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LOCKHEED MARTIN

PORTSMOUTH
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PLANT

Validation of Nuclear Criticality Safety Software and 27 Energy Group ENDF/B-IV Cross Sections

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NOTICE

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INTRODUCTION

The purpose of this validation is to provide Portsmouth Gaseous Diffusion Plant Nuclear Criticality Safety Personnel with confidence that the Lockheed Martin Nuclear Criticality Safety Software (NCSS) is valid for use in the analysis and subsequent evaluation of various plantsite activities involving enriched uranium.

This validation was patterned after a previous validation study documented in ORNL/CSD/TM-238 for the Y12CSG implementation of KENO V.a. The Y12CSG validation was considered an appropriate pattern to follow because the Y12CSG software was a forerunner to the current NCSS software and the range of experiments which were previously validated encompass the range of systems which might be encountered at Portsmouth. The validation was conducted using ENDF/B-IV 27 energy group cross sections with SCALE 4.1 and KENO V.a. All calculations were performed on the IBM-3090 located at the Oak Ridge National Laboratory in Oak Ridge, Tennessee, and consisted of activating 3 functional modules of the SCALE 4.1 package, o0o008 (BONAMI), o0o002 (NITAWL), and o0o009 (KENO V.a). The modules were accessed through the SCALE 4.1 control module CSAS25. The calculational sequence accessed two basic data libraries, a library of standard compositions (STDCOMP), and the 27 energy group master cross section library (NXS027). Specific data to uniquely identify accessed datasets is given in the table below.

Module Name	Creation Date	Dataset Name
o0o008 (BONAMI)	91.205	NCSS.ZAZ39461.BONAMI.V1R000.S000.LOAD
o0o002 (NITAWL)	91.345	NCSS.ZAZ39461.NITAWL.V1R000.S000.LOAD
o0o009 (KENO V.a)	92.010	NCSS.ZAZ39461.KENOVA.V1R000.S000.LOAD
CSAS25	92.014	NCSS.ZAZ39461.CSAS25.V1R000.S000.LOAD
STDCMP	8/19/91	NCSS.ZAZ39461.STDCMP.V1R000.DATA
NXS027	8/14/91	NCSS.ZAZ39461.NXS027.V1R000.DATA

Approximately 245 cases, consisting of 101 highly enriched ($>90\%$ U^{235}) and 144 low enriched ($<5\%$ U^{235}) cases were run. These cases consisted of various UO_2F_2 and $UO_2(NO_3)_2$ solution systems, oxide-water systems, metal-water systems, and several miscellaneous combinations of uranium and moderating materials. All of the executed cases have definite applicability to operations at the Portsmouth plant except the metal systems. Several metal systems were included for completeness to allow the

established area of applicability for the NCSS software at Portsmouth to be extended to include dry unmoderated systems with a hard neutron spectrum.

The data obtained from the calculations was tabulated and analyzed by NCS personnel at the Portsmouth plant in consultation with the statistical analysis section. The analysis concluded that for calculations of Portsmouth systems using the specified codes and systems covered by this validation, a maximum k_{eff} including 2σ of 0.9605 or lower shall be considered as subcritical to ensure a calculational margin of safety of 0.02.

CALCULATIONAL PROCEDURE

The CSAS25 calculational sequence allows simplified data input to the accessed functional modules BONAMI, NITAWL, and KENO V.a. It accesses the standard composition library to apply preset mixtures of materials available in the library, can calculate atomic densities for both mixtures and solutions, and in addition will generate the required input for the NITAWL module, allowing various options for treatment of the cross sections in the resonance regions for both homogenous and heterogenous systems to be used.

Following execution of the CSAS25 control module is the functional module BONAMI. The primary purpose of this module, when used with the 27 energy group cross section, as was done in this validation, is to read the master cross section library, select the required cross sections, and then write a smaller master library, unique to the problem under examination, for use by the NITAWL module.

The NITAWL functional module performs resonance region calculations on the selected cross sections for resonance absorbers based on the Nordheim Integral Transform method. Some flexibility is allowed to the analyst in selecting the method to be used for the treatment based on the specific problem. The specific treatment to be used is specified by the keywords INFHOMMEDIUM, LATTICECELL, and MULTIREGION in the problem input. With the infhommedium option, the entire fissile mixture is treated as if it were an infinite homogenous medium, while with the latticecell option, the fissile medium is treated as if it consisted of multiple repeated cells. The multiregion option is similar to the latticecell option, with the exception that the fissile medium is treated as if only a single lattice cell existed, with no repetition.

The major functional module of the CSAS25 sequence is the KENO V.a module. The major function of KENO V.a is to calculate the k_{eff} of a system. It is a substantial revision of KENO IV, however it differs in that KENO V.a now supports more extensive geometry features such as nested arrays, and 'holes' which allow the analyst to much more easily construct elaborate and detailed system geometries. As with any computer program, the more complicated and elaborate the system under examination, the more CPU time it can be expected to consume. To offset this potential effect, KENO V.a also supports many reflector options, such as mirror reflectors, differential albedo reflectors, and an automatic reflector which has the ability to use reflector region weighting functions which are based on one-dimensional adjoint calculations. The use of these options, typically not only reduces running time, but allows simplified input geometry to be used. In addition to these enhancements, KENO V.a now mixes its own cross sections, making the previously used ICE module unnecessary.

The 27 group cross section library used in this validation was created from a 218 group library developed from ENDF/B-IV data. Both the 27 energy group library and the 16 group Hansen-Roach library are popular for use at Portsmouth, but the 27 group library was chosen for this validation because the origins of the base data used to create it are better documented. The 27 energy group library has a fast group structure similar to the Hansen-Roach library with additional thermal groups, and was collapsed with weighting spectra used to generate the 218 group library.

VALIDATION DATABASE

As has been typical of past validation efforts, the weakest portion in this validation is the quality of the critical experiment database. The non-existence of a good quality assured database of critical experiments to validate software against is a problem that has been plaguing the criticality safety community for some time. In the interest of time and manpower, the starting database for this validation was taken from ORNL/CSD/TM-238, the authors of which allowed access to the original TM-238 input cases to alleviate the need to rekey the input data.

The TM-238 validation did not perform an in depth analysis of the critical experiments used unless a blatant abnormality presented itself, and neither will this validation. The authors of TM-238, during their in depth analysis of a few of the cases, discovered definite 'problems' with a few, and subsequently recommended that they be deleted from future validations. This validation study has excluded all those cases.

The input cases are broken down into six major groups, dependent on the specific fissile compound, the enrichment of the fissile isotope, system geometry, and in some cases reflector material.

Appendix B1 contains cases that were all at a U^{235} enrichment of 4.89% and were taken from reference section 2.0. These include experiments for homogenous single-unit criticals, both reflected and unreflected, as well as heterogenous uranium metal rods in water. The fissile compounds considered were UO_2F_2, U metal and U_3O_8. The moderating materials were water, sterotex, and UO_2F_2 solution.

Appendix B2 contains cases that were all at a U^{235} enrichment of 3.85% and were taken from reference section 3.0. The experiments represented in these cases are not formally documented at this time. These heterogenous systems consist of large diameter rods which are water moderated, and in some cases the rods have an internal hole which is also water moderated. The critical experiments were modeled in detail from descriptions in experimental logbooks Extensive detail was included in these calculations in order to thoroughly test the KENO V.a geometry package.

Appendix B3 contains cases that include some of the models from reference section 4.0 which were used for the validation of Y12CSG for the Oak Ridge Gaseous Diffusion Plant. The validation considered single-unit criticals, both reflected and unreflected, at several enrichments ranging from 1.4 to 4.98%. The first 29 cases consist of 25 UF_4-paraffin moderated systems and 4 UO_2F_2 solution systems at various moderation levels. The last 20 cases are models of 4.46% enriched damp oxide experiments conducted at Rocky Flats. These damp oxide cases test the codes ability to handle intermixed moderation as well as interstitially moderated systems.

The cases in Appendix B4 consist of highly enriched uranium experiments from reference section 2.0. These are UO_2F_2 and $UO_2(NO_3)_2$ solution systems at varying concentrations. Both single-unit and array systems under a variety of reflector conditions are included.

The cases in Appendix B5 include experiments from reference section 5.0 which were used for a validation of Y12CSG for the Y-12 plant. Hence identification numbers, assigned by Y-12 personnel are included in the case descriptions. These cases include both single-unit reflected and unreflected systems with uranium metal, uranium alloy, UO_2F_2 solution and $UO_2(NO_3)_2$ solutions. Extensive calculations were performed on arrays, including arrays of metal units with and without interstitial moderation, arrays of UO_2F_2 slab systems, and arrays of 5-liter containers filled with $UO_2(NO_3)_2$ solutions having varying

reflector thicknesses of paraffin and/or plexiglass.

Appendix B6 is comprised of data gathered during the "eta experiments" conducted at Y-12 around 1960 and documented in reference 6.0. These experiments were of $UO_2(NO_3)_2$ solutions in simple unreflected geometries. The systems were typically very dilute and occasionally included boron poisoning and a few U^{233} systems.

For ease of comparison, the appendix B numbers in this document correspond to the table numbers used in TM-238. Additionally, the TM-238 case numbers have been retained as well. Of the 258 cases executed to produce TM-238, 13 were excluded from this document; 5 from Table 4 of TM-238, and 8 from Table 5. These cases were excluded on the recommendation of the authors of TM-238 because there were either definite errors found in the modeling of the experiment, duplications of previous experiments, or in one case, not a model of a critical experiment at all.

The results obtained from each of the cases executed, along with a terse description of the model may be found in Appendixes B1 through B6. Additionally, the executed inputs are included in Appendixes E1 through E6.

STATISTICAL ANALYSIS AND VALIDATION RESULTS

When performing calculations to assess subcriticality, a limit must be established on k_{eff} to ensure that subcriticality is achieved. This limit is defined, for the purposes of this validation as k_{min}. In this validation, k_{min} is determined by a statistical analysis of the results of the calculated k_{eff}s of the benchmark experiments.

To determine the best method of performing an adequate statistical analysis of the data, consultation was held with the statistical analysis department at Portsmouth. A cursory review of the data revealed it to appear to approximate a normal distribution. If the data approximates a normal distribution then standard tabulated one-sided tolerance factors for normal distributions may be applied to calculate the minimum acceptable k_{eff} for the data, k_{min}.

The first step performed on the data was a calculation of the mean, median, and mode. In a perfectly normal distribution, these three values are equivalent. The mean may be calculated from

$$\bar{x} = \frac{1}{N}\sum_{i=1}^{N} x_i$$

and is simply the arithmetic average.

The median is that value where an equivalent number of values fall both above and below it. In the case of ungrouped data, sorted in ascending order, the value of the median may be taken to be the value of the (N+1)/2th item for odd N; for even N it is customarily taken as the arithmetic average of the (N/2)th item and the (N/2 +1)th item.

The mode is defined as that value in a distribution about which the values are most heavily concentrated, and may be calculated by the empirical relation:

$$Mode = \bar{x} - \sigma\left[\frac{\sqrt{\beta_1}(\beta_2+3)}{2(5\beta_2-6\beta_1-9)}\right]$$

where:

σ	= standard deviation about the mean
$\sqrt{\beta_1}$	= coefficient of skewness
β_2	= coefficient of kurtosis

To calculate $\sqrt{\beta_1}$, the coefficient of skewness, and β_2 the coefficient of kurtosis, it is first necessary to calculate the 2nd, 3rd and 4th moments about the mean.

$$M_r = \frac{1}{N}\Sigma\,(x_i - \bar{x})^r$$

$$r = 2,3,4$$

where:

M_r = r^{th} moment about the mean

Once M_2, M_3, and M_4 are obtained,

$$\sqrt{\beta_1}=\frac{M_3}{M_2^{3/2}} \qquad \beta_2=\frac{M_4}{M_2^2}$$

A convenient way at this point to calculate σ, the standard deviation is

$$\sigma=\sqrt{M_2}$$

For our data, by the above equation the following values were obtained as moments about the mean.

$$M_2 = 1.33698 \times 10^{-4}$$
$$M_3 = 6.46422 \times 10^{-7}$$
$$M_4 = 7.50532 \times 10^{-8}$$

The mean was then calculated as

$$\bar{x}=1.000445183$$

with

$$\sigma = k_\sigma = \sqrt{M_2} = 0.011563$$

The skewness and kurtosis coefficients were respectively

$$\sqrt{\beta_1} = 0.41815 \quad \text{and} \quad \beta_2 = 4.19874.$$

The median was 0.99975, and the mode, calculated from the above equation as 0.9989.

Neither the mode, median, or mean are significantly different from each other, as would be expected from normally distributed data.

The skewness coefficient, a measure of the degree of symmetry in a distribution, for a perfectly normal distribution (i.e., or one perfectly symmetric about the mean) would be 0.0. The kurtosis coefficient, a measure of the peakedness in a distribution, for a perfectly normal distribution would be 3.0. The value obtained for this analysis 0.41814 and 4.19874 for the skewness and kurtosis coefficient respectively are sufficiently close to those expected from a perfectly normal distribution that it can be considered normally distributed data.

An outlier rejection test was performed, and a few statistically significant outliers were noted. The KENO inputs for these cases were double checked against what was run in TM-238, and the resulting k_{eff} values were checked also. Everything was found to be in agreement and the outliers were retained in the data.

It should be noted that the kurtosis coefficient is highly sensitive to the presence of outliers.

Therefore, once a resolution on the outlier cases is obtained, the kurtosis coefficient could be expected

to improve. It should also be noted that when calculated formally, a tedious process, that the mode of a given set of data is unaffected by the presence of outliers, but when calculated with the given empirical relation, will be affected somewhat by their presence, because the relation is primarily a function of the skewness coefficient and the kurtosis coefficient.

The one-sided tolerance limit for a normal distribution was used to determine the k_{min} to be applied to the NCSS system. For a one-sided tolerance limit for a normal distribution, criticality safety personnel are only interested in estimating a value above which a proportion P will lie to a certain confidence level. The value of k_{min} is then established from:

$$k_{\min} = \bar{k} - K^* \sigma$$

where K^* is the tolerance factor. The calculation for K^* is shown in Appendix A. For 95% confidence that 99.9% of the k_{eff} values calculated in future calculations will fall above k_{min} is $K^* = 3.36136$. Therefore:

$$k_{min} = 1.0004452 - 3.36136\ (0.011563)$$

$$k_{min} = 0.9616$$

In general terms, a *bias* is a measure of the disagreement between the calculated results and experimental data. In the case of a validation, the bias is the deviation of the calculated values of k_{eff} from unity (Reference 14). Since the average k_{eff} was greater than unity, for conservatism, the absolute value of the difference will be used as the bias, as follows:

$$k_b = |1 - \bar{k}|$$

which gives $k_b = 0.000445$.

The lower one-sided tolerance limit alone cannot determine a margin of subcriticality. Another statistical value, k_m, is calculated using the 95 percent confidence interval. The incorporation of the 1.645 multiplier corresponds to the 95 percent confidence interval for a normal distribution (Reference 15). The resulting equation for k_m follows:

$$k_m = 1 - 0.000445 - 1.645\ (0.011563) = 0.9805$$

The margin of subcriticality (m) can then be calculated based on the following relationship (Reference 16).

$$m = k_m - k_{\min} = 0.0189$$

The margin of subcriticality for calculations based on this validation is 0.0189. To ensure a margin of subcriticality of 0.02, k_{min} is established as 0.9605.

EXTENSION TO THE K-25 IBM3090

During the final stages of performing calculations for this validation, personnel at PORTS were notified that the computer used to perform all calculations was scheduled to be permanently shut down in the near future. To alleviate the need to perform subsequent validation calculations on a new machine, it was decided that a portion of the required cases would be submitted for processing on the K-25 IBM3090. Approximately 10% of the inputs were chosen at random. In all cases, the exact same random number sequence was obtained, giving identical results to those obtained on IBM3090 located at X-10.

Therefore, the NCSS software, using the ENDF/B-IV 27 group cross sections is considered valid for use by NCS personnel on the K-25 IBM3090 as well as the X-10 IBM3090.

AREA OF APPLICABILITY

It is considered by NCS personnel that this validation covers a vast majority of the various fissile systems found at Portsmouth, and that it is appropriate to use NCSS to analyze them. The different types of low enriched systems include uranium metal at enrichments of 3.85% and 4.89%, H_2O moderated and reflected; U_3O_8 stereotex blocks at 4.89%, both H_2O reflected and unreflected; UO_2F_2 solutions at 4.89% enriched, with U^{235} densities ranging from approximately 22.1 to 42.5 gU^{235}/l; and UF_4(paraffin) systems at enrichments from 1.4% to 3%, H/X ratios from 133 to 971, reflected and unreflected, to simulate UF_6. The highly enriched systems included UO_2F_2 solutions at about 93%, with H/X ratios from approximately 76 to 1379, both reflected and unreflected; $UO_2(NO_3)_2$ solutions at enrichments of 93.2% with uranium densities ranging from approximately 55 to 364 gU/l, reflected and unreflected; and uranium metal systems between 93% and 97%, unreflected. A parameterization scheme covering basic system properties such as the average energy group causing fission (AEG), enrichment level, reflector condition, overall system geometry, fuel mixture, etc., was developed and applied to the 245 cases executed. This data may be found in Appendix D and may be used in conjunction with the ranges given above to assist the analyst in determining if a particular system undergoing examination falls within the established area of applicability for this validation.

The degree of confidence that can be placed on a calculation when interpolating between experimental data points is typically much higher than can be placed on an extrapolation. The same statement can be made for using calculated data from a computer code validated against experimental data. Prior to applying the minimum k_{eff} criteria calculated in this report, the user should verify that the system they are analyzing falls within the established area of applicability for this validation. If it does not, then the minimum k_{eff} that will be applied should be lowered accordingly. Without specific information on a system, a recommendation as to how much reduction might be required cannot be made, however Appendix C examines the data segregated into various groups rather than as a collective, and can assist in this determination. The statistical analysis applied in Appendix C takes advantage of the fact that different classes of systems have different overall biases, for example one type of system might on the average be biased 1% high while another type might be biased 1.3% low. Clearly, segregating these systems prior to applying a statistical analysis will yield more acceptable results.

In addition to verifying that the system being analyzed falls within the established area of applicability for this validation, the user should also assure themselves that the geometry options they intend to use have been verified by their use at some point in the validation. The 245 cases ran exercised the majority of KENO V.a's geometry options, but do not necessarily exercise all of them. In reference 12.0, NCS personnel at the Paducah Gaseous Diffusion Plant demonstrated that some of the techniques used to reduce running time, such as explicit use of bias, replicate, reflector, and albedos, do not adversely affect the calculated result. This was verified by modeling identical experiments in a variety of ways, and then

comparing the results. Also, one of the 'convenience' options in KENO V.a, the use of holes, was verified to not adversely affect calculated results, though the use of holes does tend to substantially increase running time.

CONCLUSIONS

The results of this validation indicate that the NCSS software may be used with confidence for criticality calculations at the Portsmouth Gaseous Diffusion Plant. The validation of NCSS on the IBM 3090 at ORNL was extended to include NCSS on the IBM 3090 at K-25. The results of this validation indicate that the NCSS software may be used with confidence for criticality calculations at the Portsmouth Gaseous Diffusion Plant. For calculations of Portsmouth systems using the specified codes and systems covered by this validation, a maximum k_{eff} including 2σ of 0.9605 or lower shall be considered as subcritical to ensure a calculational margin of safety of 0.02.

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Appendix A: Calculation of K^*

Due to the rather large value of n for this problem, the one-sided tolerance limit K^* was calculated by a method detailed in reference 10.0 from the equation given below.

$$K^*(n, 1-\alpha, P) = \frac{Z_p + \sqrt{Z_p^2 - ab}}{a}$$

where:

$$a = 1 - \frac{Z_{1-\alpha}^2}{2(n-1)} \qquad b = Z_p^2 - \frac{Z_{1-\alpha}^2}{n}$$

Z_p and $Z_{1-\alpha}$ may be found from the equation

$$X = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{Z_X} e^{-\frac{1}{2}u^2} du$$

either numerically or from tables found in most statistics texts.

For this case, n = 245, $1-\alpha = 0.95$, and P = 0.999, the following values are obtained;

$Z_{1-\alpha} = 1.64485$, $Z_p = 3.09$, a = 0.99446, and b = 9.53706, which gives $K^* = 3.36136$.

Appendix B1: Table 1 Results

PORTS Case #	TM-238 Case #	Experiment Description	$k_{eff} \pm \sigma$
001	CAA01	Experiment 1A. 401-4.89% U rods, 0.762-cm diam, 30-cm long, 1.3-cm pitch, H_2O moderated and reflected	0.9940 ± 0.0034
002	CAA02	Experiment 4B. 400-4.89% U rods, 0.762-cm diam, 30-cm long, 1.3-cm pitch, H_2O moderated and reflected	0.9922 ± 0.0031
003	CAA03	Experiment 11A. 240-4.89% U rods, 0.762-cm diam, 30-cm long, 1.3-cm pitch, H_2O moderated and reflected	0.9913 ± 0.0037
004	CAA04	Experiment 6A. 203-4.89% U rods, 0.762-cm diam, 30-cm long, 2.05-cm pitch, H_2O moderated and reflected	1.0011 ± 0.0037
005	CAA05	Experiment 8C. 400-4.89% U rods, 0.762-cm diam, 30-cm long, 2.05-cm pitch, H_2O moderated and reflected	0.9869 ± 0.0032
006	CAA06	Experiment 14A. 398-4.89% U rods, 0.762-cm diam, 30-cm long, 1.3-cm pitch, H_2O moderated, H_2O top reflector, Plexiglas bottom reflector, bottom reflector, Pb reflected 1 face	0.9959 ± 0.0035
007	CAA07	Experiment 23B. 400-4.89% U rods, 0.762-cm diam, 30-cm long, 1.3-cm pitch, H_2O moderated, H_2O top reflector, Plexiglas bottom reflector, Pb reflected 4 faces	0.9937 ± 0.0034
008	CAA08	Experiment 26A. 215-4.89% U rods, 0.762-cm diam, 30-cm long, 1.3-cm pitch, H_2O moderated, H_2O top reflector, Plexiglas bottom reflector, Pb reflected 4 faces	0.9941 ± 0.0030
009	CAA09	Experiment 28A. 255-4.89% U rods, 0.762-cm diam, 30-cm long, 1.3-cm pitch, H_2O moderated, H_2O top	1.0024 ± 0.0036

		reflector, Plexiglas bottom reflector, Pb reflected 4 faces, SS in center	
010	CAA10	Experiment 30C. 494-4.89% U rods, 0.762-cm diam, 30-cm long, 1.3-cm pitch, H_2O moderated, H_2O top reflector, Plexiglas bottom reflector, Pb reflected 4 faces, boral in row 6	1.0013 ± 0.0030
011	CAA11	Experiment 31C. 494-4.89% U rods, 0.762-cm diam, 30-cm long, 1.3-cm pitch, H_2O moderated, H_2O top reflector, Plexiglas bottom reflector Pb reflected 4 faces, Cd in row 6	0.9977 ± 0.0035
012	CAA12	Experiment 32S. 11 x 12 array of 4.89% U rods in ~300 g U/1 UO_2F_2 solution, 0.762-cm diam, 2.05-cm pitch, in 95.88-cm-diam tank	0.9806 ± 0.0026
013	CAA13	Experiment 33S. 9 x 10 array of 4.89% U rods in ~300 g U/1 UO_2F_2 solution, 0.762-cm diam, 2.05-cm pitch, in 95.88-cm-diam tank	0.9952 ± 0.0023
014	CAA14	Experiment 36S. 9 x 10 array of 4.89% U rods in ~300 g U/1 UO_2F_2 solution, 0.762-cm-diam, 3.25-cm pitch, in 95.88-cm-diam tank	0.9954 ± 0.0021
015	CAA15	Experiment 40S. 6 x 7 array of 4.89% U rods in ~300 g U/1 UO_2F_2 solution, 1.31-cm-diam, 2.99-cm pitch, in 95.88-cm-diam tank	0.9883 ± 0.0020
016	CAA16	Experiment 42S. 6 x 7 array of 4.89% U rods in ~300 g U/1 UO_2F_2 solution, 1.31-cm-diam, 3.40-cm pitch, in 95.88-cm-diam tank	0.9902 ± 0.0022
017	CAA17	Experiment 44S. 6 x 7 array of 4.89% U rods in ~300 g U/1 UO_2F_2 solution, 1.31-cm diam, 3.94-cm pitch, in 95.88-cm-diam tank	0.9899 ± 0.0024
018	CAA18	Experiment 45S. 6 x 7 array of 4.89%	0.9979 ± 0.0022

		U rods in ~300 g U/1 UO_2F_2 solution, 1.31-cm diam, 4.40-cm pitch, in 95.88-cm-diam tank	
019	CAA19	4.89% U_3O_8 - Stereotex blocks 55.5 g U-235/1, unreflected	0.9913 ± 0.0036
020	CAA20	4.89% U_3O_8 - Stereotex blocks 40.6 g U-235/1 (H/X = 395.0), unreflected	1.0041 ± 0.0029
021	CAA21	4.89% U_3O_8 - Stereotex blocks, 22.1 g U-235/1 (H/X = 757.0), unreflected	0.9997 ± 0.0033
022	CAA22	4.89% U_3O_8 - Stereotex blocks 33.3 g U-235/1 (H/X = 503.6), unreflected	0.9974 ± 0.0032
023	CAA23	4.89% U_3O_8 - Stereotex blocks 64.91 g U-235/1 (H/X = 199.3), paraffin top reflector, H_2O reflected bottom and sides	0.98681± 0.0035
024	CAA24	4.89% U_3O_8 - Stereotex blocks 56.2 g U-235/1 (H/X = 244.8), paraffin top reflector, H_2O reflected bottom and sides	0.9816 ± 0.0035
025	CAA25	4.89% U_3O_8 - Stereotex blocks 40.6 g U-235/1 (H/X = 396.7), paraffin top reflector, H_2O reflected bottom and sides	0.9991 ± 0.0033
026	CAA26	4.89% U_3O_8 - Stereotex blocks 22.2 g U-235/1 (H/X = 756.5), paraffin top reflector, H_2O reflected bottom and sides	1.0045 ± 0.0025
027	CAA27	4.89% U_3O_8 - Stereotex blocks 81.1 g U-235/1 (H/X = 146.8), paraffin top reflector, H_2O reflected bottom and sides	0.9901 ± 0.0035
028	CAA28	4.89% U_3O_8 - Stereotex blocks 107.0 g U-235/1 (H/X = 82.7), paraffin top reflector, H_2O reflected bottom and sides	0.9686 ± 0.0033

029	CAA29	4.89% U_3O_8 - Stereotex blocks 33.3 g U-235/1 (H/X = 504.1), paraffin top reflector, H_2O reflected bottom and sides	0.9949 ± 0.0036
030	CAA30	4.89% UO_2F_2 solution 42.54 g U-235/1 (H/X = 524) in a 20-in.-diam SS cylinder, unreflected	0.9902 ± 0.0030
031	CAA31	4.89% UO_2F_2 solution 42.54 g U-235/1 (H/X = 524) in a 20 x 20 in. aluminum box, unreflected	0.9875 ± 0.0035
032	CAA32	4.89% UO_2F_2 solution 31.79 g U-235/1 (H/X = 735) in a 20-in.-diam SS cylinder, unreflected	0.9884 ± 0.0028
033	CAA33	4.89% UO_2F_2 solution 24.04 g U-235/1 (H/X = 1002) in a 27.3-in.-diam aluminum sphere, unreflected	0.9916 ± 0.0024
034	CAA34	4.89% UO_2F_2 solution 24.28 g U-235/1 (H/X = 991) in a 30-in.-diam aluminum cylinder, unreflected	1.0010 ± 0.0028
035	CAA35	4.89% UO_2F_2 solution 42.54 g U-235/1 (H/X = 524) in a 15-in.-diam SS cylinder, H_2O reflected	1.0011 ± 0.0031
036	CAA36	4.89% UO_2F_2 solution 42.54 g U-235/1 (H/X = 524) in a 20 x 20 in. aluminum box, H_2O reflected	1.00 15± 0.0029
037	CAA37	4.89% UO_2F_2 solution 31.79 g U-235/1 (H/X = 735) in a 15-in.-diam SS cylinder, H_2O reflected	0.9943 ± 0.0027
038	CAA38	4.89% UO_2F_2 solution 22.11 g U-235/1 (H/X = 991) in a 27.3-in.-diam aluminum sphere, H_2O reflected	0.9938 ± 0.0024
039	CAA39	4.89% UO_2F_2 solution 24.22 g U-235/1 (H/X = 994) in a 20-in.-diam SS cylinder, H_2O reflected	0.9970 ± 0.0022

Appendix B2: Table 2 Results

040	CAB01	(EBJ.1) lattice 2. 15-3.85% U rods, 7.2 in. diam x 30 in. long in square lattice, 7.2 in. center to center, 77.8 cm water height	0.9950 ± 0.0026
041	CAB02	(EBJ.2X) lattice 5. 11-3.85% U rods, 7.2 in. diam x 30 in. long in square lattice, 7.95 in. center to center, 72.4 cm water height	0.9994 ± 0.0028
042	CAB03	(EBJ.3X) lattice 8. 24-3.85% U rods, 7.2 in. diam x 30 in.long in square lattice, 8.70 in. center to center, 75.0 cm water height	0.9965 ± 0.0029
043	CAB07	(EBJ.4) lattice 3. 16-3.85% U rods, 7.2 in. diam x 30 in. long in triangular lattice, 7.45 in. center to center, 79.3 cm water height	0.9818 ± 0.0024
044	CAB08	(EBJ.5X) lattice 9. 7-3.85% U rods, 7.2 in. diam x 30 in. long in triangular lattice, 8.20 in. center to center, 53.1 cm water height	0.9915 ± 0.0031
045	CAB09	(EBJ.6X) lattice 2. 11-3.85% U rods, 7.2 in. OD x 2.6 in. ID x 30 in. long in triangular lattice, 7.20 center to center, 77.2 cm water height	0.9892 ± 0.0034
046	CAB10	(EBJ.8) lattice 5. 6-3.85% U rods, 7.2 in. OD x 2.6 in. ID x 30 in. long in square lattice, 7.95 in. center to center, 91.4 cm water height (2 subcritical)	1.0004 ± 0.0024
047	CAB11	(EBJ.9) lattice 6. 16-3.85% U rods, 7.2 in. OD x 2.6 in. ID x 30 in. long in square lattice, 8.70 in. center to center, 49.2 cm water height	0.9942 ± 0.0030

048	CAB12	(EBJ.10) lattice 14. 20-3.85% U rods, 7.2 in. OD x 2.6 in. ID x 30 in. long in square lattice, 9.07 in. center to center, 79 cm water height	0.9979 ± 0.0027
049	CAB13	(EBJ.11) lattice 19. 8-3.85% U rods, 7.2 in. OD x 2.6 in. ID x 30 in. long in square lattice, 7.2 in. center to center, 72.5 cm water height	1.0048 ± 0.0026
050	CAB14	(EBJ.12) lattice 3. 22-3.85% U rods, 2.5 in. diam x 30 in. long in square lattice, 2.85 in. center to center, 72.3 cm water height	1.0017 ± 0.0031
051	CAB15	(EBJ.13) lattice 9. 15-3.85% U rods, 2.5 in. diam x 30 in. long in square lattice, 3.25 in. center to center, 64.8 cm water height	0.9994 ± 0.0031
052	CAB16	(EBJ.14) lattice 2. 23-3.85% U rods, 2.5 in. diam x 30 in. long in square lattice 4.00 in. center to center, 68.9 cm water height	0.9920 ± 0.0030

Appendix B3: Table 3 Results

053	CAS04	An unreflected rectangular parallelepiped of homogeneous $U(1.4)F_4$ and paraffin with an H/U-235 atomic ratio of 421.8; 93.1 cm x 93.0 cm x 123.8 cm	0.9854 ± 0.0023
054	CAS05	An unreflected rectangular parallelepiped of homogeneous $U(1.4)F_4$ and paraffin with an H/U-235 atomic ratio of 421.8; 100.0 cm x 99.9 cm x 103.1 cm	0.9892 ± 0.0020
055	CAS06	An unreflected rectangular parallelepiped of homogeneous $U(1.4)F_4$ and paraffin with an H/U-235 atomic ratio of 421.8; 130.7 cm x 130.6 cm x 74.2 cm	0.9866 ± 0.0020
056	CAS11	A reflected rectangular parallelepiped of homogeneous U(2) F_4 and paraffin with an H/U-235 atomic ratio of 195.2; 56.22 cm x 112.88 cm, reflected with 15.2 cm of paraffin on top and sides and 15.2 cm of Plexiglas on the bottom	0.9951 ± 0.0025
057	CAS12	An unreflected rectangular parallelepiped of homogeneous $U(2)F_4$ and paraffin with an H/U-235 atomic ratio of 195.2; 71.47 cm x 71.47 cm x 94.14 cm	0.9924 ± 0.0024
058	CAS13	A reflected rectangular parallelepiped of homogeneous $U(2)F_4$ and paraffin with an H/U-235 atomic ratio of 293.9; 51.11 cm x 51.11 cm x 73.87 cm, reflected with 15.2 cm of paraffin on top	0.9962 ± 0.0026
059	CAS14	An unreflected rectangular parallelepiped of homogeneous $U(2)F_4$ and paraffin with an H/U-235 atomic ratio of 293.9; 56.22 cm x 56.22 cm x 122.47 cm	0.9955 ± 0.0025

060	CAS15	A reflected rectangular parallelepiped of homogeneous $U(2)F_4$ and paraffin with an H/U-235 atomic ratio of 406.3; 53.67 cm x 53.67 cm x 54.29 cm, reflected with 15.2 cm of paraffin on top and sides and 15.2 cm of Plexiglas on the bottom	0.9932 ± 0.0026
061	CAS16	A reflected rectangular parallelepiped of homogeneous $U(2)F_4$ and paraffin with an H/U-235 atomic ratio of 495.9; 46.00 cm x 46.00 cm x 96.57 cm, reflected with 15.2 cm of paraffin on top and sides and 15.2 cm of Plexiglas on the bottom	0.9964 ± 0.0023
062	CAS17	A reflected rectangular parallelepiped of homogeneous $U(2)F_4$ and paraffin with an H/U-235 atomic ratio of 613.6; 56.32 cm x 61.29 cm x 54.08 cm, reflected with 15.2 cm of polyethylene on top and sides and 15.2 cm of Plexiglas on the bottom	0.9880 ± 0.0028
063	CAS18	An unreflected rectangular parallelepiped of homogeneous $U(2)F_4$ and paraffin with an H/U-235 atomic ratio of 613.6; 61.3 cm x 66.54 cm x 66.52 cm	0.9917 ± 0.0025
064	CAS19	A reflected rectangular parallelepiped of homogeneous $U(2)F_4$ and paraffin with an H/U-235 atomic ratio of 971.7; 76.51 cm x 76.44 cm x 82.42 cm, reflected with 5.2 cm of polyethylene on top and sides and 15.2 cm of Plexiglas on the bottom	0.9877 ± 0.0019
065	CAS20	An unreflected rectangular parallelepiped of homogeneous $U(2)F_4$ and paraffin with an H/U-235 atomic ratio of 971.7; 81.45 cm x 86.70 cm x 88.22 cm	0.9817 ± 0.0017
066	CAS21	A reflected rectangular parallelepiped of homogeneous $U(3)F_4$ and paraffin	1.0045 ± 0.0030

		with an H/U-235 atomic ratio of 133.4; 51.14 cm x 51.14 cm x 51.27 cm, reflected with 15.2 cm of Plexiglas on the bottom	
067	CAS22	A reflected rectangular parallelepiped of homogeneous $U(3)F_4$ and paraffin with an H/U-235 atomic ratio of 133.4; 43.47 cm x 43.47 cm x 86.39 cm, reflected with 15.2 cm of Plexiglas on the bottom	1.0038 ± 0.0029
068	CAS23	A reflected rectangular parallelepiped of homogeneous $U(3)F_4$ and paraffin with an H/U-235 atomic ratio of 133.4; 46.02 cm x 46.02 cm x 67.57 cm, reflected with 15.2 cm of paraffin on top and sides and 15.2 cm of Plexiglas on the bottom	1.0055 ± 0.0037
069	CAS24	A reflected rectangular parallelepiped of homogeneous $U(3)F_4$ and paraffin with an H/U-235 atomic ratio of 133.4; 56.25 cm x 56.25 cm x 43.41 cm, reflected with 15.2 cm of paraffin on top and sides and 15.2 cm of Plexiglas on the bottom	1.0072 ± 0.0030
070	CAS25	A reflected rectangular parallelepiped of homogeneous $U(3)F_4$ and paraffin with an H/U-235 atomic ratio of 133.4; 61.36 cm x 61.36 cm x 38.67 cm, reflected with 15.2 cm of paraffin on top and sides and 15.2 cm of Plexiglas on the bottom	1.0040 ± 0.0031
071	CAS26	An unreflected rectangular parallelepiped of homogeneous $U(3)F_4$ and paraffin with an H/U-235 atomic ratio of 133.4; 56.47 cm x 56.47 cm x 86.64 cm	1.0072 ± 0.0028
072	CAS27	An unreflected rectangular parallelepiped of homogenous $U(3)F_4$ and paraffin with an H/U-235 atomic ratio of 133.4; 56.25 cm x 61.36 cm	1.0058 ± 0.0030

		x 74.38 cm	
073	CAS28	An unreflected rectangular parallelepiped of homogeneous $U(3)F_4$ and paraffin with an H/U-235 atomic ratio of 133.4; 61.4 cm x 61.4 cm x 66.0 cm	1.0066 ± 0.0030
074	CAS29	A reflected rectangular parallelepiped of homogeneous $U(3)F_4$ and paraffin with an H/U-235 atomic ratio of 276.9; 40.81 cm x 40.80 cm x 39.49 cm, reflected with 15.2 cm of polyethylene on top and sides and 15.2 cm of Plexiglas on the bottom	1.0040 ± 0.0029
075	CAS30	An unreflected rectangular parallelepiped of homogeneous $U(3)F_4$ and paraffin with an H/U-235 atomic ratio of 276.9; 40.90 cm x 40.93 cm x 116.80 cm	1.0109 ± 0.0028
076	CAS31	An unreflected rectangular parallelepiped of homogeneous $U(3)F_4$ and paraffin with an H/U-235 atomic ratio of 276.9; 48.59 cm x 51.14 cm x 48.53 cm	1.0043 ± 0.0029
077	CAS32	An unreflected rectangular parallelepiped of homogeneous $U(3)F_4$ and paraffin with an H/U-235 atomic ratio of 276.9; 81.71 cm x 81.66 cm x 31.34 cm	1.0128 ± 0.0031
078	CAS33	A composite cadmium/steel/water side reflected stainless steel cylinder of 0.079 cm wall thickness and 19.545 cm IR filled to a height of 54.45 cm with $U(4.98)O_2F_2$ solution at an H/U-235 atomic ratio of 488	0.9952 ± 0.0029
079	CAS34	A composite 1-in. steel/water side reflected steel cylinder of 0.079 cm wall thickness and 16.51 cm IR filled to a height of 143 cm with $U(4.98)O_2F_2$ solution at an H/U-235 atomic ratio of	0.9992 ± 0.0028

080	CAS35	An unreflected sphere of $U(4.98)O_2F_2$ with an H/U-235 atomic ratio of 490. Solution radius of 25.3873 cm and stainless steel container wall thickness of 0.0508 cm	0.9995 ± 0.0033
081	CAS36	An unreflected stainless steel cylinder of 0.07874 cm wall thickness and a 19.55 cm IR filled to a height of 101.7 cm with $U(4.98)O_2F_2$ solution at an H/U-235 atomic ratio of 496	0.9955 ± 0.0032
082	CAR01	Experiment 1. 4.46% enriched U_3O_8, H/U = 0.77, 42 fuel cans with 2.44 cm interstitial moderation, plastic reflected	1.0077 ± 0.0027
083	CAR02	Experiment 2. 4.46% enriched U_3O_8, H/U = 0.77, 43 fuel cans with 2.44 cm interstitial moderation, plastic reflected	1.0069 ± 0.0032
084	CAR03	Experiment 3. 4.46% enriched U_3O_8, H/U = 0.77, 100 fuel cans with 0.929 cm interstitial moderation, plastic reflected	0.9868 ± 0.0029
085	CAR04	Experiment 13. 4.46% enriched U_3O_8, H/U = 0.77, 40 fuel cans with 2.44 cm interstitial moderation, concrete reflected	1.0169 ± 0.0032
086	CAR05	Experiment 15. 4.46% enriched U_3O_8, H/U = 0.77, 98 fuel cans with 0.929 cm interstitial moderation, concrete reflected	0.9979 ± 0.0030
087	CAR06	4.46% enriched U_3O_8, H/U = 0.77, driven by 93.12% enriched uranium metal sphere (29.870 kg), 120 + 4S fuel cans, plastic reflected	1.0052 ± 0.0039
088	CAR07	4.46% enriched U_3O_8, H/U = 0.77, driven by high concentration (14.844	1.0120 ± 0.0037

		kg 351.18 g/l) fuel cans, plastic reflected	
089	CAR08	4.46% enriched U_3O_8 H/U = 0.77, driven by low concentration (12.871 kg 86.42 g/l) 93.17% enriched $UO_2(NO_3)_2$, 119 + 2S fuel cans, plastic reflected	0.9997 ± 0.0039
090	CAR09	4.46% enriched U_3O_8, H/U = 0.77, driven by low concentration (13.001 kg 86.42 g/l) 93.17% enriched $UO_2(NO_3)_2$, 119 + 2S fuel cans, plastic reflected	0.9941 ± 0.0034
091	CAR10	4.46% enriched U_3O_8, H/U = 0.77, driven by low concentration (12.446 kg 86.42 g/l) 93.17% enriched $UO_2(NO_3)_2$, 119 + 2S fuel cans, concrete reflected	0.9949 ± 0.0035
092	CAR11	Experiment A. 4.46% enriched U_3O_8 H/U = 1.25, 38 fuel cans with 2.44 cm interstitial moderation, plastic reflected	1.0072 ± 0.0034
093	CAR12	Experiment B. 4.46% enriched U_3O_8 H/U = 1.25, 78 fuel cans with 0.929 cm interstitial moderation, plastic reflected	1.0166 ± 0.0031
094	CAR13	Experiment C. 4.46% enriched U_3O_8 H/U = 1.25,80 fuel cans with 0.929 cm interstitial moderation, plastic reflected	1.0155 ± 0.0033
095	CAR14	4.46% enriched U3O8 H/U = 1.25, driven by high concentration (12.268 kg 351.64 gU/l), 93.17% enriched $UO_2(NO_3)_2$, 119 + 2S fuel cans, plastic reflected	1.0073 ± 0.0029
096	CAR15	4.46% enriched U_3O_8 H/U = 1.25, driven by high concentration (12.400 kg 351.65 gU/l), 93.17% enriched $UO_2(NO_3)_2$,119 + 2S fuel cans, plastic	0.9968 ± 0.0035

		reflected	
097	CAR16	4.46% enriched U_3O_8 H/U = 1.25 driven by low concentration (10.836 kg p 86.60 gU/l), 93.17% enriched $UO_2(NO_3)_2$, 119 + 2S fuel cans, plastic reflected	1.0018 ± 0.0031
098	CAR17	Experiment F. 4.46% enriched U_3O_8 H/U = 2.03, 48 fuel cans with 0.92 cm interstitial moderation, plastic reflected	1.0035 ± 0.0031
099	CAR18	Experiment G. 4.46% enriched U_3O_8 H/U = 2.03, 30 fuel cans with 2.44 cm interstitial moderation, plastic reflected	1.0025 ± 0.0031
100	CAR19	Experiment D. 4.46% enriched U_3O_8 H/U = 2.03, driven by 93.12% enriched hollow uranium metal sphere (13.73 kg), 120 + 4S fuel cans, plastic reflected	1.0015 ± 0.0030
101	CAR20	Experiment E. 4.46% enriched U_3O_8 H/U = 2.03, driven by 93.12% enriched hollow uranium metal sphere (12.786 kg), 120 + 4S fuel cans, plastic reflected	0.9916 ± 0.0030

Appendix B4: Table 4 Results

102	CAA01	$U(93.2)O_2F_2$ solution sphere H/X = 1112, unreflected	1.0109 ± 0.0028
103	CAA02	$U(93.2)O_2F_2$ solution sphere H/X = 1393, unreflected	1.0067 ± 0.0022
104	CAA03	$U(93.2)O_2(NO_3)_2$ solution sphere H/X = 1379, unreflected	0.9950 ± 0.0023
105	CAA04	$U(93.2)O_2F_2$ solution sphere H/X = 76.1, H_2O reflected	1.0120 ± 0.0042
106	CAA05	$U(93.2)O_2F_2$ solution sphere H/X = 126.5, H_2O reflected	1.0031 ± 0.0041
107	CAA06	$U(93.2)O_2F_2$ solution sphere H/X = 1270, H_2O reflected	1.0050 ± 0.0024
113	CAA12	$U(93.2)O_2(NO_3)_2$ solution 142.92 g U/l, 28.01 cm diam cylinder, unreflected	1.0015 ± 0.0047
114	CAA13	$U(93.2)O_2(NO_3)_2$ solution 357.71 g U/l, 28.01 cm diam cylinder, unreflected	1.0211 ± 0.0042
115	CAA14	$U(93.2)O_2(NO_3)_2$ solution 54.89 g U/l, 33.01 cm diam cylinder, unreflected	1.0112 ± 0.0032
116	CAA15	$U(93.2)O_2(NO_3)_2$ solution 137.4 g U/l, 33.01 cm diam cylinder, unreflected	1.0032 ± 0.0045
117	CAA16	$U(93.2)O_2(NO_3)_2$ solution 357.71 g U/l, 33.01 cm diam cylinder, unreflected	1.0054 ± 0.0046
118	CAA17	$U(93.2)O_2(NO_3)_2$ solution 144.38 g U/l, 28.01 cm diam cylinder, concrete reflected	1.0086 ± 0.0043
119	CAA18	$U(93.2)O_2(NO_3)_2$ solution 334.77 g	1.0112 ± 0.0046

		U/l, 28.01 cm diam cylinder, concrete reflected	
120	CAA19	$U(93.2)O_2(NO_3)_2$ solution 144.38 g U/l, 33.01 cm diam cylinder, concrete reflected	1.0047 ± 0.0041
121	CAA20	$U(93.2)O_2(NO_3)_2$ solution 334.77 g U/l, 33.01 cm diam cylinder, concrete reflected	1.0035 ± 0.0045
122	CAA21	$U(93.2)O_2(NO_3)_2$ solution 144.38 g U/l, 28.01 cm diam cylinder, concrete reflected	1.0145 ± 0.0037
123	CAA22	$U(93.2)O_2(NO_3)_2$ solution 334.77 g U/l, 33.01 cm diam cylinder, concrete reflected	1.0097 ± 0.0046
124	CAA23	$U(93.2)O_2(NO_3)_2$ solution 147.66 g U/l, 28.01 cm diam cylinder, Plexiglas reflected	1.0124 ± 0.0043
125	CAA24	$U(93.2)O_2(NO_3)_2$ solution 345.33 g U/l, 28.01 cm diam cylinder, Plexiglas reflected	1.0088 ± 0.0040
126	CAA25	$U(93.2)O_2(NO_3)_2$ solution 147.66 g U/l, 33.01 cm diam cylinder, Plexiglas reflected	1.0115 ± 0.0041
127	CAA26	$U(93.2)O_2(NO_3)_2$ solution 345.33 g U/l, 33.01 cm diam cylinder, Plexiglas reflected	1.0069 ± 0.0034
128	CAA27	$U(93.22)O_2(NO_3)_2$ solution 147.66 g U/l, 28.01 cm diam cylinder, Plexiglas reflected	1.0073 ± 0.0040
129	CAA28	$U(93.22)O_2(NO_3)_2$ solution 345.33 g U/l, 33.01 cm diam cylinder, Plexiglas reflected	1.0124 ± 0.0046
130	CAA29	$U(93.2)O_2(NO_3)_2$ solution 67.28 g U/l, 21.12 cm diam cylinder in a 4 x 4 array, concrete reflected	1.0106 ± 0.0037

131	CAA30	$U(93.12)O_2(NO_3)_2$ solution 364.11 g U/l, 21.12 cm diam cylinder in a 4 x 4 array, concrete reflected	1.0134 ± 0.0040
132	CAA31	$U(93.2)O_2(NO_3)_2$ solution 83.49 g U/l, 16.12 cm diam cylinder in a 4 x 4 array, concrete reflected	1.0095 ± 0.0037
133	CAA32	$U(93.2)O_2(NO_3)_2$ solution 359.55 g U/l, 16.12 cm diam cylinder in a 4 x 4 array, concrete reflected	1.0079 ± 0.0041
134	CAA33	$U(93.2)O_2(NO_3)_2$ solution 76.09 g U/l, 21.12 cm diam cylinder in a 2 x 2 array, concrete reflected	1.0100 ± 0.0034
135	CAA34	$U(93.2)O_2(NO_3)_2$ solution 364.11 g U/l, 21.2 cm diam cylinder in a 2 x 2 array, concrete reflected	1.0035 ± 0.0048
136	CAA35	$U(93.2)O_2(NO_3)_2$ solution 359.55 g U/l, 16.12 cm diam cylinder in a 2 x 2 array, concrete reflected	1.0063 ± 0.0040
137	CAA36	$U(93.2)O_2(NO_3)_2$ solution 359.55 g U/l, 16.12 cm diam cylinder in a 2 x 4 array, concrete reflected	1.0110 ± 0.0045
138	CAA37	$U(93.2)O_2(NO_3)_2$ solution 60.32 g U/l, 21.12 cm diam cylinder in a 4 x 4 array, Plexiglas reflected	1.0053 ± 0.0038
139	CAA38	$U(93.2)O_2(NO_3)_2$ solution 355.94 g U/l, 21.12 cm diam cylinder in a 4 x 4 array, Plexiglas reflected	0.9910 ± 0.0034
140	CAA39	$U(93.2)O_2(NO_3)_2$ solution 60.32 g U/l, 16.12 cm diam cylinder in a 4 x 4 array, Plexiglas reflected	1.0007 ± 0.0036
141	CAA40	$U(93.2)O_2(NO_3)_2$ solution 355.94 g U/l, 16.12 cm diam cylinder in a 4 x 4 array, Plexiglas reflected	0.9960 ± 0.0036
142	CAA41	$U(93.2)O_2(NO_3)_2$ solution 60.32 g U/l, 21.12 cm diam cylinder in a 2 x 2	0.9996 ± 0.0034

		array, Plexiglas reflected	
143	CAA42	$U(93.2)O_2(NO_3)_2$ solution 355.94 g U/l, 21.12 cm diam cylinder in a 2 x 2 array, Plexiglas reflected	1.0086 ± 0.0039
144	CAA43	$U(93.2)O_2(NO_3)_2$ solution 355.94 g U/l, 16.12 cm diam cylinder in a 3 x 2 array, Plexiglas reflected	1.0006 ± 0.0041

