	3.50E-05
1.00E-01	5.57E+03	1.04E-04	7.01E-06	6.81E-06
1.70E-02	3.99E+03	1.73E-05	1.37E-06	1.31E-06
3.00E-03	3.37E+03	2.73E-06	7.40E-07	6.93E-07
5.50E-04	3.14E+03	4.63E-07	1.24E-06	1.17E-06
1.00E-04	2.07E+03	6.75E-08	1.61E-06	1.53E-06
3.00E-05	1.70E+03	1.74E-08	2.36E-06	2.22E-06
1.00E-05	1.78E+03	5.84E-09	4.42E-06	4.16E-06
3.05E-06	8.39E+02	1.11E-09	3.16E-06	2.99E-06
1.77E-06	4.45E+02	3.79E-10	2.07E-06	1.96E-06
1.30E-06	2.07E+02	1.40E-10	1.07E-06	1.00E-06
1.13E-06	1.96E+02	1.17E-10	1.09E-06	1.00E-06
1.00E-06	3.07E+02	1.54E-10	1.86E-06	1.76E-06
8.00E-07	9.85E+02	3.18E-10	7.51E-06	7.08E-06
4.00E-07	2.67E+02	5.40E-11	2.54E-06	2.41E-06
3.25E-07	5.11E+02	7.80E-11	5.65E-06	5.27E-06
2.25E-07	1.33E+03	1.12E-10	2.01E-05	1.90E-05
1.00E-07	1.46E+03	5.71E-11	3.14E-05	2.96E-05
5.00E-08	8.21E+02	1.82E-11	2.36E-05	2.24E-05
3.00E-08	6.78E+02	1.00E-11	2.38E-05	2.59E-05
1.00E-08	1.09E+02	3.96E-13	3.89E-06	7.90E-06
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	8.34E+04	8.73E-03	1.48E-03	1.45E-03

Photon Data H/U = 120.0 85% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	5.76E-01	8.48E-08	7.12E-08	7.39E-08
8.00E+00	2.42E+02	2.93E-05	2.55E-05	2.62E-05
6.50E+00	1.95E+03	1.99E-04	1.76E-04	1.81E-04
5.00E+00	2.61E+03	2.24E-04	2.00E-04	2.04E-04
4.00E+00	7.21E+03	5.16E-04	4.66E-04	4.73E-04
3.00E+00	7.49E+03	4.51E-04	4.15E-04	4.20E-04
2.50E+00	1.39E+04	7.20E-04	6.72E-04	6.78E-04
2.00E+00	1.21E+04	5.37E-04	5.06E-04	5.11E-04
1.66E+00	1.86E+04	7.19E-04	6.72E-04	6.77E-04
1.33E+00	2.79E+04	8.86E-04	8.37E-04	8.41E-04
1.00E+00	2.33E+04	5.98E-04	5.67E-04	5.68E-04
8.00E-01	3.21E+04	6.67E-04	6.24E-04	6.26E-04
6.00E-01	4.16E+04	6.35E-04	5.89E-04	5.89E-04
4.00E-01	2.16E+04	2.31E-04	2.13E-04	2.12E-04
3.00E-01	1.69E+04	1.25E-04	1.14E-04	1.13E-04
2.00E-01	1.02E+04	4.18E-05	3.75E-05	3.68E-05
1.00E-01	8.39E+03	1.82E-05	1.75E-05	1.77E-05
5.00E-02	2.45E+02	2.57E-06	2.71E-06	2.07E-06
1.00E-02	7.97E+00	0.00E+00	3.56E-07	0.00E+00
Total	2.46E+05	6.60E-03	6.13E-03	6.18E-03

Neutron Data H/U = 240.0 85% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	1.12E+03	3.18E-04	7.17E-05	7.01E-05
6.43E+00	9.24E+03	2.32E-03	5.88E-04	5.69E-04
3.00E+00	1.01E+04	1.96E-03	2.68E-04	2.55E-04
1.85E+00	5.24E+03	8.77E-04	1.04E-04	1.01E-04
1.40E+00	6.44E+03	9.43E-04	8.79E-05	8.77E-05
9.00E-01	8.96E+03	9.62E-04	7.72E-05	7.65E-05
4.00E-01	7.85E+03	5.09E-04	3.25E-05	3.20E-05
1.00E-01	5.04E+03	9.43E-05	6.40E-06	6.20E-06
1.70E-02	3.57E+03	1.54E-05	1.22E-06	1.17E-06
3.00E-03	3.16E+03	2.56E-06	6.94E-07	6.51E-07
5.50E-04	2.93E+03	4.33E-07	1.16E-06	1.10E-06
1.00E-04	1.93E+03	6.30E-08	1.51E-06	1.43E-06
3.00E-05	1.68E+03	1.72E-08	2.34E-06	2.21E-06
1.00E-05	1.75E+03	5.73E-09	4.33E-06	4.10E-06
3.05E-06	7.90E+02	1.04E-09	2.97E-06	2.80E-06
1.77E-06	4.33E+02	3.69E-10	2.01E-06	1.90E-06
1.30E-06	2.05E+02	1.39E-10	1.07E-06	1.01E-06
1.13E-06	1.74E+02	1.04E-10	9.63E-07	8.70E-07
1.00E-06	3.11E+02	1.56E-10	1.88E-06	1.78E-06
8.00E-07	9.38E+02	3.03E-10	7.17E-06	6.77E-06
4.00E-07	2.64E+02	5.34E-11	2.52E-06	2.37E-06
3.25E-07	5.06E+02	7.71E-11	5.57E-06	5.26E-06
2.25E-07	1.73E+03	1.45E-10	2.64E-05	2.50E-05
1.00E-07	2.54E+03	9.92E-11	5.48E-05	5.18E-05
5.00E-08	1.50E+03	3.31E-11	4.32E-05	4.07E-05
3.00E-08	1.38E+03	2.04E-11	4.87E-05	5.33E-05
1.00E-08	2.37E+02	8.56E-13	8.42E-06	1.74E-05
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	8.00E+04	8.00E-03	1.45E-03	1.42E-03

Photon Data H/U = 240.0 85% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	3.38E-01	4.98E-08	4.40E-08	4.58E-08
8.00E+00	2.72E+02	3.30E-05	2.87E-05	2.96E-05
6.50E+00	1.77E+03	1.81E-04	1.60E-04	1.65E-04
5.00E+00	2.78E+03	2.39E-04	2.14E-04	2.18E-04
4.00E+00	6.89E+03	4.93E-04	4.46E-04	4.53E-04
3.00E+00	7.16E+03	4.31E-04	3.97E-04	4.02E-04
2.50E+00	1.58E+04	8.21E-04	7.65E-04	7.73E-04
2.00E+00	1.16E+04	5.18E-04	4.89E-04	4.93E-04
1.66E+00	1.82E+04	7.03E-04	6.57E-04	6.63E-04
1.33E+00	2.78E+04	8.82E-04	8.32E-04	8.36E-04
1.00E+00	2.34E+04	6.01E-04	5.69E-04	5.72E-04
8.00E-01	3.29E+04	6.85E-04	6.41E-04	6.43E-04
6.00E-01	4.36E+04	6.66E-04	6.17E-04	6.17E-04
4.00E-01	2.53E+04	2.70E-04	2.48E-04	2.48E-04
3.00E-01	2.42E+04	1.79E-04	1.62E-04	1.61E-04
2.00E-01	1.70E+04	6.96E-05	6.23E-05	6.20E-05
1.00E-01	1.31E+04	2.84E-05	2.70E-05	2.78E-05
5.00E-02	2.96E+02	3.10E-06	3.44E-06	2.86E-06
1.00E-02	2.21E+00	0.00E+00	9.87E-08	0.00E+00
Total	2.72E+05	6.80E-03	6.32E-03	6.37E-03