Appendix B5: Table 5 Results

145	CAS01	Y-12 validation case A-1. 93.8% U metal sphere, unreflected (GODIVA)	1.0002 ± 0.0030
148	CAS04	Y-12 validation case A-2. 93.2% U-Mo alloy cylinder annulus, unreflected	0.9999 ± 0.0029
149	CAS05	Y-12 validation case A-3. 93.2% UO_2F_2 solution, 19.992 g U/l, in Al sphere, unreflected	1.0025 ± 0.0024
150	CAS06	Y-12 validation case A-4. 93.18% $UO_2(NO_3)_2$ solution, 20.12 g U/l, in Al sphere, unreflected	1.0016 ± 0.0022
151	CAS07	Y-12 validation case A-5. 93.5% U metal hemispherical shell, H_2O reflected	1.0112 ± 0.0034
152	CAS08	Y-12 validation case A-6. 93.2% U metal cylinder annulus, graphite reflected	1.0159 ± 0.0034
153	CAS09	Y-12 validation case A-7. 94% U metal cuboid, natural U reflected	1.0038 ± 0.0032
154	CAS10	Y-12 validation case A-8. 93.1% U metal hemispherical shell, oil reflected	1.0101 ± 0.0032
155	CAS11	Y-12 validation case A-9. 93.1% U metal hemispherical shell, steel center and oil reflected	1.0014 ± 0.0033
146	CAS02	Y-12 validation case A-10. 97.67% U metal sphere, H_2O reflected	1.0016 ± 0.0030
147	CAS03	Y-12 validation case A-11. 93.172% $UO_2(NO_3)_2$ solution, 346.7 g U/l, in SS cylinder, unreflected	1.0155 ± 0.0046
156	CAS12	Y-12 validation case B-1. 93.2% U metal cylinder annulus, unreflected, smaller U cylinder in hole touching	0.9952 ± 0.0030

		one wall	
166	CAS22	Y-12 validation case B-2. 93.2% U metal cylinder annulus, unreflected, smaller U block in hole touching one wall	1.0032 ± 0.0027
167	CAS23	Y-12 validation case B-3. 93.2% U metal, unreflected cylinders and cuboids in approximate circular arrangement, cylinder, cuboid, and hemisphere stack in center	0.9973 ± 0.0028
168	CAS24	Y-12 validation case B-4. 93.2% U metal cylinders, 4 x 4 x 4 array, unreflected	0.9931 ± 0.0031
169	CAS25	Y-12 validation case B-5. 93.2% U metal cylinders, 2 x 2 x 2 array, each unit in the array is a smaller cylinder capped on each end by a larger cylinder, unreflected	0.9942 ± 0.0032
170	CAS26	Y-12 validation case B-6. 93.2% U metal cylinders, 2 x 2 x 2 array, paraffin reflected	1.0039 ± 0.0032
171	CAS27	Y-12 validation case B-7. 93.2% U metal cylinders, 2 x 2 x 2 array, each unit in the array is a smaller cylinder capped on each end by a larger cylinder, paraffin reflected	1.0158 ± 0.0029
172	CAS28	Y-12 validation case B-8. 93.2% U metal cylinders each in a Plexiglas box, 2 x 2 x 2 array of these units unreflected	1.0070 ± 0.0030
158	CAS14	Y-12 validation case B-11. 93.2% $UO_2(NO_3)_2$ solution, 505 g U/l, in SS cylinders, 4 x 4 array, standing in a solution slab, Plexiglas reflected	1.0510 ± 0.0036
159	CAS15	Y-12 validation case B-12. 93.2% U metal cylinders, 2 x 2 x 2 array, graphite moderated and polyethylene	1.0152 ± 0.0032

		reflected	
163	CAS19	Y-12 validation case B-16. 93.1% $UO_2(NO_3)_2$ solution, 450.8 g U/l, in SS containers, square central column with 8 perpendicular cylindrical arms unreflected	1.0242 ± 0.0042
174	CAS30	Problem S333SPO. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs, 3 7.62 cm slabs in 3 x 1 array, 0 cm separation, unreflected, cylindrical tank, floor and walls in experiment room included	1.0015 ± 0.0040
176	CAS32	Problem S333SPI. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs, 3 7.62 cm slabs in 3 x 1 array, 2.54 cm separation, unreflected, cylindrical tank, floor, and walls in experiment room included	0.9860 ± 0.0037
178	CAS34	Problem S333SP3. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs, 3 7.62 cm slabs in 3 x 1 array, 7.62 cm separation, unreflected, cylindrical tank, floor, and walls in experiment room included	0.9814 ± 0.0037
180	CAS36	Problem S333SP4. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs, 3 7.62 cm slabs in 3 x 1 array, 11.43 cm separation, unreflected, cylindrical tank, floor, and walls in experiment room included	0.9936 ± 0.0038
182	CAS38	Problem S333SP5. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs, 3 7.62 cm slabs in 3 x 1 array, 13.97 cm separation, unreflected, cylindrical tank, floor, and walls in experiment room included	0.9883 ± 0.0034
184	CAS40	Problem S333SP6. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs, 3 7.62 cm slabs in 3 x 1 array, 15.24 cm separation, unreflected, cylindrical	0.9848 ± 0.0040

		tank, floor, and walls in experiment room included	
175	CAS31	Problem S333SPOR. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs, 3 7.62 cm slabs in 3 x 1 array, 0 cm separation, H_2O reflected	0.9886 ± 0.0040
177	CAS33	Problem S333SP1R. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs 3 7.62 cm slabs in 3 x 1 array, 2.54 cm separation, H_2O reflected	0.9953 ± 0.0036
179	CAS35	Problem S333SP3R. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs, 3 7.62 cm slabs in 3 x 1 array, 7.62 cm separation, H_2O reflected	0.9903 ± 0.0035
181	CAS37	Problem S333SP4R. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs, 3 7.62 cm slabs in 3 x 1 array, 11.43 cm separation, H_2O reflected	1.0048 ± 0.0033
183	CAS39	Problem S333SP5R. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs, 3 7.62 cm slabs in 3 x 1 array, 13.97 cm separation, H_2O reflected	1.0030 ± 0.0035
186	CAS42	Problem S36SP2. 93.2% UO_2F_2 solution, 81.8 g U/l in Al slabs, 7.62 cm and 14.834 cm slabs in 2 x 1 array, 5.08 cm separation, unreflected	0.9816 ± 0.0042
185	CAS41	Problem S36SP15. 93.2% UO_2F_2 solution, 81.8 g U/l in Al slabs, 7.62 cm and 14.834 cm slabs in 2 x 1 array, 38.1 cm separation, unreflected	0.9790 ± 0.0042
187	CAS43	Problem S36SP30. 93.2% UO_2F_2 solution, 81.8 g U/l in Al slabs, 7.62 cm and 14.834 cm slabs in 2 x 1 array, 76.2 cm separation, unreflected	0.9690 ± 0.0042
188	CAS44	Problem S36SP48. 93.2% UO_2F_2 solution, 81.8 g U/l in Al slabs, 7.62 cm and 14.834 cm slabs in 2 x 1 array, 121.92	0.9827 ± 0.0037

		cm separation, unreflected	
189	CAS45	Problem S363SPO. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs, 7.62 cm, 14.834 cm, and 7.62 cm slabs in 3 x 1 array, 0 cm separation, unreflected	0.9846 ± 0.0038
190	CAS46	Problem S363SP10. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs, 7.62 cm, 14.834 cm, and 7.62 cm slabs in 3 x 1 array, 25.4 cm separation, unreflected	0.9868 ± 0.0043
191	CAS47	Problem S363SP20. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs, 7.62 cm, 14.834 cm, and 7.62 cm slabs in 3 x 1 array, 50.8 cm separation, unreflected	0.9705 ± 0.0032
192	CAS48	Problem S363SP32. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs, 7.62 cm, 14.834 cm, and 7.62 cm slabs in 3 x 1 array, 81.28 cm separation, unreflected	0.9827 ± 0.0039
196	CAS52	Problem S63SP6. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs. One slab is made up from two 7.62 cm slabs snugly fit together, the other is 7.62 cm, 2 x 1 array, 15.24 cm separation, unreflected	0.9832 ± 0.0042
193	CAS49	Problem S63SP12. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs. One slab is made up from two 7.62 cm slabs snugly fit together, the other is 7.62 cm, 2 x 1 array, 30.48 cm separation, unreflected	0.9871 ± 0.0036
194	CAS50	Problem S63SP18. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs. One slab is made up from two 7.62 cm slabs snugly fit together, the other is 7.62 cm, 2 x 1 array, 45.72 cm separation, unreflected	0.9802 ± 0.0035

195	CAS51	Problem S63SP30. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs. One slab is made up from two 7.62 cm slabs snugly fit together, the other is 7.62 cm, 2 x 1 array, 76.2 cm separation, unreflected	0.9772 ± 0.0042
198	CAS54	Problem S66SP2. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs. One slab is 14.834 cm, and the other is made up from two 7.62 cm slabs snugly fit together, 2 x 1 array, 5.08 cm separation, unreflected	0.9855 ± 0.0045
202	CAS58	Problem S66SP2. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs. One slab is 14.834 cm, and the other is made up from two 7.62 cm slabs snugly fit together, 2 x 1 array, 15.24 cm separation, unreflected	0.9834 ± 0.0039
197	CAS53	Problem S66SP15. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs. One slab is 14.834 cm, and the other is made up from two 7.62 cm slabs snugly fit together, 2 x 1 array, 38.1 cm separation, unreflected	0.9881 ± 0.0034
199	CAS55	Problem S66SP20. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs. One slab is 14.834 cm, and the other is made up from two 7.62 cm slabs snugly fit together, 2 x 1 array, 50.8 cm separation, unreflected	0.9903 ± 0.0038
200	CAS56	Problem S66SP30. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs. One slab is 14.834 cm, and the other is made up from two 7.62 cm slabs snugly fit together, 2 x 1 array, 76.2 cm separation, unreflected	0.9921 ± 0.0036
201	CAS57	Problem S66SP48. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs. One slab is 14.834 cm, and the other is made up from two 7.62 cm slabs snugly fit	0.9927 ± 0.0041

		together, 2 x 1 array, 121.92 cm separation, unreflected	
203	CAS59	Problem S66SP66. 93.2% UO_2F_2 solution, 81.8 g U/l, in Al slabs. One slab is 14.834 cm, and the other is made up from two 7.62 cm slabs snugly fit together, 2 x 1 array, 167.64 cm separation, unreflected	0.9867 ± 0.0032
235	CAS91	Problem U6B271F. 92.6% $UO_2(NO_3)_2$ solution, 63.3 g U/l, in Plexiglas cylinders, 3 x 3 x 3 array, unreflected, walls, floor, and tank in experiment room included	1.0025 ± 0.0039
204	CAS60	Problem U2B271F. 92.6% $UO_2(NO_3)_2$ solution, 279 g U/l, in Plexiglas cylinders, 3 x 3 x 3 array, unreflected, walls, floor, and tank in experiment room included	0.9995 ± 0.0035
205	CAS61	Problem U2B81F. 92.6% $UO_2(NO_3)_2$ solution, 279 g U/l, in Plexiglas cylinders, 2 x 2 x 2 array, unreflected, walls, floor, and tank in experiment room included	1.0043 ± 0.0039
206	CAS62	Problem U4B1251F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 5 x 5 x 5 array, unreflected, walls, floor, and tank in experiment room included	0.9998 ± 0.0040
208	CAS64	Problem U4B641F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 4 x 4 x 4 array, unreflected, walls, floor, and tank in experiment room included	0.9997 ± 0.0038
207	CAS63	Problem U4B271F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 3 x 3 x 3 array, unreflected, walls, floor, and tank in experiment room included	1.0106 ± 0.0041

209	CAS65	Problem U4B81F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 2 x 2 x 2 array, unreflected, walls, floor, and tank in experiment room included	0.9989 ± 0.0046
234	CAS90	Problem U4U2B27. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 3 x 3 x 3 array, unreflected, 279 g U/l in 5 central units, walls, floor, and tank in experiment room included	1.0035 ± 0.0044
210	CAS66	Problem U4R27A1F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 3 x 3 x 3 array, reflected, 15.24 cm paraffin on bottom, 1.27 cm Plexiglas on other faces	1.0104 ± 0.0041
211	CAS67	Problem U4R27B1F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 3 x 3 x 3 array, reflected, 15.24 cm paraffin on bottom, 2.54 cm Plexiglas on other faces	1.0169 ± 0.0036
212	CAS68	Problem U4R27C1F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 3 x 3 x 3 array, reflected, 15.24 cm paraffin on bottom, 1.27 cm Plexiglas on other faces	1.0110 ± 0.0044
213	CAS69	Problem U4R27D1F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 3 x 3 x 3 array, reflected, 15.24 cm paraffin on 5 faces, 15.24 cm Plexiglas on 1 face	1.0164 ± 0.0041
214	CAS70	Problem U4R27E1F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 3 x 3 x 3 array, reflected, 15.24 cm paraffin on bottom, 3.81 cm paraffin on other faces	1.0257 ± 0.0041
215	CAS71	Problem U4R27F1F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 3 x 3 x 3 array, reflected,	1.0310 ± 0.00 44

		15.24 cm paraffin on bottom, 7.62 cm paraffin on other faces	
216	CAS72	Problem U4R27G1F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders 3 x 3 x 3 array, reflected, 1.27 cm Plexiglas all faces	0.9971 ± 0.0043
217	CAS73	Problem U4R27H1F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 3 x 3 x 3 array, reflected, 1.27 cm paraffin all faces	1.0142 ± 0.0046
219	CAS75	Problem U4R27J1F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 3 x 3 x 3 array, reflected, 3.81 cm paraffin all faces	1.0272 ± 0.0041
220	CAS76	Problem U4R8A1F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 2 x 2 x 2 array, reflected, 15.24 cm paraffin on bottom, 1.27 cm Plexiglas on other faces	1.0143 ± 0.0042
221	CAS77	Problem U4R8B1F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 2 x 2 x 2 array, reflected, 15.24 cm paraffin on bottom, 11.43 cm Plexiglas on other faces	1.0252 ± 0.0040
222	CAS78	Problem U4R8C1F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 2 x 2 x 2 array, reflected, 15.24 cm paraffin on bottom, 15.24 cm Plexiglas on other faces	1.0278 ± 0.0039
223	CAS79	Problem U4R8D1F. 92.5% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 2 x 2 x 2 array, reflected, 15.24 cm paraffin on bottom, 2.54 cm Plexiglas on other faces	1.0215 ± 0.0043
224	CAS80	Problem U4R8E1F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 2 x 2 x 2 array, reflected, 15.24 cm paraffin on bottom, 4.45 cm	1.0285 ± 0.0039

		Plexiglas on other faces	
225	CAS81	Problem U4R8G1F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 2 x 2 x 2 array, reflected, 15.24 cm paraffin on bottom, 6.35 cm Plexiglas on other faces	1.0214 ± 0.0039
226	CAS82	Problem U4R8G1F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 2 x 2 x 2 array, reflected, 15.24 cm paraffin on bottom, 1.27 cm Plexiglas on other faces	1.0183 ± 0.0041
227	CAS83	Problem U4R8H1F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 2 x 2 x 2 array, reflected, 15.24 cm paraffin on bottom, 3.81 cm Plexiglas on other faces	1.0169 ± 0.0037
228	CAS84	Problem U4R8I1F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 2 x 2 x 2 array, reflected, 15.24 cm paraffin on bottom, 7.62 cm Plexiglas on other faces	1.0214 ± 0.0041
229	CAS85	Problem U4R8J1F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 2 x 2 x 2 array, reflected 1.27 cm Plexiglas all faces	1.0095 ± 0.0044
230	CAS86	Problem U4R8K1F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 2 x 2 x 2 array, reflected, 1.27 cm paraffin all faces	1.0100 ± 0.0041
231	CAS87	Problem U4R8L1F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 2 x 2 x 2 array, reflected, 15.24 cm paraffin all faces	1.0166 ± 0.0043
232	CAS88	Problem U4R8M1F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 2 x 2 x 2 array, reflected, 3.81 cm paraffin all faces	1.0238 ± 0.0042

233	CAS89	Problem U4R8N1F. 92.6% $UO_2(NO_3)_2$ solution, 415 g U/l, in Plexiglas cylinders, 2 x 2 x 2 array, reflected, 7.62 cm paraffin all faces	1.0237 ± 0.0044

Appendix B6: Table 6 Inputs

236	CAE01	Experiment 1. U(93.2) $O_2(NO_3)_2$ H/X = 1378 in 27.24-in. diam sphere	0.9925 ± 0.0024
237	CAE02	Experiment 2. U(93.2) $O_2(NO_3)_2$ H/X = 1177, B poisoned, in 27.24-in. diam sphere	0.9991 ± 0.0025
238	CAE03	Experiment 3. U(93.2) $O_2(NO_3)_2$ H/X = 1033, B poisoned, in 27.24-in. diam sphere	0.9912 ± 0.0022
239	CAE04	Experiment 4. U(93.2) $O_2(NO_3)_2$ H/X = 972, B poisoned, in 27.24-in. diam sphere	1.0002 ± 0.0023
240	CAE05	Experiment 5. U-233 $O_2(NO_3)_2$ H/X = 1533, in 27.24-in. diam sphere	1.0034 ± 0.0024
241	CAE06	Experiment 6. U-233 $O_2(NO_3)_2$ H/X = 1470, B poisoned, in 27.24-in. diam sphere	0.9999 ± 0.0026
242	CAE07	Experiment 7. U-233 $O_2(NO_3)_2$ H/X = 1417, B poisoned, in 27.24-in. diam sphere	1.0070 ± 0.0023
243	CAE08	Experiment 8. U-233 $O_2(NO_3)_2$ H/X = 1368, B poisoned, in 27.24-in. diam sphere	0.9994 ± 0.0024
244	CAE09	Experiment 9. U-233 $O_2(NO_3)_2$ H/X = 1835, in 48.04-in. diam sphere	1.0075 ± 0.0023
245	CAE10	Experiment 10. U(93.2)$O_2(NO_3)_2$ H/X = 1835, in 48.04-in. diam sphere	0.9921 ± 0.0016
246	CAE11	Experiment 11. U-233 $O_2(NO_3)_2$ H/X = 1986, in 48.04-in. diam sphere	0.9930 ± 0.0018
247	CAE12	Experiment 12. U(93.2) $O_2(NO_3)_2$ H/X = 1604, in 60.92-in. diam cylinder	0.9953 ± 0.0019
248	CAE13	Experiment 13. U(93.2) $O_2(NO_3)_2$ H/X =	0.9959 ± 0.0018

		1634, in 60.92-in. diam cylinder	
249	CAE14	Experiment 14. U(93.2) $O_2(NO_3)_2$ H/X = 1821, in 60.92-in. diam cylinder	0.9979 ± 0.0018
250	CAE15	Experiment 15. U(93.2) $O_2(NO_3)_2$ H/X = 1905, in 60.92-in. diam cylinder	0.9982 ± 0.0017
251	CAE16	Experiment 16. U(93.2) $O_2(NO_3)_2$ H/X = 1981, in 60.92-in. diam cylinder	0.9920 ± 0.0015
252	CAE17	Experiment 17. U-233 $O_2(NO_3)_2$ H/X = 1819, in 60.92-in. diam cylinder	0.9934 ± 0.0019
253	CAE18	Experiment 18. U-233 $O_2(NO_3)_2$ H/X = 1900, in 60.92-in. diam cylinder	0.9955 ± 0.0020
254	CAE19	Experiment 19. U-233 $O_2(NO_3)_2$ H/X = 1996, in 60.92-in. diam cylinder	0.9961 ± 0.0019
255	CAE20	Experiment 20. U-233 $O_2(NO_3)_2$ H/X = 2106, in 60.92-in. diam cylinder	0.9934 ± 0.0015
256	CAE21	Experiment 21. U(93.2) $O_2(NO_3)_2$ H/X = 1955, in 107.7-in. diam cylinder	0.9935 ± 0.0016
257	CAE22	Experiment 22. U(93.2) $O_2(NO_3)_2$ H/X = 2004, in 107.7-in. diam cylinder	0.9951 ± 0.0012
258	CAE23	Experiment 23. U(93.2) $O_2(NO_3)_2$ H/X = 2052, in 107.7-in. diam cylinder	0.9966 ± 0.0015

Appendix C: Statistical Analysis Based on Segregated Groups

Additional statistical analyses of the validation results were performed based on the data being subdivided into various groups. In these analyses the data were evaluated with respect to a correlation variable over the range of that variable. The treatment of high and low enriched experiments together as a group may not be appropriate due to the large range of enrichments which have been considered in the validation. The effect of treating enrichment as an independent variable is discussed. In addition, the validation cases were grouped by enrichment into highly enriched critical experiments (U_{235} enrichments >90%) and low enriched critical experiments (U^{235} enrichments < 5%) and evaluated using the average energy group of the neutron causing fission (AEG) as the independent variable. An evaluation was also performed in which the data were grouped by table number, as in TM-238, and evaluated using AEG as the independent variable.

The validation experiments were parameterized by average energy group of the neutron causing fission, enrichment level, fuel enrichment, reflection conditions, reflector material, system geometry, unit geometry, fuel mixture and form, and fissile material. These data are presented in Appendix D. The tables provided in Appendix D may be used to determine the applicability of the validation to a specific system being analyzed.

The mean k_{eff} and standard deviation of the mean for each grouping of data considered are shown in Table C.1. Also presented are estimates of the lower 95% confidence bound of k_{eff} and the lower 95% confidence on 99.9% of future calculations bound of k_{eff} when the data are treated as a group. The lower 95% confidence bound of k_{eff} may be interpreted as that value of k_{eff} that one would expect to calculate above, 95% of the time, if the system being analyzed is a critical system. The lower 95% confidence on 99.9% of future calculations bound may be interpreted as the value of k_{eff} that, for a critical system similar to those validated, one would calculate above for 99.9% of the estimates of k_{eff} at the 95% confidence level. These values will be discussed in more detail later.

In the establishment of the confidence bounds of k_{eff}, the variability of the KENO calculations has been included in the estimate of the total standard deviation. This is appropriate in the general case because, while each estimate of k_{eff} is that of a critical system, each estimate is a single estimate of a different physical arrangement of fissile material which has imbedded an individual uncertainty. In the specific case where all of the estimates of k_{eff} are for a specific system or very similar systems, this treatment will overestimate the variability and be slightly conservative.

The results presented in Table C.1 indicate that if the validation data is treated as a group, a calculated k_{eff} of less than 0.95 would be considered subcritical at the 95% confidence level. With the exception of the Table 5 grouping and the Table 5 - high AEG grouping, a calculated k_{eff} of less than 0.95 would be considered as subcritical 99.9% of the time at the 95% confidence level. The Table 5 results have a large total standard deviation due to the bias in a significant number of the validation experiment groups (eg. the IF arrays - cases CAS62-CAS91 have a positive bias of about 1-1/2%, and the slab experiments - cases CAS29-CAS58 have a negative bias of about 1%).

Table C.1: Statistical estimates for grouped data

grouping	number of observations	mean	standard deviation	minimum value	maximum value	sample variance	total standard deviation	lower 95% bound	lower 95% bound on 99.9%
all cases	245	1.0004	1.1587-2	0.9686	1.0510	1.1244-5	1.2062-2	0.9806	0.9599
low enriched cases	101	0.9971	8.2925-3	0.9686	1.0169	8.8757-6	8.8113-3	0.9825	0.9659
high enriched cases	144	1.0028	1.2945-2	0.9690	1.0510	1.2901-5	1.3434-2	0.9807	0.9564
Table 1 cases	39	0.9937	7.1189-3	0.9686	1.0045	9.2363-6	7.7405-3	0.9806	0.9635
Table 2 cases	12	0.9957	6.0732-3	0.9818	1.0048	8.2878-6	6.7210-3	0.9837	0.9623
Table 3 cases	49	1.0002	8.5860-3	0.9818	1.0169	8.7447-6	9.0810-3	0.9850	0.9659
Table 4 cases	38	1.0069	5.8675-3	0.9910	1.0211	1.5427-5	7.0608-3	0.9950	0.9793
Table 5 cases	83	1.0026	1.5929-3	0.9690	1.0510	1.4233-5	1.6370-2	0.9753	0.9438
Table 5 low AEG cases	17	1.0041	7.4530-3	0.9931	1.0159	9.5368-6	8.0675-3	0.9900	0.9673
Table 5 high AEG cases	66	1.0022	1.7248-2	0.9690	1.0510	1.5443-5	1.7919-2	0.9723	0.9365
Table 6 cases	23	0.9969	4.5109-3	0.9912	1.0075	3.9489-6	4.9292-3	0.9884	0.9760

The statistical treatment for generation of a linear uniform-width closed-interval tolerance band used in TM-238, was used to generate Figures C.1 through C.11. In each of these figures the calculated k_{eff} is presented as a function of an independent variable; enrichment for Figure C.1 and AEG for the remaining figures. In each figure, the solid curve is a linear fit through the calculated data. The linear uniform width band that encompasses the lower 95% confidence band on a single future calculation, and the 95% confidence uniform-width closed-interval lower tolerance band on 99.9% proportion of the population are also presented.

For these figures, the "bias" is defined as the difference between the linear least-squares fit through the data and a $k_{eff} = 1.0$. The interpretation of the tolerance bands is similar to that for the grouped data. The linear uniform-width band that encompasses the 95% confidence band for a single future calculation may be interpreted as the k_{eff} value that, for a critical system similar to those validated, one would calculate above for a single future estimate of k_{eff} at 95% confidence. Any calculated k_{eff} above this band is considered critical. The 95% closed-interval, uniform-width, lower tolerance band on 99.9% proportion of the population may be used as the calculational acceptance criteria. The values of k_{eff} represented by this band may be interpreted as the k_{eff} value that, for a critical system similar to those validated, one would expect to calculate above for 99.9% of the estimates of k_{eff} at 95% confidence. Any calculated k_{eff} below this band is considered to be of the group of systems that is not critical (For

ease of discussion this band will be referred to as the subcritical band). The difference between the two confidence bands may be taken as the margin of calculated subcriticality. With the exception of Figure C.11, this margin is in excess of 0.02 Δk. The margin for Figure C.11 is 0.0147 Δk.

The significant effect of considering the sparsity of validation case for enrichments between 5 and 90% is shown in Figure C.1. The lack of data in this region causes the 95% confidence band for 99.9% of the population to be significantly lower than that estimated when treating the data as a group. The margin of calculated subcriticality for Figure C.1 is approximately 0.0488 Δk. This indicates that the code and cross sections should be used with caution when evaluating intermediate enrichment systems. Inclusion of critical experiments in this range would help to reduce the margin of calculated subcriticality while retaining the high degree of confidence in the prediction of subcritical systems.

A similar effect occurs when highly enriched validation cases are treated as a function of AEG over the full range of AEG as shown in Figures C.3 and C.8. Systems with an AEG in the intermediate range are uncommon. Separation of the experiments into low AEG and high AEG, as in Figures C.9 and C.10, eliminate some of the excess conservatism in the subcritical band in Figure C.8 with no reduction in the confidence of the prediction of subcritical systems.

The validation results indicate that KENO V.a and the 27 group library in NCSS accurately predict k_{eff} over a broad range of critical experiments. In the evaluation of a fissile system, the analyst must determine if the range of the validation parameters is adequate. Figures C.1 through C.3 are considered most appropriate for the general case, but may be supplemented with Figures C.4 through C.11 and the group results presented in Table C.2. Analysis of the validation results indicates that intermediate enriched systems require a larger margin of subcriticality for a given confidence level due to the lack of critical experiments in this range.

The Table 5, high AEG results, presented in Figure C.10 indicate a calculational trend in k_{eff} as a function of AEG. This trend is due to the bias in the validation experiment groups. The bias may be caused due to inadequate experimental descriptions or code and cross section bias. The use of Figure C.3 for the subcritical band for highly enriched systems would account for this bias in any event.

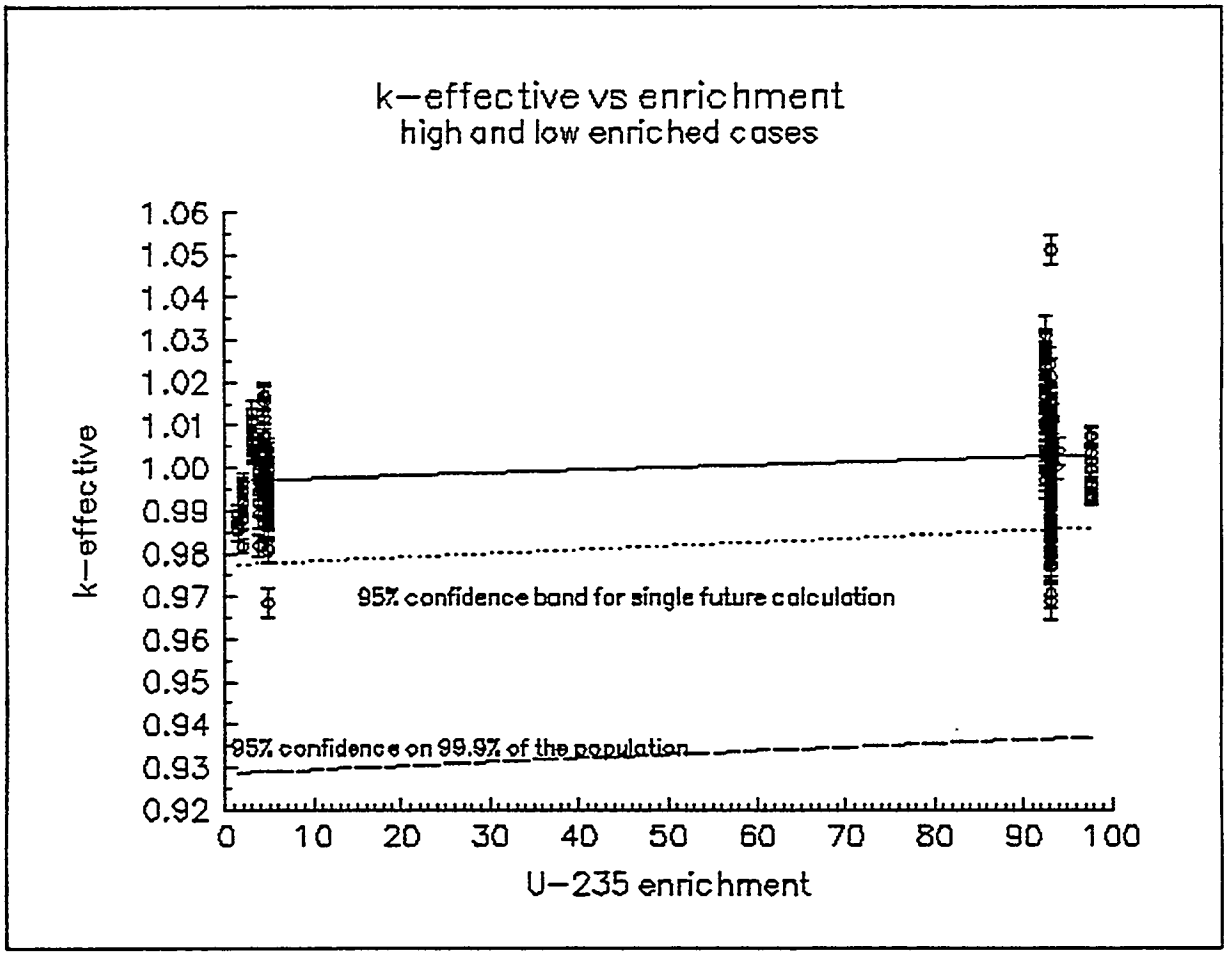

Figure C-1. K_{eff} vs Enrichment - High and Low Enriched Cases

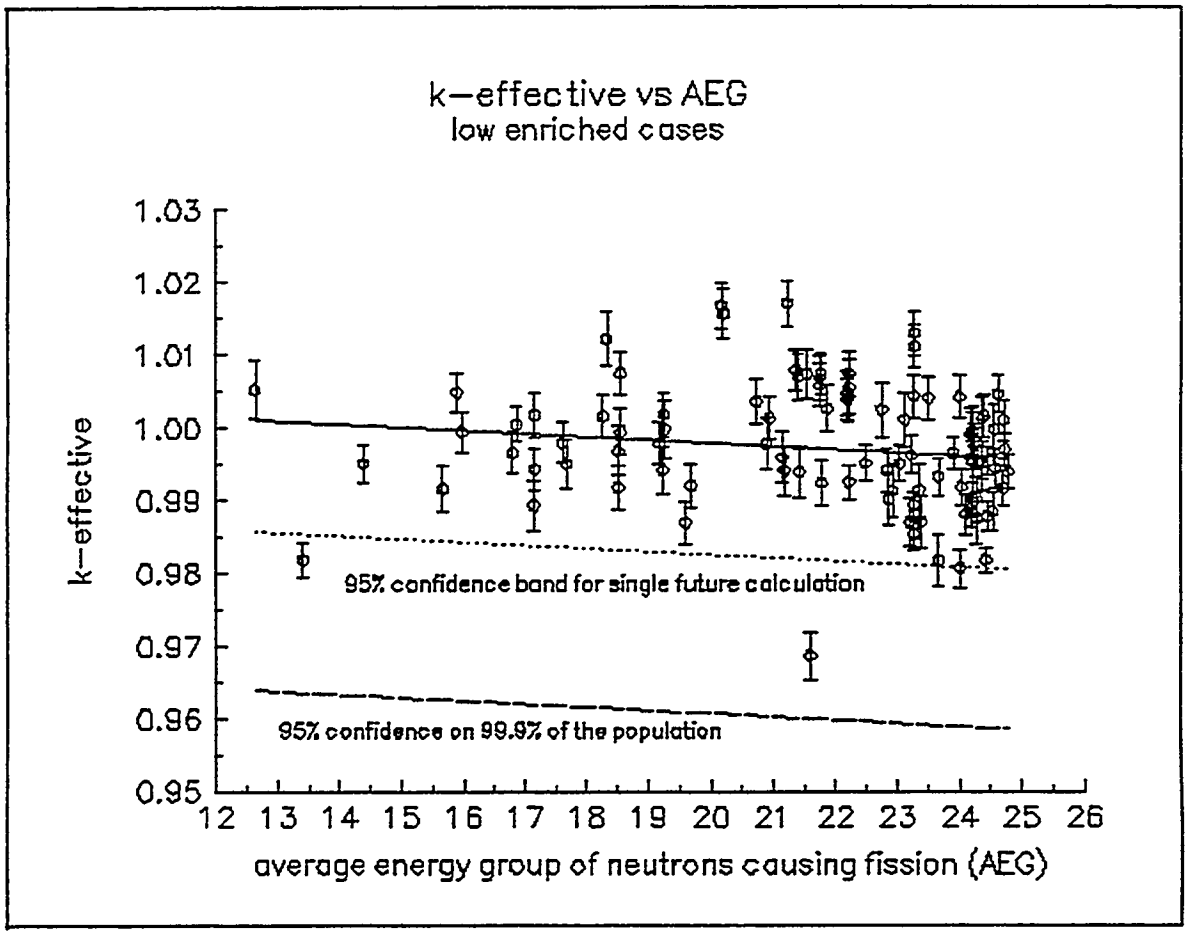

Figure C-2. K_{eff} vs AEG - Low Enriched Cases

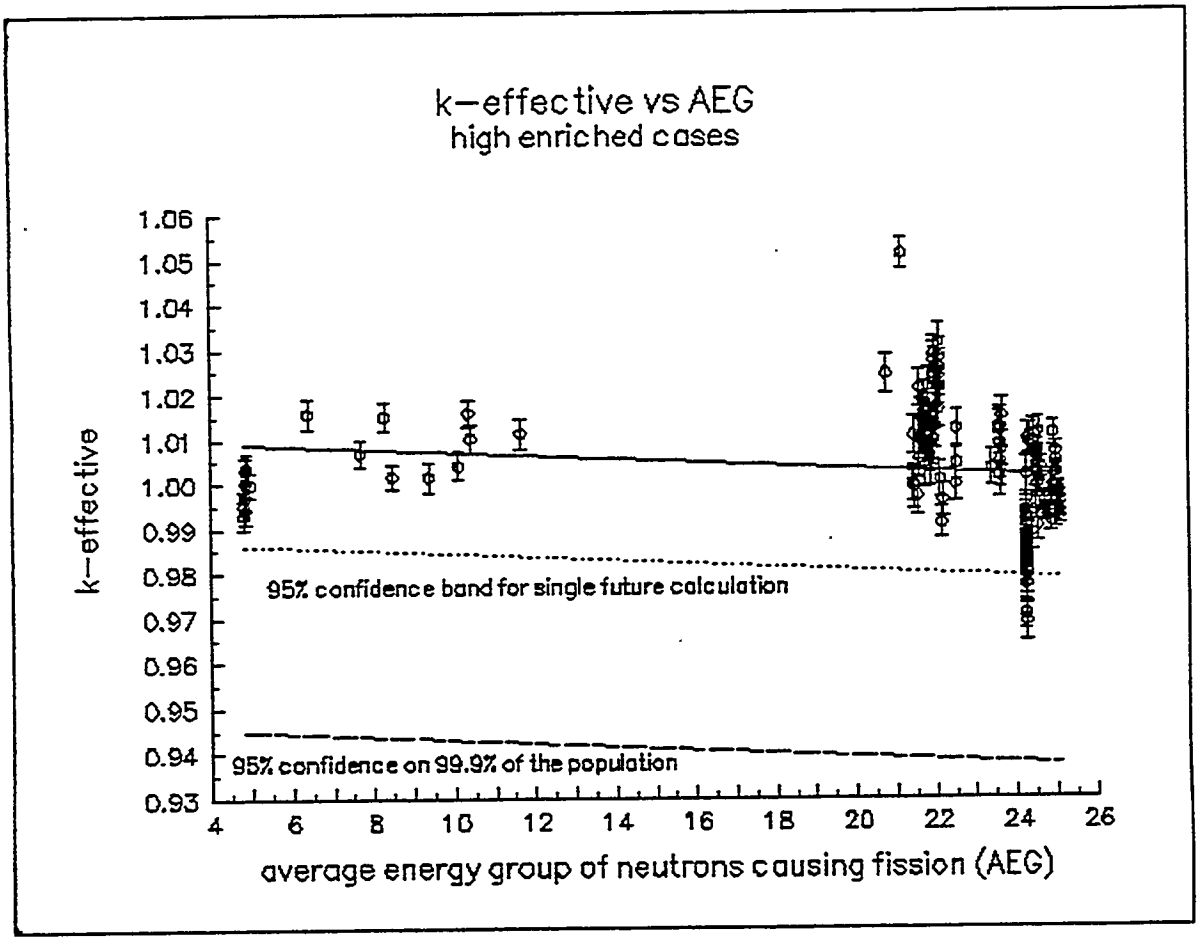

Figure C-3. K_{eff} vs AEG - Highly Enriched Cases

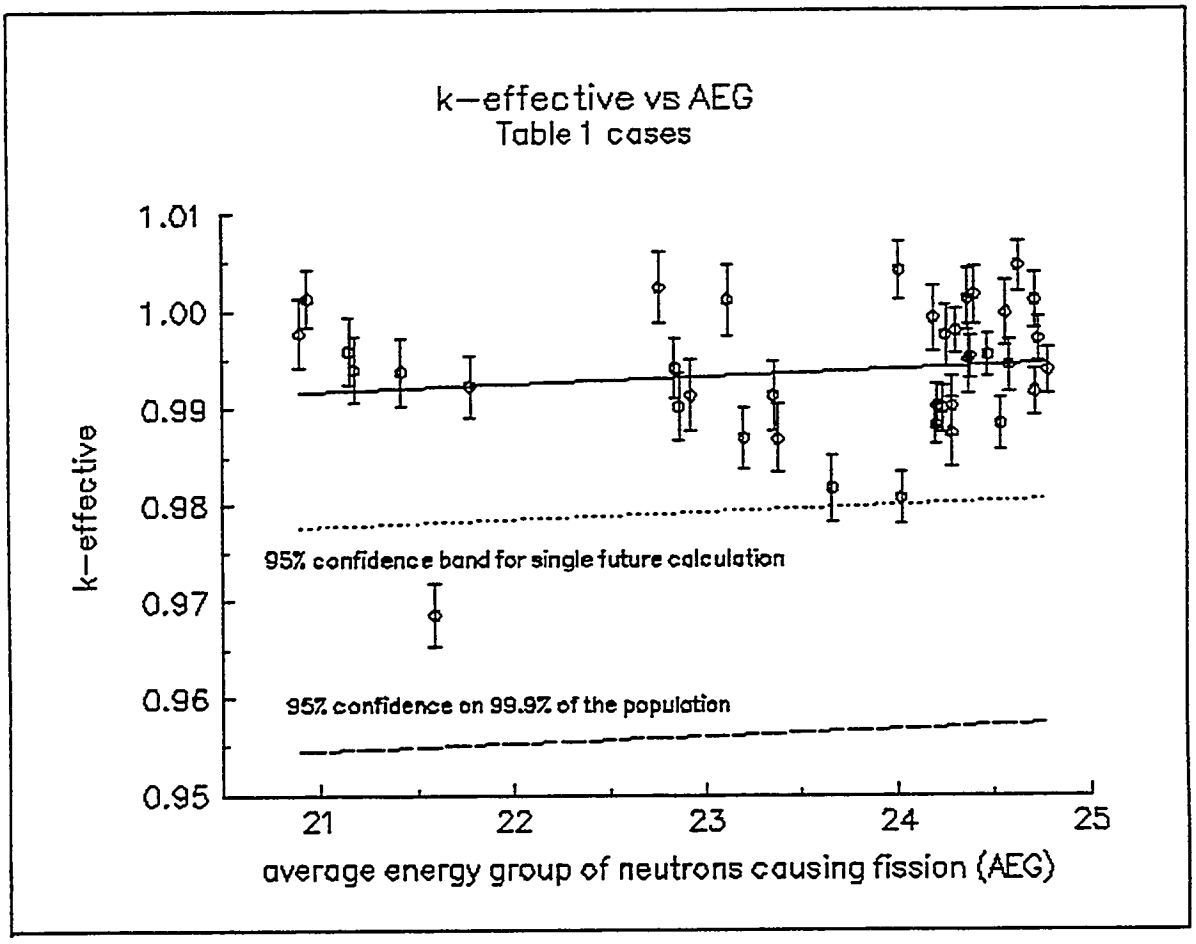

Figure C-4. K_{eff} vs AEG - Table 1 Cases

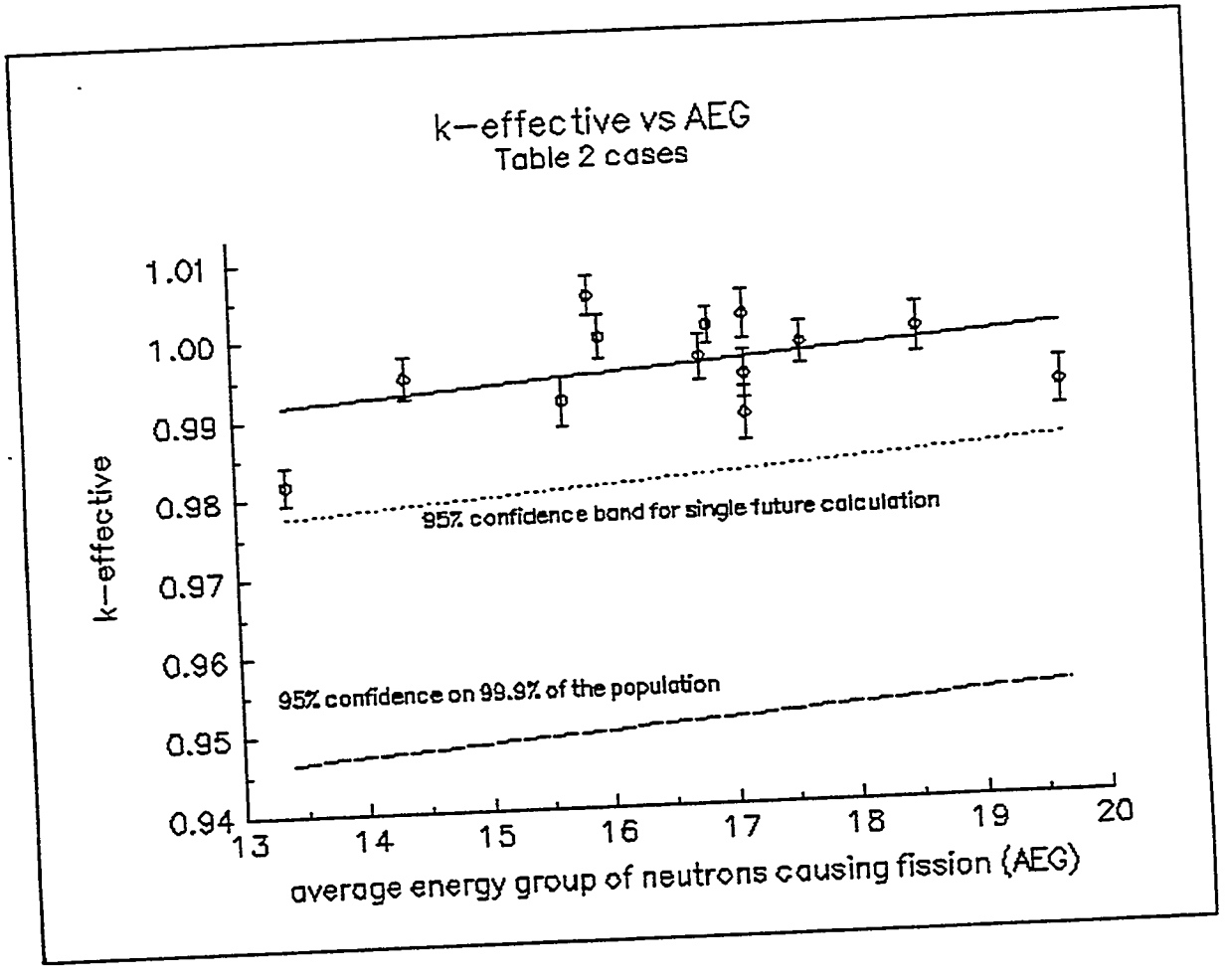

Figure C-5. K_{eff} vs AEG - Table 2 Cases

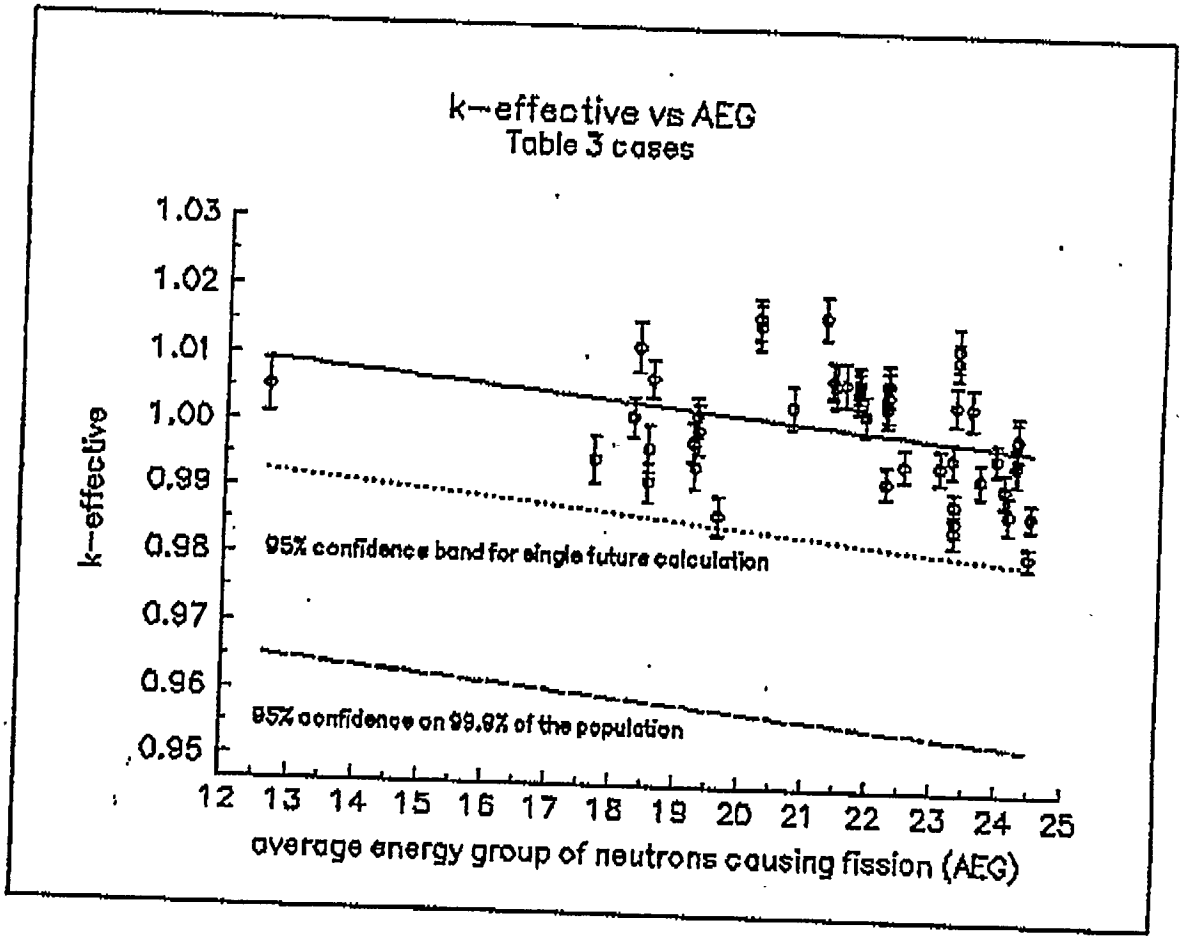

Figure C-6. K_{eff} vs AEG Table 3 Cases

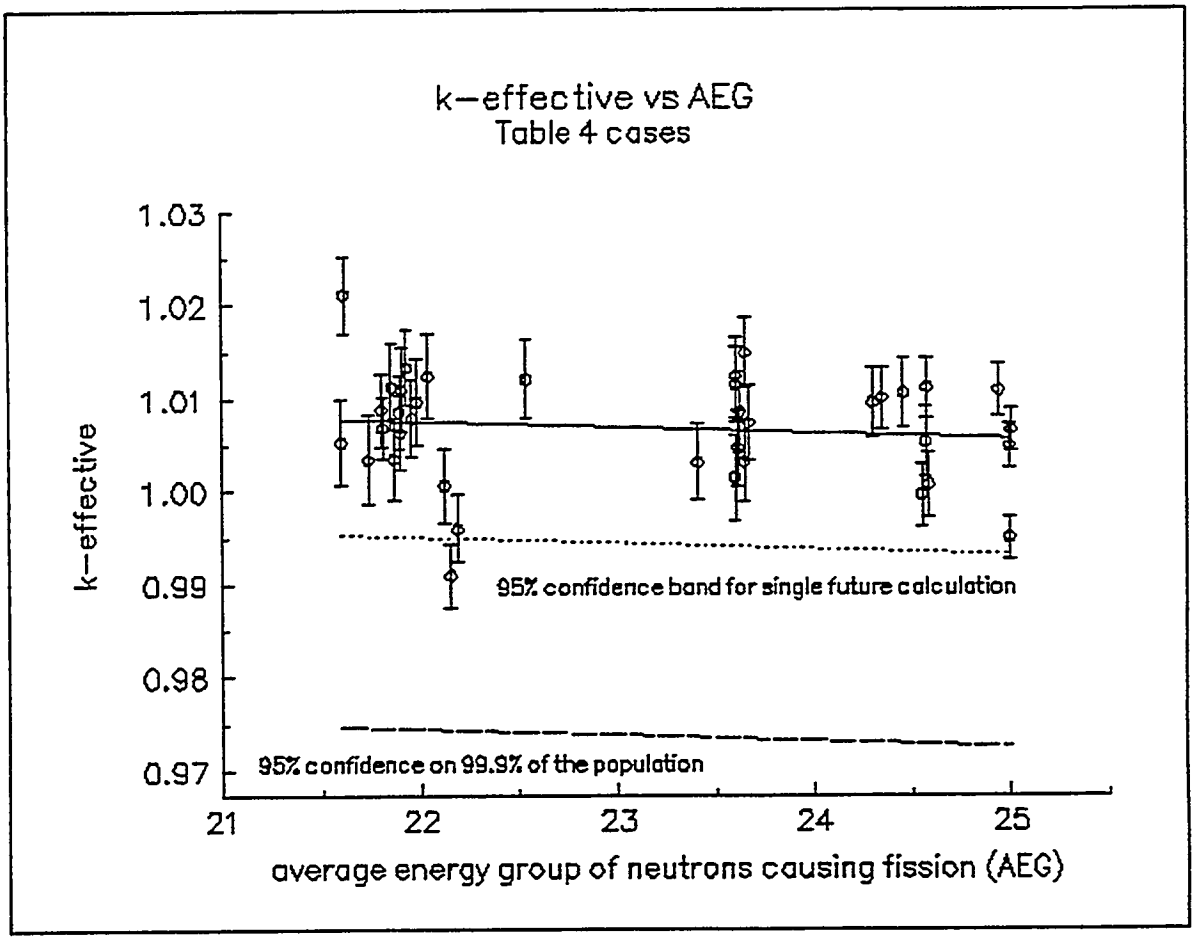

Figure C-7. K_{eff} vs AEG - Table 4 Cases

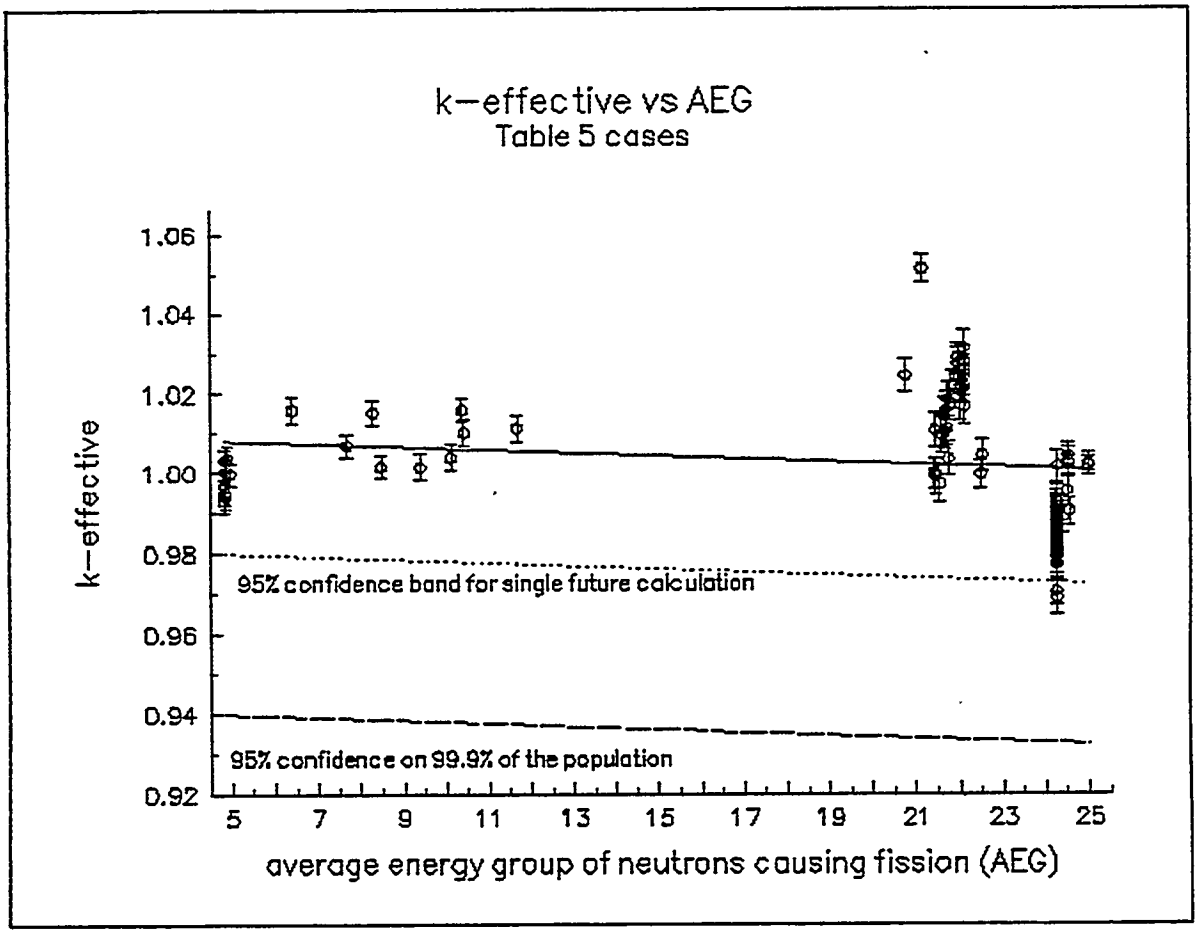

Figure C-8. K_{eff} vs AEG - Table 5 Cases

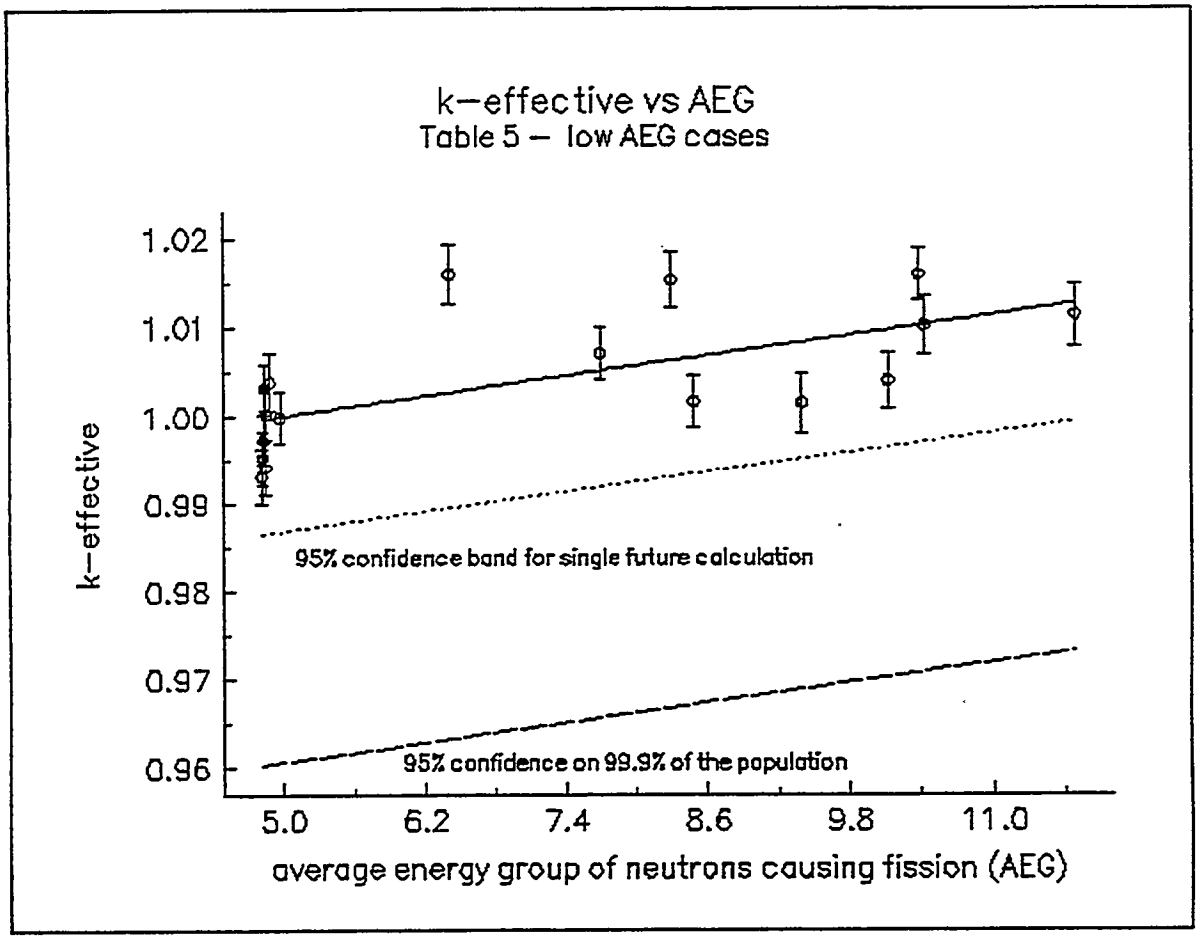

Figure C-9. K_{eff} vs AEG - Table 5 Low AEG Cases

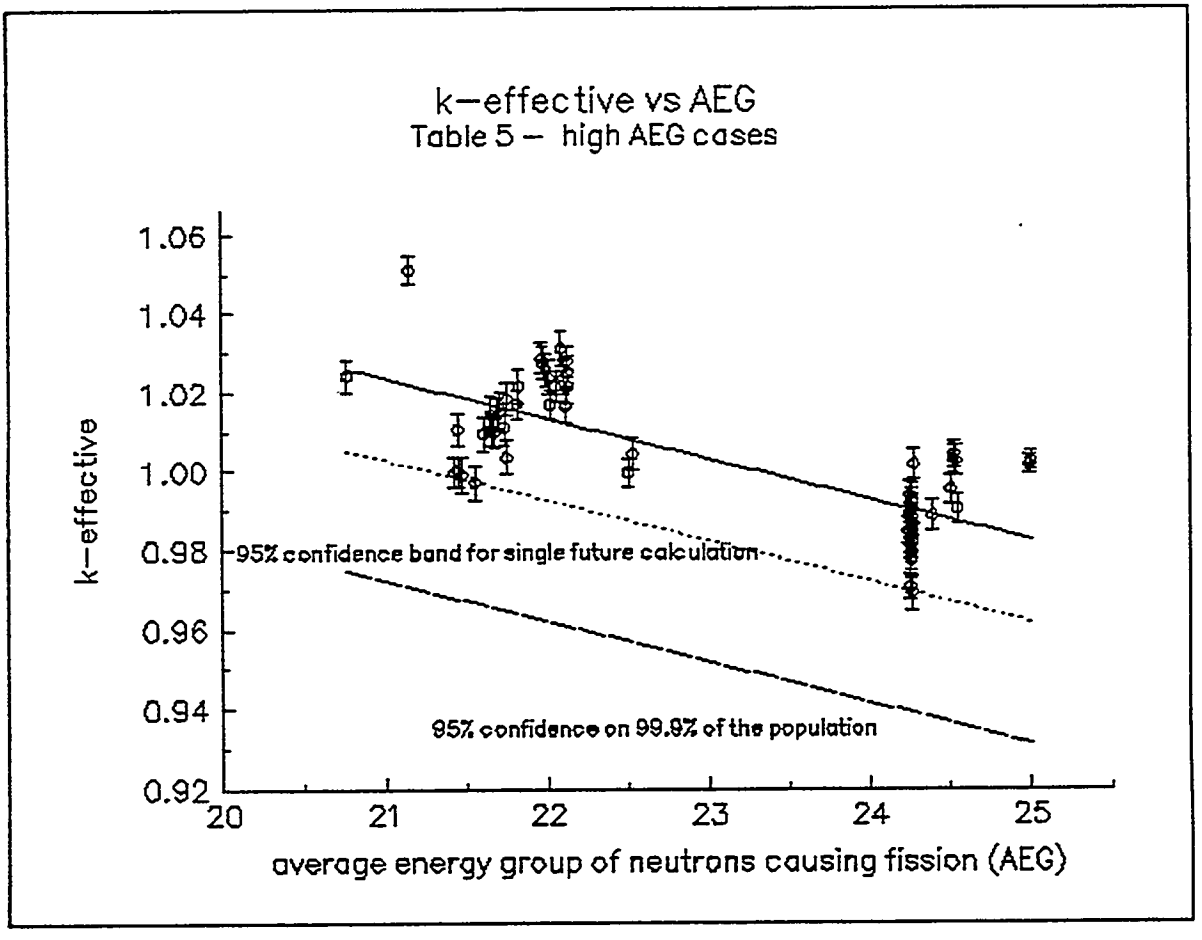

Figure 10. K_{eff} vs AEG - Table 5 High AEG Cases

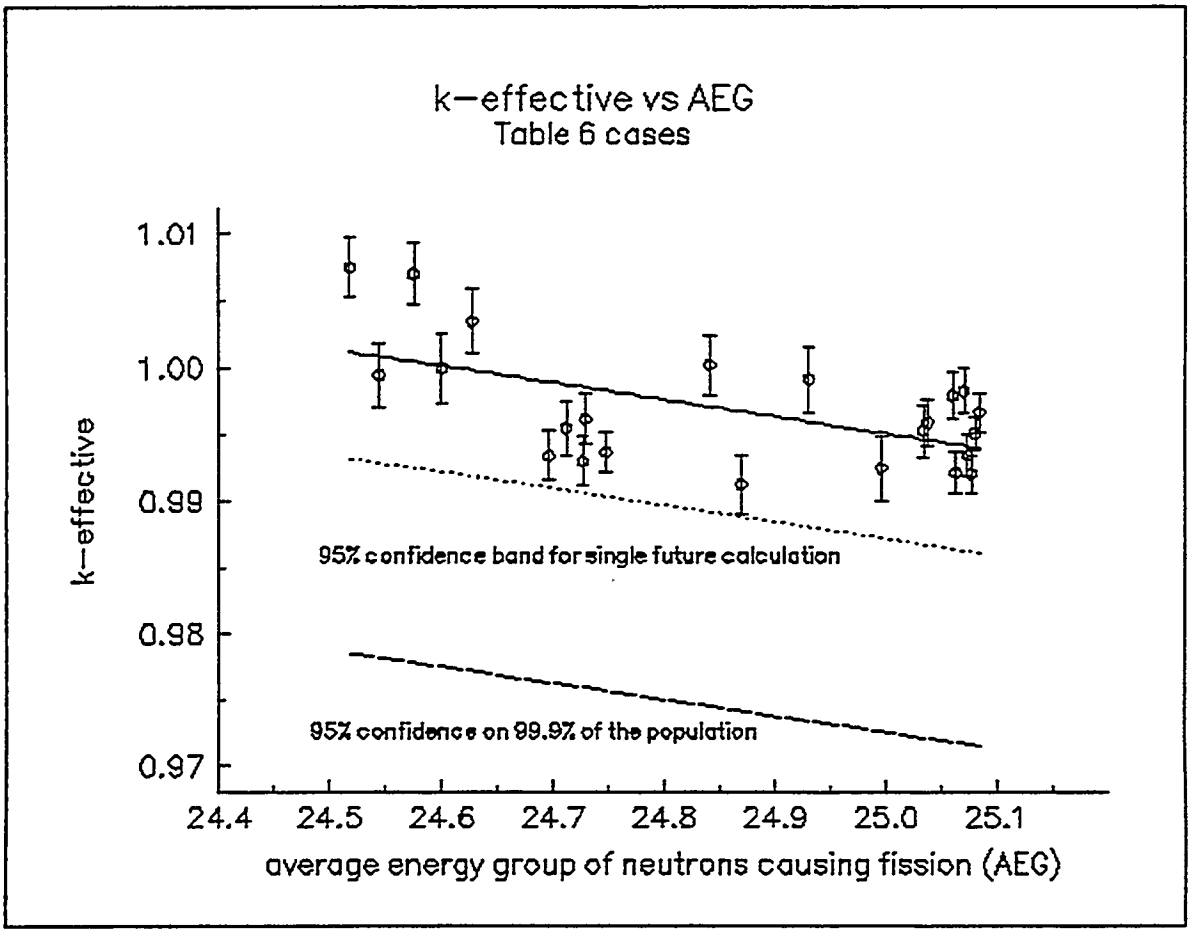

Figure C-11. K_{eff} vs AEG - Table 6 Cases

Appendix D: Calculated Results and Experimental Parameters

In order to analyze the data from the validation calculations, the experiments were parameterized. The results could then be categorized in a number of ways to test for trends and bias. Table D.1 contains the parameters which were used for data analysis for each experiment.

Key terms are as follows:

RUN	-	Sequential number assigned to experiments.
MEMB	-	Case number which corresponds to Tables 1-6.
ENRLEV	-	Enrichment level (**H**igh, **I**ntermediate, **L**ow).
AEG	-	Average Energy Group causing fission.
ASSAY	-	Fuel enrichment.
REFLCOND	-	Reflection condition (**R**eflected, **P**artially reflected, **U**nreflected).
REFL	-	Reflector material.
SYSGEOM	-	Overall system geometry (**A**rray, **S**ingle unit, **M**ixed).
UNITGEOM	-	Principal geometry of unit (**CY**linder, **SL**ab, **SP**here).
FUELMIX	-	Indicator as to whether the system was considered primarily **HET**erogeneous or **HOM**ogeneous.
FUEL	-	Primary form of fissile material.
FMATL	-	Principal fissile nuclide in fuel.
REF	-	Reference number for reference which describes the critical experiment.

Table D. 1. Calculational results and experimental parameters

Table-1

RUN	MEMB	AEG	ENRLEV	ASSAY	REFLCOND	REFL	SYSGEOM	UNITGEOM	FUELMIX	FUEL	FMATL	REF
1	CAA01	21.1822	L	4.89	R	H2O	A	CY	HET	METAL	U235	14
2	CAA02	21.7763	L	4.89	R	H2O	A	CY	HET	METAL	U235	14
3	CAA03	22.9244	L	4.89	R	H2O	A	CY	HET	METAL	U235	14
4	CAA04	23.1204	L	4.89	R	H2O	A	CY	HET	METAL	U235	14
5	CAA05	23.2052	L	4.89	R	H2O	A	CY	HET	METAL	U235	14
6	CAA06	21.1520	L	4.89	R	COMP	A	CY	HET	METAL	U235	14
7	CAA07	21.4201	L	4.89	R	PB	A	CY	HET	METAL	U235	14
8	CAA08	22.8395	L	4.89	R	PB	A	CY	HET	METAL	U235	14
9	CAA09	22.7681	L	4.89	R	PB	A	CY	HET	METAL	U235	14
10	CAA10	20.9405	L	4.89	R	PB	A	CY	HET	METAL	U235	14
11	CAA11	20.9007	L	4.89	R	PB	A	CY	HET	METAL	U235	14
12	CAA12	24.0229	L	4.89	R	UO2F2	A	CY	HET	METAL	U235	14
13	CAA13	24.3789	L	4.89	R	UO2F2	A	CY	HET	METAL	U235	14
14	CAA14	24.4714	L	4.89	R	UO2F2	A	CY	HET	METAL	U235	14
15	CAA15	24.2015	L	4.89	R	UO2F2	A	CY	HET	METAL	U235	14
16	CAA16	24.2118	L	4.89	R	UO2P2	A	CY	HET	METAL	U235	14
17	CAA17	24.2362	L	4.89	R	UO2F2	A	CY	HET	METAL	U235	14
18	CAA18	24.3070	L	4.89	R	UO2F2	A	CY	HET	METAL	U235	14
19	CAA19	23.3604	L	4.89	U		S	SL	HOM	U308	U235	15
20	CAA20	24.0109	L	4.89	U		S	SL	HOM	U308	U235	15
21	CAA21	24.5656	L	4.89	U		S	SL	HOM	U308	U235	15
22	CAA22	24.2527	L	4.89	U		S	SL	HOM	U308	U235	15
23	CAA23	23.3816	L	4.89	R	H2O	S	SL	HOM	U308	U235	15
24	CAA24	23.6646	L	4.89	R	H2O	S	SL	HOM	U308	U235	15
25	CAA25	24.1886	L	4.89	R	H2O	S	SL	HOM	U308	U235	15
26	CAA26	24.6282	L	4.89	R	H2O	S	SL	HOM	U308	U235	15
27	CAA27	22.8612	L	4.89	R	H2O	S	SL	HOM	U308	U235	15
28	CAA28	21.5891	L	4.89	R	H2O	S	SL	HOM	U308	U235	15
29	CAA29	24.3721	L	4.89	R	H2O	S	SL	HOM	U308	U235	15
30	CAA30	24.2872	L	4.89	U		S	CY	HOM	UO2F2	U235	15
31	CAA31	24.2824	L	4.89	U		S	SL	HOM	UO2F2	U235	15
32	CAA32	24.5367	L	4.89	U		S	CY	HOM	UO2F2	U235	15
33	CAA33	24.7165	L	4.89	U		S	SP	HOM	UO2F2	U235	15
34	CAA34	24.7177	L	4.89	U		S	CY	HOM	UO2F2	U235	15
35	CAA35	24.3651	L	4.89	R	H2O	S	CY	HOM	UO2F2	U235	15
36	CAA36	24.4004	L	4.89	R	H2O	S	SL	HOM	UO2F2	U235	15
37	CAA37	24.5827	L	4.89	R	H2O	S	CY	HOM	UO2F2	U235	15
38	CAA38	24.7852	L	4.89	R	H2O	S	SP	HOM	UO2F2	U235	15
39	CAA39	24.7339	L	4.89	R	H2O	S	CY	HOM	UO2F2	U235	15

Table D.1 (continued)

Table-2

RUN	MEMB	AEG	ENRLEV	ASSAY	REFLCOND	REFL	SYSGEOM	UNITGEOM	FUELMIX	FUEL	FMATL	REF
40	CAB01	14.3919	L	3.85	R	H2O	A	CY	HET	METAL	U235	16
41	CAB02	15.9838	L	3.85	R	H2O	A	CY	HET	METAL	U235	16
42	CAB03	16.8027	L	3.85	R	H2O	A	CY	HET	METAL	U235	16
43	CAB07	13.4020	L	3.85	R	H2O	A	CY	HET	METAL	U235	16
44	CAB08	15.6706	L	3.85	R	H2O	A	CY	HET	METAL	U235	16
45	CAB09	17.1510	L	3.85	R	H2O	A	CY	HET	METAL	U235	16
46	CAB10	16.8677	L	3.85	R	H2O	A	CY	HET	METAL	U235	16
47	CAB11	17.1597	L	3.85	R	H2O	A	CY	HET	METAL	U235	16
48	CAB12	17.6173	L	3.85	R	H2O	A	CY	HET	METAL	U235	16
49	CAB13	15.9016	L	3.85	R	H2O	A	CY	HET	METAL	U235	16
50	CAB14	17.1589	L	3.85	R	H2O	A	CY	HET	METAL	U235	16
51	CAB15	16.5572	L	3.85	R	H2O	A	CY	HET	METAL	U235	16
52	CAB16	19.6906	L	3.85	R	H2O	A	CY	HET	METAL	U235	16

Table D.1 (continued)

Table-3

RUN	MEMB	AEG	ENRLEV	ASSAY	REFLCOND	REFL	SYSGEOM	UNITGEOM	FUELMIX	FUEL	FMATL	REF
53	CAS04	23.2734	L	1.40	U		S	SL	HOM	UF4	U235	17
54	CAS05	23.2666	L	1.40	U		S	SL	HOM	UF4	U235	17
55	CAS06	23.2791	L	1.40	U		S	SL	HOM	UF4	U235	17
56	CAS11	22.4862	L	2.00	R	PARA	S	SL	HOM	UF4	U235	18
57	CAS12	22.2186	L	2.00	U		S	SL	HOM	UF4	U235	18
58	CAS13	23.2281	L	2.00	R	PARA	S	SL	HOM	UF4	U235	18
59	CAS14	23.0448	L	2.00	U		S	SL	HOM	UF4	U235	18
60	CAS15	23.6696	L	2.00	R	PARA	S	SL	HOM	UF4	U235	18
61	CAS16	23.9141	L	2.00	R	PARA	S	SL	HOM	UF4	U235	18
62	CAS17	24.1094	L	2.00	R	PARA	S	SL	HOM	UF4	U235	18
63	CAS18	24.0407	L	2.00	U		S	SL	HOM	UF4	U235	18
64	CAS19	24.4552	L	2.00	R	PARA	S	SL	HOM	UF4	U235	18
65	CAS20	24.4267	L	2.00	U		S	SL	HOM	UF4	U235	18
66	CAS21	22.1985	L	3.00	R	PARA	S	SL	HOM	UF4	U235	18
67	CAS22	22.1997	L	3.00	R	PARA	S	SL	HOM	UF4	U235	18
68	CAS23	22.2168	L	3.00	R	PARA	S	SL	HOM	UF4	U235	18
69	CAS24	22.2190	L	3.00	R	PARA	S	SL	HOM	UF4	U235	18
70	CAS25	22.2128	L	3.00	R	PARA	S	SL	HOM	UF4	U235	18
71	CAS26	21.7608	L	3.00	U		S	SL	HOM	UF4	U235	18
72	CAS27	21.7533	L	3.00	U		S	SL	HOM	UF4	U235	18
73	CAS28	21.7533	L	3.00	U		S	SL	HOM	UF4	U235	18
74	CAS29	23.5114	L	3.00	R	POLY	S	SL	HOM	UF4	U235	18
75	CAS30	23.2814	L	3.00	U		S	SL	HOM	UF4	U235	18
76	CAS31	23.2732	L	3.00	U		S	SL	ROM	UF4	U235	18
77	CAS32	23.2821	L	3.00	U		S	SL	HOM	UF4	U235	18
78	CAS33	24.2149	L	4.98	R	COMP	S	CY	HOM	UO2F2	U235	19
79	CAS34	24.2271	L	4.98	R	COMP	S	CY	HOM	UO2F2	U235	19
80	CAS35	24.2357	L	4.98	U		S	SP	HOM	UO2F2	U235	20
81	CAS36	24.2270	L	4.98	U		S	CY	HOM	UO2P2	U235	21
82	CAR01	21.3614	L	4.46	R	PLEX	S	SL	HET	U3O8	U235	22
83	CAR02	21.3967	L	4.46	R	PLEX	S	SL	HET	U3O8	U235	22
84	CAR03	19.6039	L	4.46	R	PLEX	S	SL	HET	U3O8	U235	22
85	CAR04	21.2247	L	4.46	R	CONC	S	SL	HET	U3O8	U235	22
86	CAR05	19.1879	L	4.46	R	CONC	S	SL	HET	U3O8	U235	22
87	CAR06	12.6293	L	4.46	R	PLEX	S	SL	HOM	U3O8	U235	23
88	CAR07	18.3295	L	4.46	R	PLEX	S	SL	HOM	U3O8	U235	23
89	CAR08	19.2732	L	4.46	R	PLEX	S	SL	HOM	U3O8	U235	23
90	CAR09	19.2330	L	4.46	R	PLEX	S	SL	HOM	U3O8	U235	23
91	CAR10	17.6779	L	4.46	R	CONC	S	SL	HOM	U3O8	U235	23
92	CAR11	21.5399	L	4.46	R	PLEX	S	SL	HET	U3O8	U235	24
93	CAR12	20.1841	L	4.46	R	PLEX	S	SL	HET	U3O8	U235	24
94	CAR13	20.2041	L	4.46	R	PLEX	S	SL	HET	U3O8	U235	24
95	CAR14	18.5538	L	4.46	R	PLEX	S	SL	HOM	U3O8	U235	24
96	CAR15	18.5150	L	4.46	R	PLEX	S	SL	HOM	U3O8	U235	24
97	CAR16	19.2531	L	4.46	R	PLEX	S	SL	HOM	U3O8	U235	24
98	CAR17	20.7366	L	4.46	R	PLEX	S	SL	HET	U3O8	U235	25
99	CAR18	21.8670	L	4.46	R	PLEX	S	SL	HET	U3O8	U235	25
100	CAR19	18.2658	L	4.46	R	PLEX	S	SL	HOM	U3O8	U235	25
101	CAR20	18.5148	L	4.46	R	PLEX	S	SL	MOM	U3O8	U235	25

Table D. 1 (continued)

Table-4

RUN	MEMB	AEG	ENRLEV	ASSAY	REFLCOND	REFL	SYSGEOM	UNITGEOM	FUELMIX	FUEL	FMATL	REF
102	CAA01	24.9397	H	93.20	U		S	SP	HOM	UO2F2	U235	26
103	CAA02	25.0034	H	93.20	U		S	SP	HOM	UO2F2	U235	26
104	CAA03	24.9984	H	93.20	U		S	SP	HOM	NITRATE	U235	26
105	CAA04	22.5400	H	93.20	R	H2O	S	SP	HOM	UO2F2	U235	26
106	CAA05	23.4107	H	93.20	R	H2O	S	SP	HOM	UO2F2	U235	26
107	CAA06	24.9970	H	93.20	R	H2O	S	SP	HOM	UO2F2	U235	26
*108	CAA07		H	93.20	R	H2O	S	SP	HOM	UO2F2	U235	27
*109	CAA08		H	93.20	R	H2O	S	SP	HOM	UO2F2	U235	27
*110	CAA09		H	93.20	U		S	SP	HOM	UO2F2	U235	27
*111	CAA10		H	93.20	R	H2O	S	SP	HOM	UO2F2	U235	27
*112	CAA11		H	93.20	R	H2O	S	SP	HOM	UO2F2	U235	27
113	CAA12	23.6024	H	93.20	U		S	CY	HOM	NITRATE	U235	28
114	CAA13	21.6104	H	93.20	U		S	CY	HOM	NITRATE	U235	28
115	CAA14	24.5750	H	93.20	U		S	CY	HOM	NITRATE	U235	28
116	CAA15	23.6500	H	93.20	U		S	CY	HOM	NITRATE	U235	28
117	CAA16	21.5981	H	93.20	U		S	CY	HOM	NITRATE	U235	28
118	CAA17	23.6255	H	93.20	R	CONC	S	CY	HOM	NITRATE	U235	28
119	CAA18	21.6547	H	93.20	R	CONC	S	CY	HOM	NITRATE	U235	28
120	CAA19	23.6165	H	93.20	R	CONC	S	CY	HOM	NITRATE	U235	28
121	CAA20	21.6671	H	93.20	R	CONC	S	CY	HOM	NITRATE	U235	28
122	CAA21	23.6516	H	93.20	R	CONC	S	CY	HOM	NITRATE	U235	28
123	CAA22	21.9814	H	93.20	R	CONC	S	CY	HOM	NITRATE	U235	28
124	CAA23	23.6074	H	93.20	R	PLEX	S	CY	HOM	NITRATE	U235	28
125	CAA24	21.6016	H	93.20	R	PLEX	S	CY	HOM	NITRATE	U235	28
126	CAA25	23.6035	H	93.20	R	PLEX	S	CY	HOM	NITRATE	U235	28
127	CAA26	21.6090	H	93.20	R	PLEX	S	CY	HOM	NITRATE	U235	28
128	CAA27	23.6706	H	93.20	R	PLEX	S	CY	HOM	NITRATE	U235	28
129	CAA28	22.0388	H	93.20	R	PLEX	S	CY	HOM	NITRATE	U235	28
130	CAA29	24.4553	H	93.20	R	CONC	A	CY	HOM	NITRATE	U235	28
131	CAA30	21.9291	H	93.20	R	CONC	A	CY	HOM	NITRATE	U235	28
132	CAA31	24.2993	H	93.20	R	CONC	A	CY	HOM	NITRATE	U235	28
133	CAA32	21.8565	H	93.20	R	CONC	A	CY	HOM	NITRATE	U235	28
134	CAA33	24.3475	H	93.20	R	CONC	A	CY	HOM	NITRATE	U235	28
135	CAA34	21.7356	H	93.20	R	CONC	A	CY	HOM	NITRATE	U235	28
136	CAA35	21.8996	H	93.20	R	CONC	A	CY	HOM	NITRATE	U235	28
137	CAA36	21.9042	H	93.20	R	CONC	A	CY	HOM	NITRATE	U235	28
138	CAA37	24.5698	H	93.20	R	PLEX	A	CY	HOM	NITRATE	U235	28
139	CAA38	22.1533	H	93.20	R	PLEX	A	CY	HOM	NITRATE	U235	28
140	CAA39	24.5841	H	93.20	R	PLEX	A	CY	HOM	NITRATE	U235	28
141	CAA40	22.1872	H	93.20	R	PLEX	A	CY	HOM	NITRATE	U235	28
142	CAA41	24.5504	H	93.20	R	PLEX	A	CY	HOM	NITRATE	U235	28
143	CAA42	21.8938	H	93.20	R	PLEX	A	CY	HOM	NITRATE	U235	28
144	CAA43	22.1219	H	93.20	R	PLEX	A	CY	HOM	NITRATE	U235	28

Table D.1 (continued)

Table-5

RUN	MEMB	AEG	ENRLEV	ASSAY	REFLCOND	REFL	SYSGEOM	UNITGEOM	FUELMIX	FUEL	FMATL	REF
145	CAS01	4.8602	H	93.80	U		S	SP	HOM	METAL	U235	29
146	CAS02	8.4864	H	97.67	R	H2O	S	SP	HOM	METAL	U235	35
147	CAS03	21.7099	H	93.20	U		S	CY	HOM	NITRATE	U235	28
148	CAS04	4.9719	H	93.20	U		S	CY	HOM	ALLOY	U235	30
149	CAS05	25.0057	H	93.20	U		S	SP	HOM	UO2F2	U235	26
150	CAS06	24.9967	H	93.20	U		S	SP	HOM	NITRATE	U235	31
151	CAS07	11.6794	H	93.50	R	H2O	S	SP	HET	METAL	U235	32
152	CAS08	6.4040	H	93.20	R	C	S	CY	HET	METAL	U235	33
153	CAS09	4.8874	H	94.00	R	U238	S	SL	HOM	METAL	U235	32
154	CAS10	10.4190	H	93.10	R	OIL	S	SP	HET	METAL	U235	33
155	CAS11	9.3981	H	93.10	R	OIL	S	SP	HET	METAL	U235	34
156	CAS12	4.8269	H	93.20	U		M	CY	HOM	METAL	U235	36
*157	CAS13		H	92.60	U		A	CY	HOM	NITRATE	U235	38
158	CAS14	21.1546	H	93.20	R	PLEX	A	MIX	HOM	NITRATE	U235	39
159	CAS15	8.2944	H	93.20	R	POLY	A	CY	HET	METAL	U235	40
*160	CAS16		H	92.60	U		A	CY	HOM	NITRATE	U235	38
*161	CAS17		H	92.60	R	PARA	A	CY	HOM	NITRATE	U235	38
*162	CAS18		H	92.60	R	PLEX	A	CY	HOM	NITRATE	U235	38
163	CAS19	20.7682	H	93.10	U		A	CY	HOM	NITRATE	U235	41
*164	CAS20		H	93.20	R	PLEX	A	CY	HOM	NITRATE	U235	28
*165	CAS21		H	93.20	R	CONC	A	CY	HOM	NITRATE	U235	28
166	CAS22	4.8443	H	93.20	U		M	CY	HOM	METAL	U235	36
167	CAS23	4.8334	H	93.20	U		M	MIX	HOM	METAL	U235	36
168	CAS24	4.8200	H	93.20	U		A	CY	HOM	METAL	U235	37
169	CAS25	4.8488	H	93.20	U		A	CY	HOM	METAL	U235	37
170	CAS26	10.1240	H	93.20	R	PARA	A	CY	HOM	METAL	U235	37
171	CAS27	10.3737	H	93.20	R	PARA	A	CY	HOM	METAL	U235	37
172	CAS28	7.6933	H	93.20	U		A	CY	HET	METAL	U235	37
*173	CAS29		H	92.60	U		A	CY	HOM	NITRATE	U235	38
174	CAS30	24.2771	H	93.20	U		S	SL	HOM	UO2F2	U235	43
175	CAS31	24.3917	H	93.20	R	H2O	S	SL	HOM	UO2F2	U235	43
176	CAS32	24.2617	H	93.20	U		A	SL	HOM	UO2F2	U235	43
177	CAS33	24.6061	H	93.20	R	H2O	A	SL	HOM	UO2F2	U235	43
178	CAS34	24.2531	H	93.20	U		A	SL	HOM	UO2F2	U235	43
179	CAS35	24.6460	H	93.20	R	H2O	A	SL	HOM	UO2F2	U235	43
180	CAS36	24.2492	H	93.20	U		A	SL	HOM	UO2F2	U235	43
181	CAS37	24.6316	H	93.20	R	H2O	A	SL	HOM	UO2F2	U235	43
182	CAS38	24.2464	H	93.20	U		A	SL	HOM	UO2F2	U235	43
183	CAS39	24.6236	H	93.20	R	H2O	A	SL	HOM	UO2F2	U235	43
184	CAS40	24.2443	H	93.20	U		A	SL	HOM	UO2F2	U235	43
185	CAS41	24.2573	H	93.20	U		A	SL	HOM	UO2F2	U235	43
186	CAS42	24.2653	H	93.20	U		A	SL	HOM	UO2F2	U235	43
187	CAS43	24.2606	H	93.20	U		A	SL	HOM	UO2F2	U235	43
188	CAS44	24.2692	H	93.20	U		A	SL	HOM	UO2F2	U235	43
189	CAS45	24.2671	H	93.20	U		S	SL	HOM	UO2F2	U235	43
190	CAS46	24.2580	H	93.20	U		A	SL	HOM	UO2F2	U235	43
191	CAS47	24.2513	H	93.20	U		A	SL	HOM	UO2F2	U235	43
192	CAS48	24.2551	H	93.20	U		A	SL	HOM	UO2F2	U235	43
193	CAS49	24.2577	H	93.20	U		A	SL	HOM	UO2F2	U235	43
194	CAS50	24.2568	H	93.20	U		A	SL	HOM	UO2F2	U235	43

Table D.1 (continued)

Table = 5 (continued)

RUN	MEMB	AEG	ENRLEV	ASSAY	REFLCOND	REFL	SYSGEOM	UNITGEOM	FUELMIX	FUEL	FMATL	REF
198	CAS54	24.2648	H	93.20	U		A	SL	HOM	UO2F2	U235	43
199	CAS55	24.2684	H	93.20	U		A	SL	HOM	UO2F2	U235	43
200	CAS56	24.2658	H	93.20	U		A	SL	HOM	UO2F2	U235	43
201	CAS57	24.2680	H	93.20	U		A	SL	HOM	UO2F2	U235	43
202	CAS58	24.2602	H	93.20	U		A	SL	HOM	UO2F2	U235	43
203	CAS59	24.2734	H	93.20	U		A	SL	HOM	UO2F2	U235	43
204	CAS60	22.5030	H	92.60	U		A	CY	HOM	NITRATE	U235	38
205	CAS61	22.5333	H	92.60	U		A	CY	HOM	NITRATE	U235	38
206	CAS62	21.4498	H	92.60	U		A	CY	HOM	NITRATE	U235	38
207	CAS63	21.4492	H	92.60	U		A	CY	HOM	NITRATE	U235	38
208	CAS64	21.4310	H	92.60	U		A	CY	HOM	NITRATE	U235	38
209	CAS65	21.4714	H	92.60	U		A	CY	HOM	NITRATE	U235	38
210	CAS66	21.6547	H	92.60	P	PLEX	A	CY	HOM	NITRATE	U235	38
211	CAS67	21.8148	H	92.60	P	PLEX	A	CY	HOM	NITRATE	U235	38
212	CAS68	21.7351	H	92.60	P	PLEX	A	CY	HOM	NITRATE	U235	38
213	CAS69	22.1175	H	92.60	R	PARA	A	CY	HOM	NITRATE	U235	38
214	CAS70	21.9868	H	92.60	P	PARA	A	CY	HOM	NITRATE	U235	38
215	CAS71	22.0885	H	92.60	P	PARA	A	CY	HOM	NITRATE	U235	38
216	CAS72	21.5554	H	92.60	P	PLEX	A	CY	HOM	NITRATE	U235	38
217	CAS73	21.6508	H	92.60	P	PARA	A	CY	HOM	NITRATE	U235	38
*216	CAS74		H	92.60	R	PARA	A	CY	HOM	NITRATE	U235	38
219	CAS75	21.9759	H	92.60	P	PARA	A	CY	HOM	NITRATE	U235	38
220	CAS76	21.6942	H	92.60	P	PLEX	A	CY	HOM	NITRATE	U235	38
221	CAS77	22.1254	H	92.60	P	PLEX	A	CY	HOM	NITRATE	U235	38
222	CAS78	22.1254	H	92.60	R	PLEX	A	CY	HOM	NITRATE	U235	38
223	CAS79	21.8226	H	92.60	P	PLEX	A	CY	HOM	NITRATE	U235	38
224	CAS80	21.9893	H	92.60	P	PLEX	A	CY	HOM	NITRATE	U235	38
225	CAS81	22.0569	H	92.60	P	PLEX	A	CY	HOM	NITRATE	U235	38
226	CAS82	21.7485	H	92.60	P	PLEX	A	CY	HOM	NITRATE	U235	38
227	CAS83	22.0213	H	92.60	P	PLEX	A	CY	HOM	NITRATE	U235	38
228	CAS84	22.1344	H	92.60	P	PLEX	A	CY	HOM	NITRATE	U235	38
229	CAS85	21.6076	H	92.60	P	PLEX	A	CY	HOM	NITRATE	U235	38
230	CAS86	21.6748	H	92.60	P	PARA	A	CY	HOM	NITRATE	U235	38
231	CAS87	22.1210	H	92.60	R	PARA	A	CY	HOM	NITRATE	U235	38
232	CAS88	22.0127	H	92.60	P	PARA	A	CY	HOM	NITRATE	U235	38
233	CAS89	22.1079	H	92.60	P	PARA	A	CY	HOM	NITRATE	U235	38
234	CAS90	21.7493	H	92.60	U		A	CY	HOM	NITRATE	U235	38
235	CAS91	24.5366	H	92.60	U		A	CY	HOM	NITRATE	U235	38

Table D.1 (continued)

Table = 6

RUN	MEMB	AEG	ENRLEV	ASSAY	REFLCOND	REFL	SYSGEOM	UNITGEOM	FUELMIX	FUEL	FMATL	REF
236	CAE01	24.9966	H	93.20	U		S	SP	HOM	NITRATE	U235	12
237	CAE02	24.9309	H	93.20	U		S	SP	HOM	NITRATE	U235	12
238	CAE03	24.8696	H	93.20	U		S	SP	HOM	NITRATE	U235	12
239	CAE04	24.8412	H	93.20	U		S	SP	HOM	NITRATE	U235	12
240	CAE05	24.6274	H	97.70	U		S	SP	HOM	NITRATE	U233	12
241	CAE06	24.6004	H	97.70	U		S	SP	HOM	NITRATE	U233	12
242	CAE07	24.5756	H	97.70	U		S	SP	HOM	NITRATE	U233	12
243	CAE08	24.5446	H	97.70	U		S	SP	HOM	NITRATE	U233	12
244	CAE09	24.5185	H	97.70	U		S	SP	HOM	NITRATE	U233	12
245	CAE10	25.0840	H	93.20	U		S	SP	HOM	NITRATE	U235	12
246	CAE11	24.7275	H	97.70	U		S	SP	HOM	NITRATE	U233	12
247	CAE12	25.0347	H	93.20	U		S	CY	HOM	NITRATE	U235	12
248	CAE13	25.0390	H	93.20	U		S	CY	HOM	NITRATE	U235	12
249	CAE14	25.0611	H	93.20	U		S	CY	HOM	NITRATE	U235	12
250	CAE15	25.0713	H	93.20	U		S	CY	HOM	NITRATE	U235	12
251	CAE16	25.0780	H	93.20	U		S	CY	HOM	NITRATE	U235	12
252	CAE17	24.6966	H	97.70	U		S	CY	HOM	NITRATE	U233	12
253	CAE18	24.7123	H	97.70	U		S	CY	HOM	NITRATE	U233	12
254	CAE19	24.7286	H	97.70	U		S	CY	HOM	NITRATE	U233	12
255	CAE20	24.7486	H	97.70	U		S	CY	HOM	NITRATE	U233	12
256	CAE21	25.0744	H	93.20	U		S	CY	HOM	NITRATE	U235	12
257	CAE22	25.0812	H	93.20	U		S	CY	HOM	NITRATE	U235	12
258	CAE23	25.0850	H	93.20	U		S	CY	HOM	NITRATE	U235	12

APPENDIX E1: TABLE 1 INPUTS

001 (CAA01)

```
=CSAS25
LIBBY EXP. 4.89% RODS 30 CM LONG, .762 CM DIAM, 1.3 CM PITCH
27GROUPNDF4 LATTICECELL
URANIUM    1 .9995 293 92235 4.89 92238 95.11 END
H2O        2 1 END
PLEXIGLASS 3 1 END
END COMP
SQUAREPITCH  1.3 .762 1 2 END
LIBBY EXP. 4.89% RODS 30 CM LONG, .762CM DIAM, 1.3CM PITCH
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
UNIT 1
CYLINDER  1 1 .381 5.08 0
CUBOID    2 1 4P.65 5.08 0
UNIT 2
CYLINDER  1 1 .381 1.27 0
CUBOID    3 1 4P.65 1.27 0
UNIT 3
CYLINDER  1 1 .381 17.935 0
CUBOID    2 1 4P.65 17.935 0
UNIT 4
CYLINDER  1 1 .381 .635 0
CUBOID    3 1 4P.65 .635 0
UNIT 5
CUBOID    2 1 4P.65 5.08 0
UNIT 6
CYLINDER  2 1 .381 1.27 0
CUBOID    3 1 4P.65 1.27 0
UNIT 7
CUBOID    2 1 4P.65 17.935 0
UNIT 8
CYLINDER  2 1 .381 .635 0
CUBOID    2 1 4P.65 .635 0
CORE      0 1 3R0
REFLECTOR  3 1 5R0 3.81 1
REFLECTOR  2 2 5R3 0 1
REFLECTOR  2 3 5R2 2.19 1
REFLECTOR  2 4 4R3 3.2 3 1
REFLECTOR  2 5 4R3 0 3   2   .
END GEOM
READ ARRAY NUX=20 NUY=21 NUZ=5 FILL
19R5 401R1  19R6 401R2  19R7 401R3 19R8 401R4 19R5 401R1
END FILL END ARRAY
READ BIAS ID=500 2 6 END BIAS
END DATA
END
```

002 (CAA02)

```
=CSAS25
LIBBY EXP. 4.89% RODS 30 CM LONG, .762 CM DIAM, 1.3CM PITCH
27GROUPNDF4  LATTICECELL
URANIUM    1 .995 293 92235 4.89 92238 95.11 END
H2O        2 1 END
PLEXIGLASS  3 1 END
END COMP
SQUAREPITCH  1.3 .762 1 2 END
LIBBY H2O REFL. CASE 4B
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
UNIT 1
CYLINDER   1 1 .381 30 0
CUBOID     2 1 4P.65 30 0
UNIT 2
CUBOID     2 1 4P.65 30 0
CORE       0 1 3R0
REFLECTOR  2 2 6R3 1
REFLECTOR  2 3 4R3 1 3 1
REFLECTOR  2 4 4R3 0 3 3
END GEOM
READ ARRAY NUX=22 NUY=22 NUZ=1 FILL
10R1 2R2 10R1 9022 44R2 10R1 2R2 10R1 9022
END FILL END ARRAY
READ BIAS ID=500 2 6 END BIAS
END DATA
END
```