Neutron Data H/U = 480.0 85% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	9.45E+02	2.67E-04	5.97E-05	5.84E-05
6.43E+00	7.46E+03	1.87E-03	4.74E-04	4.60E-04
3.00E+00	8.39E+03	1.62E-03	2.23E-04	2.12E-04
1.85E+00	4.22E+03	7.06E-04	8.38E-05	8.14E-05
1.40E+00	5.22E+03	7.64E-04	7.17E-05	7.10E-05
9.00E-01	7.22E+03	7.76E-04	6.22E-05	6.15E-05
4.00E-01	6.32E+03	4.10E-04	2.64E-05	2.59E-05
1.00E-01	4.11E+03	7.68E-05	5.21E-06	5.08E-06
1.70E-02	2.93E+03	1.27E-05	1.01E-06	9.66E-07
3.00E-03	2.56E+03	2.08E-06	5.62E-07	5.28E-07
5.50E-04	2.40E+03	3.54E-07	9.49E-07	8.99E-07
1.00E-04	1.67E+03	5.43E-08	1.31E-06	1.23E-06
3.00E-05	1.44E+03	1.47E-08	2.01E-06	1.90E-06
1.00E-05	1.52E+03	4.97E-09	3.74E-06	3.55E-06
3.05E-06	6.86E+02	9.06E-10	2.58E-06	2.44E-06
1.77E-06	3.49E+02	2.97E-10	1.62E-06	1.54E-06
1.30E-06	1.90E+02	1.29E-10	9.80E-07	9.28E-07
1.13E-06	1.67E+02	9.94E-11	9.24E-07	8.78E-07
1.00E-06	3.11E+02	1.56E-10	1.87E-06	1.73E-06
8.00E-07	8.94E+02	2.89E-10	6.82E-06	6.38E-06
4.00E-07	2.60E+02	5.25E-11	2.48E-06	2.35E-06
3.25E-07	5.26E+02	8.02E-11	5.79E-06	5.41E-06
2.25E-07	2.06E+03	1.73E-10	3.17E-05	2.99E-05
1.00E-07	3.53E+03	1.38E-10	7.68E-05	7.22E-05
5.00E-08	2.36E+03	5.24E-11	6.81E-05	6.44E-05
3.00E-08	2.08E+03	3.08E-11	7.34E-05	8.02E-05
1.00E-08	3.66E+02	1.33E-12	1.30E-05	2.71E-05
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	7.02E+04	6.51E-03	1.30E-03	1.28E-03

Photon Data H/U = 480.0 85% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	2.70E+02	3.27E-05	2.86E-05	2.95E-05
6.50E+00	1.73E+03	1.77E-04	1.57E-04	1.61E-04
5.00E+00	2.45E+03	2.10E-04	1.88E-04	1.92E-04
4.00E+00	6.55E+03	4.69E-04	4.23E-04	4.30E-04
3.00E+00	6.66E+03	4.01E-04	3.69E-04	3.74E-04
2.50E+00	1.92E+04	9.94E-04	9.26E-04	9.36E-04
2.00E+00	1.10E+04	4.89E-04	4.62E-04	4.66E-04
1.66E+00	1.69E+04	6.56E-04	6.13E-04	6.18E-04
1.33E+00	2.59E+04	8.22E-04	7.75E-04	7.80E-04
1.00E+00	2.23E+04	5.74E-04	5.44E-04	5.46E-04
8.00E-01	3.14E+04	6.53E-04	6.10E-04	6.13E-04
6.00E-01	4.29E+04	6.55E-04	6.05E-04	6.06E-04
4.00E-01	2.68E+04	2.86E-04	2.62E-04	2.62E-04
3.00E-01	2.86E+04	2.12E-04	1.90E-04	1.89E-04
2.00E-01	2.53E+04	1.04E-04	9.19E-05	9.20E-05
1.00E-01	1.80E+04	3.91E-05	3.66E-05	3.81E-05
5.00E-02	4.07E+02	4.27E-06	4.45E-06	4.24E-06
1.00E-02	7.94E+00	0.00E+00	3.55E-07	0.00E+00
Total	2.86E+05	6.78E-03	6.29E-03	6.34E-03

Neutron Data H/U = 960.0 85% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	5.63E+02	1.60E-04	3.61E-05	3.53E-05
6.43E+00	4.47E+03	1.12E-03	2.83E-04	2.75E-04
3.00E+00	4.71E+03	9.10E-04	1.24E-04	1.19E-04
1.85E+00	2.42E+03	4.05E-04	4.79E-05	4.68E-05
1.40E+00	2.84E+03	4.15E-04	3.90E-05	3.91E-05
9.00E-01	3.92E+03	4.21E-04	3.37E-05	3.34E-05
4.00E-01	3.53E+03	2.29E-04	1.45E-05	1.43E-05
1.00E-01	2.37E+03	4.43E-05	2.95E-06	2.87E-06
1.70E-02	1.63E+03	7.04E-06	5.57E-07	5.29E-07
3.00E-03	1.49E+03	1.21E-06	3.28E-07	3.08E-07
5.50E-04	1.41E+03	2.08E-07	5.54E-07	5.22E-07
1.00E-04	1.01E+03	3.28E-08	7.98E-07	7.40E-07
3.00E-05	8.88E+02	9.06E-09	1.24E-06	1.18E-06
1.00E-05	8.89E+02	2.91E-09	2.19E-06	2.06E-06
3.05E-06	4.70E+02	6.21E-10	1.76E-06	1.63E-06
1.77E-06	2.25E+02	1.91E-10	1.04E-06	9.87E-07
1.30E-06	9.05E+01	6.13E-11	4.69E-07	4.44E-07
1.13E-06	8.24E+01	4.91E-11	4.55E-07	4.31E-07
1.00E-06	1.53E+02	7.68E-11	9.28E-07	8.77E-07
8.00E-07	5.35E+02	1.73E-10	4.11E-06	3.85E-06
4.00E-07	1.69E+02	3.42E-11	1.61E-06	1.52E-06
3.25E-07	3.22E+02	4.91E-11	3.57E-06	3.37E-06
2.25E-07	1.65E+03	1.38E-10	2.57E-05	2.43E-05
1.00E-07	3.48E+03	1.36E-10	7.57E-05	7.16E-05
5.00E-08	2.29E+03	5.07E-11	6.61E-05	6.27E-05
3.00E-08	2.07E+03	3.06E-11	7.30E-05	8.06E-05
1.00E-08	3.45E+02	1.25E-12	1.23E-05	2.46E-05
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	4.40E+04	3.71E-03	8.55E-04	8.48E-04

Photon Data H/U = 960.0 85% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	1.19E+00	1.75E-07	1.55E-07	1.62E-07
8.00E+00	2.31E+02	2.80E-05	2.44E-05	2.52E-05
6.50E+00	1.33E+03	1.35E-04	1.20E-04	1.23E-04
5.00E+00	2.09E+03	1.80E-04	1.61E-04	1.64E-04
4.00E+00	5.21E+03	3.73E-04	3.37E-04	3.42E-04
3.00E+00	5.40E+03	3.25E-04	2.99E-04	3.03E-04
2.50E+00	2.22E+04	1.15E-03	1.07E-03	1.08E-03
2.00E+00	9.61E+03	4.28E-04	4.04E-04	4.07E-04
1.66E+00	1.43E+04	5.55E-04	5.19E-04	5.23E-04
1.33E+00	2.15E+04	6.82E-04	6.44E-04	6.47E-04
1.00E+00	1.84E+04	4.74E-04	4.49E-04	4.51E-04
8.00E-01	2.57E+04	5.35E-04	5.00E-04	5.02E-04
6.00E-01	3.66E+04	5.59E-04	5.14E-04	5.15E-04
4.00E-01	2.40E+04	2.56E-04	2.34E-04	2.34E-04
3.00E-01	2.85E+04	2.10E-04	1.88E-04	1.88E-04
2.00E-01	3.26E+04	1.33E-04	1.17E-04	1.17E-04
1.00E-01	2.30E+04	4.99E-05	4.57E-05	4.77E-05
5.00E-02	6.97E+02	7.32E-06	5.12E-06	4.67E-06
1.00E-02	5.43E+00	0.00E+00	2.43E-07	0.00E+00
Total	2.71E+05	6.08E-03	5.63E-03	5.68E-03