003 (CAA03)

```
=CSAS25
LIBBY EXP. 4.89% RODS 30 CM LONG, .762 CM DIAM, 1.3 CM PITCH
27GROUPNDF4  LATTICECELL
URANIUM    1 .9995 293 92235 4.89 92238 95.11 END
H2O        2 1 END
PLEXIGLASS  3 1 END
END COMP
SQUAREPITCH  1.3 .762 1 2 END
LIBBY H2O REFL. CASE 11A
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
UNIT 1
CYLINDER   1 1 .381 30 0
CUBOID     2 1 4P.65 30 0
UNIT 2
CUBOID     2 1 4P.65 30 0
CORE       0 1 3R0
REFLECTOR  2 2 6R3 2
REFLECTOR  2 4 4R3 1.9    3 1
REFLECTOR  2 5 4R3 0 3 2
END GEOM
READ ARRAY NUX=23 NUY=23 NUZ=1 FILL
12R2 2R1 2 2Q3 2R1  Q23  23R2  2R1 2 6Q3 2R1  N46  5Q69
2R1 2 6Q3 2R1  Q23
END FILL END ARRAY
READ BIAS ID=500 2 6 END BIAS
END DATA
END
```

004 (CAA04)

```
=CSAS25
LIBBY EXP. 4.89 RODS 30 CM LONG, .762 CM DIAM, 2.05 CM PITCH
27GROUPNDF4  LATTICECELL
URANIUM    1 .9995 293 92235 4.89 92238 95.11 END
H2O        2 1 END
PLEXIGLASS  3 1 END
END COMP
SQUAREPITCH  2.05 .762 1 2 END
LIBBY H2O REFL. CASE 6A
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
UNIT 1
CYLINDER   1 1 .381 30 0
CUBOID     2 1 4P1.025 30 0
UNIT 2
CUBOID     2 1 4P1.025 30 0
CORE       0 1 3R0
REFLECTOR  2 2 6R3 3
REFLECTOR  2 5 4R3 .3 3 1
REFLECTOR  2 6 4R3 0 3 1
END GEOM
READ ARRAY NUX=14 NUY=15 NUZ=1 FILL
7R1 7R2 F1
END FILL END ARRAY
READ BIAS ID=500 2 6 END BIAS
END DATA
END
```

005 (CAA05)

```
=CSAS25
LIBBY EXP. 4.89% RODS 30 CM LONG, .762 CM DIAM, 2.05 CM PITCH
27GROUPNDF4  LATTICECELL
URANIUM    1 .9995 293 92235 4.89 92238 95.11 END
H2O        2 1 END
PLEXIGLASS  3 1 END
END COMP
SQUAREPITCH  2.05 .762 1 2 END
LIBBY H2O REFL. CASE 8C
```

```
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
UNIT 1
CYLINDER   1 1 .381 30 0
CUBOID     2 1 4P1.025 30 0
UNIT 2
CUBOID     2 1 4P1.025 30 0
CORE       0 1 3R0
REFLECTOR  2 2 6R3 1
REFLECTOR  2 3 4R3 .35 3 1
REFLECTOR  2 4 4R3 0 3 3
END GEOM
READ ARRAY NUX=22 NUY=22 NUZ=1 FILL
10R1 2R2 10R1 9022 22R2 N242
END FILL END ARRAY
READ BIAS ID=500 2 6 END BIAS
END DATA
END
```

006 (CAA06)

```
=CSAS25
LIBBY EXP. 4.89% RODS 30 CM LONG, .762 CM DIAM, 1.3 CM PITCH
27GROUPNDF4  LATTICECELL
URANIUM    1 .9995 293 92235 4.89 92238 95.11 END
H2O        2 1 END
PLEXIGLASS  3 1 END
PB    4 1 END
END COMP
SQUAREPITCH  1.3 .762 1 2 END
LIBBY H2O REFL. CASE 14A PB 1 FACE
READ PARAM NPG=600  NUB=YES PLT=NO FDN=YES END PARAM
READ GEOM
UNIT 1
CYLINDER   1 1 .381 30 0
CUBOID     2 1 4P.65 30 0
UNIT 2
CUBOID     2 1 4P.65 30 0
UNIT 3
ARRAY 1 3R0
REFLECTOR  2 2 2R3 0 3 2R0 2
REFLECTOR  2 4 2R1.32 0 1.32 2R0 1
UNIT 4
CUBOID   4 1 2P20.32 2P10.16 25.4 0
REFLECTOR  2 2 4R0 1.425 0 1
REFLECTOR  3 2 5R0 3.175 1
ARRAY 2 3R0
REFLECTOR  2 4 2R1.68 0 1.68 2R0 1
REFLECTOR  2 5 2R3 0 3 2R0 2
REFLECTOR  2 2 4R0 3 0 1
REFLECTOR  2 3 4R0 2.1 0 1
REFLECTOR  3 2 5R0 3 4
REFLECTOR  3 6 5R0 1.97 1
END GEOM
READ ARRAY ARA=1 NUX=20 NUY=20 NUZ=1 FILL
18R1 2R2 F1
END FILL
ARA=2 NUX=1 NUY=2 NUZ=1 FILL 3 4
END FILL END ARRAY
READ BIAS ID=500 2 6 END BIAS
READ PLOT TTL='14A X-Y' PIC=MIX
XUL=-7.8 YUL=53.8 ZUL=15  XLR=48.8 YLR=-7.8 ZLR=15
UAX=1 VDN=-1 NAX=125 END
TTL='14A X-Y' PIC=WTS END
TTL='14A Y-Z' PIC=MIX
XUL=20 YUL=-7.8 ZUL=35.5  XLR=20 YLR=53.8 ZLR=-14.1
VAX=1 WDN=-1 UAX=0 VDN=0 NAX=125 END
TTL='14A Y-Z' PIC=WTS END
END PLOT
END DATA
END
```

007 (CAA07)

```
=CSAS25
LIBBY EXP. 4.89% RODS 30 CM LONG, .762 CM DIAM, 1.3 CM PITCH
27GROUPNDF4  LATTICECELL
URANIUM    1 .9995 293 92235 4.89 92238 95.11 END
H2O        2 1 END
PLEXIGLASS  3 1 END
PB    4 1 END
END COMP
SQUAREPITCH  1.3 .762 1 2 END
LIBBY H2O REFL. CASE 23B PB 4 FACES
READ PARAM NPG=600  NUB=YES PLT=NO FDN=YES END PARAM
READ GEOM
UNIT 1
CYLINDER   1 1 .381 27 0
CUBOID     2 1 4P.65 27 0
UNIT 2
CUBOID     2 1 4P.65 27 0
UNIT 7
CYLINDER   1 1 .381 3 0
CUBOID     0 1 4P.65 3 0
UNIT 8
CUBOID     0 1 4P.65 3 0
UNIT 3
ARRAY 1 3R0
REFLECTOR  2 1 4R3.221 2R0 1
UNIT 9
ARRAY 4 3R0
REFLECTOR  0 1 4R3.221 2R0 1
UNIT 10
ARRAY 5 3R0
UNIT 4
CUBOID   4 1 2P10.16 2P16.871 25.4 0
REFLECTOR  0 1 4R0 1.425 0 1
REFLECTOR  3 2 5R0 3.175 1
UNIT 5
ARRAY 2 3R0
UNIT 6
CUBOID  4 1 2P37.191 2P10.16 25.4 0
REFLECTOR  0 1 4R0 1.425 0 1
REFLECTOR  3 2 5R0 3.175 1
ARRAY 3 3R0
REFLECTOR 3 2 5R0 3 4
REFLECTOR 3 6 5R0 1.97 1
END GEOM
READ ARRAY ARA=1 NUX=21 NUY=21 NUZ=1 FILL
10R1 2 10R1 9Q21 21R2 10R1 2 10R1 9Q21
END FILL
ARA=4 NUX=21 NUY=21 NUZ=1 FILL
10R7 8 10R7 9Q21 21R8 10R7 8 10R7 9Q21
END FILL
ARA=2 NUX=2 NUY=1 NUZ=1 FILL 4 10 4 END FILL
ARA=3 NUX=1 NUY=3 NUZ=1 FILL 6 5 6
END FILL
ARA=5 NUX=1 NUY=1 NUZ=2 FILL 3 9
END FILL END ARRAY
READ BIAS ID=500 2 6 END BIAS
READ PLOT TTL=' X-Y' PIC=MIX
XUL=0 YUL=75 ZUL=15  XLR=75 YLR=0 ZLR=15
UAX=1 VDN=-1 NAX=125 END
TTL=' X-Y' PIC=WTS END
TTL=' Y-Z' PIC=MIX
XUL=33 YUL=0 ZUL=31  XLR=33 YLR=75 ZLR=-14.1
VAX=1 WDN=-1 UAX=0 VDN=0 NAX=125 END
TTL=' Y-Z' PIC=WTS END
END PLOT
END DATA
END
```

008 (CAA08)

```
=CSAS25
LIBBY EXP. 4.89% RODS 30 CM LONG, .762 CM DIAM, 1.3 CM PITCH
27GROUPNDF4  LATTICECELL
URANIUM    1 .9995 293 92235 4.89 92238 95.11 END
H2O        2 1 END
PLEXIGLASS  3 1 END
PB    4 1 END
```

```
END COMP
SQUAREPITCH  1.3 .762 1 2 END
LIBBY H2O REFL. CASE 26A PB 4 FACES
READ PARAM NPG=600   NUB=YES PLT=NO FDN=YES END PARAM
READ GEOM
UNIT 1
CYLINDER  1 1 .381 30 0
CUBOID    2 1 4P.65 30 0
UNIT 2
CUBOID    2 1 4P.65 30 0
UNIT 3
ARRAY 1 3R0
REFLECTOR  2 1 .62 .62 .62 4.52 2R0 1
UNIT 4
CUBOID  4 1 2P10.16 2P15.57 25.4 0
REFLECTOR  2 2 4R0 1.425 0 1
REFLECTOR  3 2 5R0 3.175 1
UNIT 5
ARRAY 2 3R0
UNIT 6
CUBOID  4 1 2P35.89 2P10.16 25.4 0
REFLECTOR  2 2 4R0 1.425 0 1
REFLECTOR  3 2 5R0 3.175 1
ARRAY 3 3R0
REFLECTOR 2 2 4R0 3 0 2
REFLECTOR 2 4 4R0 1.95 0 1
REFLECTOR  3 2 5R0 3 4
REFLECTOR 3 6 5R0 1.97 1
END GEOM
READ ARRAY ARA=1 NUX=23 NUY=20 NUZ=1 FILL
3R2 2R1 2 5R3 2R1  Q23  23R2  Q69  2 1 2 2R1 2 5R3 2R1
2R1 2 6R3 2R1  23R2  2R1 2 6R3 2R1  Q23  23R2  2Q69
2R1 2 6R3 2R1  Q23
END FILL
ARA=2 NUX=3 NUY=1 NUZ=1 FILL 4 3 4 END FILL
ARA=3 NUX=1 NUY=3 NUZ=1 FILL 6 5 6
END FILL END ARRAY
READ BIAS ID=500 2 6 END BIAS
READ PLOT TTL=' X-Y' PIC=MIX
XUL=0 YUL=72 ZUL=15  XLR=72 YLR=0 ZLR=15
UAX=1 VDN=-1 MAX=125 END
TTL=' X-Y' PIC=WTS END
TTL=' Y-Z' PIC=MIX
XUL=33 YUL=0 ZUL=40  XLR=33 YLR=72 ZLR=-14.1
VAX=1 WDN=-1 UAX=0 VDN=0 MAX=125 END
TTL=' Y-Z' PIC=WTS END
END PLOT
END DATA
END
```

009 (CAA09)

```
#CSAS25
LIBBY EXP. 4.89% RODS 30 CM LONG, .762 CM DIAM, 1.3 CM PITCH
27GROUPNDF4  LATTICECELL
URANIUM    1 .9995 293 92235 4.89 92238 95.11 END
H2O        2 1 END
PLEXIGLASS  3 1 END
PB   4 1 END
SS304   5 1 END
END COMP
SQUAREPITCH  1.3 .762 1 2 END
LIBBY H2O REFL. CASE 28A PB 4 FACES, SS PLATE IN CENTER
READ PARAM NPG=600   NUB=YES PLT=NO FDN=YES END PARAM
READ GEOM
UNIT 1
CYLINDER  1 1 .381 30 0
CUBOID    2 1 4P.65 30 0
UNIT 2
CUBOID    2 1 4P.65 30 0
UNIT 3
ARRAY 1 3R0
REFLECTOR  2 1 0 3R.62 2R0 1
UNIT 7
ARRAY 4 3R0
REFLECTOR  2 1 .62 0 2R.62 2R0 1
UNIT 8
CUBOID  5 1 2P.3175 2P15.57 25.4 0
REFLECTOR  2 1 2R.3325 2R0 1.425 3.175 1
UNIT 4
CUBOID  4 1 2P10.16 2P15.57 25.4 0
REFLECTOR  2 2 4R0 1.425 0 1
REFLECTOR  3 2 5R0 3.175 1
UNIT 5
ARRAY 2 3R0
UNIT 6
CUBOID  4 1 2P35.89 2P10.16 25.4 0
REFLECTOR  2 2 4R0 1.425 0 1
REFLECTOR  3 2 5R0 3.175 1
ARRAY 9 3R0
REFLECTOR  2 2 4R0 3 0 5
REFLECTOR  2 6 4R0 1 0 1
REFLECTOR  3 2 5R0 3 4
REFLECTOR  3 6 5R0 1.97 1
END GEOM
READ ARRAY ARA=1 NUX=11 NUY=23 NUZ=1 FILL
2 1 2 2R1 2Q3  2R1 2 2R1 2Q3  11R2  2R1 2 2R1 2Q3  Q11  6Q33
END FILL
ARA=4 NUX=11 NUY=23 NUZ=1 FILL
2R1 2 2R1 2Q3  Q11  11R2  2R1 2 2R1 2Q3  Q11  6Q33
END FILL
ARA=2 NUX=5 NUY=1 NUZ=1 FILL 4 3 8 7 4 END FILL
ARA=3 NUX=1 NUY=3 NUZ=1 FILL 6 5 6
END FILL END ARRAY
READ BIAS ID=500 2 6 END BIAS
READ PLOT TTL=' X-Y' PIC=MIX
XUL=0 YUL=72 ZUL=15  XLR=72 YLR=0 ZLR=15
UAX=1 VDN=-1 MAX=125 END
TTL=' X-Y' PIC=WTS END
TTL=' Y-Z' PIC=MIX
XUL=33 YUL=0 ZUL=40  XLR=33 YLR=72 ZLR=-14.1
VAX=1 WDN=-1 UAX=0 VDN=0 MAX=125 END
TTL=' Y-Z' PIC=WTS END
END PLOT
END DATA
END
```

010 (CAA10)

```
#CSAS25
LIBBY EXP. 4.89% RODS 30 CM LONG, .762 CM DIAM, 1.3 CM PITCH
27GROUPNDF4  LATTICECELL
URANIUM    1 .9995 293 92235 4.89 92238 95.11 END
H2O        2 1 END
PLEXIGLASS  3 1 END
PB   4 1 END
B-10   5 0 4.617-3 END
B-11   5 0 1.872-2 END
C      5 0 5.750-3 END
AL     5 0 4.765-2 END
END COMP
SQUAREPITCH  1.3 .762 1 2 END
LIBBY H2O REFL. CASE 30C PB 4 FACES, BORAL PLATE 6TH ROW
READ PARAM NPG=600   NUB=YES PLT=NO FDN=YES END PARAM
READ GEOM
UNIT 1
CYLINDER  1 1 .381 30 0
CUBOID    2 1 4P.65 30 0
UNIT 2
CUBOID    2 1 4P.65 30 0
UNIT 3
ARRAY 1 3R0
REFLECTOR  2 1 2R.62 0 .62 2R0 1
UNIT 7
ARRAY 4 3R0
REFLECTOR  2 1 3R.62 0 2R0 1
UNIT 8
CUBOID  5 1 2P15.57 2P.3175 25.4 0
REFLECTOR  2 1 2R0 2R.3325 1.425 3.175 1
UNIT 4
CUBOID  4 1 2P10.16 2P15.57 25.4 0
REFLECTOR  2 2 4R0 1.425 0 1
REFLECTOR  3 2 5R0 3.175 1
UNIT 9
ARRAY 5 3R0
UNIT 5
ARRAY 2 3R0
UNIT 6
CUBOID  4 1 2P35.89 2P10.16 25.4 0
REFLECTOR  2 2 4R0 1.425 0 1
REFLECTOR  3 2 5R0 3.175 1
ARRAY 3 3R0
REFLECTOR  2 2 4R0 3 0 2
REFLECTOR  2 4 4R0 1.8 0 1
REFLECTOR  2 2 5R0 3 4
REFLECTOR  3 6 5R0 1.97 1
END GEOM
READ ARRAY ARA=1 NUX=23 NUY=17 NUZ=1 FILL
2R2 19R1 2R2  2 21R1 2  F1
END FILL
ARA=4 NUX=23 NUY=5 NUZ=1 FILL
6R1 2 21R1 2  2R2 19R1 2R2
END FILL
ARA=5 NUX=1 NUY=3 NUZ=1 FILL 3 8 7 END FILL
ARA=2 NUX=3 NUY=1 NUZ=1 FILL 4 9 4 END FILL
ARA=3 NUX=1 NUY=3 NUZ=1 FILL 6 5 6
END FILL END ARRAY
READ BIAS ID=500 2 6 END BIAS
READ PLOT TTL=' X-Y' PIC=MIX
XUL=0 YUL=72 ZUL=15  XLR=72 YLR=0 ZLR=15
UAX=1 VDN=-1 MAX=125 END
TTL=' X-Y' PIC=WTS END
TTL=' Y-Z' PIC=MIX
XUL=33 YUL=0 ZUL=40  XLR=33 YLR=72 ZLR=-14.1
VAX=1 WDN=-1 UAX=0 VDN=0 MAX=125 END
TTL=' Y-Z' PIC=WTS END
END PLOT
END DATA
END
```

```
UNIT 5
ARRAY 2 3R0
UNIT 6
CUBOID  4 1 2P35.89 2P10.16 25.4 0
REFLECTOR  2 2 4R0 1.425 0 1
REFLECTOR  3 2 5R0 3.175 1
ARRAY 3 3R0
REFLECTOR  2 2 4R0 3 0 1
REFLECTOR  2 3 4R0 1.8 0 1
REFLECTOR  2 2 5R0 3 4
REFLECTOR  3 6 5R0 1.97 1
END GEOM
READ ARRAY ARA=1 NUX=23 NUY=17 NUZ=1 FILL
2R2 19R1 2R2  2 21R1 2  F1
END FILL
ARA=4 NUX=23 NUY=5 NUZ=1 FILL
6R1 2 21R1 2  2R2 19R1 2R2
END FILL
ARA=5 NUX=1 NUY=3 NUZ=1 FILL 3 8 7 END FILL
ARA=2 NUX=3 NUY=1 NUZ=1 FILL 4 9 4 END FILL
ARA=3 NUX=1 NUY=3 NUZ=1 FILL 6 5 6
END FILL END ARRAY
READ BIAS ID=500 2 6 END BIAS
READ PLOT TTL=' X-Y' PIC=MIX
XUL=0 YUL=72 ZUL=15  XLR=72 YLR=0 ZLR=15
UAX=1 VDN=-1 MAX=125 END
TTL=' X-Y' PIC=WTS END
TTL=' Y-Z' PIC=MIX
XUL=33 YUL=0 ZUL=40  XLR=33 YLR=72 ZLR=-14.1
TTL=' Y-Z' PIC=WTS END
END PLOT
END DATA
END
```

012 (CAA12)

```
#CSAS25
LIBBY EXP. 4.89% RODS 30 CM LONG, .762 CM DIAM, 2.05 CM PITCH IN UO2F2 SOLN
27GROUPNDF4  LATTICECELL
URANIUM    1 .9995 293 92235 4.89 92238 95.11 END
SOLNUO2F2  2 295.54 0 1 293 92235 4.89 92238 95.11 END
PLEXIGLASS  3 1 END
AL   4 1 END
SOLNUO2F2  5 295.54 0 1 293 92235 4.89 92238 95.11 END
END COMP
SQUAREPITCH  2.05 .762 1 2 END
LIBBY RODS IN UO2F2 SOLN CASE 32S
READ PARAM NPG=600 TAE=60 NUB=YES FDN=YES END PARAM

READ GEOM
UNIT 1
CYLINDER  1 1 .381 5.08 0
CUBOID    5 1 4P1.025 5.08 0
UNIT 2
CYLINDER  1 1 .381 1.27 0
CUBOID    3 1 4P1.025 1.27 0
UNIT 3
CYLINDER  1 1 .381 17.935 0
CUBOID    5 1 4P1.025 17.935 0
UNIT 4
CYLINDER  1 1 .381 .635 0
CUBOID    3 1 4P1.025 .635 0
UNIT 5
CUBOID    2 1 4P1.025 5.08 0
UNIT 6
CYLINDER  2 1 .381 1.27 0
CUBOID    3 1 4P1.025 1.27 0
UNIT 7
CUBOID    2 1 4P1.025 17.935 0
UNIT 8
CYLINDER  2 1 .381 .635 0
CUBOID    3 1 4P1.025 .635 0
CORE      0 1 -11.275 -12.3 0
REFLECTOR  3 1 5R0 3.81 1
CYLINDER  5 1 47.94 30.1 -7.4
CYLINDER  4 1 48.26 30.1 -7.72
END GEOM
READ ARRAY MUX=11 NUY=12 NUZ=5 FILL
122R1 122R2 122R3 122R4 122R1
END FILL END ARRAY
END DATA
END
```

011 (CAA11)

```
#CSAS25
LIBBY EXP. 4.89% RODS 30 CM LONG, .762 CM DIAM, 1.3 CM PITCH
27GROUPNDF4  LATTICECELL
URANIUM    1 .9995 293 92235 4.89 92238 95.11 END
H2O        2 1 END
PLEXIGLASS  3 1 END
PB   4 1 END
CD   5 1 END
END COMP
SQUAREPITCH  1.3 .762 1 2 END
LIBBY H2O REFL. CASE 31C PB 4 FACES, CD PLATE 6TH ROW
READ PARAM NPG=600   NUB=YES PLT=NO FDN=YES END PARAM
READ GEOM
UNIT 1
CYLINDER  1 1 .381 30 0
CUBOID    2 1 4P.65 30 0
UNIT 2
CUBOID    2 1 4P.65 30 0
UNIT 3
ARRAY 1 3R0
REFLECTOR  2 1 2R.62 0 .62 2R0 1
UNIT 7
ARRAY 4 3R0
REFLECTOR  2 1 3R.62 0 2R0 1
UNIT 8
CUBOID  5 1 2P15.57 2P.04445 25.4 0
REFLECTOR  2 1 2R0 2R.60555 1.425 3.175 1
UNIT 4
CUBOID  4 1 2P10.16 2P15.57 25.4 0
REFLECTOR  2 2 4R0 1.425 0 1
REFLECTOR  3 2 5R0 3.175 1
UNIT 9
ARRAY 5 3R0
UNIT 5
ARRAY 2 3R0
UNIT 6
CUBOID  4 1 2P35.89 2P10.16 25.4 0
REFLECTOR  2 2 4R0 1.425 0 1
REFLECTOR  3 2 5R0 3.175 1
ARRAY 3 3R0
REFLECTOR  2 2 4R0 .5 0 1
REFLECTOR  3 2 5R0 3 4
REFLECTOR  3 6 5R0 1.97 1
END GEOM
READ ARRAY ARA=1 NUX=23 NUY=17 NUZ=1 FILL
11R1 12R2   F1
END FILL
ARA=4 NUX=23 NUY=5 NUZ=1 FILL
F1
END FILL
ARA=5 NUX=1 NUY=3 NUZ=1 FILL 3 8 7 END FILL
ARA=2 NUX=3 NUY=1 NUZ=1 FILL 4 9 4 END FILL
ARA=3 NUX=1 NUY=3 NUZ=1 FILL 6 5 6
END FILL END ARRAY
READ BIAS ID=500 2 6 END BIAS
READ PLOT TTL=' X-Y' PIC=MIX
XUL=0 YUL=72 ZUL=15  XLR=72 YLR=0 ZLR=15
UAX=1 VDN=-1 MAX=125 END
TTL=' X-Y' PIC=WTS END
TTL=' Y-Z' PIC=MIX
XUL=33 YUL=0 ZUL=40  XLR=33 YLR=72 ZLR=-14.1
VAX=1 WDN=-1 UAX=0 VDN=0 MAX=125 END
TTL=' Y-Z' PIC=WTS END
END PLOT
END DATA
END
L
```

013 (CAA13)

```
#CSAS25
```

```
LIBBY EXP. 4.89% RODS 30 CM LONG, .762 CM DIAM, 2.05 CM PITCH IN UO2F2 SOLN
27GROUPNDF4  LATTICECELL
URANIUM    1 .9995 293 92235 4.89 92238 95.11 END
SOLNUO2F2  2 295.54 0 1 293 92235 4.89 92238 95.11 END
PLEXIGLASS  3 1 END
AL  4 1 END
SOLNUO2F2  S 295.54 0 1 293 92235 4.89 92238 95.11 END
END COMP
SQUAREPITCH  2.05 .762 1 2 END
LIBBY RODS IN UO2F2 SOLN CASE 325
READ PARAM NPG=600 TME=60 FAR=YES  NUB=YES FDN=YES END PARAM

READ GEOM
UNIT 1
CYLINDER  1 1 .381 5.08 0
CUBOID    5 1 4P1.025 5.08 0
UNIT 2
CYLINDER  1 1 .381 1.27 0
CUBOID    3 1 4P1.025 1.27 0
UNIT 3
CYLINDER  1 1 .381 17.935 0
CUBOID    5 1 4P1.025 17.935 0
UNIT 4
CYLINDER  1 1 .381 .635 0
CUBOID    3 1 4P1.025 .635 0
UNIT 5
CUBOID    2 1 4P1.025 5.08 0
UNIT 6
CYLINDER  2 1 .381 1.27 0
CUBOID    3 1 4P1.025 1.27 0
UNIT 7
CUBOID    2 1 4P1.025 17.935 0
UNIT 8
CYLINDER  2 1 .381 .635 0
CUBOID    3 1 4P1.025 .635 0
CORE      0 1 -9.225 -10.25 0
REFLECTOR  3 1 SRO 3.81 1
CYLINDER  5 1 47.94 48.65 -7.4
CYLINDER  4 1 48.26 48.65 -7.72
END GEOM
READ ARRAY NUX=9 NUY=10 NUZ=5 FILL
90R1 90R2 90R3 90R4 90R1
END FILL END ARRAY
END DATA
END
```

014 (CAA14)

```
#CSAS25
LIBBY EXP. 4.89% RODS 30 CM LONG, .762 CM DIAM, 3.25 CM PITCH IN UO2F2 SOLN
27GROUPNDF4  LATTICECELL
URANIUM    1 .9995 293 92235 4.89 92238 95.11 END
SOLNUO2F2  2 301.16 0 1 293 92235 4.89 92238 95.11 END
PLEXIGLASS  3 1 END
AL  4 1 END
SOLNUO2F2  S 301.16 0 1 293 92235 4.89 92238 95.11 END
END COMP
SQUAREPITCH  3.25 .762 1 2 END
LIBBY RODS IN UO2F2 SOLN CASE 265
READ PARAM NPG=600 TME=60 FAR=YES  NUB=YES FDN=YES END PARAM

READ GEOM
UNIT 1
CYLINDER  1 1 .381 5.08 0
CUBOID    5 1 4P1.625 5.08 0
UNIT 2
CYLINDER  1 1 .381 1.27 0
CUBOID    3 1 4P1.625 1.27 0
UNIT 3
CYLINDER  1 1 .381 17.935 0
CUBOID    5 1 4P1.625 17.935 0
UNIT 4
CYLINDER  1 1 .381 .635 0
CUBOID    3 1 4P1.625 .635 0
UNIT 5
CUBOID    2 1 4P1.625 5.08 0
UNIT 6
CYLINDER  2 1 .381 1.27 0
CUBOID    3 1 4P1.625 1.27 0
UNIT 7
CUBOID    2 1 4P1.625 17.935 0
UNIT 8
CYLINDER  2 1 .381 .635 0
CUBOID    3 1 4P1.625 .635 0
CORE      0 1 -14.625 -16.25 0
REFLECTOR  3 1 SRO 3.81 1
CYLINDER  5 1 47.94 38.52 -10.16
CYLINDER  4 1 48.26 38.52 -10.48
END GEOM
READ ARRAY NUX=9 NUY=10 NUZ=5 FILL
90R1 90R2 90R3 90R4 90R1
END FILL END ARRAY
END DATA
END
```

015 (CAA15)

```
#CSAS25
LIBBY EXP. 4.89% RODS 30 CM LONG, 1.31 CM DIAM, 2.99 CM PITCH IN UO2F2 SOLN
27GROUPNDF4  LATTICECELL
URANIUM    1 .9995 293 92235 4.89 92238 95.11 END
SOLNUO2F2  2 300.24 0 1 293 92235 4.89 92238 95.11 END
PLEXIGLASS  3 1 END
AL  4 1 END
SOLNUO2F2  S 300.24 0 1 293 92235 4.89 92238 95.11 END
END COMP
SQUAREPITCH  2.99 1.31 1 2 END
LIBBY RODS IN UO2F2 SOLN CASE 405
READ PARAM NPG=600 TME=60 FAR=YES  NUB=YES FDN=YES END PARAM

READ GEOM
UNIT 1
CYLINDER  1 1 .655 5.08 0
CUBOID    5 1 4P1.495 5.08 0
UNIT 2
CYLINDER  1 1 .655 1.27 0
CUBOID    3 1 4P1.495 1.27 0
UNIT 3
CYLINDER  1 1 .655 17.935 0
CUBOID    5 1 4P1.495 17.935 0
UNIT 4
CYLINDER  1 1 .655 .635 0
CUBOID    3 1 4P1.495 .635 0
UNIT 5
CUBOID    2 1 4P1.495 5.08 0
UNIT 6
CYLINDER  2 1 .655 1.27 0
CUBOID    3 1 4P1.495 1.27 0
UNIT 7
CUBOID    2 1 4P1.495 17.935 0
UNIT 8
CYLINDER  2 1 .655 .635 0
CUBOID    3 1 4P1.495 .635 0
CORE      0 1 -8.97 -10.465 0
REFLECTOR  3 1 SRO 3.81 1
CYLINDER  5 1 47.94 43.95 -10.16
CYLINDER  4 1 48.26 43.95 -10.48
END GEOM
READ ARRAY NUX=6 NUY=7 NUZ=5 FILL
42R1 42R2 42R3 42R4 42R1
END FILL END ARRAY
END DATA
END
```

016 (CAA16)

```
#CSAS25
LIBBY EXP. 4.89% RODS 30 CM LONG, 1.31 CM DIAM, 3.40 CM PITCH IN UO2F2 SOLN
27GROUPNDF4  LATTICECELL
URANIUM    1 .9995 293 92235 4.89 92238 95.11 END
SOLNUO2F2  2 300.24 0 1 293 92235 4.89 92238 95.11 END
PLEXIGLASS  3 1 END
AL  4 1 END
SOLNUO2F2  S 300.24 0 1 293 92235 4.89 92238 95.11 END
END COMP
SQUAREPITCH  3.40 1.31 1 2 END
LIBBY RODS IN UO2F2 SOLN CASE 425
READ PARAM NPG=600 TME=60 FAR=YES  NUB=YES FDN=YES END PARAM

READ GEOM
UNIT 1
CYLINDER  1 1 .655 5.08 0
CUBOID    5 1 4P1.70 5.08 0
UNIT 2
CYLINDER  1 1 .655 1.27 0
CUBOID    3 1 4P1.70 1.27 0
UNIT 3
CYLINDER  1 1 .655 17.935 0
CUBOID    5 1 4P1.70 17.935 0
UNIT 4
CYLINDER  1 1 .655 .635 0
CUBOID    3 1 4P1.70 .635 0
UNIT 5
CUBOID    2 1 4P1.70 5.08 0
UNIT 6
CYLINDER  2 1 .655 1.27 0
CUBOID    3 1 4P1.70 1.27 0
UNIT 7
CUBOID    2 1 4P1.70 17.935 0
UNIT 8
CYLINDER  2 1 .655 .635 0
CUBOID    3 1 4P1.70 .635 0
CORE      0 1 -10.2 -11.9 0
REFLECTOR  3 1 SRO 3.81 1
CYLINDER  5 1 47.94 39.1 -10.16
CYLINDER  4 1 48.26 39.1 -10.48
END GEOM
READ ARRAY NUX=6 NUY=7 NUZ=5 FILL
42R1 42R2 42R3 42R4 42R1
END FILL END ARRAY
END DATA
END
```

017 (CAA17)

```
#CSAS25
LIBBY EXP. 4.89% RODS 30 CM LONG, 1.31 CM DIAM, 3.940 CM PITCH IN UO2F2 SOLN
27GROUPNDF4  LATTICECELL
URANIUM    1 .9995 293 92235 4.89 92238 95.11 END
SOLNUO2F2  2 300.24 0 1 293 92235 4.89 92238 95.11 END
PLEXIGLASS  3 1 END
AL  4 1 END
SOLNUO2F2  S 300.24 0 1 293 92235 4.89 92238 95.11 END
END COMP
SQUAREPITCH  3.94 1.31 1 2 END
LIBBY RODS IN UO2F2 SOLN CASE 445
READ PARAM NPG=600 TME=60 FAR=YES  NUB=YES FDN=YES END PARAM

READ GEOM
UNIT 1
CYLINDER  1 1 .655 5.08 0
CUBOID    5 1 4P1.97 5.08 0
UNIT 2
CYLINDER  1 1 .655 1.27 0
CUBOID    3 1 4P1.97 1.27 0
UNIT 3
CYLINDER  1 1 .655 17.935 0
CUBOID    5 1 4P1.97 17.935 0
UNIT 4
CYLINDER  1 1 .655 .635 0
CUBOID    3 1 4P1.97 .635 0
UNIT 5
CUBOID    2 1 4P1.97 5.08 0
UNIT 6
CYLINDER  2 1 .655 1.27 0
CUBOID    3 1 4P1.97 1.27 0
UNIT 7
CUBOID    2 1 4P1.97 17.935 0
UNIT 8
CYLINDER  2 1 .655 .635 0
CUBOID    3 1 4P1.97 .635 0
CORE      0 1 -11.82 -13.79 0
REFLECTOR  3 1 SRO 3.81 1
CYLINDER  5 1 47.94 39.25 -10.16
CYLINDER  4 1 48.26 39.25 -10.48
END GEOM
READ ARRAY NUX=6 NUY=7 NUZ=5 FILL
42R1 42R2 42R3 42R4 42R1
END FILL END ARRAY
END DATA
END
```

018 (CAA18)

```
#CSAS25
LIBBY EXP. 4.89% RODS 30 CM LONG, 1.31 CM DIAM, 4.40 CM PITCH IN UO2F2 SOLN
27GROUPNDF4  LATTICECELL
URANIUM    1 .9995 293 92235 4.89 92238 95.11 END
SOLNUO2F2  2 301.14 0 1 293 92235 4.89 92238 95.11 END
PLEXIGLASS  3 1 END
AL  4 1 END
SOLNUO2F2  S 301.14 0 1 293 92235 4.89 92238 95.11 END
END COMP
SQUAREPITCH  4.40 1.31 1 2 END
LIBBY RODS IN UO2F2 SOLN CASE 455
READ PARAM NPG=600 TME=60 FAR=YES  NUB=YES FDN=YES END PARAM

READ GEOM
UNIT 1
CYLINDER  1 1 .655 5.08 0
CUBOID    5 1 4P2.20 5.08 0
UNIT 2
CYLINDER  1 1 .655 1.27 0
CUBOID    3 1 4P2.20 1.27 0
UNIT 3
CYLINDER  1 1 .655 17.935 0
CUBOID    5 1 4P2.20 17.935 0
UNIT 4
CYLINDER  1 1 .655 .635 0
CUBOID    3 1 4P2.20 .635 0
UNIT 5
CUBOID    2 1 4P2.20 5.08 0
UNIT 6
CYLINDER  2 1 .655 1.27 0
CUBOID    3 1 4P2.20 1.27 0
UNIT 7
CUBOID    2 1 4P2.20 17.935 0
UNIT 8
CYLINDER  2 1 .655 .635 0
CUBOID    3 1 4P2.20 .635 0
CORE      0 1 -13.2 -15.4 0
REFLECTOR  3 1 SRO 3.81 1
CYLINDER  5 1 47.94 41.45 -10.16
CYLINDER  4 1 48.26 41.45 -10.48
END GEOM
READ ARRAY NUX=6 NUY=7 NUZ=5 FILL
42R1 42R2 42R3 42R4 42R1
END FILL END ARRAY
END DATA
END
```

019 (CAA19)

```
#CSAS25
4.89% GREEN BLOCKS H/U-235=244.6 55.5G U-235/L
27GROUPNDF4  MULTIREGION
U-234    1 0 5.8000-7 END
U-235    1 0 1.4220-4 END
U-238    1 0 2.7302-3 END
H        1 0 3.4782-2 END
C        1 0 1.8022-2 END
O        1 0 9.5585-3 END
AL       2 1 END
END COMP
SPHERICAL  END
1 28 MOEXTERMOD  END ZONE
4.89% GREEN BLOCKS UNREFLECTED CASE 1
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
UNIT 1
CUBE   1 1 2P10.16
UNIT 2
CUBOID   1 1 4P10.16  2P6.604
```

```
END GEOM
READ ARRAY NUX=3 NUY=3 NUZ=3 FILL 1001 1002 END FILL END ARRAY
END DATA
END
```

020 (CAA20)

```
#CSAS25
4.89% GREEN BLOCKS H/U-235=395.0 40.6 G U-235/L
27GROUPNDF4  MULTIREGION
U-234   1 0 4.3000-7 END
U-235   1 0 1.0402-4 END
U-238   1 0 1.9972-3 END
H       1 0 4.1088-2 END
C       1 0 2.1291-2 END
O       1 0 7.8456-3 END
AL      2 1 END
END COMP
SPHERICAL   END
1 28 NOEXTERMOD  END ZONE
4.89% GREEN BLOCKS UNREFLECTED CASE 2
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CUBOID   1 1 50.8 0 60.96 0 60.452 0
END GEOM
END DATA
END
```

021 (CAA21)

```
#CSAS25
4.89% GREEN BLOCKS H/U-235=757.0 22.1 G U-235/L
27GROUPNDF4  MULTIREGION
U-234   1 0 2.3000-7 END
U-235   1 0 5.6624-5 END
U-238   1 0 1.0872-3 END
H       1 0 4.2864-2 END
C       1 0 2.2212-2 END
O       1 0 5.2889-3 END
AL      2 1 END
END COMP
SPHERICAL   END
1 28 NOEXTERMOD  END ZONE
4.89% GREEN BLOCKS UNREFLECTED CASE 3
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CUBOID   1 1 71.12 0 71.12 0 70.358 0
END GEOM
END DATA
END
```

022 (CAA22)

```
#CSAS25
4.89% GREEN BLOCKS H/U-235=503.5 33.3 G U-235/L
27GROUPNDF4  MULTIREGION
U-234   1 0 3.5000-7 END
U-235   1 0 8.5320-5 END
U-238   1 0 1.6381-3 END
H       1 0 4.2959-2 END
C       1 0 2.2261-2 END
O       1 0 6.4399-3 END
AL      2 1 END
END COMP
SPHERICAL   END
1 34 NOEXTERMOD  END ZONE
4.89% GREEN BLOCKS UNREFLECTED CASE 4
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CUBOID   1 1 60.96 0 60.96 0 52.832 0
END GEOM
END DATA
END
```

023 (CAA23)

```
#CSAS25
4.89% GREEN BLOCKS H/U-235=199.3 64.9 G U-235/L
27GROUPNDF4  MULTIREGION
U-234   1 0 6.8000-7 END
U-235   1 0 1.6628-4 END
U-238   1 0 3.1926-3 END
H       1 0 4.3140-2 END
C       1 0 1.7173-2 END
O       1 0 1.0764-2 END
AL      2 1 END
H2O     3 1 END
PARA(H2O)  4 1 END
END COMP
SPHERICAL   END
1 22 ONEEXTERMOD 2 40 NOEXTERMOD  END ZONE
4.89% GREEN BLOCKS REFLECTED CASE 1
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
UNIT 1
CUBE   1 1 2P10.16
UNIT 2
CUBOID   1 1 4P10.16  2P8.763
CORE     0 1 3R0.
REFLECTOR   4 8 4R0 3.048 0 5
REFLECTOR   3 2 4R3 0 3 6
END GEOM
READ ARRAY NUX=2 NUY=2 NUZ=3 FILL 8R1 4R2 END FILL END ARRAY
READ BIAS ID=500 2 7 ID=400 8 12 END BIAS
END DATA
END
```

024 (CAA24)

```
#CSAS25
4.89% GREEN BLOCKS H/U-235=244.8 56.2 G U-235/L
27GROUPNDF4  MULTIREGION
U-234   1 0 5.9000-7 END
U-235   1 0 1.4399-4 END
U-238   1 0 2.7647-3 END
H       1 0 3.5249-2 END
C       1 0 1.8265-2 END
O       1 0 9.6807-3 END
AL      2 1 END
H2O     3 1 END
PARA(H2O)  4 1 END
END COMP
SPHERICAL   END
1 22 ONEEXTERMOD 2 40 NOEXTERMOD  END ZONE
4.89% GREEN BLOCKS REFLECTED CASE 2
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CUBOID   1 1 40.64 0 40.64 0 57.912 0
REFLECTOR   4 8 4R0 3.048 0 5
REFLECTOR   3 2 4R3 0 3 6
END GEOM
READ BIAS ID=500 2 7 ID=400 8 12 END BIAS
END DATA
END
```

025 (CAA25)

```
#CSAS25
4.89 GREEN BLOCKS H/U-235=396.7 40.6 G U-235/L
27GROUPNDF4  MULTIREGION
U-234   1 0 4.3000-7 END
U-235   1 0 1.0402-4 END
U-238   1 0 1.9972-3 END
H       1 0 4.1265-2 END
C       1 0 2.1383-2 END
O       1 0 7.8552-3 END
AL      2 1 END
H2O     3 1 END
PARA(H2O)  4 1 END
END COMP
SPHERICAL   END
1 20 ONEEXTERMOD 2 38 NOEXTERMOD  END ZONE
4.89% GREEN BLOCKS REFLECTED CASE 3
READ PARAM NPG=600 TME=60 NUB=YES FDN=YES END PARAM
READ GEOM
CUBOID   1 1 40.64 0 40.64 0 57.658 0
REFLECTOR   4 8 4R0 3.048 0 5
REFLECTOR   3 2 4R3 0 3 6
END GEOM
READ BIAS ID=500 2 7 ID=400 8 12 END BIAS
END DATA
END
```

026 (CAA26)

```
#CSAS25
4.89% GREEN BLOCKS H/U-235=756.6 22.2 G U-235/L
27GROUPNDF4  MULTIREGION
U-234   1 0 2.3000-7 END
U-235   1 0 5.6880-5 END
U-238   1 0 1.0921-3 END
H       1 0 4.3035-2 END
C       1 0 2.2300-2 END
O       1 0 5.4119-3 END
AL      2 1 END
H2O     3 1 END
PARA(H2O)  4 1 END
END COMP
SPHERICAL   END
1 28 ONEEXTERMOD 3 46 NOEXTERMOD  END ZONE
4.89% GREEN BLOCKS REFLECTED CASE 4
READ PARAM NPG=600  TME=60 NUB=YES FDN=YES END PARAM
READ GEOM
CUBOID   1 1 71.12 0 60.96 0 51.562 0
REFLECTOR   4 8 4R0 3.048 0 5
REFLECTOR   3 2 4R3 0 3 6
END GEOM
READ BIAS ID=500 2 7 ID=400 8 12 END BIAS
END DATA
END
```

^Z

027 (CAA27)

```
#CSAS25
4.89% GREEN BLOCKS H/U-235=146.8 81.1 G U-235/L
27GROUPNDF4  MULTIREGION
U-234   1 0 8.5000-7 END
U-235   1 0 2.0779-4 END
U-238   1 0 3.9896-3 END
H       1 0 3.0504-2 END
C       1 0 1.5807-2 END
O       1 0 1.2859-2 END
AL      2 1 END
H2O     3 1 END
PARA(H2O)  4 1 END
END COMP
SPHERICAL   END
1 22 ONEEXTERMOD 3 40 NOEXTERMOD  END ZONE
4.89% GREEN BLOCKS REFLECTED CASE 5
READ PARAM NPG=600  TME=60 NUB=YES FDN=YES END PARAM
READ GEOM
CUBOID   1 1 50.8 0 50.8 0 42.164 0
REFLECTOR   4 8 4R0 3.048 0 5
REFLECTOR   3 2 4R3 0 3 6
END GEOM
READ BIAS ID=500 2 7 ID=400 8 12 END BIAS
END DATA
END
```

028 (CAA28)

```
#CSAS25
4.89% GREEN BLOCKS H/U-235=82.7 107. G U-235/L
27GROUPNDF4  MULTIREGION
U-234   1 0 1.1300-6 END
U-235   1 0 2.7615-4 END
U-238   1 0 5.2637-3 END
H       1 0 2.2672-2 END
C       1 0 1.1748-2 END
O       1 0 1.6007-2 END
AL      2 1 END
H2O     3 1 END
PARA(H2O)  4 1 END
END COMP
SPHERICAL   END
1 26 ONEEXTERMOD 3 44 NOEXTERMOD  END ZONE
4.89% GREEN BLOCKS REFLECTED CASE 6
READ PARAM NPG=600  TME=60 NUB=YES FDN=YES END PARAM
READ GEOM
CUBOID   1 1 50.8 0 60.96 0 56.134 0
REFLECTOR   4 8 4R0 3.048 0 5
REFLECTOR   3 2 4R3 0 3 6
END GEOM
READ BIAS ID=500 2 7 ID=400 8 12 END BIAS
END DATA
END
```

029 (CAA29)

```
#CSAS25
4.89% GREEN BLOCKS H/U-235=504.1 33.3 G U-235/L
27GROUPNDF4  MULTIREGION
U-234   1 0 3.5000-7 END
U-235   1 0 8.5320-5 END
U-238   1 0 1.6381-3 END
H       1 0 4.3010-2 END
C       1 0 2.2287-2 END
O       1 0 6.9427-3 END
AL      2 1 END
H2O     3 1 END
PARA(H2O)  4 1 END
END COMP
SPHERICAL   END
1 29 ONEEXTERMOD 3 47 NOEXTERMOD  END ZONE
4.89% GREEN BLOCKS REFLECTED CASE 7
READ PARAM NPG=600 TME=60 NUB=YES FDN=YES END PARAM
READ GEOM
CUBOID   1 1 50.8 0 50.8 0 41.148 0
REFLECTOR   4 8 4R0 3.048 0 5
REFLECTOR   3 2 4R3 0 3 6
END GEOM
READ BIAS ID=500 2 7 ID=400 8 12 END BIAS
END DATA
END
```

030 (CAA30)

```
#CSAS25
4.89% U02F2 H/U-235=524
27GR   MULTIREGION
SOLNU02F2   1 869.9 9 0 1 293 92234 .02 92235 4.89
92238 95.09 END
SS304   2 1 END
END COMP
CYLINDRICAL END
1 25.4 NOEXTERMOD  2 25.56 NOEXTERMOD END ZONE
4.89% U02F2 20 IN DIAM SS CYL BARE 1
READ PARAM NPG=600 TME=60 NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDID   1 1 25.4 38.66 0
CYLINDER   2 1 25.559 38.66 -.159
END GEOM
END DATA
END
```

031 (CAA31)

```
#CSAS25
4.89% U02F2 H/U-235=524
27GROUPNDF4  MULTIREGION
SOLNU02F2   1 869.9 9 0 1 293 92234 .02 92235 4.89
92238 95.09 END
AL      2 1 END
END COMP
CYLINDRICAL END
1 25.4 NOEXTERMOD  2 25.56 NOEXTERMOD END ZONE
4.89% U02F2 20X20 IN AL BOX BARE 2
READ PARAM NPG=600 TME=60 NUB=YES FDN=YES END PARAM

READ GEOM
CUBOID   1 1 4P25.25 35.9 0
CUBOID   2 1 4P25.409 35.9 -.159
END GEOM
END DATA
END
```

032 (CAA32)

```
#CSAS25
4.89% U02F2 H/U-235=735
27GROUPNDF4  MULTIREGION
```

```
SOLMUO2F2  1 650.1 0 1 293 92234 .02 92235 4.89
92238 95.09 END
SS304      2 1 END
END COMP
CYLINDRICAL END
1 25.4 NOEXTERNMOD  2 25.56 NOEXTERNMOD END ZONE
4.89% UO2F2 20 IN DIAM SS CYL BARE 3
READ PARAM NPG=600 TME=60 NUB=YES FDN=YES END PARAM

READ GEOM
CYLINDER  1 1 25.4 54.35 0
CYLINDER  2 1 25.559 54.35 -.159
END GEOM
END DATA
END
```

033 (CAA33)

```
=CSAS25
4.89% UO2F2 M/U-235=1002
27GROUPNDF4  MULTIREGION
SOLMUO2F2  1 491.6 0 1 293 92234 .02 92235 4.89
92238 95.09 END
AL         2 1 END
END COMP
SPHERICAL END
1 34.6 NOEXTERNMOD  2 34.76 NOEXTERNMOD END ZONE
4.89% UO2F2 27.3 IN DIAM AL SPHERE BARE 4
READ PARAM NPG=600 TME=60 NUB=YES FDN=YES END PARAM

READ GEOM
HEMISPHE-Z  1 1 34.6   CHORD 30.
SPHERE      0 1 34.6
SPHERE      2 1 34.759
END GEOM
END DATA
END
```