Neutron Data H/U = 1.0 100% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	8.29E+02	2.35E-04	5.23E-05	5.09E-05
6.43E+00	7.95E+03	1.99E-03	5.07E-04	4.92E-04
3.00E+00	1.03E+04	2.00E-03	2.72E-04	2.59E-04
1.85E+00	5.79E+03	9.69E-04	1.15E-04	1.12E-04
1.40E+00	7.28E+03	1.07E-03	9.98E-05	9.96E-05
9.00E-01	1.18E+04	1.27E-03	1.02E-04	1.01E-04
4.00E-01	9.01E+03	5.84E-04	3.64E-05	3.58E-05
1.00E-01	6.14E+03	1.15E-04	7.87E-06	7.64E-06
1.70E-02	3.20E+03	1.38E-05	1.14E-06	1.09E-06
3.00E-03	1.53E+03	1.24E-06	3.30E-07	3.06E-07
5.50E-04	4.58E+02	6.76E-08	1.65E-07	1.56E-07
1.00E-04	1.16E+02	3.79E-09	8.62E-08	8.28E-08
3.00E-05	3.22E+01	3.29E-10	4.34E-08	4.09E-08
1.00E-05	2.55E+01	8.36E-11	6.40E-08	6.04E-08
3.05E-06	8.19E+00	1.08E-11	3.04E-08	2.87E-08
1.77E-06	3.98E+00	3.39E-12	1.83E-08	1.73E-08
1.30E-06	4.55E-01	3.08E-13	2.33E-09	2.20E-09
1.13E-06	3.98E-01	2.37E-13	2.21E-09	2.10E-09
1.00E-06	1.14E+00	5.71E-13	6.85E-09	6.47E-09
8.00E-07	2.24E+00	7.25E-13	1.68E-08	1.59E-08
4.00E-07	8.31E-01	1.68E-13	7.76E-09	7.32E-09
3.25E-07	1.18E-01	1.79E-14	1.20E-09	1.13E-09
2.25E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.00E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5.00E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3.00E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.00E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	6.45E+04	8.25E-03	1.19E-03	1.16E-03

Photon Data H/U = 1.0 100% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	3.61E-01	5.32E-08	4.58E-08	4.76E-08
8.00E+00	3.39E+01	4.10E-06	3.56E-06	3.66E-06
6.50E+00	3.04E+02	3.10E-05	2.74E-05	2.82E-05
5.00E+00	4.80E+02	4.12E-05	3.69E-05	3.76E-05
4.00E+00	1.40E+03	1.00E-04	9.07E-05	9.17E-05
3.00E+00	1.57E+03	9.43E-05	8.69E-05	8.76E-05
2.50E+00	2.48E+03	1.29E-04	1.20E-04	1.21E-04
2.00E+00	2.67E+03	1.19E-04	1.12E-04	1.12E-04
1.66E+00	3.74E+03	1.45E-04	1.35E-04	1.35E-04
1.33E+00	4.97E+03	1.58E-04	1.50E-04	1.48E-04
1.00E+00	3.50E+03	9.01E-05	8.57E-05	8.42E-05
8.00E-01	3.86E+03	8.04E-05	7.57E-05	7.38E-05
6.00E-01	3.61E+03	5.52E-05	5.19E-05	4.99E-05
4.00E-01	1.09E+03	1.17E-05	1.08E-05	1.00E-05
3.00E-01	6.88E+02	5.09E-06	4.63E-06	4.02E-06
2.00E-01	5.04E+02	2.06E-06	1.82E-06	1.54E-06
1.00E-01	4.29E+02	9.31E-07	8.96E-07	7.48E-07
5.00E-02	3.39E+01	3.56E-07	3.16E-07	1.69E-07
1.00E-02	4.19E-01	0.00E+00	1.87E-08	0.00E+00
Total	3.14E+04	1.07E-03	9.96E-04	9.89E-04

Neutron Data H/U = 2.5 100% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	1.02E+03	2.89E-04	6.45E-05	7.72E-10
6.43E+00	9.23E+03	2.32E-03	5.87E-04	5.70E-04
3.00E+00	1.15E+04	2.22E-03	3.03E-04	2.89E-04
1.85E+00	6.27E+03	1.05E-03	1.25E-04	1.21E-04
1.40E+00	7.89E+03	1.15E-03	1.07E-04	1.07E-04
9.00E-01	1.19E+04	1.28E-03	1.03E-04	1.02E-04
4.00E-01	9.43E+03	6.11E-04	3.86E-05	3.80E-05
1.00E-01	6.26E+03	1.17E-04	7.94E-06	7.70E-06
1.70E-02	3.84E+03	1.66E-05	1.34E-06	1.28E-06
3.00E-03	2.46E+03	1.99E-06	5.34E-07	5.01E-07
5.50E-04	1.18E+03	1.75E-07	4.43E-07	4.18E-07
1.00E-04	4.00E+02	1.30E-08	3.03E-07	2.87E-07
3.00E-05	1.84E+02	1.88E-09	2.49E-07	2.35E-07
1.00E-05	1.48E+02	4.84E-10	3.64E-07	3.44E-07
3.05E-06	5.44E+01	7.18E-11	2.05E-07	1.94E-07
1.77E-06	2.78E+01	2.37E-11	1.29E-07	1.22E-07
1.30E-06	8.79E+00	5.96E-12	4.55E-08	4.31E-08
1.13E-06	3.11E+00	1.85E-12	1.73E-08	1.64E-08
1.00E-06	8.19E+00	4.11E-12	4.96E-08	4.69E-08
8.00E-07	1.84E+01	5.96E-12	1.35E-07	1.28E-07
4.00E-07	3.29E+00	6.66E-13	3.10E-08	2.92E-08
3.25E-07	2.99E+00	4.55E-13	3.24E-08	3.06E-08
2.25E-07	1.93E+00	1.62E-13	2.84E-08	2.68E-08
1.00E-07	1.81E+00	7.09E-14	4.01E-08	3.78E-08
5.00E-08	4.02E-01	8.91E-15	1.22E-08	1.16E-08
3.00E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.00E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	7.19E+04	9.06E-03	1.34E-03	1.24E-03

Photon Data H/U = 2.5 100% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E-02	2.95E+00	0.00E+00	1.32E-07	0.00E+00
5.00E-02	6.43E+01	6.79E-07	6.24E-07	2.02E-07
1.00E-01	9.16E+02	2.00E-06	1.93E-06	1.61E-06
2.00E-01	1.06E+03	4.36E-06	3.87E-06	3.16E-06
3.00E-01	1.45E+03	1.08E-05	9.69E-06	8.65E-06
4.00E-01	2.39E+03	2.56E-05	2.37E-05	2.19E-05
6.00E-01	8.36E+03	1.28E-04	1.20E-04	1.16E-04
8.00E-01	8.32E+03	1.74E-04	1.63E-04	1.59E-04
1.00E+00	7.56E+03	1.96E-04	1.85E-04	1.82E-04
1.33E+00	1.08E+04	3.44E-04	3.23E-04	3.21E-04
1.66E+00	7.99E+03	3.11E-04	2.89E-04	2.89E-04
2.00E+00	5.44E+03	2.44E-04	2.29E-04	2.29E-04
2.50E+00	5.58E+03	2.91E-04	2.70E-04	2.72E-04
3.00E+00	3.53E+03	2.14E-04	1.96E-04	1.97E-04
4.00E+00	3.26E+03	2.35E-04	2.11E-04	2.14E-04
5.00E+00	1.25E+03	1.08E-04	9.59E-05	9.76E-05
6.50E+00	8.45E+02	8.67E-05	7.60E-05	7.80E-05
8.00E+00	7.83E+01	9.54E-06	8.27E-06	8.51E-06
1.00E+01	2.81E-01	4.16E-08	3.53E-08	3.67E-08
Total	6.88E+04	2.38E-03	2.21E-03	2.20E-03

Neutron Data H/U = 5.0 100% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	1.06E+03	3.01E-04	6.78E-05	6.62E-05
6.43E+00	9.22E+03	2.31E-03	5.86E-04	5.68E-04
3.00E+00	1.10E+04	2.13E-03	2.91E-04	2.78E-04
1.85E+00	5.82E+03	9.75E-04	1.16E-04	1.13E-04
1.40E+00	7.32E+03	1.07E-03	1.00E-04	9.99E-05
9.00E-01	1.07E+04	1.15E-03	9.20E-05	9.07E-05
4.00E-01	8.68E+03	5.62E-04	3.59E-05	3.52E-05
1.00E-01	5.68E+03	1.06E-04	7.18E-06	6.98E-06
1.70E-02	3.84E+03	1.66E-05	1.33E-06	1.27E-06
3.00E-03	2.79E+03	2.26E-06	6.10E-07	5.72E-07
5.50E-04	1.80E+03	2.66E-07	6.89E-07	6.49E-07
1.00E-04	7.10E+02	2.31E-08	5.37E-07	5.09E-07
3.00E-05	4.26E+02	4.34E-09	5.80E-07	5.45E-07
1.00E-05	3.52E+02	1.15E-09	8.57E-07	8.10E-07
3.05E-06	1.45E+02	1.91E-10	5.43E-07	5.14E-07
1.77E-06	7.65E+01	6.52E-11	3.55E-07	3.36E-07
1.30E-06	2.32E+01	1.58E-11	1.20E-07	1.14E-07
1.13E-06	1.86E+01	1.11E-11	1.03E-07	9.81E-08
1.00E-06	3.07E+01	1.54E-11	1.85E-07	1.74E-07
8.00E-07	6.77E+01	2.19E-11	5.01E-07	4.73E-07
4.00E-07	1.23E+01	2.48E-12	1.16E-07	1.09E-07
3.25E-07	1.23E+01	1.88E-12	1.36E-07	1.28E-07
2.25E-07	2.19E+01	1.84E-12	3.24E-07	3.07E-07
1.00E-07	6.16E+00	2.41E-13	1.27E-07	1.20E-07
5.00E-08	3.21E+00	7.10E-14	9.09E-08	8.75E-08
3.00E-08	5.46E-01	8.06E-15	1.90E-08	2.06E-08
1.00E-08	1.19E-01	4.29E-16	4.22E-09	6.64E-09
1.00E-11	0.00E+00	0.00E+00	0	0.00E+00
Total	6.98E+04	8.62E-03	1.30E-03	1.26E-03

Photon Data H/U = 5.0 100% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	2.81E-01	4.16E-08	3.53E-08	3.67E-08
8.00E+00	7.83E+01	9.54E-06	8.27E-06	8.51E-06
6.50E+00	8.45E+02	8.67E-05	7.60E-05	7.80E-05
5.00E+00	1.25E+03	1.08E-04	9.59E-05	9.76E-05
4.00E+00	3.26E+03	2.35E-04	2.11E-04	2.14E-04
3.00E+00	3.53E+03	2.14E-04	1.96E-04	1.97E-04
2.50E+00	5.58E+03	2.91E-04	2.70E-04	2.72E-04
2.00E+00	5.44E+03	2.44E-04	2.29E-04	2.29E-04
1.66E+00	7.99E+03	3.11E-04	2.89E-04	2.89E-04
1.33E+00	1.08E+04	3.44E-04	3.23E-04	3.21E-04
1.00E+00	7.56E+03	1.96E-04	1.85E-04	1.82E-04
8.00E-01	8.32E+03	1.74E-04	1.63E-04	1.59E-04
6.00E-01	8.36E+03	1.28E-04	1.20E-04	1.16E-04
4.00E-01	2.39E+03	2.56E-05	2.37E-05	2.19E-05
3.00E-01	1.45E+03	1.08E-05	9.69E-06	8.65E-06
2.00E-01	1.06E+03	4.36E-06	3.87E-06	3.16E-06
1.00E-01	9.16E+02	2.00E-06	1.93E-06	1.61E-06
5.00E-02	6.43E+01	6.79E-07	6.24E-07	2.02E-07
1.00E-02	2.95E+00	0.00E+00	1.32E-07	0.00E+00
Total	6.88E+04	2.38E-03	2.21E-03	2.20E-03

Neutron Data H/U = 7.5 100% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	1.10E+03	3.11E-04	6.97E-05	6.83E-05
6.43E+00	9.41E+03	2.36E-03	5.99E-04	5.81E-04
3.00E+00	1.11E+04	2.15E-03	2.94E-04	2.81E-04
1.85E+00	5.91E+03	9.89E-04	1.17E-04	1.15E-04
1.40E+00	7.37E+03	1.08E-03	1.01E-04	1.00E-04
9.00E-01	1.04E+04	1.12E-03	8.99E-05	8.87E-05
4.00E-01	8.70E+03	5.64E-04	3.58E-05	3.52E-05
1.00E-01	5.71E+03	1.07E-04	7.20E-06	7.01E-06
1.70E-02	3.90E+03	1.68E-05	1.35E-06	1.29E-06
3.00E-03	3.05E+03	2.47E-06	6.67E-07	6.22E-07
5.50E-04	2.13E+03	3.14E-07	8.19E-07	7.68E-07
1.00E-04	9.91E+02	3.23E-08	7.58E-07	7.20E-07
3.00E-05	6.16E+02	6.29E-09	8.48E-07	8.02E-07
1.00E-05	5.14E+02	1.68E-09	1.28E-06	1.21E-06
3.05E-06	2.25E+02	2.97E-10	8.41E-07	7.87E-07
1.77E-06	1.22E+02	1.04E-10	5.65E-07	5.31E-07
1.30E-06	4.38E+01	2.97E-11	2.27E-07	2.13E-07
1.13E-06	3.24E+01	1.93E-11	1.79E-07	1.71E-07
1.00E-06	5.87E+01	2.95E-11	3.54E-07	3.39E-07
8.00E-07	1.33E+02	4.31E-11	1.00E-06	9.43E-07
4.00E-07	2.59E+01	5.24E-12	2.47E-07	2.33E-07
3.25E-07	3.62E+01	5.52E-12	3.94E-07	3.73E-07
2.25E-07	4.34E+01	3.64E-12	6.31E-07	5.87E-07
1.00E-07	1.29E+01	5.05E-13	2.71E-07	2.52E-07
5.00E-08	3.66E+00	8.11E-14	1.01E-07	9.68E-08
3.00E-08	2.85E+00	4.21E-14	9.98E-08	1.11E-07
1.00E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	7.17E+04	8.70E-03	1.32E-03	1.29E-03