034 (CAA34)

```
=CSAS25
4.89% UO2F2 M/U-235=991
27GROUPNDF4  MULTIREGION
SOLMUO2F2  1 496.5 0 1 293 92234 .02 92235 4.89
92238 95.09 END
AL         2 1 END
PLEXIGLASS  3 1 END
END COMP
CYLINDRICAL END
1 38.1 NOEXTERNMOD  2 38.26 NOEXTERNMOD END ZONE
4.89% UO2F2 30 IN DIAM SS CYL BARE 5
READ PARAM NPG=600 TME=60 NUB=YES FDN=YES END PARAM

READ GEOM
CYLINDER  1 1 38.1 44.75 0
CYLINDER  2 1 38.259 44.75 -.159
CUBOID    0 1 4P60.96 44.75 -.159
REFLECTOR 3 1 SAO 2.54 1
END GEOM
END DATA
END
```

035 (CAA35)

```
=CSAS25
4.89% UO2F2 M/U-235=524
27GR   MULTIREGION
SOLMUO2F2  1 869.9 0 1 293 92234 .02 92235 4.89
92238 95.09 END
SS304      2 1 END
H2O        3 1 END
END COMP
CYLINDRICAL END
1 19 ONEEXTERNMOD 2 19.2 NOEXTERNMOD 3 37.2 NOEXTERNMOD END ZONE
4.89% UO2F2 15 IN DIAM SS CYL REFL 1
READ PARAM NPG=600 TME=60 NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER  1 1 19.05 50.37 0
CYLINDER  2 1 19.209 50.529 -.159
REFLECTOR 3 2 3R3 6
END GEOM
READ BIAS ID=500 2 7 END BIAS
END DATA
END
```

036 (CAA36)

```
=CSAS25
4.89% UO2F2 M/U-235=524
27GR   MULTIREGION
SOLMUO2F2  1 869.9 0 1 293 92234 .02 92235 4.89
92238 95.09 END
AL         2 1 END
H2O        3 1 END
END COMP
CYLINDRICAL END
1 25.4 ONEEXTERNMOD 2 25.56 NOEXTERNMOD 3 43.56 NOEXTERNMOD END ZONE
4.89% UO2F2 20X20 IN AL BOX REFL 2
READ PARAM NPG=600 TME=60 NUB=YES FDN=YES END PARAM
READ GEOM
CUBOID    1 1 4P25.25 25.4 0
CUBOID    2 1 4P25.409 25.559 -.159
REFLECTOR 3 2 6R3 6
END GEOM
READ BIAS ID=500 2 7 END BIAS
END DATA
END
```

037 (CAA37)

```
=CSAS25
4.89% UO2F2 M/U-235=735
27GR   MULTIREGION
SOLMUO2F2  1 650.1 0 1 293 92234 .02 92235 4.89
92238 95.09 END
SS304      2 1 END
H2O        3 1 END
END COMP
CYLINDRICAL END
1 19 ONEEXTERNMOD 2 19.2 NOEXTERNMOD 3 37.2 NOEXTERNMOD END ZONE
4.89% UO2F2 15 IN DIAM SS CYL REFL 3
READ PARAM NPG=600 TME=60 NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER  1 1 19.05 153.01 0
CYLINDER  2 1 19.209 153.169 -.159
REFLECTOR 3 2 3R3 6
END GEOM
READ BIAS ID=500 2 7 END BIAS
END DATA
END
```

038 (CAA38)

```
=CSAS25
4.89% UO2F2 M/U-235=1099
27GR   MULTIREGION
SOLMUO2F2  1 452.1 0 1 293 92234 .02 92235 4.89
92238 95.09 END
AL         2 1 END
H2O        3 1 END
END COMP
SPHERICAL END
1 34.6 ONEEXTERNMOD  2 34.76 NOEXTERNMOD  3 52.76 NOEXTERNMOD END ZONE
4.89% UO2F2 27.3 IN DIAM AL SPHERE REFL 4
READ PARAM NPG=600 TME=60 NUB=YES FDN=YES END PARAM
READ GEOM
HEMISPHE-Z  1 1 34.6   CHORD 27.9
SPHERE      0 1 34.6
SPHERE      2 1 34.759
REFLECTOR   3 2 3. 6
END GEOM
READ BIAS ID=500 2 7 END BIAS
END DATA
END
```

039 (CAA39)

```
=CSAS25
4.89% UO2F2 M/U-235=994
27GR   MULTIREGION
SOLMUO2F2  1 495.3 0 1 293 92234 .02 92235 4.89
92238 95.09 END
SS304      2 1 END
H2O        3 1 END
END COMP
CYLINDRICAL END
1 25.4 ONEEXTERNMOD 2 25.56 NOEXTERNMOD 3 43.56 NOEXTERNMOD END ZONE
4.89% UO2F2 20 IN DIAM SS CYL REFL 5
READ PARAM NPG=600 TME=60 NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER  1 1 25.4 85.72 0
CYLINDER  2 1 25.559 85.879 -.159
REFLECTOR 3 2 3R3 6
END GEOM
READ BIAS ID=500 2 7 END BIAS
END DATA
END
```

APPENDIX E2: TABLE 2 INPUTS

040 (CAB01)

```
#CSAS25
CASE EBJ.1 U(3.85) 15 0 7.2"/0"/0"/77.0CM, SQUARE
27GROUPNDF4 INFHOMMEDIUM

' U(3.85) METAL
U-235          1 0.  1.0643E-3 END
U-238          1 0.  4.5971E-2 END

' FULL DENSITY WATER MODERATOR/REFLECTOR
H2O            2 1.0              END

' FIR TIMBER MODEL
C              3 0.  1.06802E-2 END
H              3 0.  2.21713E-2 END
O              3 0.  1.10850E-2 END

' STEEL FOR GRATING, TANK WALLS AND FLOOR
CARBONSTEEL  4 1.0                END

' STAINLESS STEEL LINING FOR TANK
SS304          5 1.0              END

END COMP
CASE EBJ.1 U(3.85) 15 0 7.2"/0"/0"/77.0CM, SQUARE
READ PARM
MPG=600  PLT=NO FDN=YES NUB=YES TRE=90 TBA=2
END PARM
READ GEOM

UNIT 1
COM=' FIR TIMBER 7.25" X 72" X 7.25" '
CUBOID 3 1 1R2.0R 0. 18.415 0. 18.415 0.

UNIT 2
COM=' WATER GAP 3.5" X 72" X 7.25" BETWEEN TIMBERS '
CUBOID 2 1 1R2.0R 0. 8.89 0. 18.415 0.

UNIT 3
COM=' ARRAY OF TIMBERS 72" X 72" X 7.25" '
ARRAY 1 3*0.0
REPLICATE 2 1 2R0. 2R0.3175 2R0. 1

UNIT 4
COM=' SECTION OF STEEL GRATING '
CUBOID 4 1 2.778125 .238125 .396875 -.396875 3.175 2.38125
CUBOID 2 1 2.778125 .238125 4.524375 -4.524375 3.175 0.
CUBOID 4 1 3.01625 0. 4.524375 -4.524375 3.175 0.

UNIT 5
COM=' ARRAY OF STEEL GRATING '
ARRAY 2 3*0.0
REPLICATE 2 1 4R0.9525 2R0.0 1

UNIT 6
COM=' U(3.85) ANNULUS WITH INSERT '
CYLINDER 1 1 3.175 76.2 0.
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 9.144 76.2 0.
CUBOID 2 1 4P9.144 76.2 0.

UNIT 7
COM=' WATER CUBOID TO COMPLETE ANNULI ARRAY '
CUBOID 2 1 4P9.144 76.2 0.

UNIT 8
COM=' ARRAY OF 15 ANNULI WITH U(3.85) INSERTS '
ARRAY 3 3*0.0
REPLICATE 2 1 4R54.864 1.6 0. 1

CORE 4 1 -91.44 -91.44 0.
REPLICATE 2 1 4R30.48 2R0. 1
REPLICATE 5 1 5R0.0 0.1905 1
REPLICATE 4 1 5R0.0 2.54 1
END GEOM
READ ARRAY
ARA=1 NUX=1 NUY=13 NUZ=1
FILL 1 2 5Q2 1 END FILL
ARA=2 NUX=60 NUY=20 NUZ=1
FILL F4 END FILL
ARA=3 NUX=4 NUY=4 NUZ=1
LOOP 6  1 4 1  1 4 1  1 1 1
     7  4 4 1  1 1 1  1 1 1 END LOOP
GBL=4
ARA=4 NUX=1 NUY=1 NUZ=3
FILL 3 5 8 END FILL
END ARRAY
READ START
XSR=-36.576 XSP=36.576 YSR=-36.576 YSP=36.576 ZSR=21.59 ZSP=97.79
END START
READ PLOT

TTL='PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF ANNULI/INSERTS'
XUL=-91.44 YUL=91.44 ZUL=59.69
XLR=91.44 YLR=-91.44 ZLR=59.69
UAX=1. VDN=-1. DLX=1.524 NCH=' U.WGSC' END

TTL='PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF GRATING'
XUL=-91.44 YUL=91.44 ZUL=20.0025
XLR=91.44 YLR=-91.44 ZLR=20.0025
UAX=1. VDN=-1. DLX=1.524 NCH=' U.WGSC' END

TTL='PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF FIR TIMBERS'
XUL=-91.44 YUL=91.44 ZUL=9.2075
XLR=91.44 YLR=-91.44 ZLR=9.2075
UAX=1. VDN=-1. DLX=1.524 NCH=' U.WGSC' END

TTL='PLAN VIEW 1/10 SCALE OF MOCKUP, Z=MIDLEVEL OF U UNITS'
XUL=-121.92 YUL=121.92 ZUL=59.69
XLR=121.92 YLR=-121.92 ZLR=59.69
UAX=1. VDN=-1. DLX=2.54 NCH=' U.WGSC' END

TTL='PLAN VIEW 2X SCALE OF SINGLE U UNIT, Z=MIDLEVEL OF UNIT'
XUL=0.  YUL=18.288 ZUL=59.69
XLR=18.288 YLR=0. ZLR=59.69
UAX=1. VDN=-1. DLX=0.127 NCH=' U.WGSC' END

TTL='CROSS SECTION OF CORE 1/6 SCALE,Y=9.144"
XUL=-91.44 YUL=9.144 ZUL=102.
XLR=91.44 YLR=9.144 ZLR=0.
UAX=1. VDN=-1. DLX=1.524 NCH=' U.WGSC' END

TTL='CROSS SECTION OF MOCKUP 1/10 SCALE,Y=9.144"
XUL=-121.92 YUL=9.144 ZUL=105.
XLR=121.92 YLR=9.144 ZLR=-45.
UAX=1. VDN=-1. DLX=2.54 NCH=' U.WGSC' END

TTL='CROSS SECTION OF GRATING/FIR TIMBERS, FULL SCALE'
XUL=0.  YUL=0. ZUL=24.13
XLR=25.4 YLR=0. ZLR=-3.0
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGSC' END

TTL='PLAN VIEW OF GRATING THRU TIEBARS, FULL SCALE"
XUL=0. YUL=25.4 ZUL=21.193
XLR=25.4 YLR=0. ZLR=21.193
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGSC' END

TTL='PLAN VIEW OF GRATING @ GRATING MIDLEVEL, FULL SCALE"
XUL=0. YUL=25.4 ZUL=20.0025
XLR=25.4 YLR=0. ZLR=20.0025
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGSC' END

TTL='PLAN VIEW OF TIMBERS @ TIMBER MIDLEVEL, FULL SCALE"
XUL=0. YUL=25.4 ZUL=9.2075
XLR=25.4 YLR=-25.4 ZLR=9.2075
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGSC' END

END PLOT
END DATA
END
```

041 (CAB02)

```
#CSAS25
CASE EBJ.2X  ( U(3.85) 11 0 7.2"/0"/0.75"/72.4CM, SQUARE)
27GROUPNDF4 INFHOMMEDIUM

' U(3.85) METAL
U-235          1 0.  1.0643E-3 END
U-238          1 0.  4.5971E-2 END

' FULL DENSITY WATER MODERATOR/REFLECTOR
H2O            2 1.0              END

' FIR TIMBER MODEL
C              3 0.  1.06802E-2 END
H              3 0.  2.21713E-2 END
O              3 0.  1.10850E-2 END

' STEEL FOR GRATING, TANK WALLS AND FLOOR
CARBONSTEEL  4 1.0                END

' STAINLESS STEEL LINING FOR TANK
SS304          5 1.0              END

END COMP
CASE EBJ.2X  RESTART EBJ.2 0 GENERATION 0 11
READ PARM
MPG=600  PLT=NO NUB=YES FDN=YES TRE=90 TBA=2
END PARM
READ GEOM

UNIT 1
COM=' FIR TIMBER 7.25" X 72" X 7.25" '
CUBOID 3 1 1R2.0R 0. 18.415 0. 18.415 0.

UNIT 2
COM=' WATER GAP 3.5" X 72" X 7.25" BETWEEN TIMBERS '
CUBOID 2 1 1R2.0R 0. 8.89 0. 18.415 0.

UNIT 3
COM=' ARRAY OF TIMBERS 72" X 72" X 7.25" PLUS 12" H2O '
ARRAY 1 3*0.0
REPLICATE 2 1 2R0. 2R0.3175 2R0. 1
REPLICATE 2 1 4R30.48 2R0. 1

UNIT 4
COM=' SECTION OF STEEL GRATING '
CUBOID 4 1 2.778125 .238125 .396875 -.396875 3.175 2.38125
CUBOID 2 1 2.778125 .238125 4.524375 -4.524375 3.175 0.
CUBOID 4 1 3.01625 0. 4.524375 -4.524375 3.175 0.

UNIT 5
COM=' ARRAY OF STEEL GRATING PLUS 12" H2O '
ARRAY 2 3*0.0
REPLICATE 2 1 4R0.9525 2R0.0 1
REPLICATE 2 1 4R30.48 2R0.0 1

UNIT 6
COM=' U(3.85) ANNULUS WITH INSERT (72.4 CM H) '
CYLINDER 1 1 3.175 72.4 0.
CYLINDER 2 1 3.302 72.4 0.
CYLINDER 1 1 9.144 72.4 0.
CUBOID 2 1 4P10.0965 72.4 0.

UNIT 7
COM=' WATER CUBOID TO COMPLETE ANNULI ARRAY (72.4 CM H) '
CUBOID 2 1 4P10.0965 72.4 0.

UNIT 8
COM=' ARRAY OF 11 ANNULI WITH U(3.85) INSERTS (72.4 CM H) '
ARRAY 3 3*0.0
REPLICATE 2 1 4R51.054 2R0. 1
REPLICATE 2 1 4R30.48 2R0.0 1

UNIT 9
COM=' U(3.85) ANNULUS WITH INSERT (3.8 CM H) '
CYLINDER 1 1 3.175 3.8 0.
CYLINDER 0 1 3.302 3.8 0.
CYLINDER 1 1 9.144 3.8 0.
CUBOID 0 1 4P10.0965 3.8 0.

UNIT 10
COM=' VOID CUBOID TO COMPLETE ANNULI ARRAY (3.8 CM H) '
CUBOID 0 1 4P10.0965 3.8 0.

UNIT 11
COM=' ARRAY OF 11 ANNULI WITH U(3.85) INSERTS (3.8 CM H) '
ARRAY 4 3*0.0
REPLICATE 0 1 4R51.054 2R0.0 1
REPLICATE 0 1 4R30.48 2R0.0 1

CORE 5 1 -121.92 -121.92 0.
REPLICATE 5 1 5R0.0 0.1905 1
REPLICATE 4 1 5R0.0 2.54 1
END GEOM
READ ARRAY
ARA=1 NUX=1 NUY=13 NUZ=1
FILL 1 2 5Q2 1 END FILL
ARA=2 NUX=60 NUY=20 NUZ=1
FILL F4 END FILL
ARA=3 NUX=4 NUY=4 NUZ=1
LOOP 6  1 4 1  1 4 1  1 1 1
     7  1 4 1  1 1 1  1 1 1
     7  4 4 1  2 2 1  1 1 1 END LOOP
ARA=4 NUX=4 NUY=4 NUZ=1
LOOP  9  1 4 1  1 4 1  1 1 1
     10  1 4 1  1 1 1  1 1 1
     10  4 4 1  2 2 1  1 1 1 END LOOP
GBL=5
ARA=5 NUX=1 NUY=1 NUZ=4
FILL 2 5 8 11 END FILL
END ARRAY
READ START
MST=6
LMU=200  TFX= 10.0965 TFY= 10.0965 TFZ=59.69
LMU=400  TFX=-10.0965 TFY= 10.0965 TFZ=59.69
LMU=470  TFX= 10.0965 TFY=-10.0965 TFZ=59.69
LMU=540  TFX=-10.0965 TFY=-10.0965 TFZ=59.59
LMU=610  TFX=-40.3856 TFY=-10.0965 TFZ=59.69
LMU=680  TFX=-40.3856 TFY= 10.0965 TFZ=59.69
LMU=750  TFX=-40.3856 TFY= 40.3856 TFZ=59.69
LMU=820  TFX=-10.0965 TFY= 40.3856 TFZ=59.69
LMU=890  TFX= 10.0965 TFY= 40.3856 TFZ=59.69
LMU=960  TFX= 40.3856 TFY= 40.3856 TFZ=59.69
LMU=1000 TFX= 40.3856 TFY= 10.0965 TFZ=59.69
END START
READ PLOT

TTL='PLAN VIEW 1/6 SCALE OF PALLET, Z=MIDLEVEL OF ANNULI/INSERTS'
XUL=-91.44 YUL=91.44 ZUL=59.69
XLR=91.44 YLR=-91.44 ZLR=59.69
UAX=1. VDN=-1. DLX=1.524 NCH=' U.WGSC' END

TTL='PLAN VIEW 1/6 SCALE OF PALLET, Z=MIDLEVEL OF GRATING'
XUL=-91.44 YUL=91.44 ZUL=20.0025
XLR=91.44 YLR=-91.44 ZLR=20.0025
UAX=1. VDN=-1. DLX=1.524 NCH=' U.WGSC' END

TTL='PLAN VIEW 1/6 SCALE OF PALLET, Z=MIDLEVEL OF FIR TIMBERS'
XUL=-91.44 YUL=91.44 ZUL=9.2075
XLR=91.44 YLR=-91.44 ZLR=9.2075
UAX=1. VDN=-1. DLX=1.524 NCH=' U.WGSC' END

TTL='PLAN VIEW 1/10 SCALE OF MOCKUP, Z=MIDLEVEL OF U UNITS'
XUL=-137. YUL=137. ZUL=59.69
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XLR=137. YLR=-137. ZLR=59.69
UAX=1. VDN=-1. DLX=2.54 MCH='' U.WGSC' END

TTL='PLAN VIEW 2X SCALE OF SINGLE U UNIT, Z=MIDLEVEL OF UNIT'
XUL=0. YUL=20.193 ZUL=59.69
XLR=20.193 YLR=0. ZLR=59.69
UAX=1. VDN=-1. DLX=0.127 MCH='' U.WGSC' END

TTL='CROSS SECTION OF PALLET 1/6 SCALE,Y=10.0965'
XUL=-91.44 YUL=10.0965 ZUL=113.
XLR=91.44 YLR=10.0965 ZLR=-18.
UAX=1. VDN=-1. DLX=1.524 MCH='' U.WGSC' END

TTL='CROSS SECTION OF MOCKUP 1/10 SCALE,Y=10.0965'
XUL=-137. YUL=10.0965 ZUL=113.
XLR=137. YLR=10.0965 ZLR=-18.
UAX=1. VDN=-1. DLX=2.54 MCH='' U.WGSC' END

TTL='CROSS SECTION OF FLOOR/GRATING/FIR TIMBERS, FULL SCALE'
XUL=0. YUL=0. ZUL=24.13
XLR=25.4 YLR=0. ZLR=-5.4
UAX=1. VDN=-1. DLX=.254 MCH='' U.WGSC' END

TTL='PLAN VIEW OF GRATING THRU TIEBARS, FULL SCALE'
XUL=0. YUL=25.4 ZUL=21.193
XLR=25.4 YLR=0. ZLR=21.193
UAX=1. VDN=-1. DLX=.254 MCH='' U.WGSC' END

TTL='PLAN VIEW OF GRATING @ GRATING MIDLEVEL, FULL SCALE'
XUL=0. YUL=25.4 ZUL=20.0025
XLR=25.4 YLR=0. ZLR=20.0025
UAX=1. VDN=-1. DLX=.254 MCH='' U.WGSC' END

TTL='PLAN VIEW OF TIMBERS @ TIMBER MIDLEVEL, FULL SCALE'
XUL=0. YUL=25.4 ZUL=9.2075
XLR=25.4 YLR=25.4 ZLR=9.2075
UAX=1. VDN=-1. DLX=.254 MCH='' U.WGSC' END

TTL='CROSS SECTION AT TOP OF UNITS, 2X SCALE'
XUL=0. YUL=10.0965 ZUL=105.
XLR=12.7 YLR=10.0965 ZLR=90.
UAX=1. VDN=-1. DLX=.127 MCH='' U.WGSC' END
END PLOT
END DATA
END
```

042 (CAB03)

```
@CSAS25
CASE EBJ.3X  ( U(3.85) 24 @ 7.2"/0"/1.5"/75.0CM, SQUARE)
27GROUPNDF4 INFHOMMEDIUM

' U(3.85) METAL
U-235          1 0.  1.8643E-3 END
U-238          1 0.  4.5971E-2 END

' FULL DENSITY WATER MODERATOR/REFLECTOR
H2O            2 1.0              END

' FIR TIMBER MODEL
C              3 0.  1.06802E-2 END
H              3 0.  2.21713E-2 END
O              3 0.  1.10850E-2 END

' STEEL FOR GRATING, TANK WALLS AND FLOOR
CARBONSTEEL  4 1.0                END

' STAINLESS STEEL LINING FOR TANK
SS304          5 1.0              END

END COMP
CASE EBJ.3X
READ PARM
NPG=600  NUB=YES PLT=NO FDN=YES TRE=90 TBA=2
END PARM
READ GEOM

UNIT 1
COM='  FIR TIMBER 7.25" X 72" X 7.25" '
CUBOID 3 1 182.88 0. 18.415 0. 18.415 0.

UNIT 2
COM='  WATER GAP 3.5" X 72" X 7.25" BETWEEN TIMBERS '
CUBOID 2 1 182.88 0. 8.89 0. 18.415 0.

UNIT 3
COM='  ARRAY OF TIMBERS 72" X 72" X 7.25" PLUS 12" H2O '
ARRAY 1 3*0.0
REPLICATE 2 1 2R0. 2R0.3175 2R0. 1
REPLICATE 2 1 4R30.48 2R0. 1

UNIT 4
COM='  SECTION OF STEEL GRATING '
CUBOID 4 1 2.778125 .238125 .396875 -.396875 3.175 2.38125
CUBOID 2 1 2.778125 .238125 4.524375 -4.524375 3.175 0.
CUBOID 4 1 3.01625 0. 4.524375 -4.524375 3.175 0.

UNIT 5
COM='  ARRAY OF STEEL GRATING PLUS 12" H2O '
ARRAY 2 3*0.0
REPLICATE 2 1 4R0.9525 2R0.0 1
REPLICATE 2 1 4R30.48 2R0.0 1

UNIT 6
COM='  U(3.85) ANNULUS WITH INSERT (75.0 CM H) '
CYLINDER 1 1 3.175 75.0 0.
CYLINDER 2 1 3.302 75.0 0.
CYLINDER 1 1 9.144 75.0 0.
CUBOID 2 1 4P11.049 75.0 0.

UNIT 7
COM='  WATER CUBOID TO COMPLETE ANNULI ARRAY (75.0 CM H) '
CUBOID 2 1 4P11.049 75.0 0.

UNIT 8
COM='  ARRAY OF 24 ANNULI WITH U(3.85) INSERTS (75.0 CM H) '
ARRAY 3 3*0.0
REPLICATE 2 1 4R36.195 2R0. 1
REPLICATE 2 1 4R30.48 2R0.0 1

UNIT 9
COM='  U(3.85) ANNULUS WITH INSERT (1.2 CM H) '
CYLINDER 1 1 3.175 1.2 0.
CYLINDER 0 1 3.302 1.2 0.
CYLINDER 1 1 9.144 1.2 0.
CUBOID 0 1 4P11.049 1.2 0.

UNIT 10
COM='  VOID CUBOID TO COMPLETE ANNULI ARRAY (1.2 CM H) '
CUBOID 0 1 4P11.049 1.2 0.

UNIT 11
COM='  ARRAY OF 24 ANNULI WITH U(3.85) INSERTS (1.2 CM H) '
ARRAY 4 3*0.0
REPLICATE 0 1 4R36.195 2R0.0 1
REPLICATE 0 1 4R30.48 2R0.0 1

CORE 5 1 -121.92 -121.92 0.
REPLICATE 5 1 5R0.0 0.1905 1
REPLICATE 4 1 5R0.0 2.54 1
END GEOM
READ ARRAY
ARA=1 NUX=1 NUY=13 NUZ=1
FILL 1 2 5@2 1 END FILL
ARA=2 NUX=60 NUY=20 NUZ=1
FILL F4 END FILL
ARA=3 NUX=5 NUY=5 NUZ=1
LOOP  6  1 5 1  1 5 1  1 1 1
      7  5 5 1  1 1 1  1 1 1 END LOOP
ARA=4 NUX=5 NUY=5 NUZ=1
LOOP  9  1 5 1  1 5 1  1 1 1
     10  5 5 1  1 1 1  1 1 1 END LOOP
GBL=5
ARA=5 NUX=1 NUY=1 NUZ=4
FILL 3 5 @ 11 END FILL
END ARRAY
```

```
READ START
RST=1
XSM=-55.245 XSP=55.245 YSM=-55.245 YSP=55.245 ZSM=21.59 ZSP=97.79
END START
READ PLOT

TTL='PLAN VIEW 1/6 SCALE OF PALLET, Z=MIDLEVEL OF ANNULI/INSERTS'
XUL=-91.44 YUL=91.44 ZUL=59.69
XLR=91.44 YLR=-91.44 ZLR=59.69
UAX=1. VDN=-1. DLX=1.524 MCH='' U.WGSC' END

TTL='PLAN VIEW 1/6 SCALE OF PALLET, Z=MIDLEVEL OF GRATING'
XUL=-91.44 YUL=91.44 ZUL=20.0025
XLR=91.44 YLR=-91.44 ZLR=20.0025
UAX=1. VDN=-1. DLX=1.524 MCH='' U.WGSC' END

TTL='PLAN VIEW 1/6 SCALE OF PALLET, Z=MIDLEVEL OF FIR TIMBERS'
XUL=-91.44 YUL=91.44 ZUL=9.2075
XLR=91.44 YLR=-91.44 ZLR=9.2075
UAX=1. VDN=-1. DLX=1.524 MCH='' U.WGSC' END

TTL='PLAN VIEW 1/10 SCALE OF MOCKUP, Z=MIDLEVEL OF U UNITS'
XUL=-137. YUL=137. ZUL=59.69
XLR=137. YLR=-137. ZLR=59.69
UAX=1. VDN=-1. DLX=2.54 MCH='' U.WGSC' END

TTL='PLAN VIEW 2X SCALE OF SINGLE U UNIT, Z=MIDLEVEL OF UNIT'
XUL=-11.049 YUL=11.049 ZUL=59.69
XLR=11.049 YLR=-11.049 ZLR=59.69
UAX=1. VDN=-1. DLX=0.127 MCH='' U.WGSC' END

TTL='CROSS SECTION OF PALLET 1/6 SCALE,Y=0.0'
XUL=-91.44 YUL=0.0 ZUL=113.
XLR=91.44 YLR=0.0 ZLR=-18.
UAX=1. VDN=-1. DLX=1.524 MCH='' U.WGSC' END

TTL='CROSS SECTION OF MOCKUP 1/10 SCALE,Y=0.0'
XUL=-137. YUL=0.0 ZUL=113.
XLR=137. YLR=0.0 ZLR=-18.
UAX=1. VDN=-1. DLX=2.54 MCH='' U.WGSC' END

TTL='CROSS SECTION OF FLOOR/GRATING/FIR TIMBERS, FULL SCALE'
XUL=0. YUL=0. ZUL=24.13
XLR=25.4 YLR=0. ZLR=-5.4
UAX=1. VDN=-1. DLX=.254 MCH='' U.WGSC' END

TTL='PLAN VIEW OF GRATING THRU TIEBARS, FULL SCALE'
XUL=0. YUL=25.4 ZUL=21.193
XLR=25.4 YLR=0. ZLR=21.193
UAX=1. VDN=-1. DLX=.254 MCH='' U.WGSC' END

TTL='PLAN VIEW OF GRATING @ GRATING MIDLEVEL, FULL SCALE'
XUL=0. YUL=25.4 ZUL=20.0025
XLR=25.4 YLR=0. ZLR=20.0025
UAX=1. VDN=-1. DLX=.254 MCH='' U.WGSC' END

TTL='PLAN VIEW OF TIMBERS @ TIMBER MIDLEVEL, FULL SCALE'
XUL=0. YUL=25.4 ZUL=9.2075
XLR=25.4 YLR=-25.4 ZLR=9.2075
UAX=1. VDN=-1. DLX=.254 MCH='' U.WGSC' END

TTL='CROSS SECTION AT TOP OF UNITS, 2X SCALE'
XUL=-11.049 YUL=0. ZUL=105.
XLR=11.049 YLR=0. ZLR=90.
UAX=1. VDN=-1. DLX=.127 MCH='' U.WGSC' END
END PLOT
END DATA
END
```

043 (CAB07)

```
@CSAS25
CASE EBJ.4 U(3.85) 16 @ 7.2"/0"/0.25"/79.3CM, TRIANGULAR
27GROUPNDF4 INFHOMMEDIUM

' U(3.85) METAL
U-235          1 0.  1.8643E-3 END
U-238          1 0.  4.5971E-2 END

' FULL DENSITY WATER MODERATOR/REFLECTOR
H2O            2 1.0              END

' FIR TIMBER MODEL
C              3 0.  1.06802E-2 END
H              3 0.  2.21713E-2 END
O              3 0.  1.10850E-2 END

' STEEL FOR GRATING, TANK WALLS AND FLOOR
CARBONSTEEL  4 1.0                END

' STAINLESS STEEL LINING FOR TANK
SS304          5 1.0              END

END COMP
CASE EBJ.4 U(3.85) 16 @ 7.2"/0"/0.25"/79.3CM, TRIANGULAR
READ PARM
TBA=3 NPG=600  NUB=YES PLT=NO FDN=YES TRE=90
END PARM
READ GEOM

UNIT 1
COM='  FIR TIMBER 7.25" X 72" X 7.25" '
CUBOID 3 1 182.88 0. 18.415 0. 18.415 0.

UNIT 2
COM='  WATER GAP 3.5" X 72" X 7.25" BETWEEN TIMBERS '
CUBOID 2 1 182.88 0. 8.89 0. 18.415 0.

UNIT 3
COM='  ARRAY OF TIMBERS 72" X 72" X 7.25" '
ARRAY 1 3*0.0
REPLICATE 2 1 2R0. 2R0.3175 2R0. 1

UNIT 4
COM='  SECTION OF STEEL GRATING '
CUBOID 4 1 2.778125 .238125 .396875 -.396875 3.175 2.38125
CUBOID 2 1 2.778125 .238125 4.524375 -4.524375 3.175 0.
CUBOID 4 1 3.01625 0. 4.524375 -4.524375 3.175 0.

UNIT 5
COM='  ARRAY OF STEEL GRATING '
ARRAY 2 3*0.0
REPLICATE 2 1 4R0.9525 2R0.0 1

UNIT 6
COM='  U(3.85) ANNULUS WITH INSERT '
CYLINDER 1 1 3.175 76.2 0.
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 9.144 76.2 0.

UNIT 7
COM='  ARRAY OF 16 ANNULI WITH U(3.85) INSERTS '
CUBOID 2 1 4P91.44 79.3 0.
HOLE 6    0.0      0.0     0.0
HOLE 6  -18.923    0.0     0.0
HOLE 6   -9.4615  16.3878  0.0
HOLE 6    9.4615  16.3878  0.0
HOLE 6   18.923    0.0     0.0
HOLE 6    9.4615 -16.3878  0.0
HOLE 6   -9.4615 -16.3878  0.0
HOLE 6  -28.3845  16.3878  0.0
HOLE 6  -18.923   32.7756  0.0
HOLE 6    0.0     32.7756  0.0
HOLE 6   28.3845  16.3878  0.0
HOLE 6   37.846    0.0     0.0
HOLE 6   28.3845 -16.3878  0.0
HOLE 6    0.0    -32.7756  0.0
HOLE 6  -18.923  -32.7756  0.0
HOLE 6  -28.3845 -16.3878  0.0

CORE 3 1 -91.44 -91.44 0.
REPLICATE 2 1 4R30.48 2R0. 1
REPLICATE 5 1 5R0.0 0.1905 1
REPLICATE 4 1 5R0.0 2.54 1
END GEOM
READ ARRAY
```

```
ARA=1 NUX=1 NUY=13 NUZ=1
FILL 1 2 502 1 END FILL
ARA=2 NUX=60 NUY=20 NUZ=1
FILL F4 END FILL
GBL=3
ARA=3 NUX=1 NUY=1 NUZ=3
FILL 3 5 7 END FILL
END ARRAY
READ START
MST=1
XSM=-37.5285 XSP=44.99
YSM=-41.9196 YSP=41.9196
ZSM= 21.59   ZSP=97.79
END START
READ PLOT

TTL="PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF ANNULI/INSERTS"
XUL=-91.44 YUL=91.44 ZUL=59.69
XLR=91.44 YLR=-91.44 ZLR=59.69
UAX=1. VDN=-1. DLX=1.524 NCH=" U.WGSC" END

TTL="PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF GRATING"
XUL=-91.44 YUL=91.44 ZUL=20.0025
XLR=91.44 YLR=-91.44 ZLR=20.0025
UAX=1. VDN=-1. DLX=1.524 NCH=" U.WGSC" END

TTL="PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF FIR TIMBERS"
XUL=-91.44 YUL=91.44 ZUL=9.2075
XLR=91.44 YLR=-91.44 ZLR=9.2075
UAX=1. VDN=-1. DLX=1.524 NCH=" U.WGSC" END

TTL="PLAN VIEW 1/10 SCALE OF MOCKUP, Z=MIDLEVEL OF U UNITS"
XUL=-121.92 YUL=121.92 ZUL=59.69
XLR=121.92 YLR=-121.92 ZLR=59.69
UAX=1. VDN=-1. DLX=2.54 NCH=" U.WGSC" END

TTL="PLAN VIEW FULL SCALE OF SINGLE U UNIT, Z=MIDLEVEL OF UNIT"
XUL=-16.75 YUL=16.75 ZUL=59.69
XLR=16.75 YLR=-16.75 ZLR=59.69
UAX=1. VDN=-1. DLX=0.254 NCH=" U.WGSC" END

TTL="CROSS SECTION OF CORE 1/6 SCALE,Y=0.0"
XUL=-91.44 YUL=0.0 ZUL=102.
XLR=91.44 YLR=0.0 ZLR=0.
UAX=1. VDN=-1. DLX=1.524 NCH=" U.WGSC" END

TTL="CROSS SECTION OF MOCKUP 1/10 SCALE,Y=0.0"
XUL=-121.92 YUL=0.0 ZUL=105.
XLR=121.92 YLR=0.0 ZLR=-65.
UAX=1. VDN=-1. DLX=2.54 NCH=" U.WGSC" END

TTL="CROSS SECTION OF GRATING/FIR TIMBERS, FULL SCALE"
XUL=0. YUL=0. ZUL=24.13
XLR=25.4 YLR=0. ZLR=-5.0
UAX=1. VDN=-1. DLX=.254 NCH=" U.WGSC" END

TTL="PLAN VIEW OF GRATING THRU TIEBARS, FULL SCALE"
XUL=0. YUL=25.4 ZUL=21.193
XLR=25.4 YLR=0. ZLR=21.193
UAX=1. VDN=-1. DLX=.254 NCH=" U.WGSC" END

TTL="PLAN VIEW OF GRATING @ GRATING MIDLEVEL, FULL SCALE"
XUL=0. YUL=25.4 ZUL=20.0025
XLR=25.4 YLR=0. ZLR=20.0025
UAX=1. VDN=-1. DLX=.254 NCH=" U.WGSC" END

TTL="PLAN VIEW OF TIMBERS @ TIMBER MIDLEVEL, FULL SCALE"
XUL=0. YUL=25.4 ZUL=9.2075
XLR=25.4 YLR=-25.4 ZLR=9.2075
UAX=1. VDN=-1. DLX=.254 NCH=" U.WGSC" END
END PLOT
END DATA
END

                                044 (CAB08)

#CSAS25
CASE EBJ.5X  ( U(3.85) 7 @ 7.2"/0"/1.0"/53.1CM, TRIANGULAR)
27GROUPNDF4 INFHOMMEDIUM

' U(3.85) METAL
U-235          1 0.  1.8643E-3 END
U-238          1 0.  4.5971E-2 END

' FULL DENSITY WATER MODERATOR/REFLECTOR
H2O            2 1.0                END

' FIR TIMBER MODEL
C              3 0.  1.06802E-2 END
H              3 0.  2.21713E-2 END
O              3 0.  1.10850E-2 END

' STEEL FOR GRATING, TANK WALLS AND FLOOR
CARBONSTEEL    4 1.0            END

' STAINLESS STEEL LINING FOR TANK
SS304          5 1.0            END

END COMP
CASE EBJ.5X
READ PARM
TBA=3 NPG=600  NUB=YES PLT=NO FDN=YES TME=90
END PARM
READ GEOM

UNIT 1
COM=" FIR TIMBER 7.25" X 72" X 7.25" "
CUBOID 3 1 182.88 0. 18.415 0. 18.415 0.

UNIT 2
COM=" WATER GAP 3.5" X 72" X 7.25" BETWEEN TIMBERS "
CUBOID 2 1 182.88 0. 8.89 0. 18.415 0.

UNIT 3
COM=" ARRAY OF TIMBERS 72" X 72" X 7.25" "
ARRAY 1 3*0.0
REPLICATE 2 1 2R0. 2R0.2175 2R0. 1
REPLICATE 2 1 4R30.48 2R0.0 1

UNIT 4
COM=" SECTION OF STEEL GRATING "
CUBOID 4 1 2.778125 .238125 .396875 -.396875 3.175 2.38125
CUBOID 2 1 2.778125 .238125 4.524375 -4.524375 3.175 0.
CUBOID 4 1 3.01625 0. 4.524375 -4.524375 3.175 0.

UNIT 5
COM=" ARRAY OF STEEL GRATING "
ARRAY 2 3*0.0
REPLICATE 2 1 4R0.9525 2R0.0 1
REPLICATE 2 1 4R30.48 2R0.0 1

UNIT 6
COM=" U(3.85) UNIT, FLOODED, H=1.905, LEVELS 1 AND 3 "
CYLINDER 1 1 3.175 1.905 0.
CYLINDER 2 1 3.302 1.905 0.
CYLINDER 1 1 9.144 1.905 0.

UNIT 7
COM=" ARRAY OF 7 UNITS, FLOODED, H=1.905, LEVELS 1 AND 3 "
CUBOID 3 1 4P91.44 1.905 0.
HOLE 6   0.0     0.0      0.0
HOLE 6 -20.828   0.0      0.0
HOLE 6 -10.414  18.037577 0.0
HOLE 6  10.414  18.037577 0.0
HOLE 6  20.828   0.0      0.0
HOLE 6  10.414 -18.037577 0.0
HOLE 6 -10.414 -18.037577 0.0
REPLICATE 2 1 4R30.48 2R0.0 1

UNIT 8
COM=" U(3.85) UNIT, FLOODED, H=35.2425, LEVEL 2 "
CYLINDER 1 1 3.175 35.2425 0.
CYLINDER 2 1 3.302 35.2425 0.
CYLINDER 1 1 9.144 35.2425 0.

UNIT 9
COM=" ARRAY OF 7 UNITS, FLOODED, H=35.2425, LEVEL 2 "
CUBOID 2 1 4P91.44 35.2425 0.
HOLE 8   0.0     0.0      0.0
HOLE 8 -20.828   0.0      0.0
HOLE 8 -10.414  18.037577 0.0
HOLE 8  10.414  18.037577 0.0
HOLE 8  20.828   0.0      0.0
HOLE 8  10.414 -18.037577 0.0
HOLE 8 -10.414 -18.037577 0.0
REPLICATE 2 1 4R30.48 2R0.0  1

UNIT 10
COM=" U(3.85) UNIT, FLOODED, H=14.0475, LEVEL 4 "
CYLINDER 1 1 3.175 14.0475 0.
CYLINDER 2 1 3.302 14.0475 0.
CYLINDER 1 1 9.144 14.0475 0.

UNIT 11
COM=" ARRAY OF 7 UNITS, FLOODED, H=14.0475, LEVEL 4 "
CUBOID 2 1 4P91.44 14.0475 0.
HOLE 10   0.0     0.0      0.0
HOLE 10 -20.828   0.0      0.0
HOLE 10 -10.414  18.037577 0.0
HOLE 10  10.414  18.037577 0.0
HOLE 10  20.828   0.0      0.0
HOLE 10  10.414 -18.037577 0.0
HOLE 10 -10.414 -18.037577 0.0
REPLICATE 2 1 4R30.48 2R0.0 1

UNIT 12
COM=" U(3.85) UNIT, DRY, H=11.9875, LEVEL 5 "
CYLINDER 1 1 3.175 11.9875 0.
CYLINDER 0 1 3.302 11.9875 0.
CYLINDER 1 1 9.144 11.9875 0.

UNIT 13
COM=" ARRAY OF 7 UNITS, DRY, H=11.9875, LEVEL 5 "
CUBOID 0 1 4P91.44 11.9875 0.
HOLE 12   0.0     0.0      0.0
HOLE 12 -20.828   0.0      0.0
HOLE 12 -10.414  18.037577 0.0
HOLE 12  10.414  18.037577 0.0
HOLE 12  20.828   0.0      0.0
HOLE 12  10.414 -18.037577 0.0
HOLE 12 -10.414 -18.037577 0.0
REPLICATE 0 1 4R30.48 2R0.0 1

UNIT 14
COM=" U(3.85) UNIT, DRY, H=1.905, LEVEL 6 "
CYLINDER 1 1 3.175 1.905 0.
CYLINDER 0 1 3.302 1.905 0.
CYLINDER 1 1 9.144 1.905 0.

UNIT 15
COM=" ARRAY OF 7 UNITS, DRY, H=1.905, LEVEL 6 "
CUBOID 3 1 4P91.44 1.905 0.
HOLE 14   0.0     0.0      0.0
HOLE 14 -20.828   0.0      0.0
HOLE 14 -10.414  18.037577 0.0
HOLE 14  10.414  18.037577 0.0
HOLE 14  20.828   0.0      0.0
HOLE 14  10.414 -18.037577 0.0
HOLE 14 -10.414 -18.037577 0.0
REPLICATE 0 1 4R30.48 2R0.0 1

UNIT 16
COM=" U(3.85) UNIT, DRY, H=9.2075, LEVEL 7 "
CYLINDER 1 1 3.175 9.2075 0.
CYLINDER 0 1 3.302 9.2075 0.
CYLINDER 1 1 9.144 9.2075 0.

UNIT 17
COM=" ARRAY OF 7 UNITS, DRY, H=9.2075, LEVEL 7 "
CUBOID 0 1 4P91.44 9.2075 0.
HOLE 16   0.0     0.0      0.0
HOLE 16 -20.828   0.0      0.0
HOLE 16 -10.414  18.037577 0.0
HOLE 16  10.414  18.037577 0.0
HOLE 16  20.828   0.0      0.0
HOLE 16  10.414 -18.037577 0.0
HOLE 16 -10.414 -18.037577 0.0
REPLICATE 0 1 4R30.48 2R0.0 1

CORE 3 1 -121.92 -121.92 0.
REPLICATE 5 1 5R0.0 0.1905 1
REPLICATE 4 1 5R0.0 2.54 1
END GEOM
READ ARRAY
ARA=1 NUX=1 NUY=13 NUZ=1
FILL 1 2 502 1 END FILL
ARA=2 NUX=60 NUY=20 NUZ=1
FILL F4 END FILL
GBL=3
ARA=3 NUX=1 NUY=1 NUZ=9
FILL 3 5 7 9 7 11 13 15 17 END FILL
END ARRAY
READ START
MST=1
XSM=-20.828 XSP=20.828
YSM=-20.828 YSP=20.828
ZSM= 21.59   ZSP=74.69
END START
READ PLOT

TTL="PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF ANNULI/INSERTS"
XUL=-100. YUL=100. ZUL=59.69
XLR=100. YLR=-100. ZLR=59.69
UAX=1. VDN=-1. DLX=1.524 NCH=" U.WGSC" END

TTL="PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF GRATING"
XUL=-100. YUL=100. ZUL=20.0025
XLR=100. YLR=-100. ZLR=20.0025
UAX=1. VDN=-1. DLX=1.524 NCH=" U.WGSC" END

TTL="PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF FIR TIMBERS"
XUL=-100. YUL=100. ZUL=9.2075
XLR=100. YLR=-100. ZLR=9.2075
UAX=1. VDN=-1. DLX=1.524 NCH=" U.WGSC" END

TTL="PLAN VIEW 1/10 SCALE OF MOCKUP, Z=MIDLEVEL OF U UNITS"
XUL=-130. YUL=130. ZUL=59.69
XLR=130. YLR=-130. ZLR=59.69
UAX=1. VDN=-1. DLX=2.54 NCH=" U.WGSC" END

TTL="PLAN VIEW, FULL SCALE AT CENTER OF ARRAY, Z=MIDLEVEL "
XUL=-16.75 YUL=16.75 ZUL=59.69
XLR=16.75 YLR=-16.75 ZLR=59.69
UAX=1. VDN=-1. DLX=0.254 NCH=" U.WGSC" END

TTL="CROSS SECTION OF CORE 1/6 SCALE,Y=0.0"
XUL=-100. YUL=0.0 ZUL=102.
XLR=100. YLR=0.0 ZLR=0.
UAX=1. VDN=-1. DLX=1.524 NCH=" U.WGSC" END

TTL="CROSS SECTION OF MOCKUP 1/10 SCALE,Y=0.0"
XUL=-130. YUL=0.0 ZUL=105.
XLR=130. YLR=0.0 ZLR=-65.
UAX=1. VDN=-1. DLX=2.54 NCH=" U.WGSC" END

TTL="CROSS SECTION OF GRATING/FIR TIMBERS, FULL SCALE"
XUL=0. YUL=0. ZUL=24.13
XLR=25.4 YLR=0. ZLR=-5.0
UAX=1. VDN=-1. DLX=.254 NCH=" U.WGSC" END

TTL="PLAN VIEW OF GRATING THRU TIEBARS, FULL SCALE"
XUL=0. YUL=25.4 ZUL=21.193
XLR=25.4 YLR=0. ZLR=21.193
UAX=1. VDN=-1. DLX=.254 NCH=" U.WGSC" END

TTL="PLAN VIEW OF GRATING @ GRATING MIDLEVEL, FULL SCALE"
XUL=0. YUL=25.4 ZUL=20.0025
XLR=25.4 YLR=0. ZLR=20.0025
UAX=1. VDN=-1. DLX=.254 NCH=" U.WGSC" END

TTL="PLAN VIEW OF TIMBERS @ TIMBER MIDLEVEL, FULL SCALE"
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XUL=0. YUL=25.4 ZUL=9.2075
XLR=25.4 YLR=-25.4 ZLR=9.2075
UAX=1. VDN=-1. DLX=.254 MCH='U.WGSC' END

TTL='CROSS SECTION OF CENTRAL UNIT, 2X SCALE'
XUL=0.0 YUL=0.0 ZUL=102.
XLR=15.24 YLR=0.0 ZLR=-5.
UAX=1. VDN=-1. DLX=0.127 MCH='U.WGSC' END

END PLOT
END DATA
END
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045 (CAB09)

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=CSAS25
CASE EBJ.6X  ( U(3.85) 22 @ 7.2"/0"/2.35"/77.2CM, TRIANGULAR)
27GROUPNDF4 INFHOMMEDIUM

' U(3.85) METAL
U-235          1 0.  1.8643E-3 END
U-238          1 0.  4.5971E-2 END

' FULL DENSITY WATER MODERATOR/REFLECTOR
H2O            2 1.0                END

' FIR TIMBER MODEL
C              3 0.  1.06802E-2 END
H              3 0.  2.21713E-2 END
O              3 0.  1.10650E-2 END

' STEEL FOR GRATING, TANK WALLS AND FLOOR
CARBONSTEEL  4 1.0                  END

' STAINLESS STEEL LINING FOR TANK
SS304          5 1.0                END

END COMP
CASE EBJ.6X
READ PARM
TBA=3 HPG=600  HUB=YES PLT=NO FDN=YES TME=90
END PARM
READ GEOM

UNIT 1
COM='  FIR TIMBER 7.25" X 72" X 7.25" '
CUBOID 3 1 1E2.88 0. 18.415 0. 18.415 0.

UNIT 2
COM='  WATER GAP 3.5" X 72" X 7.25" BETWEEN TIMBERS '
CUBOID 2 1 1E2.88 0. 8.89 0. 18.415 0.

UNIT 3
COM='  ARRAY OF TIMBERS 72" X 72" X 7.25" '
ARRAY 1 3*0.0
REPLICATE 2 1 2R0. 2R0.3175 2R0. 1
REPLICATE 2 1 4R30.48 2R0.0 1

UNIT 4
COM='  SECTION OF STEEL GRATING '
CUBOID 4 1 2.778125 .238125 .396875 -.396875 3.175 2.38125
CUBOID 2 1 2.778125 -.238125 4.524375 -4.524375 3.175 0.
CUBOID 4 1 3.01625 0. 4.524375 -4.524375 3.175 0.

UNIT 5
COM='  ARRAY OF STEEL GRATING '
ARRAY 2 3*0.0
REPLICATE 2 1 4R0.9525 2R0.0 1
REPLICATE 2 1 4R30.48 2R0.0 1

UNIT 6
COM='  U(3.85) UNIT, FLOODED, H=1.905, LEVELS 1, 3, AND 5 '
CYLINDER 1 1 3.175 1.905 0.
CYLINDER 2 1 3.302 1.905 0.
CYLINDER 1 1 9.144 1.905 0.

UNIT 7
COM='  ARRAY OF 22 UNITS, FLOODED, H=1.905, LEVELS 1, 3, AND 5 '
CUBOID 3 1 4P91.44 1.905 0.
MOLE 6    0.0      0.0       0.0
MOLE 6  -24.257    0.0       0.0
MOLE 6  -12.1285  21.007178  0.0
MOLE 6   12.1285  21.007178  0.0
MOLE 6   24.257    0.0       0.0
MOLE 6   12.1285 -21.007178  0.0
MOLE 6  -12.1285 -21.007178  0.0
MOLE 6  -36.3855 -21.007178  0.0
MOLE 6  -48.514    0.0       0.0
MOLE 6  -36.3855  21.007178  0.0
MOLE 6  -24.257   42.014356  0.0
MOLE 6    0.0     42.014356  0.0
MOLE 6   24.257   42.014356  0.0
MOLE 6   36.3855  21.007178  0.0
MOLE 6   48.514    0.0       0.0
MOLE 6   36.3855 -21.007178  0.0
MOLE 6   24.257  -42.014356  0.0
MOLE 6    0.0    -42.014356  0.0
MOLE 6  -24.257  -42.014356  0.0
MOLE 6  -48.514  -42.014356  0.0
MOLE 6  -12.1285  63.021534  0.0
MOLE 6   60.6425 -21.007178  0.0
REPLICATE 2 1 4R30.48 2R0.0 1

UNIT 8
COM='  U(3.85) UNIT, FLOODED, H=35.2425, LEVEL 2 '
CYLINDER 1 1 3.175 35.2425 0.
CYLINDER 2 1 3.302 35.2425 0.
CYLINDER 1 1 9.144 35.2425 0.

UNIT 9
COM='  ARRAY OF 22 UNITS, FLOODED, H=35.2425, LEVEL 2 '
CUBOID 2 1 4P91.44 35.2425 0.
MOLE 8    0.0      0.0       0.0
MOLE 8  -24.257    0.0       0.0
MOLE 8  -12.1285  21.007178  0.0
MOLE 8   12.1285  21.007178  0.0
MOLE 8   24.257    0.0       0.0
MOLE 8   12.1285 -21.007178  0.0
MOLE 8  -12.1285 -21.007178  0.0
MOLE 8  -36.3855 -21.007178  0.0
MOLE 8  -48.514    0.0       0.0
MOLE 8  -36.3855  21.007178  0.0
MOLE 8  -24.257   42.014356  0.0
MOLE 8    0.0     42.014356  0.0
MOLE 8   24.257   42.014356  0.0
MOLE 8   36.3855  21.007178  0.0
MOLE 8   48.514    0.0       0.0
MOLE 8   36.3855 -21.007178  0.0
MOLE 8   24.257  -42.014356  0.0
MOLE 8    0.0    -42.014356  0.0
MOLE 8  -24.257  -42.014356  0.0
MOLE 8  -48.514  -42.014356  0.0
MOLE 8  -12.1285  63.021534  0.0
MOLE 8   60.6425 -21.007178  0.0
REPLICATE 2 1 4R30.48 2R0.0  1

UNIT 10
COM='  U(3.85) UNIT, FLOODED, H=26.035, LEVEL 4 '
CYLINDER 1 1 3.175 26.035 0.
CYLINDER 2 1 3.302 26.035 0.
CYLINDER 1 1 9.144 26.035 0.

UNIT 11
COM='  ARRAY OF 22 UNITS, FLOODED, H=26.035, LEVEL 4 '
CUBOID 2 1 4P91.44 26.035 0.
MOLE 10    0.0      0.0       0.0
MOLE 10  -24.257    0.0       0.0
MOLE 10  -12.1285  21.007178  0.0
MOLE 10   12.1285  21.007178  0.0
MOLE 10   24.257    0.0       0.0
MOLE 10   12.1285 -21.007178  0.0
MOLE 10  -12.1285 -21.007178  0.0
MOLE 10  -36.3855 -21.007178  0.0
MOLE 10  -48.514    0.0       0.0
MOLE 10  -36.3855  21.007178  0.0
MOLE 10  -24.257   42.014356  0.0
MOLE 10    0.0     42.014356  0.0
MOLE 10   24.257   42.014356  0.0
MOLE 10   36.3855  21.007178  0.0
MOLE 10   48.514    0.0       0.0
MOLE 10   36.3855 -21.007178  0.0
MOLE 10   24.257  -42.014356  0.0
MOLE 10    0.0    -42.014356  0.0
MOLE 10  -24.257  -42.014356  0.0
MOLE 10  -48.514  -42.014356  0.0
MOLE 10  -12.1285  63.021534  0.0
MOLE 10   60.6425 -21.007178  0.0
REPLICATE 2 1 4R30.48 2R0.0 1

UNIT 12
COM='  U(3.85) UNIT, FLOODED, H=9.2075, LEVEL 6 '
CYLINDER 1 1 3.175 9.2075 0.
CYLINDER 2 1 3.302 9.2075 0.
CYLINDER 1 1 9.144 9.2075 0.

UNIT 13
COM='  ARRAY OF 22 UNITS, FLOODED, H=9.2075, LEVEL 6 '
CUBOID 2 1 4P91.44 9.2075 0.
MOLE 12    0.0      0.0       0.0
MOLE 12  -24.257    0.0       0.0
MOLE 12  -12.1285  21.007178  0.0
MOLE 12   12.1285  21.007178  0.0
MOLE 12   24.257    0.0       0.0
MOLE 12   12.1285 -21.007178  0.0
MOLE 12  -12.1285 -21.007178  0.0
MOLE 12  -36.3855 -21.007178  0.0
MOLE 12  -48.514    0.0       0.0
MOLE 12  -36.3855  21.007178  0.0
MOLE 12  -24.257   42.014356  0.0
MOLE 12    0.0     42.014356  0.0
MOLE 12   24.257   42.014356  0.0
MOLE 12   36.3855  21.007178  0.0
MOLE 12   48.514    0.0       0.0
MOLE 12   36.3855 -21.007178  0.0
MOLE 12   24.257  -42.014356  0.0
MOLE 12    0.0    -42.014356  0.0
MOLE 12  -24.257  -42.014356  0.0
MOLE 12  -48.514  -42.014356  0.0
MOLE 12  -12.1285  63.021534  0.0
MOLE 12   60.6425 -21.007178  0.0
REPLICATE 2 1 4R30.48 2R0.0 1

CORE 3 1 -121.92 -121.92 0.
REPLICATE 2 1 4R0.0 1.0 0.0 1
REPLICATE 5 1 5R0.0 0.1905 1
REPLICATE 4 1 5R0.0 2.54 1
END GEOM
READ ARRAY
ARA=1 NUX=1 NUY=13 NUZ=1
FILL 1 2 5@2 1 END FILL
ARA=2 NUX=60 NUY=20 NUZ=1
FILL F4 END FILL
GBL=3
ARA=3 NUX=1 NUY=1 NUZ=8
FILL 3 5 7 9 7 11 7 13 END FILL
END ARRAY
READ START
NST=1
XSN=-57.658 XSP=57.658
YSN=-51.158356 YSP=51.158356
ZSN= 21.59   ZSP=97.79
END START
READ PLOT

TTL='PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF ANNULI/INSERTS'
XUL=-100. YUL=100. ZUL=59.69
XLR=100. YLR=-100. ZLR=59.69
UAX=1. VDN=-1. DLX=1.524 MCH='U.WGSC' END

TTL='PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF GRATING'
XUL=-100. YUL=100. ZUL=20.0025
XLR=100. YLR=-100. ZLR=20.0025
UAX=1. VDN=-1. DLX=1.524 MCH='U.WGSC' END

TTL='PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF FIR TIMBERS'
XUL=-100. YUL=100. ZUL=9.2075
XLR=100. YLR=-100. ZLR=9.2075
UAX=1. VDN=-1. DLX=1.524 MCH='U.WGSC' END

TTL='PLAN VIEW 1/10 SCALE OF MOCKUP, Z=MIDLEVEL OF U UNITS'
XUL=-130. YUL=130. ZUL=59.69
XLR=130. YLR=-130. ZLR=59.69
UAX=1. VDN=-1. DLX=2.54 MCH='U.WGSC' END

TTL='PLAN VIEW, FULL SCALE AT CENTER OF ARRAY, Z=MIDLEVEL '
XUL=-16.75 YUL=16.75 ZUL=59.69
XLR=16.75 YLR=-16.75 ZLR=59.69
UAX=1. VDN=-1. DLX=0.254 MCH='U.WGSC' END

TTL='CROSS SECTION OF CORE 1/6 SCALE,Y=0.0'
XUL=-100. YUL=0.0 ZUL=102.
XLR=100. YLR=0.0 ZLR=0.
UAX=1. VDN=-1. DLX=1.524 MCH='U.WGSC' END

TTL='CROSS SECTION OF MOCKUP 1/10 SCALE,Y=0.0'
XUL=-130. YUL=0.0 ZUL=105.
XLR=130. YLR=0.0 ZLR=-65.
UAX=1. VDN=-1. DLX=2.54 MCH='U.WGSC' END

TTL='CROSS SECTION OF GRATING/FIR TIMBERS, FULL SCALE'
XUL=0. YUL=0. ZUL=24.13
XLR=25.4 YLR=0. ZLR=-5.0
UAX=1. VDN=-1. DLX=.254 MCH='U.WGSC' END

TTL='PLAN VIEW OF GRATING THRU TIEBARS, FULL SCALE'
XUL=0. YUL=25.4 ZUL=21.193
XLR=25.4 YLR=0. ZLR=21.183
UAX=1. VDN=-1. DLX=.254 MCH='U.WGSC' END

TTL='PLAN VIEW OF GRATING @ GRATING MIDLEVEL, FULL SCALE'
XUL=0. YUL=25.4 ZUL=20.0025
XLR=25.4 YLR=0. ZLR=20.0025
UAX=1. VDN=-1. DLX=.254 MCH='U.WGSC' END

TTL='PLAN VIEW OF TIMBERS @ TIMBER MIDLEVEL, FULL SCALE'
XUL=0. YUL=25.4 ZUL=9.2075
XLR=25.4 YLR=-25.4 ZLR=9.2075
UAX=1. VDN=-1. DLX=.254 MCH='U.WGSC' END

TTL='CROSS SECTION OF CENTRAL UNIT, 2X SCALE'
XUL=0.0 YUL=0.0 ZUL=102.
XLR=15.24 YLR=0.0 ZLR=-5.
UAX=1. VDN=-1. DLX=0.127 MCH='U.WGSC' END

END PLOT
END DATA
END
```