Photon Data H/U = 7.5 100% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	6.77E-01	1.00E-07	8.02E-08	8.31E-08
8.00E+00	1.01E+02	1.23E-05	1.07E-05	1.10E-05
6.50E+00	1.08E+03	1.11E-04	9.75E-05	1.00E-04
5.00E+00	1.61E+03	1.39E-04	1.23E-04	1.26E-04
4.00E+00	4.33E+03	3.12E-04	2.80E-04	2.84E-04
3.00E+00	4.48E+03	2.72E-04	2.49E-04	2.51E-04
2.50E+00	6.84E+03	3.57E-04	3.32E-04	3.34E-04
2.00E+00	6.90E+03	3.09E-04	2.90E-04	2.91E-04
1.66E+00	9.97E+03	3.88E-04	3.61E-04	3.61E-04
1.33E+00	1.35E+04	4.32E-04	4.06E-04	4.04E-04
1.00E+00	9.75E+03	2.52E-04	2.38E-04	2.35E-04
8.00E-01	1.10E+04	2.31E-04	2.16E-04	2.12E-04
6.00E-01	1.12E+04	1.71E-04	1.61E-04	1.55E-04
4.00E-01	3.28E+03	3.53E-05	3.26E-05	3.02E-05
3.00E-01	2.03E+03	1.51E-05	1.36E-05	1.24E-05
2.00E-01	1.24E+03	5.11E-06	4.49E-06	3.74E-06
1.00E-01	1.24E+03	2.70E-06	2.58E-06	2.17E-06
5.00E-02	7.35E+01	7.76E-07	6.79E-07	2.69E-07
1.00E-02	6.08E+00	0.00E+00	2.72E-07	0.00E+00
Total	8.86E+04	3.05E-03	2.82E-03	2.81E-03

Neutron Data H/U = 15.0 100% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	1.08E+03	3.05E-04	6.86E-05	6.64E-05
6.43E+00	9.16E+03	2.30E-03	5.82E-04	5.61E-04
3.00E+00	1.06E+04	2.06E-03	2.82E-04	2.68E-04
1.85E+00	5.57E+03	9.33E-04	1.11E-04	1.07E-04
1.40E+00	6.76E+03	9.89E-04	9.24E-05	9.28E-05
9.00E-01	9.62E+03	1.03E-03	8.29E-05	8.12E-05
4.00E-01	8.17E+03	5.29E-04	3.37E-05	3.33E-05
1.00E-01	5.29E+03	9.90E-05	6.68E-06	6.51E-06
1.70E-02	3.68E+03	1.59E-05	1.27E-06	1.22E-06
3.00E-03	3.10E+03	2.51E-06	6.82E-07	6.48E-07
5.50E-04	2.50E+03	3.69E-07	9.67E-07	8.78E-07
1.00E-04	1.34E+03	4.37E-08	1.04E-06	9.74E-07
3.00E-05	9.46E+02	9.65E-09	1.30E-06	1.22E-06
1.00E-05	8.92E+02	2.92E-09	2.20E-06	2.14E-06
3.05E-06	4.03E+02	5.32E-10	1.52E-06	1.51E-06
1.77E-06	2.22E+02	1.89E-10	1.03E-06	9.55E-07
1.30E-06	8.79E+01	5.96E-11	4.56E-07	4.44E-07
1.13E-06	6.10E+01	3.63E-11	3.37E-07	2.54E-07
1.00E-06	1.16E+02	5.84E-11	7.00E-07	6.72E-07
8.00E-07	4.06E-09	1.12E-10	2.62E-06	2.45E-06
4.00E-07	7.99E-10	1.37E-11	6.46E-07	5.75E-07
3.25E-07	1.11E-09	1.44E-11	1.03E-06	1.07E-06
2.25E-07	1.93E-09	1.38E-11	2.39E-06	2.23E-06
1.00E-07	8.05E-10	2.68E-12	1.44E-06	1.45E-06
5.00E-08	3.27E-10	6.15E-13	7.98E-07	7.27E-07
3.00E-08	1.43E-10	1.80E-13	4.26E-07	4.02E-07
1.00E-08	1.22E-11	3.76E-15	3.69E-08	1.06E-07
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	6.96E+04	8.26E-03	1.28E-03	1.24E-03

Photon Data H/U = 15.0 100% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	2.48E-01	3.67E-08	3.14E-08	3.27E-08
8.00E+00	1.64E+02	2.00E-05	1.72E-05	1.77E-05
6.50E+00	1.44E+03	1.48E-04	1.30E-04	1.33E-04
5.00E+00	2.13E+03	1.84E-04	1.64E-04	1.67E-04
4.00E+00	5.68E+03	4.09E-04	3.68E-04	3.73E-04
3.00E+00	5.77E+03	3.49E-04	3.20E-04	3.23E-04
2.50E+00	9.12E+03	4.76E-04	4.42E-04	4.45E-04
2.00E+00	9.04E+03	4.05E-04	3.80E-04	3.82E-04
1.66E+00	1.35E+04	5.27E-04	4.90E-04	4.92E-04
1.33E+00	1.91E+04	6.10E-04	5.73E-04	5.72E-04
1.00E+00	1.44E+04	3.71E-04	3.51E-04	3.48E-04
8.00E-01	1.68E+04	3.52E-04	3.29E-04	3.26E-04
6.00E-01	1.79E+04	2.74E-04	2.56E-04	2.51E-04
4.00E-01	5.73E+03	6.15E-05	5.69E-05	5.44E-05
3.00E-01	3.34E+03	2.49E-05	2.26E-05	2.09E-05
2.00E-01	2.03E+03	8.36E-06	7.31E-06	6.40E-06
1.00E-01	1.79E+03	3.90E-06	3.75E-06	3.37E-06
5.00E-02	1.16E+02	1.22E-06	1.17E-06	5.02E-07
1.00E-02	6.57E+00	0.00E+00	2.94E-07	0.00E+00
Total	1.28E+05	4.23E-03	3.91E-03	3.92E-03

Neutron Data H/U = 30.0 100% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	1.10E+03	3.12E-04	7.04E-05	6.85E-05
6.43E+00	9.29E+03	2.33E-03	5.91E-04	5.68E-04
3.00E+00	1.04E+04	2.01E-03	2.76E-04	2.62E-04
1.85E+00	5.53E+03	9.26E-04	1.10E-04	1.08E-04
1.40E+00	6.74E+03	9.86E-04	9.23E-05	9.04E-05
9.00E-01	9.26E+03	9.95E-04	7.97E-05	7.93E-05
4.00E-01	8.02E+03	5.19E-04	3.32E-05	3.30E-05
1.00E-01	5.29E+03	9.91E-05	6.70E-06	6.62E-06
1.70E-02	3.73E+03	1.61E-05	1.28E-06	1.21E-06
3.00E-03	3.10E+03	2.51E-06	6.82E-07	6.35E-07
5.50E-04	2.68E+03	3.95E-07	1.04E-06	9.85E-07
1.00E-04	1.60E+03	5.20E-08	1.24E-06	1.16E-06
3.00E-05	1.28E+03	1.30E-08	1.77E-06	1.66E-06
1.00E-05	1.18E+03	3.88E-09	2.94E-06	2.69E-06
3.05E-06	5.28E+02	6.97E-10	1.98E-06	1.81E-06
1.77E-06	2.93E+02	2.50E-10	1.37E-06	1.35E-06
1.30E-06	1.34E+02	9.10E-11	6.95E-07	6.46E-07
1.13E-06	1.14E+02	6.81E-11	6.32E-07	5.67E-07
1.00E-06	1.97E+02	9.89E-11	1.19E-06	1.13E-06
8.00E-07	5.51E+02	1.78E-10	4.18E-06	4.10E-06
4.00E-07	1.32E+02	2.66E-11	1.25E-06	1.21E-06
3.25E-07	1.95E+02	2.98E-11	2.15E-06	2.00E-06
2.25E-07	3.92E+02	3.29E-11	5.75E-06	5.57E-06
1.00E-07	2.44E+02	9.53E-12	5.17E-06	4.89E-06
5.00E-08	9.66E+01	2.14E-12	2.79E-06	2.84E-06
3.00E-08	6.54E+01	9.65E-13	2.30E-06	2.52E-06
1.00E-08	9.73E+00	3.52E-14	3.46E-07	6.16E-07
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	7.22E+04	8.20E-03	1.30E-03	1.25E-03

Photon Data H/U = 30.0 100% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	2.28E+02	2.78E-05	2.42E-05	2.47E-05
6.50E+00	1.78E+03	1.82E-04	1.60E-04	1.64E-04
5.00E+00	2.56E+03	2.22E-04	1.97E-04	2.00E-04
4.00E+00	7.00E+03	5.04E-04	4.53E-04	4.60E-04
3.00E+00	7.16E+03	4.34E-04	3.97E-04	4.02E-04
2.50E+00	1.15E+04	6.00E-04	5.57E-04	5.62E-04
2.00E+00	1.13E+04	5.07E-04	4.76E-04	4.79E-04
1.66E+00	1.71E+04	6.67E-04	6.20E-04	6.23E-04
1.33E+00	2.47E+04	7.90E-04	7.41E-04	7.42E-04
1.00E+00	1.95E+04	5.04E-04	4.75E-04	4.75E-04
8.00E-01	2.41E+04	5.05E-04	4.70E-04	4.68E-04
6.00E-01	2.72E+04	4.18E-04	3.89E-04	3.84E-04
4.00E-01	9.98E+03	1.07E-04	9.89E-05	9.64E-05
3.00E-01	6.19E+03	4.60E-05	4.18E-05	4.02E-05
2.00E-01	3.49E+03	1.44E-05	1.25E-05	1.10E-05
1.00E-01	3.10E+03	6.77E-06	6.51E-06	6.05E-06
5.00E-02	1.40E+02	1.48E-06	1.18E-06	6.91E-07
1.00E-02	6.92E+00	0.00E+00	3.09E-07	0.00E+00
Total	1.77E+05	5.54E-03	5.12E-03	5.14E-03

Neutron Data H/U = 60.0 100% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	1.15E+03	3.27E-04	7.38E-05	7.27E-05
6.43E+00	9.23E+03	2.32E-03	5.87E-04	5.74E-04
3.00E+00	1.03E+04	1.98E-03	2.72E-04	2.57E-04
1.85E+00	5.31E+03	8.88E-04	1.05E-04	1.03E-04
1.40E+00	6.51E+03	9.54E-04	8.92E-05	8.87E-05
9.00E-01	9.11E+03	9.78E-04	7.85E-05	7.78E-05
4.00E-01	7.95E+03	5.15E-04	3.30E-05	3.28E-05
1.00E-01	5.16E+03	9.65E-05	6.51E-06	6.34E-06
1.70E-02	3.61E+03	1.56E-05	1.24E-06	1.19E-06
3.00E-03	3.13E+03	2.53E-06	6.87E-07	6.27E-07
5.50E-04	2.85E+03	4.21E-07	1.12E-06	1.07E-06
1.00E-04	1.77E+03	5.77E-08	1.38E-06	1.28E-06
3.00E-05	1.42E+03	1.45E-08	1.98E-06	1.93E-06
1.00E-05	1.46E+03	4.78E-09	3.60E-06	3.39E-06
3.05E-06	6.57E+02	8.67E-10	2.47E-06	2.33E-06
1.77E-06	3.67E+02	3.13E-10	1.70E-06	1.62E-06
1.30E-06	1.67E+02	1.13E-10	8.64E-07	7.57E-07
1.13E-06	1.40E+02	8.37E-11	7.76E-07	7.40E-07
1.00E-06	2.59E+02	1.30E-10	1.57E-06	1.56E-06
8.00E-07	7.30E+02	2.36E-10	5.59E-06	5.07E-06
4.00E-07	2.13E+02	4.31E-11	2.04E-06	1.76E-06
3.25E-07	3.19E+02	4.86E-11	3.52E-06	3.11E-06
2.25E-07	7.32E+02	6.15E-11	1.09E-05	1.03E-05
1.00E-07	5.80E+02	2.27E-11	1.24E-05	1.14E-05
5.00E-08	2.64E+02	5.85E-12	7.64E-06	7.39E-06
3.00E-08	2.00E+02	2.95E-12	7.01E-06	7.48E-06
1.00E-08	2.56E+01	9.25E-14	9.09E-07	1.69E-06
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	7.36E+04	8.07E-03	1.31E-03	1.28E-03

Photon Data H/U = 60.0 100% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	1.21E+00	1.80E-07	1.42E-07	1.47E-07
8.00E+00	2.68E+02	3.27E-05	2.82E-05	2.90E-05
6.50E+00	2.03E+03	2.08E-04	1.83E-04	1.87E-04
5.00E+00	2.99E+03	2.59E-04	2.30E-04	2.34E-04
4.00E+00	7.75E+03	5.58E-04	5.01E-04	5.09E-04
3.00E+00	7.99E+03	4.84E-04	4.43E-04	4.49E-04
2.50E+00	1.32E+04	6.87E-04	6.37E-04	6.43E-04
2.00E+00	1.24E+04	5.58E-04	5.23E-04	5.27E-04
1.66E+00	1.91E+04	7.43E-04	6.90E-04	6.95E-04
1.33E+00	2.87E+04	9.16E-04	8.60E-04	8.62E-04
1.00E+00	2.35E+04	6.09E-04	5.74E-04	5.74E-04
8.00E-01	3.10E+04	6.49E-04	6.04E-04	6.04E-04
6.00E-01	3.73E+04	5.73E-04	5.30E-04	5.28E-04
4.00E-01	1.65E+04	1.78E-04	1.63E-04	1.62E-04
3.00E-01	1.06E+04	7.88E-05	7.17E-05	7.02E-05
2.00E-01	5.78E+03	2.38E-05	2.07E-05	2.00E-05
1.00E-01	5.27E+03	1.15E-05	1.11E-05	1.09E-05
5.00E-02	1.94E+02	2.04E-06	2.09E-06	1.48E-06
1.00E-02	9.99E+00	0.00E+00	4.46E-07	0.00E+00
Total	2.25E+05	6.57E-03	6.07E-03	6.11E-03

Neutron Data H/U = 120.0 100% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	1.28E+03	3.63E-04	8.17E-05	7.99E-05
6.43E+00	1.02E+04	2.57E-03	6.52E-04	6.32E-04
3.00E+00	1.13E+04	2.18E-03	3.00E-04	2.87E-04
1.85E+00	5.88E+03	9.85E-04	1.17E-04	1.14E-04
1.40E+00	7.25E+03	1.06E-03	9.92E-05	9.89E-05
9.00E-01	1.03E+04	1.11E-03	8.88E-05	8.77E-05
4.00E-01	8.89E+03	5.76E-04	3.71E-05	3.64E-05
1.00E-01	5.83E+03	1.09E-04	7.38E-06	7.18E-06
1.70E-02	3.99E+03	1.72E-05	1.37E-06	1.31E-06
3.00E-03	3.52E+03	2.85E-06	7.74E-07	7.25E-07
5.50E-04	3.21E+03	4.74E-07	1.26E-06	1.19E-06
1.00E-04	2.09E+03	6.80E-08	1.63E-06	1.53E-06
3.00E-05	1.71E+03	1.75E-08	2.38E-06	2.25E-06
1.00E-05	1.79E+03	5.87E-09	4.40E-06	4.14E-06
3.05E-06	7.91E+02	1.04E-09	2.98E-06	2.81E-06
1.77E-06	4.79E+02	4.08E-10	2.23E-06	2.11E-06
1.30E-06	1.92E+02	1.30E-10	9.95E-07	9.45E-07
1.13E-06	1.68E+02	1.00E-10	9.31E-07	8.76E-07
1.00E-06	3.17E+02	1.59E-10	1.92E-06	1.79E-06
8.00E-07	9.66E+02	3.12E-10	7.35E-06	6.91E-06
4.00E-07	2.74E+02	5.53E-11	2.61E-06	2.47E-06
3.25E-07	4.84E+02	7.38E-11	5.34E-06	5.07E-06
2.25E-07	1.29E+03	1.08E-10	1.95E-05	1.83E-05
1.00E-07	1.28E+03	5.03E-11	2.77E-05	2.63E-05
5.00E-08	7.14E+02	1.58E-11	2.05E-05	1.95E-05
3.00E-08	5.67E+02	8.37E-12	2.00E-05	2.19E-05
1.00E-08	1.04E+02	3.76E-13	3.70E-06	7.48E-06
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	8.49E+04	8.98E-03	1.51E-03	1.47E-03