046 (CAB10)

```
=CSAS25
CASE EBJ.8 U(3.85) 6 @ 7.2"/2.6"/0.75"/91.4CM, SQUARE
27GROUPNDF4 INFHOMMEDIUM

' U(3.85) METAL
U-235          1 0.  1.8643E-3 END
U-238          1 0.  4.5971E-2 END

' FULL DENSITY WATER MODERATOR/REFLECTOR
H2O            2 1.0                END

' FIR TIMBER MODEL
C              3 0.  1.06802E-2 END
H              3 0.  2.21713E-2 END
O              3 0.  1.10650E-2 END

' STEEL FOR GRATING, TANK WALLS AND FLOOR
CARBONSTEEL  4 1.0                  END

' STAINLESS STEEL LINING FOR TANK
SS304          5 1.0                END
```

```
END COMP
CASE EBJ.8 U(3.85) 6 0 7.2"/2.6"/0.75"/91.4CM, SQUARE
READ PARM
MPG=400  MUB=YES PLT=NO FDN=YES TRE=90 TBA=2
END PARM
READ GEOM

UNIT 1
COM=' FIR TIMBER 7.25" X 72" X 7.25" '
CUBOID 3 1 182.88 0. 18.415 0. 18.415 0.

UNIT 2
COM=' WATER GAP 3.5" X 72" X 7.25" BETWEEN TIMBERS '
CUBOID 2 1 182.88 0. 8.89 0. 18.415 0.

UNIT 3
COM=' ARRAY OF TIMBERS 72" X 72" X 7.25" '
ARRAY 1 3*0.0
REPLICATE 2 1 2R0. 2R0.3175 2R0. 1
REPLICATE 2 1 4R30.48 2R0. 1

UNIT 4
COM=' SECTION OF STEEL GRATING '
CUBOID 4 1 2.778125 .238125 .396875 -.396875 3.175 2.38125
CUBOID 2 1 2.778125 .238125 4.524375 -4.524375 3.175 0.
CUBOID 4 1 3.01625 0. 4.524375 -4.524375 3.175 0.

UNIT 5
COM=' ARRAY OF STEEL GRATING '
ARRAY 2 3*0.0
REPLICATE 2 1 4R0.9525 2R0.0 1
REPLICATE 2 1 4R30.48 2R0. 1

UNIT 6
COM=' U(3.85) ANNULUS, H=76.2, SUBMERGED, ON CORNER '
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 4.614139 76.2 0.
CYLINDER 1 1 5.628264 76.2 0.
CYLINDER 1 1 6.485710 76.2 0.
CYLINDER 1 1 7.242341 76.2 0.
CYLINDER 1 1 7.927079 76.2 0.
CYLINDER 1 1 8.557199 76.2 0.
CYLINDER 1 1 9.144000 76.2 0.
CUBOID 2 1 4P10.0965 91.4 0.

UNIT 7
COM=' U(3.85) ANNULUS, H=76.2, SUBMERGED, ON SIDE '
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 4.614139 76.2 0.
CYLINDER 1 1 5.628264 76.2 0.
CYLINDER 1 1 6.485710 76.2 0.
CYLINDER 1 1 7.242341 76.2 0.
CYLINDER 1 1 7.927079 76.2 0.
CYLINDER 1 1 8.557199 76.2 0.
CYLINDER 1 1 9.144000 76.2 0.
CUBOID 2 1 4P10.0965 91.4 0.

UNIT 8
COM=' ARRAY OF 6 ANNULI, H=76.2, SUBMERGED '
ARRAY 3 3*0.0
REPLICATE 2 1 2R61.1505 2R71.247 2R0. 1
REPLICATE 2 1 4R30.48 2R0. 1

CORE 4 1 -121.92 -121.92 0.
REPLICATE 5 1 5R0.0 0.1905 1
REPLICATE 4 1 5R0.0 2.54 1
END GEOM
READ ARRAY
ARA=1 NUX=1 NUY=13 NUZ=1
FILL 1 2 502 1 END FILL
ARA=2 NUX=60 NUY=20 NUZ=1
FILL F4 END FILL
ARA=3 NUX=3 NUY=2 NUZ=1
FILL 6 7 6 6 7 6 END FILL
GBL=4
ARA=4 NUX=1 NUY=1 NUZ=3
FILL 3 5 8 END FILL
END ARRAY
READ START
RST=1
XSM=-30.2895 XSP=30.2895
YSM=-20.193 YSP=20.193
ZSM=21.59 ZSP=97.79
END START
READ PLOT

TTL='PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF ANNULI/INSERTS'
XUL=-91.44 YUL=91.44 ZUL=59.69
XLR=91.44 YLR=-91.44 ZLR=59.69
UAX=1. VDN=-1. DLX=1.524 NCH=' U.WGS' END

TTL='PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF GRATING'
XUL=-91.44 YUL=91.44 ZUL=20.0025
XLR=91.44 YLR=-91.44 ZLR=20.0025
UAX=1. VDN=-1. DLX=1.524 NCH=' U.WGS' END

TTL='PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF FIR TIMBERS'
XUL=-91.44 YUL=91.44 ZUL=9.2075
XLR=91.44 YLR=-91.44 ZLR=9.2075
UAX=1. VDN=-1. DLX=1.524 NCH=' U.WGS' END

TTL='PLAN VIEW 1/10 SCALE OF MOCKUP, Z=MIDLEVEL OF U UNITS'
XUL=-135. YUL=135. ZUL=59.69
XLR=135. YLR=-135. ZLR=59.69
UAX=1. VDN=-1. DLX=2.54 NCH=' U.WGS' END

TTL='PLAN VIEW 2X SCALE OF SINGLE U UNIT, Z=MIDLEVEL OF UNIT'
XUL=0.0 YUL=20.193 ZUL=59.69
XLR=20.193 YLR=0.0 ZLR=59.69
UAX=1. VDN=-1. DLX=0.127 NCH=' U.WGS' END

TTL='CROSS SECTION OF CORE 1/6 SCALE,Y=10.0965'
XUL=-91.44 YUL=10.0965 ZUL=125.
XLR=91.44 YLR=10.0965 ZLR=-10.
UAX=1. VDN=-1. DLX=1.524 NCH=' U.WGS' END

TTL='CROSS SECTION OF MOCKUP 1/10 SCALE,Y=10.0965'
XUL=-135. YUL=10.0965 ZUL=125.
XLR=135. YLR=10.0965 ZLR=-10.
UAX=1. VDN=-1. DLX=2.54 NCH=' U.WGS' END

TTL='CROSS SECTION OF GRATING/FIR TIMBERS, FULL SCALE'
XUL=0. YUL=0. ZUL=24.13
XLR=25.4 YLR=0. ZLR=-2.0
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGS' END

TTL='PLAN VIEW OF GRATING THRU TIEBARS, FULL SCALE'
XUL=0. YUL=25.4 ZUL=21.193
XLR=25.4 YLR=0. ZLR=21.193
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGS' END

TTL='PLAN VIEW OF GRATING @ GRATING MIDLEVEL, FULL SCALE'
XUL=0. YUL=25.4 ZUL=20.0025
XLR=25.4 YLR=0. ZLR=20.0025
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGS' END

TTL='PLAN VIEW OF TIMBERS @ TIMBER MIDLEVEL, FULL SCALE'
XUL=0. YUL=25.4 ZUL=9.2075
XLR=25.4 YLR=25.4 ZLR=9.2075
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGS' END

TTL='CROSS SECTION OF CENTRAL UNIT, FULL SCALE,Y=10.0965'
XUL=-10.0965 YUL=10.0965 ZUL=125.
XLR=10.0965 YLR=10.0965 ZLR=-10.
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGS' END

END PLOT
END DATA
END

                              047 (CAB11)

#CSAS25
CASE EBJ.9 U(3.85) 16 0 7.2"/2.6"/1.50"/49.2CM, SQUARE
27GROUPNDF4 INFHOMMEDIUM

' U(3.85) METAL
U-235          1 0.  1.8643E-3 END
U-238          1 0.  4.5971E-2 END

' FULL DENSITY WATER MODERATOR/REFLECTOR
H2O            2 1.0              END

' FIR TIMBER MODEL
C              3 0.  1.068902E-2 END
H              3 0.  2.21713E-2 END
O              3 0.  1.10650E-2 END

' STEEL FOR GRATING, TANK WALLS AND FLOOR
CARBONSTEEL    4 1.0              END

' STAINLESS STEEL LINING FOR TANK
SS304          5 1.0              END

END COMP
CASE EBJ.9 U(3.85) 16 0 7.2"/2.6"/1.50"/49.2CM, SQUARE
READ PARM
MPG=600  MUB=YES PLT=NO FDN=YES TRE=90 TBA=2
END PARM
READ GEOM

UNIT 1
COM=' FIR TIMBER 7.25" X 72" X 7.25" '
CUBOID 3 1 182.88 0. 18.415 0. 18.415 0.

UNIT 2
COM=' WATER GAP 3.5" X 72" X 7.25" BETWEEN TIMBERS '
CUBOID 2 1 182.88 0. 8.89 0. 18.415 0.

UNIT 3
COM=' ARRAY OF TIMBERS 72" X 72" X 7.25" '
ARRAY 1 3*0.0
REPLICATE 2 1 2R0. 2R0.3175 2R0. 1
REPLICATE 2 1 4R30.48 2R0. 1

UNIT 4
COM=' SECTION OF STEEL GRATING '
CUBOID 4 1 2.778125 .238125 .396875 -.396875 3.175 2.38125
CUBOID 2 1 2.778125 .238125 4.524375 -4.524375 3.175 0.
CUBOID 4 1 3.01625 0. 4.524375 -4.524375 3.175 0.

UNIT 5
COM=' ARRAY OF STEEL GRATING '
ARRAY 2 3*0.0
REPLICATE 2 1 4R0.9525 2R0.0 1
REPLICATE 2 1 4R30.48 2R0. 1

UNIT 6
COM=' U(3.85) ANNULUS, H=49.2, SUBMERGED, ON CORNER '
CYLINDER 2 1 3.302 49.2 0.
CYLINDER 1 1 4.614139 49.2 0.
CYLINDER 1 1 5.628264 49.2 0.
CYLINDER 1 1 6.485710 49.2 0.
CYLINDER 1 1 7.242341 49.2 0.
CYLINDER 1 1 7.927079 49.2 0.
CYLINDER 1 1 8.557199 49.2 0.
CYLINDER 1 1 9.144000 49.2 0.
CUBOID 2 1 4P11.049 49.2 0.

UNIT 7
COM=' U(3.85) ANNULUS, H=49.2, SUBMERGED, ON SIDE '
CYLINDER 2 1 3.302 49.2 0.
CYLINDER 1 1 4.614139 49.2 0.
CYLINDER 1 1 5.628264 49.2 0.
CYLINDER 1 1 6.485710 49.2 0.
CYLINDER 1 1 7.242341 49.2 0.
CYLINDER 1 1 7.927079 49.2 0.
CYLINDER 1 1 8.557199 49.2 0.
CYLINDER 1 1 9.144000 49.2 0.
CUBOID 2 1 4P11.049 49.2 0.

UNIT 8
COM=' U(3.85) ANNULUS, H=49.2, SUBMERGED, IN MIDDLE '
CYLINDER 2 1 3.302 49.2 0.
CYLINDER 1 1 4.614139 49.2 0.
CYLINDER 1 1 5.628264 49.2 0.
CYLINDER 1 1 6.485710 49.2 0.
CYLINDER 1 1 7.242341 49.2 0.
CYLINDER 1 1 7.927079 49.2 0.
CYLINDER 1 1 8.557199 49.2 0.
CYLINDER 1 1 9.144000 49.2 0.
CUBOID 2 1 4P11.049 49.2 0.

UNIT 9
COM=' U(3.85) ANNULUS, H=27.0, DRY, ON CORNER '
CYLINDER 0 1 3.302 27.0 0.
CYLINDER 1 1 4.614139 27.0 0.
CYLINDER 1 1 5.628264 27.0 0.
CYLINDER 1 1 6.485710 27.0 0.
CYLINDER 1 1 7.242341 27.0 0.
CYLINDER 1 1 7.927079 27.0 0.
CYLINDER 1 1 8.557199 27.0 0.
CYLINDER 1 1 9.144000 27.0 0.
CUBOID 0 1 4P11.049 27.0 0.

UNIT 10
COM=' U(3.85) ANNULUS, H=27.0, DRY, ON SIDE '
CYLINDER 0 1 3.302 27.0 0.
CYLINDER 1 1 4.614139 27.0 0.
CYLINDER 1 1 5.628264 27.0 0.
CYLINDER 1 1 6.485710 27.0 0.
CYLINDER 1 1 7.242341 27.0 0.
CYLINDER 1 1 7.927079 27.0 0.
CYLINDER 1 1 8.557199 27.0 0.
CYLINDER 1 1 9.144000 27.0 0.
CUBOID 0 1 4P11.049 27.0 0.

UNIT 11
COM=' U(3.85) ANNULUS, H=27.0, DRY, IN MIDDLE '
CYLINDER 0 1 3.302 27.0 0.
CYLINDER 1 1 4.614139 27.0 0.
CYLINDER 1 1 5.628264 27.0 0.
CYLINDER 1 1 6.485710 27.0 0.
CYLINDER 1 1 7.242341 27.0 0.
CYLINDER 1 1 7.927079 27.0 0.
CYLINDER 1 1 8.557199 27.0 0.
CYLINDER 1 1 9.144000 27.0 0.
CUBOID 0 1 4P11.049 27.0 0.

UNIT 12
COM=' ARRAY OF 16 ANNULI, H=49.2, SUBMERGED '
ARRAY 3 3*0.0
REPLICATE 2 1 4R47.244 2R0. 1
REPLICATE 2 1 4R30.48 2R0. 1

UNIT 13
COM=' ARRAY OF 16 ANNULI, H=27.0, DRY '
ARRAY 4 3*0.0
REPLICATE 0 1 4R47.244 2R0. 1
REPLICATE 0 1 4R30.48 2R0. 1

CORE 5 1 -121.92 -121.92 0.
REPLICATE 5 1 5R0.0 0.1905 1
REPLICATE 4 1 5R0.0 2.54 1
END GEOM
READ ARRAY
ARA=1 NUX=1 NUY=13 NUZ=1
FILL 1 2 502 1 END FILL
ARA=2 NUX=60 NUY=20 NUZ=1
FILL F4 END FILL
ARA=3 NUX=4 NUY=4 NUZ=1
FILL 6 7 7 6 7 8 8 7 7 8 8 7 6 7 7 6 END FILL
ARA=4 NUX=4 NUY=4 NUZ=1
FILL 9 10 10 9 10 11 11 10 10 11 11 10 9 10 10 9 END FILL
GBL=5
ARA=5 NUX=1 NUY=1 NUZ=4
FILL 3 5 12 13 END FILL
END ARRAY
READ START
RST=1
XSM=-44.196 XSP=44.196
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YSN=-44.196 YSP=44.196
ZSN=21.59 ZSP=70.79
END START
READ PLOT

TTL="PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF ANNULI/INSERTS"
XUL=-91.44 YUL=91.44 ZUL=59.69
XLR=91.44 YLR=-91.44 ZLR=59.69
UAX=1. VDN=-1. DLX=1.524 MCH=" U.WGS" END

TTL="PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF GRATING"
XUL=-91.44 YUL=91.44 ZUL=20.0025
XLR=91.44 YLR=-91.44 ZLR=20.0025
UAX=1. VDN=-1. DLX=1.524 MCH=" U.WGS" END

TTL="PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF FIR TIMBERS"
XUL=-91.44 YUL=91.44 ZUL=9.2075
XLR=91.44 YLR=-91.44 ZLR=9.2075
UAX=1. VDN=-1. DLX=1.524 MCH=" U.WGS" END

TTL="PLAN VIEW 1/10 SCALE OF MOCKUP, Z=MIDLEVEL OF U UNITS"
XUL=-135. YUL=135. ZUL=59.69
XLR=135. YLR=-135. ZLR=59.69
UAX=1. VDN=-1. DLX=2.54 MCH=" U.WGS" END

TTL="PLAN VIEW 2X SCALE OF SINGLE U UNIT, Z=MIDLEVEL OF UNIT"
XUL=0.0 YUL=22.098 ZUL=59.69
XLR=22.098 YLR=0. ZLR=59.69
UAX=1. VDN=-1. DLX=0.127 MCH=" U.WGS" END

TTL="CROSS SECTION OF CORE 1/6 SCALE,Y=11.049"
XUL=-91.44 YUL=11.049 ZUL=110.
XLR=91.44 YLR=11.049 ZLR=-10.
UAX=1. VDN=-1. DLX=1.524 MCH=" U.WGS" END

TTL="CROSS SECTION OF MOCKUP 1/10 SCALE,Y=11.049"
XUL=-135. YUL=11.049 ZUL=125.
XLR=135. YLR=11.049 ZLR=-10.
UAX=1. VDN=-1. DLX=2.54 MCH=" U.WGS" END

TTL="CROSS SECTION OF GRATING/FIR TIMBERS, FULL SCALE"
XUL=0. YUL=0. ZUL=24.13
XLR=25.4 YLR=0. ZLR=3.0
UAX=1. VDN=-1. DLX=.254 MCH=" U.WGS" END

TTL="PLAN VIEW OF GRATING THRU TIEBARS, FULL SCALE"
XUL=0. YUL=25.4 ZUL=21.193
XLR=25.4 YLR=0. ZLR=21.193
UAX=1. VDN=-1. DLX=.254 MCH=" U.WGS" END

TTL="PLAN VIEW OF GRATING @ GRATING MIDLEVEL, FULL SCALE"
XUL=0. YUL=25.4 ZUL=20.0025
XLR=25.4 YLR=0. ZLR=20.0025
UAX=1. VDN=-1. DLX=.254 MCH=" U.WGS" END

TTL="PLAN VIEW OF TIMBERS @ TIMBER MIDLEVEL, FULL SCALE"
XUL=0. YUL=25.4 ZUL=9.2075
XLR=25.4 YLR=-25.4 ZLR=9.2075
UAX=1. VDN=-1. DLX=.254 MCH=" U.WGS" END

TTL="CROSS SECTION OF CENTRAL UNIT, FULL SCALE,Y=11.049"
XUL=0.0 YUL=22.098 ZUL=110.
XLR=22.098 YLR=0.0 ZLR=-10.
UAX=1. VDN=-1. DLX=.254 MCH=" U.WGS" END

END PLOT
END DATA
END
```

048 (CAB12)

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#CSAS25
CASE EBJ.10 U(3.85) 20 @ 7.2"/2.6"/1.87"/79.0CM, SQUARE
2/GROUPNDF4 INFHOMMEDIUM

' U(3.85) METAL
U-235          1 0.  1.8643E-3 END
U-238          1 0.  4.5971E-2 END

' FULL DENSITY WATER MODERATOR/REFLECTOR
H2O            2 1.0                END

' FIR TIMBER MODEL
C              3 0.  1.06802E-2 END
H              3 0.  2.21713E-2 END
O              3 0.  1.10650E-2 END

' STEEL FOR GRATING, TANK WALLS AND FLOOR
CARBONSTEEL    4 1.0                END

' STAINLESS STEEL LINING FOR TANK
SS304          5 1.0                END

END COMP
CASE EBJ.10 U(3.85) 20 @ 7.2"/2.6"/1.87"/79.0CM, SQUARE
READ PARM
NPG=600  NUB=YES PLT=NO FDN=YES TRE=90 TBA=2
END PARM
READ GEOM

UNIT 1
COM=" FIR TIMBER 7.25" X 72" X 7.25" "
CUBOID 3 1 182.88 0. 18.415 0. 18.415 0.

UNIT 2
COM=" WATER GAP 3.5" X 72" X 7.25" BETWEEN TIMBERS "
CUBOID 2 1 182.88 0. 8.89 0. 18.415 0.

UNIT 3
COM=" ARRAY OF TIMBERS 72" X 72" X 7.25" "
ARRAY 1 3*0.0
REPLICATE 2 1 2R0. 2R0.3175 2R0. 1
REPLICATE 2 1 4R30.48 2R0. 1

UNIT 4
COM=" SECTION OF STEEL GRATING "
CUBOID 4 1 2.778125  .238125  .396875 -.396875 3.175 2.38125
CUBOID 2 1 2.778125  .238125 4.524375 -4.524375 3.175 0.
CUBOID 4 1 3.01625 0. 4.524375 -4.524375 3.175 0.

UNIT 5
COM=" ARRAY OF STEEL GRATING "
ARRAY 2 3*0.0
REPLICATE 2 1 4R0.9525 2R0.0 1
REPLICATE 2 1 4R30.48 2R0. 1

UNIT 6
COM=" U(3.85) ANNULUS, H=76.2, SUBMERGED "
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 9.144 76.2 0.
CUBOID 2 1 4P11.5189 79.0 0.

UNIT 7
COM=" U(3.85) ANNULUS, H=76.2, SUBMERGED "
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 9.144 76.2 0.
CUBOID 2 1 4P11.5189 79.0 0.

UNIT 8
COM=" U(3.85) ANNULUS, H=76.2, SUBMERGED "
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 9.144 76.2 0.
CUBOID 2 1 4P11.5189 79.0 0.

UNIT 9
COM=" U(3.85) ANNULUS, H=76.2, SUBMERGED "
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 9.144 76.2 0.
CUBOID 2 1 4P11.5189 79.0 0.

UNIT 10
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 9.144 76.2 0.
CUBOID 2 1 4P11.5189 79.0 0.

UNIT 11
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 9.144 76.2 0.
CUBOID 2 1 4P11.5189 79.0 0.

UNIT 12
COM=" U(3.85) ANNULUS, H=76.2, SUBMERGED "
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 9.144 76.2 0.
CUBOID 2 1 4P11.5189 79.0 0.

UNIT 13
COM=" U(3.85) ANNULUS, H=76.2, SUBMERGED "
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 9.144 76.2 0.
CUBOID 2 1 4P11.5189 79.0 0.

UNIT 14
COM=" U(3.85) ANNULUS, H=76.2, SUBMERGED "
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 9.144 76.2 0.
CUBOID 2 1 4P11.5189 79.0 0.

UNIT 15
COM=" U(3.85) ANNULUS, H=76.2, SUBMERGED "
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 9.144 76.2 0.
CUBOID 2 1 4P11.5189 79.0 0.

UNIT 16
COM=" U(3.85) ANNULUS, H=76.2, SUBMERGED "
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 9.144 76.2 0.
CUBOID 2 1 4P11.5189 79.0 0.

UNIT 17
COM=" U(3.85) ANNULUS, H=76.2, SUBMERGED "
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 9.144 76.2 0.
CUBOID 2 1 4P11.5189 79.0 0.

UNIT 18
COM=" U(3.85) ANNULUS, H=76.2, SUBMERGED "
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 9.144 76.2 0.
CUBOID 2 1 4P11.5189 79.0 0.

UNIT 19
COM=" U(3.85) ANNULUS, H=76.2, SUBMERGED "
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 9.144 76.2 0.
CUBOID 2 1 4P11.5189 79.0 0.

UNIT 20
COM=" U(3.85) ANNULUS, H=76.2, SUBMERGED "
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 9.144 76.2 0.
CUBOID 2 1 4P11.5189 79.0 0.

UNIT 21
COM=" U(3.85) ANNULUS, H=76.2, SUBMERGED "
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 9.144 76.2 0.
CUBOID 2 1 4P11.5189 79.0 0.

UNIT 22
COM=" U(3.85) ANNULUS, H=76.2, SUBMERGED "
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 9.144 76.2 0.
CUBOID 2 1 4P11.5189 79.0 0.

UNIT 23
COM=" U(3.85) ANNULUS, H=76.2, SUBMERGED "
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 9.144 76.2 0.
CUBOID 2 1 4P11.5189 79.0 0.

UNIT 24
COM=" U(3.85) ANNULUS, H=76.2, SUBMERGED "
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 9.144 76.2 0.
CUBOID 2 1 4P11.5189 79.0 0.

UNIT 25
COM=" U(3.85) ANNULUS, H=76.2, SUBMERGED "
CYLINDER 2 1 3.302 76.2 0.
CYLINDER 1 1 9.144 76.2 0.
CUBOID 2 1 4P11.5189 79.0 0.

UNIT 26
COM=" WATER CUBOID TO COMPLETE ARRAY "
CUBOID 2 1 4P11.5189 79.0 0.

UNIT 27
COM=" ARRAY OF 20 ANNULI, H=76.2, SUBMERGED "
ARRAY 3 3*0.0
REPLICATE 2 1 4R33.8455 2R0. 1
REPLICATE 2 1 4R30.48 2R0. 1

CORE 4 1 -121.92 -121.92 0.
REPLICATE 5 1 5R0.0 0.1905 1
REPLICATE 4 1 5R0.0 2.54 1
END GEOM
READ ARRAY
ARA=1 NUX=1 NUY=13 NUZ=1
FILL 1 2 502 1 END FILL
ARA=2 NUX=60 NUY=20 NUZ=1
FILL F4 END FILL
ARA=3 NUX=5 NUY=5 NUZ=1
FILL 26 26 6 7 26 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
26 23 24 25 26 END FILL
GBL=4
ARA=4 NUX=1 NUY=1 NUZ=3
FILL 3 5 27 END FILL
END ARRAY
READ START
RST=1
XSN=-57.5945 XSP=57.5945
YSN=-57.5945 YSP=57.5945
ZSN=21.59 ZSP=97.79
END START
READ PLOT

TTL="PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF ANNULI/INSERTS"
XUL=-91.44 YUL=91.44 ZUL=59.69
XLR=91.44 YLR=-91.44 ZLR=59.69
UAX=1. VDN=-1. DLX=1.524 MCH=" U.WGS" END

TTL="PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF GRATING"
XUL=-91.44 YUL=91.44 ZUL=20.0025
XLR=91.44 YLR=-91.44 ZLR=20.0025
UAX=1. VDN=-1. DLX=1.524 MCH=" U.WGS" END

TTL="PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF FIR TIMBERS"
XUL=-91.44 YUL=91.44 ZUL=9.2075
XLR=91.44 YLR=-91.44 ZLR=9.2075
UAX=1. VDN=-1. DLX=1.524 MCH=" U.WGS" END

TTL="PLAN VIEW 1/10 SCALE OF MOCKUP, Z=MIDLEVEL OF U UNITS"
XUL=-135. YUL=135. ZUL=59.69
XLR=135. YLR=-135. ZLR=59.69
UAX=1. VDN=-1. DLX=2.54 MCH=" U.WGS" END

TTL="PLAN VIEW 2X SCALE OF SINGLE U UNIT, Z=MIDLEVEL OF UNIT"
XUL=-11.5189 YUL=11.5189 ZUL=59.69
XLR=11.5189 YLR=-11.5189 ZLR=59.69
UAX=1. VDN=-1. DLX=0.127 MCH=" U.WGS" END

TTL="CROSS SECTION OF CORE 1/6 SCALE,Y=0.0"
XUL=-91.44 YUL=0.0 ZUL=110.
XLR=91.44 YLR=0.0 ZLR=-10.
UAX=1. VDN=-1. DLX=1.524 MCH=" U.WGS" END

TTL="CROSS SECTION OF MOCKUP 1/10 SCALE,Y=0.0"
XUL=-135. YUL=0.0 ZUL=125.
XLR=135. YLR=0.0 ZLR=-10.
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UAX=1, VDN=-1, DLX=2.54 MCH=* U.WCS* END

TTL="CROSS SECTION OF GRATING/FIR TIMBERS, FULL SCALE"
XUL=0. YUL=0. ZUL=24.13
XLR=25.4 YLR=0. ZLR=-3.0
UAX=1, VDN=-1. DLX=.254 MCH=* U.WCS* END

TTL="PLAN VIEW OF GRATING THRU TIEBARS, FULL SCALE"
XUL=0. YUL=25.4 ZUL=21.193
XLR=25.4 YLR=0. ZLR=21.193
UAX=1, VDN=-1. DLX=.254 MCH=* U.WCS* END

TTL="PLAN VIEW OF GRATING @ GRATING MIDLEVEL, FULL SCALE"
XUL=0. YUL=25.4 ZUL=20.0025
XLR=25.4 YLR=0. ZLR=20.0025
UAX=1, VDN=-1. DLX=.254 MCH=* U.WCS* END

TTL="PLAN VIEW OF TIMBERS @ TIMBER MIDLEVEL, FULL SCALE"
XUL=0. YUL=25.4 ZUL=9.2075
XLR=25.4 YLR=25.4 ZLR=9.2075
UAX=1, VDN=-1. DLX=.254 MCH=* U.WCS* END

TTL="CROSS SECTION OF CENTRAL UNIT, FULL SCALE,Y=0.0"
XUL=-11.5189 YUL=0.0 ZUL=110.
XLR=11.5189 YLR=0.0 ZLR=-10.
UAX=1, VDN=-1. DLX=.254 MCH=* U.WCS* END

END PLOT
END DATA
END
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049 (CAB13)

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#CSAS25
CASE EBJ.11 U(3.85) 0 0 7.2"/2.6"/0.0"/72.5CM, SQUARE
27GROUPNDF4 INFHOMMEDIUM

* U(3.85) METAL
U-235          1 0.  1.8643E-3 END
U-238          1 0.  4.5971E-2 END

* FULL DENSITY WATER MODERATOR/REFLECTOR
H2O            2 1.0           END

* FIR TIMBER MODEL
C              3 0.  1.06802E-2 END
H              3 0.  2.21713E-2 END
O              3 0.  1.10850E-2 END

* STEEL FOR GRATING, TANK WALLS AND FLOOR
CARBONSTEEL  4 1.0             END

* STAINLESS STEEL LINING FOR TANK
SS304          5 1.0           END

END COMP
CASE EBJ.11 U(3.85) 0 0 7.2"/2.6"/0.0"/72.5CM, SQUARE
READ PARM
NPG=600  NUB=YES PLT=NO FDN=YES TRE=90 TBA=2
END PARM
READ GEOM

UNIT 1
COM=* FIR TIMBER 7.25" X 72" X 7.25" *
CUBOID 3 1 182.88 0. 18.415 0. 18.415 0.

UNIT 2
COM=* WATER GAP 3.5" X 72" X 7.25" BETWEEN TIMBERS *
CUBOID 2 1 182.88 0. 8.89 0. 18.415 0.

UNIT 3
COM=* ARRAY OF TIMBERS 72" X 72" X 7.25" *
ARRAY 1 3*0.0
REPLICATE 2 1 2R0. 2R0.3175 2R0. 1
REPLICATE 2 1 4R30.48 2R0. 1

UNIT 4
COM=* SECTION OF STEEL GRATING *
CUBOID 4 1 2.778125 .238125 .396875 -.396875 3.175 2.38125
CUBOID 2 1 2.778125 .238125 4.524375 -4.524375 3.175 0.
CUBOID 4 1 3.01625 0. 4.524375 -4.524375 3.175 0.

UNIT 5
COM=* ARRAY OF STEEL GRATING *
ARRAY 2 3*0.0
REPLICATE 2 1 4R0.9525 2R0.0 1
REPLICATE 2 1 4R30.48 2R0. 1

UNIT 6
COM=* U(3.85) ANNULUS, H=72.5, SUBMERGED, ON CORNER *
CYLINDER 2 1 3.302 72.5 0.
CYLINDER 1 1 4.614139 72.5 0.
CYLINDER 1 1 5.628264 72.5 0.
CYLINDER 1 1 6.485710 72.5 0.
CYLINDER 1 1 7.242341 72.5 0.
CYLINDER 1 1 7.927079 72.5 0.
CYLINDER 1 1 8.557199 72.5 0.
CYLINDER 1 1 9.144000 72.5 0.
CUBOID 2 1 4P9.144 72.5 0.

UNIT 7
COM=* U(3.85) ANNULUS, H=72.5, SUBMERGED, ON SIDE *
CYLINDER 2 1 3.302 72.5 0.
CYLINDER 1 1 4.614139 72.5 0.
CYLINDER 1 1 5.628264 72.5 0.
CYLINDER 1 1 6.485710 72.5 0.
CYLINDER 1 1 7.242341 72.5 0.
CYLINDER 1 1 7.927079 72.5 0.
CYLINDER 1 1 8.557199 72.5 0.
CYLINDER 1 1 9.144000 72.5 0.
CUBOID 2 1 4P9.144 72.5 0.

UNIT 8
COM=* U(3.85) ANNULUS, H=3.7, DRY, ON CORNER *
CYLINDER 0 1 3.302 3.7 0.
CYLINDER 1 1 4.614139 3.7 0.
CYLINDER 1 1 5.628264 3.7 0.
CYLINDER 1 1 6.485710 3.7 0.
CYLINDER 1 1 7.242341 3.7 0.
CYLINDER 1 1 7.927079 3.7 0.
CYLINDER 1 1 8.557199 3.7 0.
CYLINDER 1 1 9.144000 3.7 0.
CUBOID 0 1 4P9.144 3.7 0.

UNIT 9
COM=* U(3.85) ANNULUS, H=3.7, DRY, ON SIDE *
CYLINDER 0 1 3.302 3.7 0.
CYLINDER 1 1 4.614139 3.7 0.
CYLINDER 1 1 5.628264 3.7 0.
CYLINDER 1 1 6.485710 3.7 0.
CYLINDER 1 1 7.242341 3.7 0.
CYLINDER 1 1 7.927079 3.7 0.
CYLINDER 1 1 8.557199 3.7 0.
CYLINDER 1 1 9.144000 3.7 0.
CUBOID 0 1 4P9.144 3.7 0.

UNIT 10
COM=* ARRAY OF 8 ANNULI, H=72.5, SUBMERGED *
ARRAY 3 3*0.0
REPLICATE 2 1 2R54.864 2R73.152 2R0. 1
REPLICATE 2 1 4R30.48 2R0. 1

UNIT 11
COM=* ARRAY OF 8 ANNULI, H=3.7, DRY *
ARRAY 4 3*0.0
REPLICATE 0 1 2R54.864 2R73.152 2R0. 1
REPLICATE 0 1 4R30.48 2R0. 1

CORE 5 1 -121.92 -121.92 0.
REPLICATE 5 1 5R0.0 0.1905 1
REPLICATE 4 1 5R0.0 2.54 1
END GEOM
READ ARRAY
ARA=1 NUX=1 NUY=13 NUZ=1
FILL 1 2 502 1 END FILL
ARA=2 NUX=60 NUY=20 NUZ=1
FILL F4 END FILL
ARA=3 NUX=4 NUY=2 NUZ=1
FILL 6 7 7 6 6 7 7 6 END FILL
ARA=4 NUX=4 NUY=2 NUZ=1
FILL 8 9 9 8 8 9 9 8 END FILL
GBL=5
ARA=5 NUX=1 NUY=1 NUZ=4
FILL 3 5 10 11 END FILL
END ARRAY
READ START
NST=1
XSM=-36.576 XSP=36.576
YSM=-18.288 YSP=18.288
ZSM=21.59 ZSP=94.09
END START
READ PLOT

TTL="PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF ANNULI/INSERTS"
XUL=-91.44 YUL=91.44 ZUL=59.69
XLR=91.44 YLR=-91.44 ZLR=59.69
UAX=1. VDN=-1. DLX=1.524 MCH=* U.WCS* END

TTL="PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF GRATING"
XUL=-91.44 YUL=91.44 ZUL=20.0025
XLR=91.44 YLR=-91.44 ZLR=20.0025
UAX=1. VDN=-1. DLX=1.524 MCH=* U.WCS* END

TTL="PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF FIR TIMBERS"
XUL=-91.44 YUL=91.44 ZUL=9.2075
XLR=91.44 YLR=-91.44 ZLR=9.2075
UAX=1. VDN=-1. DLX=1.524 MCH=* U.WCS* END

TTL="PLAN VIEW 1/10 SCALE OF MOCKUP, Z=MIDLEVEL OF U UNITS"
XUL=-135. YUL=125. ZUL=59.69
XLR=135. YLR=-135. ZLR=59.69
UAX=1. VDN=-1. DLX=2.54 MCH=* U.WCS* END

TTL="PLAN VIEW 2X SCALE OF SINGLE U UNIT, Z=MIDLEVEL OF UNIT"
XUL=0.0 YUL=18.288 ZUL=59.69
XLR=18.288 YLR=0. ZLR=59.69
UAX=1. VDN=-1. DLX=0.127 MCH=* U.WCS* END

TTL="CROSS SECTION OF CORE 1/6 SCALE,Y=9.144"
XUL=-91.44 YUL=9.144 ZUL=110.
XLR=91.44 YLR=9.144 ZLR=-10.
UAX=1. VDN=-1. DLX=1.524 MCH=* U.WCS* END

TTL="CROSS SECTION OF MOCKUP 1/10 SCALE,Y=9.144"
XUL=-135. YUL=9.144 ZUL=125.
XLR=135. YLR=9.144 ZLR=-10.
UAX=1. VDN=-1. DLX=2.54 MCH=* U.WCS* END

TTL="CROSS SECTION OF GRATING/FIR TIMBERS, FULL SCALE"
XUL=0. YUL=0. ZUL=24.13
XLR=25.4 YLR=0. ZLR=-3.0
UAX=1. VDN=-1. DLX=.254 MCH=* U.WCS* END

TTL="PLAN VIEW OF GRATING THRU TIEBARS, FULL SCALE"
XUL=0. YUL=25.4 ZUL=21.193
XLR=25.4 YLR=0. ZLR=21.193
UAX=1. VDN=-1. DLX=.254 MCH=* U.WCS* END

TTL="PLAN VIEW OF GRATING @ GRATING MIDLEVEL, FULL SCALE"
XUL=0. YUL=25.4 ZUL=20.0025
XLR=25.4 YLR=0. ZLR=20.0025
UAX=1. VDN=-1. DLX=.254 MCH=* U.WCS* END

TTL="PLAN VIEW OF TIMBERS @ TIMBER MIDLEVEL, FULL SCALE"
XUL=0. YUL=25.4 ZUL=9.2075
XLR=25.4 YLR=25.4 ZLR=9.2075
UAX=1. VDN=-1. DLX=.254 MCH=* U.WCS* END

TTL="CROSS SECTION OF CENTRAL UNIT, FULL SCALE,Y=9.144"
XUL=0.0 YUL=9.144 ZUL=110.
XLR=18.288 YLR=9.144 ZLR=-10.
UAX=1. VDN=-1. DLX=.254 MCH=* U.WCS* END

END PLOT
END DATA
END
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050 (CAB14)

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#CSAS25
CASE EBJ.12 U(3.85) 22 0 2.5"/0.0"/0.35"/72.3CM, SQUARE
27GROUPNDF4 INFHOMMEDIUM

* U(3.85) METAL
U-235          1 0.  1.8643E-3 END
U-238          1 0.  4.5971E-2 END

* FULL DENSITY WATER MODERATOR/REFLECTOR
H2O            2 1.0           END

* FIR TIMBER MODEL
C              3 0.  1.06802E-2 END
H              3 0.  2.21713E-2 END
O              3 0.  1.10850E-2 END

* STEEL FOR GRATING, TANK WALLS AND FLOOR
CARBONSTEEL  4 1.0             END

* STAINLESS STEEL LINING FOR TANK
SS304          5 1.0           END

END COMP
CASE EBJ.12 U(3.85) 22 0 2.5"/0.0"/0.35"/72.3CM, SQUARE
READ PARM
NPG=600  NUB=YES PLT=NO FDN=YES TRE=90 TBA=2
END PARM
READ GEOM

UNIT 1
COM=* FIR TIMBER 7.25" X 72" X 7.25" *
CUBOID 3 1 182.88 0. 18.415 0. 18.415 0.

UNIT 2
COM=* WATER GAP 3.5" X 72" X 7.25" BETWEEN TIMBERS *
CUBOID 2 1 182.88 0. 8.89 0. 18.415 0.

UNIT 3
COM=* ARRAY OF TIMBERS 72" X 72" X 7.25" *
ARRAY 1 3*0.0
REPLICATE 2 1 2R0. 2R0.3175 2R0. 1
REPLICATE 2 1 4R30.48 2R0. 1

UNIT 4
COM=* SECTION OF STEEL GRATING *
CUBOID 4 1 2.778125 .238125 .396875 -.396875 3.175 2.38125
CUBOID 2 1 2.778125 .238125 4.524375 -4.524375 3.175 0.
CUBOID 4 1 3.01625 0. 4.524375 -4.524375 3.175 0.

UNIT 5
COM=* ARRAY OF STEEL GRATING *
ARRAY 2 3*0.0
REPLICATE 2 1 4R0.9525 2R0.0 1
REPLICATE 2 1 4R30.48 2R0. 1

UNIT 6
COM=* U(3.85) ROD, H=72.3, SUBMERGED *
CYLINDER 1 1 1.419903 72.3 0.
CYLINDER 1 1 2.008046 72.3 0.
CYLINDER 1 1 2.459344 72.3 0.
CYLINDER 1 1 2.829806 72.3 0.
CYLINDER 1 1 3.175000 72.3 0.
CUBOID 2 1 4P3.6195 72.3 0.

UNIT 7
COM=* WATER CUBOID TO COMPLETE ARRAY 3 *
CUBOID 2 1 4P3.6195 72.3 0.

UNIT 8
COM=* U(3.85) ROD, H=3.9, DRY *
CYLINDER 1 1 1.419903 3.9 0.
CYLINDER 1 1 2.008046 3.9 0.
CYLINDER 1 1 2.459344 3.9 0.
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CYLINDER 1 1 2.839806 3.9 0.
CYLINDER 1 1 3.175000 3.9 0.
CUBOID 0 1 4P3.6195 3.9 0.

UNIT 9
COM=' VOID CUBOID TO COMPLETE ARRAY 4 '
CUBOID 0 1 4P3.6195 3.9 0.

UNIT 10
COM=' U(3.85) ROD ARRAY, H=72.3, SUBMERGED '
ARRAY 3 3*0.0
REPLICATE 2 1 4R73.3425 2R0. 1
REPLICATE 2 1 4R30.48 2R0. 1

UNIT 11
COM=' ARRAY OF 22 U(3.85) RODS, H=3.9, DRY '
ARRAY 4 3*0.0
REPLICATE 0 1 4R73.3425 2R0. 1
REPLICATE 0 1 4R30.48 2R0. 1

CORE 5 1 -121.92 -121.92 0.
REPLICATE 5 1 5R0.0 0.1905 1
REPLICATE 4 1 5R0.0 2.54 1
END GEOM
READ ARRAY
ARA=1 NUX=1 NUY=13 NUZ=1
FILL 1 2 5Q2 1 END FILL
ARA=2 NUX=60 NUY=20 NUZ=1
FILL F4 END FILL
ARA=3 NUX=5 NUY=5 NUZ=1
FILL 2R6 3R7 20R6 END FILL
ARA=4 NUX=5 NUY=5 NUZ=1
FILL 2R8 3R9 20R8 END FILL
GBL=5
ARA=5 NUX=1 NUY=1 NUZ=4
FILL 3 5 10 11 END FILL
END ARRAY
READ START
NST=1
XSM=-18.0975 XSP=18.0975
YSM=-18.0975 YSP=18.0975
ZSM=21.59 ZSP=93.89
END START
READ PLOT

TTL='PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF ANNULI/INSERTS'
XUL=-91.44 YUL=91.44 ZUL=59.69
XLR=91.44 YLR=-91.44 ZLR=59.69
UAX=1. VDN=-1. DLX=1.524 NCH=' U.WGS' END

TTL='PLAN VIEW OF ARRAY, FULL SCALE'
XUL=-18.0975 YUL=18.0975 ZUL=59.69
XLR=18.0975 YLR=-18.0975 ZLR=59.69
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGS' END

TTL='PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF GRATING'
XUL=-91.44 YUL=91.44 ZUL=20.0025
XLR=91.44 YLR=-91.44 ZLR=20.0025
UAX=1. VDN=-1. DLX=1.524 NCH=' U.WGS' END

TTL='PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF FIR TIMBERS'
XUL=-91.44 YUL=91.44 ZUL=9.2075
XLR=91.44 YLR=-91.44 ZLR=9.2075
UAX=1. VDN=-1. DLX=1.524 NCH=' U.WGS' END

TTL='PLAN VIEW 1/10 SCALE OF MOCKUP, Z=MIDLEVEL OF U UNITS'
XUL=-135. YUL=135. ZUL=59.69
XLR=135. YLR=-135. ZLR=59.69
UAX=1. VDN=-1. DLX=2.54 NCH=' U.WGS' END

TTL='PLAN VIEW 2X SCALE OF SINGLE U UNIT, Z=MIDLEVEL OF UNIT'
XUL=-3.6195 YUL=3.6195 ZUL=59.69
XLR=3.6195 YLR=-3.6195 ZLR=59.69
UAX=1. VDN=-1. DLX=0.127 NCH=' U.WGS' END

TTL='CROSS SECTION OF CORE 1/6 SCALE,Y=0.0"
XUL=-91.44 YUL=0.0 ZUL=110.
XLR=91.44 YLR=0.0 ZLR=-10.
UAX=1. VDN=-1. DLX=1.524 NCH=' U.WGS' END

TTL='CROSS SECTION OF MOCKUP 1/10 SCALE,Y=0.0"
XUL=-135. YUL=0.0 ZUL=125.
XLR=135. YLR=0.0 ZLR=-10.
UAX=1. VDN=-1. DLX=2.54 NCH=' U.WGS' END

TTL='CROSS SECTION OF GRATING/FIR TIMBERS, FULL SCALE"
XUL=0. YUL=0. ZUL=24.13
XLR=25.4 YLR=0. ZLR=-3.0
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGS' END

TTL='PLAN VIEW OF GRATING THRU TIEBARS, FULL SCALE"
XUL=0. YUL=25.4 ZUL=21.193
XLR=25.4 YLR=0. ZLR=21.193
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGS' END

TTL='PLAN VIEW OF GRATING @ GRATING MIDLEVEL, FULL SCALE"
XUL=0. YUL=25.4 ZUL=20.0025
XLR=25.4 YLR=0. ZLR=20.0025
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGS' END

TTL='PLAN VIEW OF TIMBERS @ TIMBER MIDLEVEL, FULL SCALE"
XUL=0. YUL=25.4 ZUL=9.2075
XLR=25.4 YLR=-25.4 ZLR=9.2075
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGS' END

TTL='CROSS SECTION OF CENTRAL UNIT, 2XL SCALE,Y=0.0"
XUL=-3.6195 YUL=0.0 ZUL=110.
XLR=3.6195 YLR=0.0 ZLR=-10.
UAX=1. VDN=-1. DLX=.127 NCH=' U.WGS' END

END PLOT
END DATA
END
                                    051 (CAB15)
#CSAS25
CASE EBJ.13 U(3.85) 15 @ 2.5"/0.0"/0.75"/64.8CM, SQUARE
27GROUPNDF4 INFHOMMEDIUM

' U(3.85) METAL
U-235          1 0.  1.8643E-3 END
U-238          1 0.  4.5971E-2 END

' FULL DENSITY WATER MODERATOR/REFLECTOR
H2O            2 1.0                END

' FIR TIMBER MODEL
C              3 0.  1.06802E-2 END
H              3 0.  2.21713E-2 END
O              3 0.  1.10450E-2 END

' STEEL FOR GRATING, TANK WALLS AND FLOOR
CARBONSTEEL    4 1.0                END

' STAINLESS STEEL LINING FOR TANK
SS304          5 1.0                END

END COMP
CASE EBJ.13 U(3.85) 15 @ 2.5"/0.0"/0.75"/64.8CM, SQUARE
READ PARM
NPG=600  RUB=YES PLT=NO FDN=YES TRE=90 TBA=2
END PARM
READ GEOM

UNIT 1
COM=' FIR TIMBER 7.25" X 72" X 7.25" '
CUBOID 3 1 182.88 0. 18.415 0. 18.415 0.

UNIT 2
COM=' WATER GAP 3.5" X 72" X 7.25" BETWEEN TIMBERS '
CUBOID 2 1 182.88 0. 8.89 0. 18.415 0.

UNIT 3
COM=' ARRAY OF TIMBERS 72" X 72" X 7.25" '
ARRAY 1 3*0.0
REPLICATE 2 1 2R0. 2R0.3175 2R0. 1
REPLICATE 2 1 4R30.48 2R0. 1

UNIT 4
COM=' SECTION OF STEEL GRATING '
CUBOID 4 1 2.778125 .238125 .396875 -.396875 3.175 2.38125
CUBOID 2 1 2.778125 .238125 4.524375 -4.524375 3.175 0.
CUBOID 4 1 3.01625 0. 4.524375 -4.524375 3.175 0.

UNIT 5
COM=' ARRAY OF STEEL GRATING '
ARRAY 2 3*0.0
REPLICATE 2 1 4R0.9525 2R0.0 1
REPLICATE 2 1 4R30.48 2R0. 1

UNIT 6
COM=' U(3.85) ROD, H=64.8, SUBMERGED '
CYLINDER 1 1 1.419903 64.8 0.
CYLINDER 1 1 2.008046 64.8 0.
CYLINDER 1 1 2.459344 64.8 0.
CYLINDER 1 1 2.839806 64.8 0.
CYLINDER 1 1 3.175000 64.8 0.
CUBOID 2 1 4P4.1275 64.8 0.

UNIT 7
COM=' WATER CUBOID TO COMPLETE ARRAY 3 '
CUBOID 2 1 4P4.1275 64.8 0.

UNIT 8
COM=' U(3.85) ROD, H=11.4, DRY '
CYLINDER 1 1 1.419903 11.4 0.
CYLINDER 1 1 2.008046 11.4 0.
CYLINDER 1 1 2.459344 11.4 0.
CYLINDER 1 1 2.839806 11.4 0.
CYLINDER 1 1 3.175000 11.4 0.
CUBOID 0 1 4P4.1275 11.4 0.

UNIT 9
COM=' VOID CUBOID TO COMPLETE ARRAY 4 '
CUBOID 0 1 4P4.1275 11.4 0.

UNIT 10
COM=' U(3.85) ROD ARRAY, H=64.8, SUBMERGED '
ARRAY 3 3*0.0
REPLICATE 2 1 4R74.93 2R0. 1
REPLICATE 2 1 4R30.48 2R0. 1

UNIT 11
COM=' ARRAY OF 15 RODS, H=11.4, DRY '
ARRAY 4 3*0.0
REPLICATE 0 1 4R74.93 2R0. 1
REPLICATE 0 1 4R30.48 2R0. 1

CORE 5 1 -121.92 -121.92 0.
REPLICATE 5 1 5R0.0 0.1905 1
REPLICATE 4 1 5R0.0 2.54 1
END GEOM
READ ARRAY
ARA=1 NUX=1 NUY=13 NUZ=1
FILL 1 2 5Q2 1 END FILL
ARA=2 NUX=60 NUY=20 NUZ=1
FILL F4 END FILL
ARA=3 NUX=4 NUY=4 NUZ=1
FILL 3R5 7 12R5 END FILL
ARA=4 NUX=4 NUY=4 NUZ=1
FILL 3R8 9 12R8 END FILL
GBL=5
ARA=5 NUX=1 NUY=1 NUZ=4
FILL 3 5 10 11 END FILL
END ARRAY
READ START
NST=1
XSM=-16.51 XSP=16.51
YSM=-16.51 YSP=16.51
ZSM=21.59 ZSP=86.39
END START
READ PLOT

TTL='PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF ANNULI/INSERTS"
XUL=-91.44 YUL=91.44 ZUL=59.69
XLR=91.44 YLR=-91.44 ZLR=59.69
UAX=1. VDN=-1. DLX=1.524 NCH=' U.WGS' END

TTL='PLAN VIEW FULL SCALE OF ARRAY, Z=MIDLEVEL OF UNITS"
XUL=-16.51 YUL=16.51 ZUL=59.69
XLR=16.51 YLR=-16.51 ZLR=59.69
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGS' END

TTL='PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF GRATING"
XUL=-91.44 YUL=91.44 ZUL=20.0025
XLR=91.44 YLR=-91.44 ZLR=20.0025
UAX=1. VDN=-1. DLX=1.524 NCH=' U.WGS' END

TTL='PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF FIR TIMBERS"
XUL=-91.44 YUL=91.44 ZUL=9.2075
XLR=91.44 YLR=-91.44 ZLR=9.2075
UAX=1. VDN=-1. DLX=1.524 NCH=' U.WGS' END

TTL='PLAN VIEW 1/10 SCALE OF MOCKUP, Z=MIDLEVEL OF U UNITS"
XUL=-135. YUL=135. ZUL=59.69
XLR=135. YLR=-135. ZLR=59.69
UAX=1. VDN=-1. DLX=2.54 NCH=' U.WGS' END

TTL='PLAN VIEW 2X SCALE OF SINGLE U UNIT, Z=MIDLEVEL OF UNIT"
XUL=0.0 YUL=8.255 ZUL=59.69
XLR=8.255 YLR=0.0 ZLR=59.69
UAX=1. VDN=-1. DLX=0.127 NCH=' U.WGS' END

TTL='CROSS SECTION OF CORE 1/6 SCALE,Y=4.1275"
XUL=-91.44 YUL=4.1275 ZUL=110.
XLR=91.44 YLR=4.1275 ZLR=-10.
UAX=1. VDN=-1. DLX=1.524 NCH=' U.WGS' END

TTL='CROSS SECTION OF MOCKUP 1/10 SCALE,Y=4.1275"
XUL=-135. YUL=4.1275 ZUL=125.
XLR=135. YLR=4.1275 ZLR=-10.
UAX=1. VDN=-1. DLX=2.54 NCH=' U.WGS' END

TTL='CROSS SECTION OF GRATING/FIR TIMBERS, FULL SCALE"
XUL=0. YUL=0. ZUL=24.13
XLR=25.4 YLR=0. ZLR=-3.0
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGS' END

TTL='PLAN VIEW OF GRATING THRU TIEBARS, FULL SCALE"
XUL=0. YUL=25.4 ZUL=21.193
XLR=25.4 YLR=0. ZLR=21.193
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGS' END

TTL='PLAN VIEW OF GRATING @ GRATING MIDLEVEL, FULL SCALE"
XUL=0. YUL=25.4 ZUL=20.0025
XLR=25.4 YLR=0. ZLR=20.0025
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGS' END

TTL='PLAN VIEW OF TIMBERS @ TIMBER MIDLEVEL, FULL SCALE"
XUL=0. YUL=25.4 ZUL=9.2075
XLR=25.4 YLR=-25.4 ZLR=9.2075
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGS' END

TTL='CROSS SECTION OF CENTRAL UNIT, 2X SCALE,Y=4.1275"
XUL=0.0 YUL=4.1275 ZUL=110.
XLR=8.255 YLR=4.1275 ZLR=-10.
UAX=1. VDN=-1. DLX=.127 NCH=' U.WGS' END

END PLOT
END DATA
END
                                    052 (CAB16)
#CSAS25
CASE EBJ.14 U(3.85) 23 @ 2.5"/0.0"/1.50"/68.9CM, SQUARE
27GROUPNDF4 INFHOMMEDIUM

' U(3.85) METAL
U-235          1 0.  1.8643E-3 END
U-238          1 0.  4.5971E-2 END
```

```
' FULL DENSITY WATER MODERATOR/REFLECTOR
H2O          2 1.0                END

' FIR TIMBER MODEL
C            3 0.  1.06802E-2 END
H            3 0.  2.21713E-2 END
O            3 0.  1.10650E-2 END

' STEEL FOR GRATING, TANK WALLS AND FLOOR
CARBONSTEEL  4 1.0                END

' STAINLESS STEEL LINING FOR TANK
SS304        5 1.0                END

END COMP
CASE [B3,14 U(3.85) 23 0 2.5"/0.0"/1.50"/68.9CM, SQUARE
READ PARM
NPG=600  NUB=YES PLT=NO FDN=YES TRE=90 TBA=2
END PARM
READ GEOM

UNIT 1
COM='  FIR TIMBER 7.25" X 72" X 7.25" '
CUBOID 3 1 182.88 0. 18.415 0. 18.415 0.

UNIT 2
COM='  WATER GAP 3.5" X 72" X 7.25" BETWEEN TIMBERS '
CUBOID 2 1 182.88 0. 8.89 0. 18.415 0.

UNIT 3
COM='  ARRAY OF TIMBERS 72" X 72" X 7.25" '
ARRAY 1 3*0.0
REPLICATE 2 1 2R0. 2R0.3175 2R0. 1
REPLICATE 2 1 4R30.48 2R0. 1

UNIT 4
COM='  SECTION OF STEEL GRATING '
CUBOID 4 1 2.778125 .238125 .396875 -.396875 3.175 2.38125
CUBOID 2 1 2.778125 .238125 4.524375 -4.524375 3.175 0.
CUBOID 4 1 3.01625 0. 4.524375 -4.524375 3.175 0.

UNIT 5
COM='  ARRAY OF STEEL GRATING '
ARRAY 2 3*0.0
REPLICATE 2 1 4R0.9525 2R0.0 1
REPLICATE 2 1 4R30.48 2R0. 1

UNIT 6
COM='  U(3.85) ROD, H=68.9, SUBMERGED '
CYLINDER 1 1 1.419903 68.9 0.
CYLINDER 1 1 2.008046 68.9 0.
CYLINDER 1 1 2.459344 68.9 0.
CYLINDER 1 1 2.839806 68.9 0.
CYLINDER 1 1 3.175000 68.9 0.
CUBOID 2 1 4P5.08 68.9 0.

UNIT 7
COM='  WATER CUBOID TO COMPLETE ARRAY 3 '
CUBOID 2 1 4P5.08 68.9 0.

UNIT 8
COM='  U(3.85) ROD, H=7.3, DRY '
CYLINDER 1 1 1.419903 7.3 0.
CYLINDER 1 1 2.008046 7.3 0.
CYLINDER 1 1 2.459344 7.3 0.
CYLINDER 1 1 2.839806 7.3 0.
CYLINDER 1 1 3.175000 7.3 0.
CUBOID 0 1 4P5.08 7.3 0.

UNIT 9
COM='  VOID CUBOID TO COMPLETE ARRAY 4 '
CUBOID 0 1 4P5.08 7.3 0.

UNIT 10
COM='  U(3.85) ROD ARRAY, H=68.9, SUBMERGED '
ARRAY 3 3*0.0
REPLICATE 2 1 4R66.04 2R0. 1
REPLICATE 2 1 4R30.48 2R0. 1

UNIT 11
COM='  ARRAY OF 22 U(3.85) RODS, H=7.3, DRY '
ARRAY 4 3*0.0
REPLICATE 0 1 4R66.04 2R0. 1
REPLICATE 0 1 4R30.48 2R0. 1

CORE 5 1 -121.92 -121.92 0.
REPLICATE 5 1 5R0.0 0.1905 1
REPLICATE 4 1 3R0.0 2.54 1
END GEOM
READ ARRAY
ARA=1 NUX=1 NUY=13 NUZ=1
FILL 1 2 502 1 END FILL
ARA=2 NUX=60 NUY=20 NUZ=1
FILL F4 END FILL
ARA=3 NUX=5 NUY=5 NUZ=1
FILL 3R6 2R7 20R6 END FILL
ARA=4 NUX=5 NUY=5 NUZ=1
FILL 3R8 2R9 20R8 END FILL
GBL=5
ARA=5 NUX=1 NUY=1 NUZ=4
FILL 3 5 10 11 END FILL
END ARRAY
READ START
RST=1
XSM=-25.4 XSP=25.4
YSM=-25.4 YSP=25.4
ZSM=21.59 ZSP=90.49
END START
READ PLOT

TTL="PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF ANNULI/INSERTS"
XUL=-91.44 YUL=91.44 ZUL=59.69
XLR=91.44 YLR=-91.44 ZLR=59.69
UAX=1. VDN=-1. DLX=1.524 NCH=' U.WGS' END

TTL="PLAN VIEW OF ARRAY, FULL SCALE"
XUL=-25.4 YUL=25.4 ZUL=59.69
XLR=25.4 YLR=-25.4 ZLR=59.69
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGS' END

TTL="PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF GRATING"
XUL=-91.44 YUL=91.44 ZUL=20.0025
XLR=91.44 YLR=-91.44 ZLR=20.0025
UAX=1. VDN=-1. DLX=1.524 NCH=' U.WGS' END

TTL="PLAN VIEW 1/6 SCALE OF CORE, Z=MIDLEVEL OF FIR TIMBERS"
XUL=-91.44 YUL=91.44 ZUL=9.2075
XLR=91.44 YLR=-91.44 ZLR=9.2075
UAX=1. VDN=-1. DLX=1.524 NCH=' U.WGS' END

TTL="PLAN VIEW 1/10 SCALE OF MOCKUP, Z=MIDLEVEL OF U UNITS"
XUL=-135. YUL=135. ZUL=59.69
XLR=135. YLR=-135. ZLR=59.69
UAX=1. VDN=-1. DLX=2.54 NCH=' U.WGS' END

TTL="PLAN VIEW 2X SCALE OF SINGLE U UNIT, Z=MIDLEVEL OF UNIT"
XUL=-5.08 YUL=5.08 ZUL=59.69
XLR=5.08 YLR=-5.08 ZLR=59.69
UAX=1. VDN=-1. DLX=0.127 NCH=' U.WGS' END

TTL="CROSS SECTION OF CORE 1/6 SCALE,Y=0.0"
XUL=-91.44 YUL=0.0 ZUL=110.
XLR=91.44 YLR=0.0 ZLR=-10.
UAX=1. VDN=-1. DLX=1.524 NCH=' U.WGS' END

TTL="CROSS SECTION OF MOCKUP 1/10 SCALE,Y=0.0"
XUL=-135. YUL=0.0 ZUL=125.
XLR=135. YLR=0.0 ZLR=-10.
UAX=1. VDN=-1. DLX=2.54 NCH=' U.WGS' END

TTL="CROSS SECTION OF GRATING/FIR TIMBERS, FULL SCALE"
XUL=0. YUL=0. ZUL=24.13
XLR=25.4 YLR=0. ZLR=-3.0
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGS' END

TTL="PLAN VIEW OF GRATING THRU TIEBARS, FULL SCALE"
XUL=0. YUL=25.4 ZUL=21.193
XLR=25.4 YLR=0. ZLR=21.193
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGS' END

TTL="PLAN VIEW OF GRATING @ GRATING MIDLEVEL, FULL SCALE"
XUL=0. YUL=25.4 ZUL=20.0025
XLR=25.4 YLR=0. ZLR=20.0025
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGS' END

TTL="PLAN VIEW OF TIMBERS @ TIMBER MIDLEVEL, FULL SCALE"
XUL=0. YUL=25.4 ZUL=9.2075
XLR=25.4 YLR=-25.4 ZLR=9.2075
UAX=1. VDN=-1. DLX=.254 NCH=' U.WGS' END

TTL="CROSS SECTION OF CENTRAL UNIT, 2X SCALE,Y=0.0"
XUL=-5.08 YUL=0.0 ZUL=110.
XLR=5.08 YLR=0.0 ZLR=-10.
UAX=1. VDN=-1. DLX=.127 NCH=' U.WGS' END

END PLOT
END DATA
END
```

APPENDIX E3: TABLE 3 INPUTS

```
                                053 (CAS04)
=CSAS25
BRITISH HANDBOOK OF CRITICALITY SAFETY U(1.42)F4 & PARA(H2O) (CASE 04)
27GROUPNDF4  INFHOMMEDIUM
UF4       1 0.4903 293 92235 1.4023 92238 98.5977 END
* NOTE: THE ENRICHMENT GIVEN IN THE REFRENCE IS NOT WEIGHT PERCENT
PARA(H2O) 1 0.4572 END
END COMP
BRITISH HANDBOOK OF CRITICALITY SAFETY U(1.42)F4 & PARA(H2O) (CASE 04)
READ PARM   MPG=600 MUB=YES FDN=YES END PARM
READ GEOM
CUBOID  1 1 2P46.55 2P46.50 2P61.9
END GEOM
END DATA
END


                                054 (CAS05)
=CSAS25
BRITISH HANDBOOK OF CRITICALITY SAFETY U(1.42)F4 & PARA(H2O) (CASE 05)
27GROUPNDF4  INFHOMMEDIUM
UF4       1 0.4903 293 92235 1.4023 92238 98.5977 END
* NOTE: THE ENRICHMENT GIVEN IN THE REFRENCE IS NOT WEIGHT PERCENT
PARA(H2O) 1 0.4572 END
END COMP
BRITISH HANDBOOK OF CRITICALITY SAFETY U(1.42)F4 & PARA(H2O) (CASE 05)
READ PARM   MPG=600 MUB=YES FDN=YES END PARM
READ GEOM
CUBOID  1 1 2P50.00 2P49.95 2P51.55
END GEOM
END DATA
END


                                055 (CAS06)
=CSAS25
BRITISH HANDBOOK OF CRITICALITY SAFETY U(1.42)F4 & PARA(H2O) (CASE 06)
27GROUPNDF4  INFHOMMEDIUM
UF4       1 0.4903 293 92235 1.4023 92238 98.5977 END
* NOTE: THE ENRICHMENT GIVEN IN THE REFRENCE IS NOT WEIGHT PERCENT
PARA(H2O) 1 0.4572 END
END COMP
BRITISH HANDBOOK OF CRITICALITY SAFETY U(1.42)F4 & PARA(H2O) (CASE 06)
READ PARM   MPG=600 MUB=YES FDN=YES END PARM
READ GEOM
CUBOID  1 1 2P65.35 2P65.3 2P37.1
END GEOM
END DATA
END


                                056 (CAS11)
=CSAS25
RAFFETY AND NILHALCZO U(2)F4-1 REFLECTED (CASE 11)
27GROUPNDF4  INFHOMMEDIUM
U-235  1 0 1.5811E-4 END
U-238  1 0 7.6467E-3 END
H      1 0 3.0864E-2 END
C      1 0 1.4839E-2 END
F      1 0 3.1219E-2 END
PARA(H2O)  2 1.0 END
PLEXIGLASS  3 0.918 END
AL          3 0.062 END
END COMP
RAFFETY AND NALHALCZO U(2)F4-1 REFLECTED (CASE 11)
READ PARM  RUN=YES    MPG=600 MUB=YES FDN=YES END PARM
READ GEOM
UNIT  1
CUBOID  1 1 4P28.110 2P56.44
REPLICATE  2 2 5*3.048 0.0 S
UNIT  2
CUBOID  3 1 4P28.110 2*0.0
REPLICATE 3 2 4*3.048 0.0 3.048 S
END GEOM
READ ARRAY
MUX=1  MUY=1  MUZ=2
FILL  2 1 END FILL
END ARRAY
READ BIAS ID=400  2 6 END BIAS
END DATA
END


                                057 (CAS12)
=CSAS25
RAFFETY AND NILHALCZO U(2)F4-1 UNREFLECTED (CASE 12)
27GROUPNDF4  INFHOMMEDIUM
U-235  1 0 1.5811E-4 END
U-238  1 0 7.6467E-3 END
H      1 0 3.0864E-2 END
C      1 0 1.4839E-2 END
F      1 0 3.1219E-2 END
END COMP
RAFFETY AND NALHALCZO U(2)F4-1 UNREFLECTED (CASE12)
READ PARM   MPG=600 MUB=YES FDN=YES END PARM
READ GEOM
CUBOID  1 1 35.735 -35.735 35.735 -35.735 47.07 -47.07
END GEOM
END DATA
END


                                058 (CAS13)
=CSAS25
RAFFETY AND NILHALCZO U(2)F4-2 REFLECTED (CASE 13) NO BIASING
27GROUPNDF4  INFHOMMEDIUM
U-235  1 0 1.3303E-4 END
U-238  1 0 6.4370E-3 END
H      1 0 3.9097E-2 END
C      1 0 1.8797E-2 END
F      1 0 2.6280E-2 END
PARA(H2O)  2 1.0 END
PLEXIGLASS  3 0.918 END
AL          3 0.062 END
END COMP
RAFFETY AND NALHALCZO U(2)F4-2 REFLECTED (CASE 13) NO BIASING
READ PARM  RUN=YES    MPG=600 MUB=YES FDN=YES END PARM
READ GEOM
UNIT  1
CUBOID  1 1 4P25.555 2P34.935
REPLICATE  2 2 5*3.048 0.0 S
UNIT  2
CUBOID  3 1 4P25.555 2*0.0
REPLICATE 3 2 4*3.048 0.0 3.048 S
END GEOM
READ ARRAY
MUX=1  MUY=1  MUZ=2
FILL  2 1 END FILL
END ARRAY
* READ BIAS ID=400  2 6 END BIAS
END DATA
END


                                059 (CAS14)
=CSAS25
RAFFETY AND NILHALCZO U(2)F4-2 UNREFLECTED (CASE 14)
27GROUPNDF4  INFHOMMEDIUM
U-235  1 0 1.3303E-4 END
U-238  1 0 6.4370E-3 END
H      1 0 3.9097E-2 END
C      1 0 1.8797E-2 END
F      1 0 2.6280E-2 END
END COMP
RAFFETY AND NALHALCZO U(2)F4-2 UNREFLECTED (CASE 14)
READ PARM   MPG=600 MUB=YES FDN=YES END PARM
READ GEOM
CUBOID  1 1 28.11 -28.11 28.11 -28.11 61.235 -61.235
END GEOM
END DATA
END


                                060 (CAS15)
=CSAS25
RAFFETY AND NALHALCZO U(2)F4-3 REFLECTED (CASE 15)
27GROUPNDF4  INFHOMMEDIUM
U-235  1 0 1.1191E-4 END
U-238  1 0 5.4152E-3 END
H      1 0 4.5472E-2 END
C      1 0 2.1861E-2 END
F      1 0 2.2109E-2 END
PARA(H2O)  2 1.0 END
PLEXIGLASS  3 0.918 END
AL          3 0.062 END
END COMP
RAFFETY AND NALHALCZO U(2)F4-3 REFLECTED (CASE 15)
READ PARM  RUN=YES    MPG=600 MUB=YES FDN=YES END PARM
READ GEOM
UNIT  1
CUBOID  1 1 4P26.835 2P27.145
REPLICATE  2 2 5*3.048 0.0 S
UNIT  2
CUBOID  3 1 4P26.835 2*0.0
REPLICATE 3 2 4*3.048 0.0 3.048 S
END GEOM
READ ARRAY
MUX=1  MUY=1  MUZ=2
FILL  2 1 END FILL
END ARRAY
READ BIAS ID=400  2 6 END BIAS
END DATA
END


                                061 (CAS16)
=CSAS25
RAFFETY AND NILHALCZO U(2)F4-4 REFLECTED (CASE 16)
27GROUPNDF4  INFHOMMEDIUM
U-235  1 0 0.9924E-4 END
U-238  1 0 4.7998E-3 END
H      1 0 4.9212E-2 END
C      1 0 2.3660E-2 END
F      1 0 1.9596E-2 END
PARA(H2O)  2 1.0 END
PLEXIGLASS  3 0.918 END
AL          3 0.062 END
END COMP
RAFFETY AND NALHALCZO U(2)F4-4 REFLECTED (CASE 16)
READ PARM  RUN=YES  MPG=600 MUB=YES FDN=YES END PARM
READ GEOM
UNIT  1
CUBOID  1 1 4P23.000 2P48.285
REPLICATE  2 2 5*3.048 0.0 S
UNIT  2
CUBOID  3 1 4P23.000 2*0.0
REPLICATE 3 2 4*3.048 0.0 3.048 S
END GEOM
READ ARRAY
MUX=1  MUY=1  MUZ=2
FILL  2 1 END FILL
END ARRAY
READ BIAS ID=400  2 6 END BIAS
END DATA
END


                                062 (CAS17)
=CSAS25
RAFFETY AND NILHALCZO U(2)F4-5 REFLECTED (CASE 17)
27GROUPNDF4  INFHOMMEDIUM
U-235  1 0 0.8667E-4 END
U-238  1 0 4.1941E-3 END
H      1 0 5.3187E-2 END
C      1 0 2.5570E-2 END
F      1 0 1.7123E-2 END
POLY(H2O)  2 1.0 END
PLEXIGLASS  3 0.918 END
AL          3 0.062 END
END COMP
RAFFETY AND NALHALCZO U(2)F4-5 REFLECTED (CASE 17)
READ PARM  RUN=YES   MPG=600 MUB=YES FDN=YES END PARM
READ GEOM
UNIT  1
CUBOID  1 1 2P28.160 2P30.645 2P27.040
REPLICATE  2 2 5*3.048 0.0 S
UNIT  2
CUBOID  3 1 2P28.160 2P30.645 2*0.0
REPLICATE 3 2 4*3.048 0.0 3.048 S
END GEOM
READ ARRAY
MUX=1  MUY=1  MUZ=2
FILL  2 1 END FILL
END ARRAY
READ BIAS ID=400  2 6 END BIAS
END DATA
END


                                063 (CAS18)
=CSAS25
RAFFETY AND NILHALCZO U(2)F4-5 UNREFLECTED (CASE 18)
27GROUPNDF4  INFHOMMEDIUM
U-235  1 0 0.8667E-4 END
U-238  1 0 4.1941E-3 END
H      1 0 5.3187E-2 END
C      1 0 2.5570E-2 END
F      1 0 1.7123E-2 END
END COMP
RAFFETY AND NALHALCZO U(2)F4-5 UNREFLECTED (CASE18)
READ PARM   MPG=600 MUB=YES FDN=YES END PARM
READ GEOM
CUBOID  1 1 30.65 -30.65 33.27 -33.27 33.26 -33.26
END GEOM
END DATA
END


                                064 (CAS19)
=CSAS25
RAFFETY AND NILHALCZO U(2)F4-6 REFLECTED (CASE 19)
27GROUPNDF4  INFHOMMEDIUM
U-235  1 0 0.6232E-4 END
U-238  1 0 3.0100E-3 END
H      1 0 6.0557E-2 END
C      1 0 2.9114E-2 END
F      1 0 1.2209E-2 END
POLY(H2O)  2 1.0 END
PLEXIGLASS  3 0.918 END
AL          3 0.062 END
END COMP
RAFFETY AND NALHALCZO U(2)F4-6 REFLECTED (CASE 19)
READ PARM  RUN=YES   MPG=600 MUB=YES FDN=YES END PARM
READ GEOM
UNIT  1
CUBOID  1 1 2P38.255 2P38.220 2P41.210
REPLICATE  2 2 5*3.048 0.0 S
UNIT  2
CUBOID  3 1 2P38.255 2P38.220 2*0.0
REPLICATE 3 2 4*3.048 0.0 3.048 S
END GEOM
READ ARRAY
MUX=1  MUY=1  MUZ=2
FILL  2 1 END FILL
END ARRAY
READ BIAS ID=400  2 6 END BIAS
END DATA
END


                                065 (CAS20)
=CSAS25
RAFFETY AND NILHALCZO U(2)F4-6 UNREFLECTED (CASE 20)
```

```
27GROUPNDF4  INFHOMMEDIUM
U-235  1 0 0.6232E-4 END
U-238  1 0 3.0100E-3 END
H      1 0 6.0557E-2 END
C      1 0 2.9114E-2 END
F      1 0 1.2309E-2 END
END COMP
RAFFETY AND MALMALCZO U(2)F4-6 UNREFLECTED (CASE20)
READ PARM   NPG=600 MUB=YES FDN=YES END PARM
READ GEOM
CUBOID  1 1 40.725 -40.725 43.35 -43.35 44.110 -44.110
END GEOM
END DATA
END
```

066 (CAS21)

```
#CSAS25
RAFFETY AND MILMALCZO U(3)F4-1 REFLECTED (CASE 21) NO BIAS
27GROUPNDF4  INFHOMMEDIUM
U-235  1 0 2.3494E-4 END
U-238  1 0 7.4999E-3 END
H      1 0 3.1341E-2 END
C      1 0 1.5067E-2 END
F      1 0 3.0939E-2 END
PARA(H2O)  2 1.0 END
PLEXIGLASS  3 0.918 END
AL          3 0.062 END
END COMP
RAFFETY AND MILMALCZO U(3)F4-1 REFLECTED (CASE 21) NO BIAS
READ PARM  RUN=YES   NPG=600 MUB=YES FDN=YES END PARM
READ GEOM
UNIT  1
CUBOID  1 1 2P25.57 2P25.57 2P25.635
REPLICATE  2 2 5*3.048 0.0 S
UNIT  2
CUBOID  3 1 2P25.57 2P25.57 2*0.0
REPLICATE 3 2 4*3.048 0.0 3.048 S
END GEOM
READ ARRAY
MUX=1  MUY=1  MUZ=2
FILL  2 1 END FILL
END ARRAY
' READ BIAS ID=400  2 6 END BIAS
END DATA
END
```

067 (CAS22)

```
#CSAS25
RAFFETY AND MILMALCZO U(3)F4-1 REFLECTED (CASE 22)
27GROUPNDF4  INFHOMMEDIUM
U-235  1 0 2.3494E-4 END
U-238  1 0 7.4999E-3 END
H      1 0 3.1341E-2 END
C      1 0 1.5067E-2 END
F      1 0 3.0939E-2 END
PARA(H2O)  2 1.0 END
PLEXIGLASS  3 0.918 END
AL          3 0.062 END
END COMP
RAFFETY AND MALMALCZO U(3)F4-1 REFLECTED (CASE 22)
READ PARM  RUN=YES   NPG=600 MUB=YES FDN=YES END PARM
READ GEOM
UNIT  1
CUBOID  1 1 2P21.735 2P21.735 2P43.1950
REPLICATE  2 2 5*3.048 0.0 S
UNIT  2
CUBOID  3 1 2P21.735 2P21.735 2*0.0
REPLICATE 3 2 4*3.048 0.0 3.048 S
END GEOM
READ ARRAY
MUX=1  MUY=1  MUZ=2
FILL  2 1 END FILL
END ARRAY
READ BIAS ID=400  2 6 END BIAS
END DATA
END
```

068 (CAS23)

```
#CSAS25
RAFFETY AND MILMALCZO U(3)F4-1 REFLECTED (CASE 23)
27GROUPNDF4  INFHOMMEDIUM
U-235  1 0 2.3494E-4 END
U-238  1 0 7.4999E-3 END
H      1 0 3.1341E-2 END
C      1 0 1.5067E-2 END
F      1 0 3.0939E-2 END
PARA(H2O)  2 1.0 END
PLEXIGLASS  3 0.918 END
AL          3 0.062 END
END COMP
RAFFETY AND MALMALCZO U(3)F4-1 REFLECTED (CASE 23)
READ PARM  RUN=YES   NPG=600 MUB=YES FDN=YES END PARM
READ GEOM
UNIT  1
CUBOID  1 1 2P23.010 2P23.010 2P33.785
REPLICATE  2 2 5*3.048 0.0 S
UNIT  2
CUBOID  3 1 2P23.010 2P23.010 2*0.0
REPLICATE 3 2 4*3.048 0.0 3.048 S
END GEOM
READ ARRAY
MUX=1  MUY=1  MUZ=2
FILL  2 1 END FILL
END ARRAY
READ BIAS ID=400  2 6 END BIAS
END DATA
END
```

069 (CAS24)

```
#CSAS25
RAFFETY AND MILMALCZO U(3)F4-1 REFLECTED (CASE 24) NO BIASING
27GROUPNDF4  INFHOMMEDIUM
U-235  1 0 2.3494E-4 END
U-238  1 0 7.4999E-3 END
H      1 0 3.1341E-2 END
C      1 0 1.5067E-2 END
F      1 0 3.0939E-2 END
PARA(H2O)  2 1.0 END
PLEXIGLASS  3 0.918 END
AL          3 0.062 END
END COMP
RAFFETY AND MALMALCZO U(3)F4-1 REFLECTED (CASE 24) NO BIASING
READ PARM  RUN=YES   NPG=600 MUB=YES FDN=YES END PARM
READ GEOM
UNIT  1
CUBOID  1 1 2P28.125 2P28.125 2P21.705
REPLICATE  2 2 5*3.048 0.0 S
UNIT  2
CUBOID  3 1 2P28.125 2P28.125 2*0.0
REPLICATE 3 2 4*3.048 0.0 3.048 S
END GEOM
READ ARRAY
MUX=1  MUY=1  MUZ=2
FILL  2 1 END FILL
END ARRAY
' READ BIAS ID=400  2 6 END BIAS
END DATA
END
```

070 (CAS25)

```
#CSAS25
RAFFETY AND MILMALCZO U(3)F4-1 REFLECTED (CASE 25)
27GROUPNDF4  INFHOMMEDIUM
U-235  1 0 2.3494E-4 END
U-238  1 0 7.4999E-3 END
H      1 0 3.1341E-2 END
C      1 0 1.5067E-2 END
F      1 0 3.0939E-2 END
PARA(H2O)  2 1.0 END
PLEXIGLASS  3 0.918 END
AL          3 0.062 END
END COMP
RAFFETY AND MALMALCZO U(3)F4-1 REFLECTED (CASE 25)
READ PARM  RUN=YES   NPG=600 MUB=YES FDN=YES END PARM
READ GEOM
UNIT  1
CUBOID  1 1 2P30.680 2P30.680 2P19.335
REPLICATE  2 2 5*3.048 0.0 S
UNIT  2
CUBOID  3 1 2P30.680 2P30.680 2*0.0
REPLICATE 3 2 4*3.048 0.0 3.048 S
END GEOM
READ ARRAY
MUX=1  MUY=1  MUZ=2
FILL  2 1 END FILL
END ARRAY
READ BIAS ID=400  2 6 END BIAS
END DATA
END
```

071 (CAS26)

```
#CSAS25
RAFFETY AND MILMALCZO U(3)F4-1 UNREFLECTED (CASE 26)
27GROUPNDF4  INFHOMMEDIUM
U-235  1 0 2.3494E-4 END
U-238  1 0 7.4999E-3 END
H      1 0 3.1341E-2 END
C      1 0 1.5067E-2 END
F      1 0 3.0939E-2 END
END COMP
RAFFETY AND MALMALCZO U(3)F4-1 UNREFLECTED (CASE 26)
READ PARM   NPG=600 MUB=YES FDN=YES END PARM
READ GEOM
CUBOID  1 1 28.235 -28.235 28.235 -28.235 43.32 -43.32
END GEOM
END DATA
END
```

072 (CAS27)

```
#CSAS25
RAFFETY AND MILMALCZO U(3)F4-1 UNREFLECTED (CASE 27)
27GROUPNDF4  INFHOMMEDIUM
U-235  1 0 2.3494E-4 END
U-238  1 0 7.4999E-3 END
H      1 0 3.1341E-2 END
C      1 0 1.5067E-2 END
F      1 0 3.0939E-2 END
END COMP
RAFFETY AND MALMALCZO U(3)F4-1 UNREFLECTED (CASE 27)
READ PARM   NPG=600 MUB=YES FDN=YES END PARM
READ GEOM
CUBOID  1 1 28.125 -28.125 30.68 -30.68 37.19 -37.19
END GEOM
END DATA
END
```

073 (CAS28)

```
#CSAS25
RAFFETY AND MILMALCZO U(3)F4-1 UNREFLECTED (CASE 28)
27GROUPNDF4  INFHOMMEDIUM
U-235  1 0 2.3494E-4 END
U-238  1 0 7.4999E-3 END
H      1 0 3.1341E-2 END
C      1 0 1.5067E-2 END
F      1 0 3.0939E-2 END
END COMP
RAFFETY AND MALMALCZO U(3)F4-1 UNREFLECTED (CASE 28)
READ PARM   NPG=600 MUB=YES FDN=YES END PARM
READ GEOM
CUBOID  1 1 30.7 -30.7 30.7 -30.7 33.00 -33.00
END GEOM
END DATA
END
```

074 (CAS29)

```
#CSAS25
RAFFETY AND MILMALCZO U(3)F4-2 REFLECTED (CAS29)
27GROUPNDF4  INFHOMMEDIUM
U-235  1 0 1.6709E-4 END
U-238  1 0 5.2355E-3 END
H      1 0 4.6262E-2 END
C      1 0 2.2241E-2 END
F      1 0 2.2011E-2 END
POLY(H2O)  2 1.0 END
PLEXIGLASS  3 0.918 END
AL          3 0.062 END
END COMP
RAFFETY AND MALMALCZO U(3)F4-2 REFLECTED (CAS29)
READ PARM  RUN=YES   NPG=600 MUB=YES FDN=YES END PARM
READ GEOM
UNIT  1
CUBOID  1 1 2P20.405 2P20.400 2P19.745
REPLICATE  2 2 5*3.048 0.0 S
UNIT  2
CUBOID  3 1 2P20.405 2P20.400 2*0.0
REPLICATE 3 2 4*3.048 0.0 3.048 S
END GEOM
READ ARRAY
MUX=1  MUY=1  MUZ=2
FILL  2 1 END FILL
END ARRAY
READ BIAS ID=400  2 6 END BIAS
END DATA
END
```

075 (CAS30)

```
#CSAS25
RAFFETY AND MILMALCZO U(3)F4-2 UNREFLECTED (CASE 30)
27GROUPNDF4  INFHOMMEDIUM
U-235  1 0 1.6709E-4 END
U-238  1 0 5.2355E-3 END
H      1 0 4.6262E-2 END
C      1 0 2.2241E-2 END
F      1 0 2.2011E-2 END
END COMP
RAFFETY AND MALMALCZO U(3)F4-2 UNREFLECTED (CASE 30)
READ PARM  RUN=YES   NPG=600 MUB=YES FDN=YES END PARM
READ GEOM
CUBOID  1 1 2P20.450 2P20.445 2P58.400
END GEOM
END DATA
END
```

076 (CAS31)

```
#CSAS25
RAFFETY AND MILMALCZO U(3)F4-2 UNREFLECTED (CASE 31)
27GROUPNDF4  INFHOMMEDIUM
U-235  1 0 1.6709E-4 END
U-238  1 0 5.2355E-3 END
H      1 0 4.6262E-2 END
C      1 0 2.2241E-2 END
F      1 0 2.2011E-2 END
END COMP
RAFFETY AND MALMALCZO U(3)F4-2 UNREFLECTED (CASE 31)
READ PARM  RUN=YES   NPG=600 MUB=YES FDN=YES END PARM
READ GEOM
CUBOID  1 1 2P24.295 2P25.570 2P24.265
END GEOM
END DATA
END
```

077 (CAS32)

```
#CSAS25
RAFFETY AND MILMALCZO U(3)F4-2 UNREFLECTED (CASE 32)
27GROUPNDF4  INFHOMMEDIUM
U-235  1 0 1.6709E-4 END
U-238  1 0 5.2355E-3 END
H      1 0 4.6262E-2 END
C      1 0 2.2241E-2 END
F      1 0 2.2011E-2 END
END COMP
RAFFETY AND MALMALCZO U(3)F4-2 UNREFLECTED (CASE 32)
READ PARM  RUN=YES   NPG=600 MUB=YES FDN=YES END PARM
READ GEOM
CUBOID  1 1 2P40.855 2P40.830 2P15.670
END GEOM
END DATA
END
```

078 (CAS33)

```
=CSAS25
CRITICAL REFLECTED CYLINDER OF AQUEOUS U(4.98)O2F2 (CASE 33)
27GROUPNDF4  INFHOMMEDIUM
SOLNUO2F2   1 910.36 0.0 1 298 92235 4.98 92238 95.02 END
SS304   2 1.0 END
H2O     3 1.0 END
CO      4 1.0 END
END COMP
CRITICAL REFLECTED CYLINDER OF AQUEOUS U(4.98)O2F2 (CASE 33)
READ PARM  RUN=YES   NPG=600 NUB=YES FDN=YES END PARM
READ GEOM
UNIT  1
CYLINDER  1 1 19.545 2P27.225
CYLINDER  0 1 19.545 78.975 -27.225
CYLINDER  2 1 19.624 79.054 -27.304
CYLINDER  4 1 19.705 79.054 -27.304
CYLINDER  2 1 22.245 79.054 -27.304
CYLINDER  3 1 45.000 79.054 -27.304
CUBOID    0 1 4P45.000 79.054 -27.304
END GEOM
END DATA
END

                              079 (CAS34)
=CSAS25
CRITICAL REFLECTED CYLINDER OF AQUEOUS U(4.98)O2F2 (CASE 34)
27GROUPNDF4  INFHOMMEDIUM
' SOLNUO2F2   1 910.36 0.0 1 298 92235 4.98 92238 95.02 END
U-235   1 0 1.1599E-4 END
U-238   1 0 2.1852E-3 END
F       1 0 4.6024E-3 END
N       1 0 5.6605E-2 END
O       1 0 3.2904E-2 END
SS304   2 1.0 END
H2O     3 1.0 END
END COMP
CRITICAL REFLECTED CYLINDER OF AQUEOUS U(4.98)O2F2 (CASE 34)
READ PARM  RUN=YES   NPG=600 NUB=YES FDN=YES END PARM
READ GEOM
UNIT  1
CYLINDER  1 1 16.510 2P71.500
CYLINDER  0 1 16.510 172.400 -71.500
CYLINDER  2 1 16.589 172.479 -71.579
CYLINDER  2 1 19.129 172.479 -71.579
CYLINDER  3 1 45.000 172.479 -71.579
CUBOID    0 1 4P45.000 172.479 -71.579
END GEOM
END DATA
END