Photon Data H/U = 120.0 100% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.00E+00	2.64E+02	3.20E-05	2.79E-05	2.87E-05
6.50E+00	1.98E+03	2.02E-04	1.79E-04	1.83E-04
5.00E+00	2.84E+03	2.44E-04	2.19E-04	2.23E-04
4.00E+00	7.33E+03	5.25E-04	4.74E-04	4.82E-04
3.00E+00	7.49E+03	4.51E-04	4.15E-04	4.21E-04
2.50E+00	1.35E+04	6.99E-04	6.52E-04	6.58E-04
2.00E+00	1.18E+04	5.27E-04	4.97E-04	5.01E-04
1.66E+00	1.86E+04	7.19E-04	6.72E-04	6.77E-04
1.33E+00	2.81E+04	8.93E-04	8.43E-04	8.47E-04
1.00E+00	2.33E+04	6.00E-04	5.68E-04	5.70E-04
8.00E-01	3.27E+04	6.81E-04	6.37E-04	6.39E-04
6.00E-01	4.17E+04	6.37E-04	5.91E-04	5.91E-04
4.00E-01	2.17E+04	2.31E-04	2.13E-04	2.13E-04
3.00E-01	1.73E+04	1.28E-04	1.17E-04	1.16E-04
2.00E-01	1.05E+04	4.31E-05	3.81E-05	3.73E-05
1.00E-01	8.38E+03	1.82E-05	1.75E-05	1.78E-05
5.00E-02	2.29E+02	2.41E-06	2.38E-06	1.91E-06
1.00E-02	8.67E+00	0.00E+00	3.87E-07	0.00E+00
Total	2.48E+05	6.63E-03	6.16E-03	6.21E-03

Neutron Data H/U = 240.0 100% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	1.16E+03	3.28E-04	7.43E-05	7.28E-05
6.43E+00	9.40E+03	2.36E-03	5.97E-04	5.80E-04
3.00E+00	1.06E+04	2.04E-03	2.81E-04	2.68E-04
1.85E+00	5.43E+03	9.09E-04	1.08E-04	1.05E-04
1.40E+00	6.65E+03	9.73E-04	9.14E-05	9.13E-05
9.00E-01	9.48E+03	1.02E-03	8.16E-05	8.06E-05
4.00E-01	8.21E+03	5.32E-04	3.40E-05	3.34E-05
1.00E-01	5.35E+03	1.00E-04	6.74E-06	6.56E-06
1.70E-02	3.75E+03	1.62E-05	1.28E-06	1.22E-06
3.00E-03	3.20E+03	2.59E-06	7.04E-07	6.59E-07
5.50E-04	3.04E+03	4.49E-07	1.19E-06	1.13E-06
1.00E-04	1.97E+03	6.42E-08	1.54E-06	1.45E-06
3.00E-05	1.75E+03	1.78E-08	2.43E-06	2.28E-06
1.00E-05	1.79E+03	5.87E-09	4.42E-06	4.17E-06
3.05E-06	7.97E+02	1.05E-09	3.01E-06	2.84E-06
1.77E-06	4.70E+02	4.00E-10	2.19E-06	2.07E-06
1.30E-06	2.06E+02	1.40E-10	1.07E-06	1.02E-06
1.13E-06	1.78E+02	1.06E-10	9.87E-07	9.37E-07
1.00E-06	3.10E+02	1.56E-10	1.87E-06	1.78E-06
8.00E-07	1.02E+03	3.28E-10	7.75E-06	7.30E-06
4.00E-07	3.03E+02	6.13E-11	2.90E-06	2.73E-06
3.25E-07	5.40E+02	8.23E-11	5.93E-06	5.60E-06
2.25E-07	1.66E+03	1.40E-10	2.53E-05	2.37E-05
1.00E-07	2.24E+03	8.78E-11	4.86E-05	4.61E-05
5.00E-08	1.38E+03	3.06E-11	3.98E-05	3.72E-05
3.00E-08	1.20E+03	1.77E-11	4.23E-05	4.66E-05
1.00E-08	2.07E+02	7.47E-13	7.35E-06	1.47E-05
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	8.23E+04	8.28E-03	1.47E-03	1.44E-03

Photon Data H/U = 240.0 100% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	1.15E+00	1.69E-07	1.37E-07	1.41E-07
8.00E+00	2.81E+02	3.40E-05	2.97E-05	3.05E-05
6.50E+00	1.81E+03	1.85E-04	1.63E-04	1.67E-04
5.00E+00	2.74E+03	2.35E-04	2.11E-04	2.15E-04
4.00E+00	6.96E+03	4.98E-04	4.50E-04	4.57E-04
3.00E+00	7.18E+03	4.32E-04	3.98E-04	4.03E-04
2.50E+00	1.55E+04	8.02E-04	7.48E-04	7.56E-04
2.00E+00	1.18E+04	5.26E-04	4.96E-04	5.01E-04
1.66E+00	1.84E+04	7.11E-04	6.65E-04	6.71E-04
1.33E+00	2.80E+04	8.89E-04	8.39E-04	8.43E-04
1.00E+00	2.40E+04	6.17E-04	5.85E-04	5.87E-04
8.00E-01	3.33E+04	6.93E-04	6.48E-04	6.50E-04
6.00E-01	4.44E+04	6.78E-04	6.27E-04	6.28E-04
4.00E-01	2.58E+04	2.75E-04	2.53E-04	2.52E-04
3.00E-01	2.45E+04	1.81E-04	1.64E-04	1.63E-04
2.00E-01	1.74E+04	7.12E-05	6.37E-05	6.36E-05
1.00E-01	1.30E+04	2.83E-05	2.69E-05	2.77E-05
5.00E-02	2.90E+02	3.04E-06	3.12E-06	2.83E-06
1.00E-02	8.51E+00	0.00E+00	3.80E-07	0.00E+00
Total	2.75E+05	6.86E-03	6.37E-03	6.42E-03

Neutron Data H/U = 480.0 100% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	1.01E+03	2.86E-04	6.47E-05	6.33E-05
6.43E+00	8.01E+03	2.01E-03	5.08E-04	4.93E-04
3.00E+00	8.88E+03	1.71E-03	2.35E-04	2.24E-04
1.85E+00	4.51E+03	7.56E-04	8.95E-05	8.75E-05
1.40E+00	5.50E+03	8.05E-04	7.52E-05	7.51E-05
9.00E-01	7.76E+03	8.33E-04	6.66E-05	6.59E-05
4.00E-01	6.87E+03	4.45E-04	2.87E-05	2.81E-05
1.00E-01	4.43E+03	8.29E-05	5.58E-06	5.42E-06
1.70E-02	3.06E+03	1.32E-05	1.05E-06	1.00E-06
3.00E-03	2.76E+03	2.24E-06	6.08E-07	5.70E-07
5.50E-04	2.62E+03	3.87E-07	1.03E-06	9.74E-07
1.00E-04	1.78E+03	5.78E-08	1.39E-06	1.31E-06
3.00E-05	1.56E+03	1.59E-08	2.18E-06	2.06E-06
1.00E-05	1.62E+03	5.32E-09	3.99E-06	3.79E-06
3.05E-06	7.55E+02	9.97E-10	2.84E-06	2.71E-06
1.77E-06	4.27E+02	3.64E-10	1.98E-06	1.88E-06
1.30E-06	1.74E+02	1.18E-10	9.04E-07	8.59E-07
1.13E-06	1.62E+02	9.64E-11	8.96E-07	8.50E-07
1.00E-06	3.19E+02	1.60E-10	1.93E-06	1.79E-06
8.00E-07	9.15E+02	2.96E-10	7.01E-06	6.61E-06
4.00E-07	2.70E+02	5.47E-11	2.58E-06	2.43E-06
3.25E-07	5.24E+02	7.99E-11	5.78E-06	5.53E-06
2.25E-07	1.98E+03	1.66E-10	3.04E-05	2.88E-05
1.00E-07	3.33E+03	1.30E-10	7.22E-05	6.82E-05
5.00E-08	2.21E+03	4.90E-11	6.37E-05	6.04E-05
3.00E-08	1.97E+03	2.91E-11	6.95E-05	7.65E-05
1.00E-08	3.41E+02	1.23E-12	1.21E-05	2.55E-05
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	7.38E+04	6.95E-03	1.36E-03	1.33E-03

Photon Data H/U = 480.0 100% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	9.28E-01	1.37E-07	1.12E-07	1.16E-07
8.00E+00	2.57E+02	3.12E-05	2.72E-05	2.79E-05
6.50E+00	1.74E+03	1.78E-04	1.57E-04	1.62E-04
5.00E+00	2.59E+03	2.22E-04	1.99E-04	2.03E-04
4.00E+00	6.62E+03	4.74E-04	4.27E-04	4.34E-04
3.00E+00	6.83E+03	4.11E-04	3.78E-04	3.83E-04
2.50E+00	1.84E+04	9.57E-04	8.92E-04	9.01E-04
2.00E+00	1.11E+04	4.94E-04	4.66E-04	4.70E-04
1.66E+00	1.76E+04	6.79E-04	6.36E-04	6.41E-04
1.33E+00	2.66E+04	8.46E-04	7.98E-04	8.02E-04
1.00E+00	2.27E+04	5.83E-04	5.52E-04	5.54E-04
8.00E-01	3.24E+04	6.75E-04	6.30E-04	6.33E-04
6.00E-01	4.37E+04	6.68E-04	6.16E-04	6.17E-04
4.00E-01	2.75E+04	2.94E-04	2.69E-04	2.69E-04
3.00E-01	2.94E+04	2.17E-04	1.95E-04	1.95E-04
2.00E-01	2.63E+04	1.08E-04	9.57E-05	9.58E-05
1.00E-01	1.83E+04	3.96E-05	3.71E-05	3.86E-05
5.00E-02	4.10E+02	4.30E-06	4.41E-06	4.04E-06
1.00E-02	8.52E+00	0.00E+00	3.81E-07	0.00E+00
Total	2.93E+05	6.88E-03	6.38E-03	6.43E-03

Neutron Data H/U = 960.0 100% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
2.00E+01	6.63E+02	1.88E-04	4.20E-05	4.08E-05
6.43E+00	5.28E+03	1.33E-03	3.36E-04	3.26E-04
3.00E+00	5.73E+03	1.11E-03	1.53E-04	1.46E-04
1.85E+00	2.91E+03	4.88E-04	5.78E-05	5.65E-05
1.40E+00	3.46E+03	5.07E-04	4.72E-05	4.70E-05
9.00E-01	4.76E+03	5.12E-04	4.10E-05	4.05E-05
4.00E-01	4.37E+03	2.83E-04	1.81E-05	1.77E-05
1.00E-01	2.87E+03	5.38E-05	3.62E-06	3.48E-06
1.70E-02	2.00E+03	8.64E-06	6.79E-07	6.45E-07
3.00E-03	1.87E+03	1.52E-06	4.12E-07	3.83E-07
5.50E-04	1.70E+03	2.50E-07	6.66E-07	6.28E-07
1.00E-04	1.21E+03	3.93E-08	9.46E-07	9.00E-07
3.00E-05	1.03E+03	1.05E-08	1.44E-06	1.36E-06
1.00E-05	1.18E+03	3.87E-09	2.91E-06	2.69E-06
3.05E-06	5.18E+02	6.83E-10	1.95E-06	1.84E-06
1.77E-06	3.02E+02	2.58E-10	1.40E-06	1.33E-06
1.30E-06	1.24E+02	8.38E-11	6.40E-07	6.09E-07
1.13E-06	1.00E+02	5.99E-11	5.58E-07	5.45E-07
1.00E-06	2.07E+02	1.04E-10	1.25E-06	1.18E-06
8.00E-07	5.96E+02	1.93E-10	4.53E-06	4.27E-06
4.00E-07	1.78E+02	3.60E-11	1.70E-06	1.60E-06
3.25E-07	3.52E+02	5.37E-11	3.87E-06	3.66E-06
2.25E-07	1.82E+03	1.53E-10	2.82E-05	2.66E-05
1.00E-07	3.79E+03	1.48E-10	8.26E-05	7.75E-05
5.00E-08	2.46E+03	5.44E-11	7.10E-05	6.66E-05
3.00E-08	2.26E+03	3.33E-11	7.95E-05	8.73E-05
1.00E-08	3.84E+02	1.39E-12	1.37E-05	2.72E-05
1.00E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	5.21E+04	4.47E-03	9.96E-04	9.85E-04

Photon Data H/U = 960.0 100% Enrichment

Maximum Energy (MeV)	Flux Spectrum (#/cm^2/sec/watt)	Henderson "Free in Air" (Rad/watt-min)	Kerma (Rad/watt-min)	MCNP Heating Response (Rad/watt-min)
1.00E+01	6.43E-01	9.47E-08	7.75E-08	8.03E-08
8.00E+00	2.44E+02	2.96E-05	2.57E-05	2.64E-05
6.50E+00	1.45E+03	1.48E-04	1.32E-04	1.35E-04
5.00E+00	2.25E+03	1.93E-04	1.73E-04	1.76E-04
4.00E+00	5.76E+03	4.12E-04	3.72E-04	3.77E-04
3.00E+00	5.91E+03	3.56E-04	3.27E-04	3.31E-04
2.50E+00	2.21E+04	1.14E-03	1.07E-03	1.08E-03
2.00E+00	1.04E+04	4.62E-04	4.37E-04	4.40E-04
1.66E+00	1.53E+04	5.94E-04	5.55E-04	5.60E-04
1.33E+00	2.32E+04	7.36E-04	6.95E-04	6.99E-04
1.00E+00	2.01E+04	5.18E-04	4.90E-04	4.92E-04
8.00E-01	2.77E+04	5.77E-04	5.39E-04	5.41E-04
6.00E-01	3.94E+04	6.02E-04	5.55E-04	5.56E-04
4.00E-01	2.64E+04	2.82E-04	2.58E-04	2.57E-04
3.00E-01	3.15E+04	2.33E-04	2.08E-04	2.08E-04
2.00E-01	3.47E+04	1.42E-04	1.25E-04	1.25E-04
1.00E-01	2.39E+04	5.19E-05	4.75E-05	5.01E-05
5.00E-02	6.79E+02	7.13E-06	5.09E-06	4.61E-06
1.00E-02	5.58E+00	0.00E+00	2.49E-07	0.00E+00
Total	2.91E+05	6.49E-03	6.01E-03	6.06E-03