                              080 (CAS35)
=CSAS25
CRITICAL SPHERE OF AQUEOUS U(4.98)O2F2 (CASE 35)
27GROUPNDF4  INFHOMMEDIUM
' SOLNUO2F2   1 910.18 0.0 1 292 92235 4.98 92238 95.02 END
U-235   1 0 1.1612E-4 END
U-238   1 0 2.1878E-3 END
H       1 0 5.6947E-2 END
O       1 0 3.3081E-2 END
F       1 0 4.6080E-3 END
SS304   2 1.0 END
END COMP
CRITICAL SPHERE OF AQUEOUS U(4.98)O2F2 (CASE 35)
READ PARM  RUN=YES   NPG=600 NUB=YES FDN=YES END PARM
READ GEOM
UNIT  1
SPHERE  1 1 25.3873
SPHERE  2 1 25.4127
CUBOID    0 1 6P25.4127
END GEOM
END DATA
END

                              081 (CAS36)
=CSAS25
CRITICAL CYLINDER OF AQUEOUS U(4.98)O2F2 (CASE 36)
27GROUPNDF4  INFHOMMEDIUM
SOLNUO2F2   1 910.36 0.0 1 298 92235 4.98 92238 95.02 END
SS304   2 1.0 END
END COMP
CRITICAL CYLINDER OF AQUEOUS U(4.98)O2F2 (CASE 36)
READ PARM  RUN=YES   NPG=600 NUB=YES FDN=YES END PARM
READ GEOM
UNIT  1
CYLINDER  1 1 19.5500 2P50.85
CYLINDER  0 1 19.5500 74.16 -50.85
CYLINDER  2 1 19.6287 74.16 -50.9287
CUBOID    0 1 4P19.6287 74.16 -50.9287
END GEOM
END DATA
END

                              082 (CAR01)
=CSAS25
ROCKY FLATS CRITICALS NUREG/CR-1071 EXPERIMENT NUMBER 1 (27 GROUP)
' 48 FUEL CANS 2.44 CM MODERATOR GEE.MU77.DATA(OPT1)
27GR   LATTICECELL
U308   1 5.4078E-1 293.0 92234 0.03 92235 4.46 92236 0.08 92238 95.43 END
H2O    1 8.9514E-2 END
ARBM-BAGGIE  1.0 3 0 0 0 1001 14.01 6012 84.9 8016 1.20 1 1.9134E-2
     END
ARBM-AL1100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 2 9.5390E-1
     END
ARBM-TAPE(VINYL)  1.0 7 0 0 0 1001 5.92 6012 45.91 8016 10.82 17000
   25.73 20000 6.9 22000 1.6 82000 1.1 2 1.1115E-2 END
ARBM-TAPE(MYLAR)  1.0 3 0 0 0 1001 6.83 6012 65.50 8016 27.02 2
     1.7491E-2 END
ARBM-MODERATOR  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 3 END
ARBM-PLEX(REG)  1.0 3 0 0 0 1001 7.84 6012 59.59 8016 32.23 4
     1.1773 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 4
     3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 4
     1.1648E-3 END
ARBM-PLEX(TRIS)  1.0 8 0 0 1 1001 7.16 6012 52.03 7014 0.16 8016 29.82
   15031 1.02 17000 1.81 35079 4.260 35081 2.840 5 1.2757 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 5
     3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 5
     1.1648E-3 END
ARBM-FILLER  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 6 .98 END
' THIS MATERIAL IS ACTUALLY MODERATOR ADJUSTED FOR THE VOLUME
' FRACTION OF THE VOID FILLED BETWEEN CORE AND REFLECTOR.
END COMP
SPHTRIANGP  19.9462 18.5857 1 3 18.9579 2 END
ROCKY FLATS CRITICALS NUREG/CR-1071 EXPERIMENT NUMBER 1 (27 GROUP)
' 48 FUEL CANS 2.44 CM MODERATOR GEE.MU77.DATA(OPT1)
READ PARM  RUN=YES NPG=600
NUB=YES FDN=YES PLT=NO
END PARM
READ GEOM
UNIT  1
CON='FUEL BOX 15.28 CM ON A SIDE WITH .15 CM WALLS .05CM STACKING VOID'
CUBOID   1 1 6P7.49
CUBOID   2 1 6P7.64
CUBOID   0 1 6P7.6450
UNIT  2
CON='X-FACE INTERSTITIAL MODERATOR'
CUBOID   3 1 2P1.2200 4P7.665
UNIT  3
CON='Y-FACE INTERSTITIAL MODERATOR'
CUBOID   3 1 2P7.665 2P1.2200 2P7.665
UNIT  4
CON='Z-FACE INTERSTITIAL MODERATOR'
CUBOID   3 1 4P7.665 2P1.2200
UNIT  5
CON='MORE X-FACE MODERATOR'
CUBOID   3 1 4P1.2200 2P7.665
UNIT  6
CON='MORE Y-FACE MODERATOR'
CUBOID   3 1 2P7.665 4P1.2200
UNIT  7
CON='MORE Z-FACE MODERATOR'
CUBOID   3 1 2P1.2200 2P7.665 2P1.2200
UNIT  8
CON='LAST OF INTERSTITIAL MODERATOR'
CUBOID   3 1 6P1.2200
UNIT  9
CON='NORTH SPLIT TABLE CORE'
ARRAY 1 3*0.0
UNIT  10
CON='SOUTH SPLIT TABLE CORE'
ARRAY 2 3*0.0
UNIT  11
CON='PLEXIGLASS REFLECTOR SHEET WITHOUT TRIS, NORTH BOTTOM REFLECTOR'
CUBOID   4 1 2P16.5500 2P38.7500 2P0.6150
UNIT  12
CON='PLEXIGLASS REFLECTOR SHEET WITH TRIS, NORTH BOTTOM REFLECTOR'
CUBOID   5 1 2P16.5500 2P38.7500 2P0.6150
UNIT  13
CON='UPPER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID   5 1 2P16.550 2P38.75 2P8.24
UNIT  14
CON='LOWER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID   5 1 2P16.550 2P38.75 2P3.69
UNIT  15
CON='NORTH BOTTOM REFLECTOR INCLUDES REGULAR AND TRIS'
ARRAY 3 3*0.0
UNIT  16
CON='PLEXIGLAS SHEET BOTTOM SOUTH REFLECTOR WITHOUT TRIS'
CUBOID   0 1 2P5.1 2P2.55 2P0.615
CUBOID   4 1 44.3 -5.1 2P38.75  2P0.615
UNIT  17
CON='PLEXIGLAS SHEET BOTTOM SOUTH REFLECTOR WITH TRIS'
CUBOID   0 1 2P5.1 2P2.55 2P0.615
CUBOID   5 1 44.3 -5.1 2P38.75 2P0.6150
UNIT  18
CON='LOWER PORTION SOUTH BOTTOM REFLECTOR WITH TRIS'
CUBOID   0 1 2P5.1 2P2.55 2P8.855
CUBOID   5 1 44.3 -5.1 2P38.75 2P8.855
UNIT  19
CON='SOUTH BOTTOM REFLECTOR WITH REGULAR AND TRIS'
ARRAY 4 3*0.0
UNIT  20
CON='EAST AND WEST REFLECTORS FOR NORTH REFLECTOR WITH TRIS'
CUBOID   5 1 2P16.550 2P12.65 2P54.2825
UNIT  21
CON='ARRAY FOR EAST AND WEST REFLECTORS FOR NORTH REFLECTOR'
ARRAY 5 3*0.0
UNIT  22
CON='EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR WITH TRIS'
CUBOID   5 1 2P24.700 2P12.65 2P54.2825
UNIT  23
CON='ARRAY FOR EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR'
ARRAY 6 3*0.0
UNIT  24
CON='NORTH TOP REFLECTOR WITH TRIS'
CUBOID   5 1 2P29.100 2P64.05 2P12.15
UNIT  25
CON='ARRAY FOR NORTH TOP REFLECTOR'
ARRAY 7 3*0.0
UNIT  26
CON='SOUTH TOP REFLECTOR WITH TRIS'
CUBOID   0 1 2P5.1 2P2.55 2P12.15
CUBOID   5 1 69.4 -5.1 2P64.05 2P12.15
UNIT  27
CON='ARRAY FOR SOUTH TOP REFLECTOR'
ARRAY 8 3*0.0
UNIT  28
CON='NORTH END REFLECTOR 9.8CM PORTION WITHOUT TRIS'
CUBOID   4 1 2P4.9000 2P64.0500 2P54.2825
UNIT  29
CON='NORTH END RELFECTOR 5.2 CM PORTION WITH TRIS'
CUBOID   5 1 2P2.6 2P64.0500 2P54.2825
UNIT  30
CON='NORTH END RELFECTOR 10.1 CM PORTION WITHOUT TRIS'
CUBOID   4 1 2P5.05 2P64.05 2P54.2825
UNIT  31
CON='ARRAY FOR NORTH END REFLECTOR'
ARRAY 9 3*0.0
UNIT  32
CON='SOUTH END REFLECTOR'
CUBOID   5 1 2P12.55 2P64.05 2P54.2825
UNIT  33
CON='ARRAY FOR SOUTH END REFLECTOR'
ARRAY 10 3*0.0
UNIT  34
CON='BOTTOM MODERATING PLASTIC NORTH CORE'
CUBOID   6 1 2P16.550 2P38.7500 2P13.0500
UNIT  35
CON='TOP MODERATING PLASTIC NORTH CORE'
CUBOID   6 1 2P16.550 2P38.7500 2P3.2525
UNIT  36
ARRAY 11 3*0.0
UNIT  37
ARRAY 12 3*0.0
UNIT  38
CON='NORTH CORE WITH BOTTOM REFLECTOR'
ARRAY 13 3* 0.0
UNIT  39
CON='NORTH CORE WITH EAST AND WEST REFLECTOR'
ARRAY 14 3*0.0
UNIT  40
CON='NORTH CORE WITH END REFLECTOR'
ARRAY 15 3*0.0
UNIT  41
CON='NORTH SPLIT TABLE FACEPLATE'
CUBOID   3 1 2P0.6150 2P64.0500 2P66.4325
UNIT  42
CON='NORTH CORE WITH TOP REFLECTOR'
ARRAY 16 3*0.0
UNIT  43
CON='NORTH CORE WITH FACEPLATE'
ARRAY 17 3*0.0
UNIT  44
CON='12.95 CM THICK MODERATOR SOUTH CORE'
CUBOID   6 1 2P23.924 2P6.475 2P40.183
UNIT  45
CON='2.95 THICK MODERATOR SOUTH CORE'
CUBOID   6 1 2P23.924 2P38.5285 2P1.475
UNIT  46
CON='COMBINATION OF CORE WITH 12.95 THICK MODERATOR'
ARRAY 18 3*0.0
UNIT  47
CON='COMBINATION OF CORE WITH 2.95 THICK MODERATOR'
ARRAY 19 3*0.0
UNIT  48
CON='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 20 3*0.0
UNIT  49
CON='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 21 3*0.0
UNIT  50
CON='SOUTH CORE END REFLECTOR'
ARRAY 22 3*0.0
UNIT  51
CON='FACEPLATE FOR SOUTH SPLIT TABLE'
CUBOID   3 1 2P0.4620  2P64.0500 2P66.4325
UNIT  52
CON='SOUTH CORE WITH TOP REFLECTOR'
ARRAY 23 3*0.0
UNIT  53
CON='SOUTH CORE WITH FACEPLATE'
ARRAY 24 3*0.0
UNIT  54
CON='AIR GAP'
CUBOID   0 1 2P0.1550 2P64.0500 2P66.4325
GLOBAL
UNIT  55
CON='TOTAL'
ARRAY 25 3*0.0
UNIT  56
CON='EMPTY FUEL LOCATION'
CUBOID   0 1 6P7.6450
UNIT  57
CON='SIDE MODERATOR'
CUBOID   6 1 2P16.550 2P4.4300 2P25.4350
UNIT  58
CON='END MODERATOR'
CUBOID   6 1 2P8.1500 2P38.7500 2P25.4350
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UNIT 59
COM='SOUTH CORE BOTTOM MODERATING PLASTIC'
CUBOID 6 1 2P24.7000 2P38.7500 2P13.0500
UNIT 60
COM='SOUTH CORE TOP MODERATING PLASTIC'
CUBOID 6 1 2P24.7000 2P38.7500 2P3.2525
UNIT 61
COM='Y-FACE MODERATOR VOID'
CUBOID 0 1 2P7.665 2P1.2200 2P7.665
END GEOMETRY
READ ARRAY
ARA=1 NUX=3 NUY=7 NUZ=5
COM='NORTH SPLIT TABLE CORE'
FILL 1 2 1 3 5 3 206 1 2 1
     4 7 4 6 8 6 206 4 7 4
     1042
     56 2 1 3 5 3 1 2 1 3 5 3 106 56 2 1 END FILL
ARA=2 NUX=3 NUY=7 NUZ=5
COM='SOUTH SPLIT TABLE CORE'
FILL 1 2 1 3 5 3 206 1 2 1
     4 7 4 6 8 6 206 4 7 4
     1042
     1 2 56 3 5 61 206 1 2 56 END FILL
ARA=3 NUX=1 NUY=1 NUZ=3
COM='NORTH BOTTOM REFLECTOR'
FILL 14 11 13 END FILL
ARA=4 NUX=1 NUY=1 NUZ=7
COM='SOUTH BOTTOM REFLECTOR'
FILL 18 16 17 16 16 17 17 END FILL
ARA=5 NUX=1 NUY=1 NUZ=1
COM='EAST AND WEST WALLS OF NORTH REFLECTOR'
FILL 20 END FILL
ARA=6 NUX=1 NUY=1 NUZ=1
COM='EAST AND WEST WALLS OF SOUTH REFLECTOR'
FILL 22 END FILL
ARA=7 NUX=1 NUY=1 NUZ=1
COM='ARRAY FOR NORTH TOP REFLECTOR'
FILL 24 END FILL
ARA=8 NUX=1 NUY=1 NUZ=1
COM='ARRAY FOR SOUTH TOP REFLECTOR'
FILL 26 END FILL
ARA=9 NUX=3 NUY=1 NUZ=1
COM='ARRAY FOR NORTH END REFLECTOR'
FILL 28 29 30 END FILL
ARA=10 NUX=1 NUY=1 NUZ=1
COM='ARRAY FOR SOUTH END REFLECTOR'
FILL 32 END FILL
ARA=11 NUX=1 NUY=2 NUZ=1
COM='COMBINARION OF CORE WITH SIDE MODERATOR'
FILL 9 57 END FILL
ARA=12 NUX=1 NUY=1 NUZ=3
COM='COMBINATION OF PREVIOUS ARRAY WITH TOP AND BOTTOM MODERATOR'
FILL 34 36 35 END FILL
ARA=13 NUX=1 NUY=1 NUZ=2
COM='COMBINATION OF NORTH CORE WITH BOTTOM REFLECTOR'
FILL 15 37 END FILL
ARA=14 NUX=1 NUY=3 NUZ=1
COM='NORTH CORE WITH SIDE REFLECTORS'
FILL 21 38 21 END FILL
ARA=15 NUX=2 NUY=1 NUZ=1
COM='NORTH CORE WITH END REFLECTOR'
FILL 31 39 END FILL
ARA=16 NUX=1 NUY=1 NUZ=2
COM='NORTH CORE WITH TOP REFLECTOR'
FILL 40 25 END FILL
ARA=17 NUX=2 NUY=1 NUZ=1
COM='NORTH CORE WITH FACEPLATE'
FILL 42 41 END FILL
ARA=18 NUX=1 NUY=2 NUZ=1
COM='COMBINATION OF S. CORE WITH SIDE MODERATOR'
FILL 10 57 END FILL
ARA=19 NUX=2 NUY=1 NUZ=1
COM='COMBINATION OF CORE WITH END MODERATOR'
FILL 46 58 END FILL
ARA=20 NUX=1 NUY=1 NUZ=4
COM='SOUTH CORE WITH BOTTOM MODERATOR AND REFLECTOR'
FILL 19 59 47 60 END FILL
ARA=21 NUX=1 NUY=3 NUZ=1
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
FILL 23 48 23 END FILL
ARA=22 NUX=2 NUY=1 NUZ=1
COM='SOUTH CORE WITH END REFLECTOR'
FILL 49 33 END FILL
ARA=23 NUX=1 NUY=1 NUZ=2
COM='COMBINATION OF CORE WITH TOP REFLECTOR'
FILL 50 27 END FILL
ARA=24 NUX=2 NUY=1 NUZ=1
COM='SOUTH CORE WITH FACEPLATE'
FILL 51 52 END FILL
ARA=25 NUX=3 NUY=1 NUZ=1
COM='TOTALL'
FILL 43 54 53 END FILL
END ARRAY
READ PLOT TTL='XZ SLICE OF RFP1 SHOWING MATERIAL REGIONS'
XUL=-2 YUL=64.05 ZUL=136
XLR=137 YLR=64.05 ZLR=-2
UAX=1 WDW=-1 NAX=130 NCH='0123456'END
TTL='YZ SLICE OF NORTH CORE SECOND ROW'
XUL=28 YUL=-2 ZUL=136
XLR=28 YLR=136 ZLR=-2
VAX=1 WDW=-1 NAX=130 NCH='0123456'END
TTL='YZ SLICE OF SOUTH CORE SECOND ROW'
XUL=80 YUL=-2 ZUL=136
XLR=80 YLR=136 ZLR=-2
VAX=1 WDW=-1 NAX=130 NCH='0123456'
END PLOT
END DATA
END

                              083 (CAR02)

#CSAS25
ROCKY FLATS CRITICALS NUREG/CR-1071 EXPERIMENT NUMBER 2 (27 GROUP)
' 43 FUEL CANS 2.44 CM MODERATOR GEE.MU77.DATA(OPT2)
27GR LATTICECELL
U308 1 5.4078E-1 293.0 92234 0.03 92235 4.46 92236 0.08 92238 95.43 END
H20 1 8.9514E-2 END
ARBM-BAGGIE 1.0 3 0 0 0 1001 14.01 6012 84.9 8016 1.20 1 1.9134E-2
   END
ARBM-AL1100 1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 2 9.5390E-1
   END
ARBM-TAPE(VINYL) 1.0 7 0 0 0 1001 5.92 6012 45.91 8016 10.82 17000
   25.73 20040 6.9 22000 1.6 82000 1.1 2 1.1135E-2 END
ARBM-TAPE(MYLAR) 1.0 3 0 0 0 1001 6.83 6012 65.50 8016 27.02 2
   1.7491E-2 END
ARBM-MODERATOR 1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 3 END
ARBM-PLEX(REG) 1.0 3 0 0 0 1001 7.84 6012 59.59 8016 32.23 4
   1.1773 END
ARBM-PLEX(PAPER) 1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 4
   2.7534E-3 END
ARBM-PLEX(GLUE) 1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 4
   1.1648E-3 END
ARBM-PLEX(TRIS) 1.0 8 0 0 0 1001 7.16 6012 52.03 7014 0.16 8016 29.82
   15031 1.02 17000 1.81 35079 4.260 35081 2.840 5 1.2757 END
ARBM-PLEX(PAPER) 1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 5
   2.7534E-3 END
ARBM-PLEX(GLUE) 1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 5
   1.1648E-3 END
ARBM-MODERATOR 1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 6 .99 END
' THIS MATERIAL IS ACTUALLY MODERATOR ADJUSTED FOR THE VOLUME
' FRACTION OF THE VOID FILLED BETWEEN CORE AND REFLECTOR.
END COMP
SPHTRIANGP 19.9462 18.5857 1 3 18.9579 2 END
ROCKY FLATS CRITICALS NUREG/CR-1071 EXPERIMENT NUMBER 2 (27 GROUP)
' 43 FUEL CANS 2.44 CM MODERATOR GEE.MU77.DATA(OPT2)
READ PARM RUN=YES MPC=600
MUB=YES FDN=YES PLT=NO
END PARM
READ GEOM
UNIT 1
COM='FUEL BOX 15.28 CM ON A SIDE WITH .15 CM WALLS .05CM STACKING VOID'
CUBOID 1 1 4P7.49
CUBOID 2 1 4P7.64
CUBOID 0 1 4P7.6650
UNIT 2
COM='X-FACE INTERSTITIAL MODERATOR'
CUBOID 3 1 2P1.2200 4P7.665
UNIT 3
COM='Y-FACE INTERSTITIAL MODERATOR'
CUBOID 3 1 2P7.665 2P1.2200 2P7.665
UNIT 4
COM='Z-FACE INTERSTITIAL MODERATOR'
CUBOID 3 1 4P7.665 2P1.2200
UNIT 5
COM='MORE X-FACE MODERATOR'
CUBOID 3 1 4P1.2200 2P7.665
UNIT 6
COM='MORE Y-FACE MODERATOR'
CUBOID 3 1 2P7.665 4P1.2200
UNIT 7
COM='MORE Z-FACE MODERATOR'
CUBOID 3 1 2P1.2200 2P7.665 2P1.2200
UNIT 8
COM='LAST OF INTERSTITIAL MODERATOR'
CUBOID 3 1 6P1.2200
UNIT 9
COM='NORTH SPLIT TABLE CORE'
ARRAY 1 3*0.0
UNIT 10
COM='SOUTH SPLIT TABLE CORE'
ARRAY 2 3*0.0
UNIT 11
COM='PLEXICLASS REFLECTOR SHEET WITHOUT TRIS, NORTH BOTTOM REFLECTOR'
CUBOID 4 1 2P16.5500 2P38.7500 2P0.6150
UNIT 12
COM='PLEXICLASS REFLECTOR SHEET WITH TRIS, NORTH BOTTOM REFLECTOR'
CUBOID 5 1 2P16.5500 2P38.7500 2P0.6150
UNIT 13
COM='UPPER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID 5 1 2P16.550 2P38.75 2P8.24
UNIT 14
COM='LOWER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID 5 1 2P16.550 2P38.75 2P3.69
UNIT 15
COM='NORTH BOTTOM REFLECTOR INCLUDES REGULAR AND TRIS'
ARRAY 3 3*0.0
UNIT 16
COM='PLEXICLAS SHEET BOTTOM SOUTH REFLECTOR WITHOUT TRIS'
CUBOID 0 1 2P5.1 2P2.55 2P0.6150
CUBOID 4 1 44.3 -5.1 2P38.75 2P0.615
UNIT 17
COM='PLEXICLAS SHEET BOTTOM SOUTH REFLECTOR WITH TRIS'
CUBOID 0 1 2P5.1 2P2.55 2P0.6150
CUBOID 5 1 44.3 -5.1 2P38.75 2P0.6150
UNIT 18
COM='LOWER PORTION SOUTH BOTTOM REFLECTOR WITH TRIS'
CUBOID 0 1 2P5.1 2P2.55 2P8.855
CUBOID 5 1 44.3 -5.1 2P38.75 2P8.855
UNIT 19
COM='SOUTH BOTTOM REFLECTOR WITH REGULAR AND TRIS'
ARRAY 4 3*0.0
UNIT 20
COM='EAST AND WEST REFLECTORS FOR NORTH REFLECTOR WITH TRIS'
CUBOID 5 1 2P16.550 2P12.65 2P54.2825
UNIT 21
COM='ARRAY FOR EAST AND WEST REFLECTORS FOR NORTH REFLECTOR'
ARRAY 5 3*0.0
UNIT 22
COM='EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR WITH TRIS'
CUBOID 5 1 2P24.700 2P12.65 2P54.2825
UNIT 23
COM='ARRAY FOR EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR'
ARRAY 6 3*0.0
UNIT 24
COM='NORTH TOP REFLECTOR WITH TRIS'
CUBOID 5 1 2P29.100 2P64.05 2P12.15
UNIT 25
COM='ARRAY FOR NORTH TOP REFLECTOR'
ARRAY 7 3*0.0
UNIT 26
COM='SOUTH TOP REFLECTOR WITH TRIS'
CUBOID 0 1 2P5.1 2P2.55 2P12.15
CUBOID 5 1 69.4 -5.1 2P64.05 2P12.15
UNIT 27
COM='ARRAY FOR SOUTH TOP REFLECTOR'
ARRAY 8 3*0.0
UNIT 28
COM='NORTH END REFLECTOR 9.8CM PORTION WITHOUT TRIS'
CUBOID 4 1 2P4.9000 2P64.0500 2P54.2825
UNIT 29
COM='NORTH END RELFECTOR 5.2 CM PORTION WITH TRIS'
CUBOID 5 1 2P2.6 2P64.0500 2P54.2825
UNIT 30
COM='NORTH END RELFECTOR 10.1 CM PORTION WITHOUT TRIS'
CUBOID 4 1 2P5.05 2P64.05 2P54.2825
UNIT 31
COM='ARRAY FOR NORTH END REFLECTOR'
ARRAY 9 3*0.0
UNIT 32
COM='SOUTH END REFLECTOR'
CUBOID 5 1 2P12.55 2P64.05 2P54.2825
UNIT 33
COM='ARRAY FOR SOUTH END REFLECTOR'
ARRAY 10 3*0.0
UNIT 34
COM='BOTTOM MODERATING PLASTIC NORTH CORE'
CUBOID 6 1 2P16.550 2P38.7500 2P13.0500
UNIT 35
COM='TOP MODERATING PLASTIC NORTH CORE'
CUBOID 6 1 2P16.550 2P38.7500 2P3.2525
UNIT 36
ARRAY 11 3*0.0
UNIT 37
ARRAY 12 3*0.0
UNIT 38
COM='NORTH CORE WITH BOTTOM REFLECTOR'
ARRAY 13 3* 0.0
UNIT 39
COM='NORTH CORE WITH EAST AND WEST REFLECTOR'
ARRAY 14 3*0.0
UNIT 40
COM='NORTH CORE WITH END REFLECTOR'
ARRAY 15 3*0.0
UNIT 41
COM='NORTH SPLIT TABLE FACEPLATE'
CUBOID 3 1 2P0.6150 2P64.0500 2P66.4325
UNIT 42
COM='NORTH CORE WITH TOP REFLECTOR'
ARRAY 16 3*0.0
UNIT 43
COM='NORTH CORE WITH FACEPLATE'
ARRAY 17 3*0.0
UNIT 44
COM='12.95 CM THICK MODERATOR SOUTH CORE'
CUBOID 6 1 2P23.924 2P6.475 2P40.183
UNIT 45
COM='2.95 THICK MODERATOR SOUTH CORE'
CUBOID 6 1 2P23.924 2P38.5285 2P1.475
UNIT 46
COM='COMBINATION OF CORE WITH 12.95 THICK MODERATOR'
ARRAY 18 3*0.0
UNIT 47
COM='COMBINATION OF CORE WITH 2.95 THICK MODERATOR'
ARRAY 19 3*0.0
UNIT 48
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 20 3*0.0
UNIT 49
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 21 3*0.0
UNIT 50
COM='SOUTH CORE END REFLECTOR'
ARRAY 22 3*0.0
UNIT 51
COM='FACEPLATE FOR SOUTH SPLIT TABLE'
CUBOID 3 1 2P0.4620 2P64.0500 2P66.4325
UNIT 52
COM='SOUTH CORE WITH TOP REFLECTOR'
ARRAY 23 3*0.0
UNIT 53
COM='SOUTH CORE WITH FACEPLATE'
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ARRAY 24 3*0.0
UNIT 54
COM='AIR GAP'
CUBOID  0 1 2P0.7600 2P64.0500 2P66.4325
GLOBAL
UNIT 55
COM='TOTAL'
ARRAY 25 3*0.0
UNIT 56
COM='EMPTY FUEL LOCATION'
CUBOID  0 1 6P7.6650
UNIT 57
COM='SIDE MODERATOR'
CUBOID  6 1 2P16.550 2P4.4300 2P25.4350
UNIT 58
COM='END MODERATOR'
CUBOID  6 1 2P8.1500 2P38.7500 2P25.4350
UNIT 59
COM='SOUTH CORE BOTTOM MODERATING PLASTIC'
CUBOID  6 1 2P24.7000 2P38.7500 2P13.0500
UNIT 60
COM='SOUTH CORE TOP MODERATING PLASTIC'
CUBOID  6 1 2P24.7000 2P38.7500 2P3.2525
UNIT 61
COM='Y-FACE MODERATOR VOID'
CUBOID  0 1 2P7.665 2P1.2200 2P7.665
END GEOMETRY
READ ARRAY
ARA=1  NUX=3 NUY=7 NUZ=5
COM='NORTH SPLIT TABLE CORE'
FILL  1 2 1 2 5 3 206 1 2 1
      4 7 4 6 8 6 206 4 7 4
      1042
      56 2 1 3 5 3 1 2 1 3 5 3 106 56 2 1  END FILL
ARA=2  NUX=3 NUY=7 NUZ=5
COM='SOUTH SPLIT TABLE CORE'
FILL  1 2 1 3 5 3 206 1 2 1
      4 7 4 6 8 6 206 4 7 4
      1042
      1 2 56 3 5 3 1 2 1 3 5 3 1 2 56 3 5 61 1 2 56  END FILL
ARA=3  NUX=1 NUY=1 NUZ=3
COM='NORTH BOTTOM REFLECTOR'
FILL  14 11 13  END FILL
ARA=4  NUX=1 NUY=1 NUZ=7
COM='SOUTH BOTTOM REFLECTOR'
FILL  18 16 17 16 16 17 17  END FILL
ARA=5  NUX=1 NUY=1 NUZ=1
COM='EAST AND WEST WALLS OF NORTH REFLECTOR'
FILL  20 END FILL
ARA=6  NUX=1 NUY=1 NUZ=1
COM='EAST AND WEST WALLS OF SOUTH REFLECTOR'
FILL  22  END FILL
ARA=7  NUX=1 NUY=1 NUZ=1
COM='ARRAY FOR NORTH TOP REFLECTOR'
FILL  24  END FILL
ARA=8  NUX=1 NUY=1 NUZ=1
COM='ARRAY FOR SOUTH TOP REFLECTOR'
FILL  26 END FILL
ARA=9  NUX=3 NUY=1 NUZ=1
COM='ARRAY FOR NORTH END REFLECTOR'
FILL  28 29 30  END FILL
ARA=10  NUX=1 NUY=1 NUZ=1
COM='ARRAY FOR SOUTH END REFLECTOR'
FILL  32  END FILL
ARA=11  NUX=1 NUY=2 NUZ=1
COM='COMBINARION OF CORE WITH SIDE MODERATOR'
FILL  9 57  END FILL
ARA=12 NUX=1 NUY=1 NUZ=2
COM='COMBINATION OF PREVIOUS ARRAY WITH TOP AND BOTTOM MODERATOR'
FILL  34 36 35  END FILL
ARA=13  NUX=1 NUY=1 NUZ=2
COM='COMBINATION OF NORTH CORE WITH BOTTOM REFLECTOR'
FILL  15 37  END FILL
ARA=14  NUX=1 NUY=3 NUZ=1
COM='NORTH CORE WITH SIDE REFLECTORS'
FILL  21 38 21  END FILL
ARA=15  NUX=2 NUY=1 NUZ=1
COM='NORTH CORE WITH END REFLECTOR'
FILL  31 39  END FILL
ARA=16  NUX=1 NUY=1 NUZ=2
COM='NORTH CORE WITH TOP REFLECTOR'
FILL  40 25  END FILL
ARA=17  NUX=2 NUY=1 NUZ=1
COM='NORTH CORE WITH FACEPLATE'
FILL  42 41  END FILL
ARA=18  NUX=1 NUY=2 NUZ=1
COM='COMBINATION OF S. CORE WITH SIDE MODERATOR'
FILL  10 57  END FILL
ARA=19  NUX=2 NUY=1 NUZ=1
COM='COMBINATION OF CORE WITH END MODERATOR'
FILL  46 58  END FILL
ARA=20  NUX=1 NUY=1 NUZ=4
COM='SOUTH CORE WITH BOTTOM MODERATOR AND REFLECTOR'
FILL  19 59 47 60  END FILL
ARA=21 NUX=1 NUY=2 NUZ=1
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
FILL  23 48 23  END FILL
ARA=22 NUX=2 NUY=1 NUZ=1
COM='SOUTH CORE WITH END REFLECTOR'
FILL  49 33  END FILL
ARA=23  NUX=1 NUY=1 NUZ=2
COM='COMBINATION OF CORE WITH TOP REFLECTOR'
FILL  50 27  END FILL
ARA=24  NUX=2 NUY=1 NUZ=1
COM='SOUTH CORE WITH FACEPLATE'
FILL  51 52  END FILL
ARA=25  NUX=3 NUY=1 NUZ=1
COM='TOTAL'
FILL  43 54 53  END FILL
END ARRAY
READ PLOT TTL='XZ SLICE OF RFP2 SHOWING MATERIAL REGIONS'
XUL=-2  YUL=64.05 ZUL=136
XLR=137 YLR=64.05 ZLR=-2
UAX=1  WDW=-1 MAX=130  MCH='0123456'END
TTL='YZ SLICE OF NORTH CORE SECOND ROW'
XUL=28  YUL=-2  ZUL=136
XLR=28  YLR=136 ZLR=-2
VAX=1  WDW=-1 MAX=130  MCH='0123456'END
TTL='YZ SLICE OF SOUTH CORE SECOND ROW'
XUL=80 YUL=-2  ZUL=136
XLR=80 YLR=136  ZLR=-2
VAX=1  WDW=-1 MAX=130  MCH='0123456'
END PLOT
END DATA
END
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D84 (CAROJ)

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#CSAS25
ROCKY FLATS CRITICALS NUREG/CR-1071 EXPERIMENT NUMBER 3 (27 GROUP)
' 100 FUEL CANS 0.929 CM MODERATOR GEE.MU77.DATA(UNO)
27GR  LATTICECELL
U308  1 5.4078E-1 293.0 92234 0.03 92235 4.46 92236 0.08 92238 95.43 END
H20   1 8.9514E-2 END
ARBM-BAGGIE  1.0 3 0 0 0 1001 14.01 6012 84.9 8016 1.20 1 1.9134E-2
     END
ARBM-AL1100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 2 9.5390E-1
     END
ARBM-TAPE(VINYL)  1.0 7 0 0 0 1001 5.92 6012 45.91 8016 10.82 17000
     25.73 20040 6.9 22000 1.6 82000 1.1 2 1.1115E-2 END
ARBM-TAPE(MYLAR)  1.0 3 0 0 0 1001 6.83 6012 65.50 8016 27.02 2
   1.7491E-2 END
ARBM-MODERATOR  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 3 END
ARBM-PLEX(REG)  1.0 3 0 0 0 1001 7.84 6012 59.59 8016 32.23 4
   1.1773 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 4
   3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 4
   1.1648E-3 END
ARBM-PLEX(TRIS)  1.0 8 0 0 1 1001 7.16 6012 52.03 7014 0.16 8016 29.82
     15031 1.02 17000 1.81 25079 4.260 25081 2.840 5 1.2757 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 5
   3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 5
   1.1648E-3 END
ARBM-FILLER  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 6 0.7 END
' THIS MATERIAL IS ACTUALLY MODERATOR ADJUSTED FOR THE VOLUME
' FRACTION OF THE VOID FILLED BETWEEN CORE AND REFLECTOR.
END COMP
SPHTRIAN=P  19.00 18.5857 1 2 18.9579 2 END
ROCKY FLATS CRITICALS NUREG/CR-1071 EXPERIMENT NUMBER 3 (27 GROUP)
' 100 FUEL CANS 0.929 CM MODERATOR GEE.MU77.DATA(UNO)
READ PARM  RUN=YES NPG=600
MUB=YES FDN=YES PLT=NO
END PARM
READ GEOM
UNIT 1
COM='FUEL BOX 15.28 CM ON A SIDE WITH .15 CM WALLS .05CM STACKING VOID'
CUBOID  3 1 6P7.49
CUBOID  2 1 6P7.64
CUBOID  0 1 6P7.6650
UNIT 2
COM='X-FACE INTERSTITIAL MODERATOR'
CUBOID  3 1 2P0.4445 4P7.665
UNIT 3
COM='Y-FACE INTERSTITIAL MODERATOR'
CUBOID  3 1 2P7.665 2P0.4445 2P7.665
UNIT 4
COM='Z-FACE INTERSTITIAL MODERATOR'
CUBOID  3 1 4P7.665 2P0.4445
UNIT 5
COM='MORE X-FACE MODERATOR'
CUBOID  3 1 4P0.4445 2P7.665
UNIT 6
COM='MORE Y-FACE MODERATOR'
CUBOID  3 1 2P7.665 4P0.4445
UNIT 7
COM='MORE Z-FACE MODERATOR'
CUBOID  3 1 2P0.4445 2P7.665 2P0.4445
UNIT 8
COM='LAST OF INTERSTITIAL MODERATOR'
CUBOID  3 1 6P0.4445
UNIT 9
COM='NORTH SPLIT TABLE CORE'
ARRAY 1 3*0.0
UNIT 10
COM='SOUTH SPLIT TABLE CORE'
ARRAY 2 3*0.0
UNIT 11
COM='PLEXIGLASS REFLECTOR SHEET WITHOUT TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  4 1 2P15.8000 2P38.7500 2P0.6150
UNIT 12
COM='PLEXIGLASS REFLECTOR SHEET WITH TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  5 1 2P15.8000 2P38.7500 2P0.6150
UNIT 13
COM='UPPER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P8.24
UNIT 14
COM='LOWER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P3.69
UNIT 15
COM='NORTH BOTTOM REFLECTOR INCLUDES REGULAR AND TRIS'
ARRAY 3 3*0.0
UNIT 16
COM='PLEXIGLAS SHEET BOTTOM SOUTH REFLECTOR WITHOUT TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P0.6150
CUBOID  4 1 44.3 -5.1 2P38.75  2P0.615
UNIT 17
COM='PLEXIGLAS SHEET BOTTOM SOUTH REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P0.6150
CUBOID  5 1 44.3 -5.1 2P38.75 2P0.6150
UNIT 18
COM='LOWER PORTION SOUTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P8.855
CUBOID  5 1 44.3 -5.1 2P38.75 2P8.855
UNIT 19
COM='SOUTH BOTTOM REFLECTOR WITH REGULAR AND TRIS'
ARRAY 4 3*0.0
UNIT 20
COM='EAST AND WEST REFLECTORS FOR NORTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P12.65 2P54.2825
UNIT 21
COM='ARRAY FOR EAST AND WEST REFLECTORS FOR NORTH REFLECTOR'
ARRAY 5 3*0.0
UNIT 22
COM='EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P24.700 2P12.65 2P54.2825
UNIT 23
COM='ARRAY FOR EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR'
ARRAY 6 3*0.0
UNIT 24
COM='NORTH TOP REFLECTOR WITH TRIS'
CUBOID  5 1 2P28.35 2P64.05 2P12.15
UNIT 25
COM='ARRAY FOR NORTH TOP REFLECTOR'
ARRAY 7 3*0.0
UNIT 26
COM='SOUTH TOP REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P12.15
CUBOID  5 1 69.4 -5.1 2P64.05 2P12.15
UNIT 27
COM='ARRAY FOR SOUTH TOP REFLECTOR'
ARRAY 8 3*0.0
UNIT 28
COM='NORTH END REFLECTOR 9.8CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P4.9000 2P64.0500 2P54.2825
UNIT 29
COM='NORTH END RELFECTOR 5.2 CM PORTION WITH TRIS'
CUBOID  5 1 2P2.6 2P64.0500 2P54.2825
UNIT 30
COM='NORTH END RELFECTOR 10.1 CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P5.05 2P64.05 2P54.2825
UNIT 31
COM='ARRAY FOR NORTH END REFLECTOR'
ARRAY 9 3*0.0
UNIT 32
COM='SOUTH END REFLECTOR'
CUBOID  5 1 2P12.55 2P64.05 2P54.2825
UNIT 33
COM='ARRAY FOR SOUTH END REFLECTOR'
ARRAY 10 3*0.0
UNIT 34
COM='12.95 THICK MODERATING PLASTIC NORTH CORE'
CUBOID  6 1 2P15.7945 2P6.4750 2P40.1830
UNIT 35
COM='2.95 THICK MODERATING PLASTIC NORTH CORE'
CUBOID  6 1 2P15.7945 2P38.5285 2P1.475
UNIT 36
ARRAY 11 3*0.0
UNIT 37
ARRAY 12 3*0.0
REPLICATE  0 1 0.0 0.011 0.443 0.0 0.1590 0.0 1
UNIT 38
COM='NORTH CORE WITH BOTTOM REFLECTOR'
ARRAY 13 3* 0.0
UNIT 39
COM='NORTH CORE WITH EAST AND WEST REFLECTOR'
ARRAY 14 3*0.0
UNIT 40
COM='NORTH CORE WITH END REFLECTOR'
ARRAY 15 3*0.0
UNIT 41
COM='NORTH SPLIT TABLE FACEPLATE'
CUBOID  3 1 2P0.6150 2P64.0500 2P66.4325
UNIT 42
COM='NORTH CORE WITH TOP REFLECTOR'
ARRAY 16 3*0.0
UNIT 43
COM='NORTH CORE WITH FACEPLATE'
ARRAY 17 3*0.0
UNIT 44
COM='12.95 CM THICK MODERATOR SOUTH CORE'
CUBOID  6 1 2P23.924 2P6.475 2P40.183
UNIT 45
COM='2.95 THICK MODERATOR SOUTH CORE'
CUBOID  6 1 2P23.924 2P38.5285 2P1.475
UNIT 46
COM='COMBINATION OF CORE WITH 12.95 THICK MODERATOR'
ARRAY 18 3*0.0
UNIT 47
COM='COMBINATION OF CORE WITH 2.95 THICK MODERATOR'
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ARRAY 19 3*0.0
REPLICATE  0 1 1.552 0.0 0.4430 0.0 0.159 0.0 1
UNIT  48
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 20 3*0.0
UNIT  49
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 21 3*0.0
UNIT  50
COM='SOUTH CORE END REFLECTOR'
ARRAY 22 3*0.0
UNIT  51
COM='FACEPLATE FOR SOUTH SPLIT TABLE'
CUBOID  3 1 2P0.4620  2P64.0500 2P66.4325
UNIT  52
COM='SOUTH CORE WITH TOP REFLECTOR'
ARRAY 23 3*0.0
UNIT  53
COM='SOUTH CORE WITH FACEPLATE'
ARRAY 24 3*0.0
UNIT  54
COM='AIR GAP'
CUBOID  0 1 2P0.5250 2P64.0500 2P66.4325
GLOBAL
UNIT  55
COM='TOTAL'
ARRAY 25 3*0.0
END GEOMETRY
READ ARRAY
ARA=1  NUX=3 NUY=7 NUZ=2
COM='NORTH SPLIT TABLE CORE'
FILL  1 2 1 3 5 3 206 1 2 1
      4 7 4 6 8 6 206 4 7 4
      3042
      1 2 1 3 5 3 206 1 2 1  END FILL
ARA=2  NUX=5 NUY=7 NUZ=9
COM='SOUTH SPLIT TABLE CORE'
FILL  1 2 1 2 1 3 5 3 5 3 2010 1 2 1 2 1
      4 7 4 7 4 6 8 6 8 6 2010 4 7 4 7 4
      3070
      1 2 1 2 1 3 5 3 5 3 2010 1 2 1 2 1  END FILL
ARA=3  NUX=1 NUY=1 NUZ=3
COM='NORTH BOTTOM REFLECTOR'
FILL  14 11 13  END FILL
ARA=4  NUX=1 NUY=1 NUZ=7
COM='SOUTH BOTTOM REFLECTOR'
FILL  18 16 17 16 16 17 17  END FILL
ARA=5  NUX=1 NUY=1 NUZ=1
COM='EAST AND WEST WALLS OF NORTH REFLECTOR'
FILL  20 END FILL
ARA=6  NUX=1 NUY=1 NUZ=1
COM='EAST AND WEST WALLS OF SOUTH REFLECTOR'
FILL  22  END FILL
ARA=7  NUX=1 NUY=1 NUZ=1
COM='ARRAY FOR NORTH TOP REFLECTOR'
FILL  24  END FILL
ARA=8  NUX=1 NUY=1 NUZ=1
COM='ARRAY FOR SOUTH TOP REFLECTOR'
FILL  26 END FILL
ARA=9  NUX=3 NUY=1 NUZ=1
COM='ARRAY FOR NORTH END REFLECTOR'
FILL  28 29 30  END FILL
ARA=10  NUX=1 NUY=1 NUZ=1
COM='ARRAY FOR SOUTH END REFLECTOR'
FILL  32  END FILL
ARA=11  NUX=1 NUY=2 NUZ=1
COM='COMBINARION OF CORE WITH 12.95CM THICK MODERATOR'
FILL  9 34  END FILL
ARA=12 NUX=1 NUY=1 NUZ=2
COM='COMBINATION OF PREVIOUS ARRAY WITH 2.95CM THICK MODERATOR'
FILL  36 35  END FILL
ARA=13  NUX=1 NUY=1 NUZ=2
COM='COMBINATION OF NORTH CORE WITH BOTTOM REFLECTOR'
FILL  15 37  END FILL
ARA=14  NUX=1 NUY=3 NUZ=1
COM='NORTH CORE WITH SIDE REFLECTORS'
FILL  21 38 21  END FILL
ARA=15  NUX=2 NUY=1 NUZ=1
COM='NORTH CORE WITH END REFLECTOR'
FILL  31 39  END FILL
ARA=16  NUX=1 NUY=1 NUZ=2
COM='NORTH CORE WITH TOP REFLECTOR'
FILL  40 25  END FILL
ARA=17  NUX=2 NUY=1 NUZ=1
COM='NORTH CORE WITH FACEPLATE'
FILL  42 41  END FILL
ARA=18  NUX=1 NUY=2 NUZ=1
COM='COMBINATION OF 5, CORE WITH 12.95 CM THICK MODERATOR'
FILL  10 44  END FILL
ARA=19  NUX=1 NUY=1 NUZ=2
COM='COMBINATION OF CORE WITH 2.95 CM THICK MODERATOR'
FILL  44 45  END FILL
ARA=20  NUX=1 NUY=1 NUZ=2
COM='SOUTH CORE WITH BOTTOM REFLECTOR'
FILL  19 47  END FILL
ARA=21 NUX=1 NUY=3 NUZ=1
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
FILL  23 48 23  END FILL
ARA=22 NUX=2 NUY=1 NUZ=1
COM='SOUTH CORE WITH END REFLECTOR'
FILL  49 33  END FILL
ARA=23  NUX=1 NUY=1 NUZ=2
COM='COMBINATION OF CORE WITH TOP REFLECTOR'
FILL  50 27  END FILL
ARA=24  NUX=2 NUY=1 NUZ=1
COM='SOUTH CORE WITH FACEPLATE'
FILL  51 52  END FILL
ARA=25  NUX=3 NUY=1 NUZ=1
COM='TOTAL'
FILL  43 54 53  END FILL
END ARRAY
READ PLOT TTL='XZ SLICE OF RFP3 SHOWING MATERIAL REGIONS'
XUL=-1  YUL=64.05 ZUL=135
XLR=136 YLR=64.05 ZLR=-2
UAX=1  WDW=-1 MAX=130  MCH='0123456'END
TTL='YZ SLICE OF NORTH CORE SECOND ROW'
XUL=28  YUL=-2  ZUL=136
XLR=28  YLR=136 ZLR=-2
VAX=1  WDW=-1 MAX=130  MCH='0123456'END
TTL='YZ SLICE OF SOUTH CORE SECOND ROW'
XUL=90 YUL=-2  ZUL=136
XLR=90 YLR=136  ZLR=-2
VAX=1  WDW=-1 MAX=130  MCH='0123456'
END PLOT
END DATA
END
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085 (CAR04)

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#CSAS25
ROCKY FLATS CRITICALS NUREG/CR-1071 EXPERIMENT NUMBER 13 (27 GROUP)
27GR   LATTICECELL
U308  1 5.4078E-1 293.0 92234 0.03 92235 4.46 92236 0.08 92238 95.43 END
H20  1 8.9514E-2 END
ARBM-BAGGIE  1.0 3 0 0 0 1001 14.01 6012 84.9 8016 1.20 1 1.9134E-2
   END
ARBM-AL1100  1.0 3 0 0 0 1 13027 99.18 26000 0.5 29000 0.2 2 9.5390E-1
   END
ARBM-TAPE(VINYL)  1.0 7 0 0 0 0 1001 5.92 6012 45.91 8016 10.82 17000
   25.73 20000 6.9 22000 1.4 82000 1.1 2 1.1115E-2 END
ARBM-TAPE(MYLAR)  1.0 3 0 0 0 0 1001 6.83 6012 65.50 8016 27.02 2
   1.7491E-2 END
ARBM-MODERATOR  1.185 3 0 0 0 0 1001 7.83 6012 59.49 8016 32.48 3 END
RFCONCRETE   S  1.0 END
END COMP
SPHTRIANGP  19.9462 18.5857 1 3 18.9579 2 END
ROCKY FLATS CRITICALS NUREG/CR-1071 EXPERIMENT NUMBER 13 (27 GROUP)
READ PARM  RUN=YES NPG=600
PLT=NO FDN=YES RUB=YES
END PARM
READ GEOM
UNIT  1
COM='FUEL BOX 15.28 CM ON A SIDE WITH .15 CM WALLS .05CM STACKING VOID'
CUBOID  1 1 6P7.49
CUBOID  2 1 6P7.64
CUBOID  0 1 6P7.6450
UNIT  2
COM='X-FACE INTERSTITIAL MODERATOR'
CUBOID  3 1 2P1.2200 4P7.665
UNIT  3
COM='Y-FACE INTERSTITIAL MODERATOR'
CUBOID  3 1 2P7.665 2P1.2200 2P7.665
UNIT  4
COM='Z-FACE INTERSTITIAL MODERATOR'
CUBOID  3 1 4P7.665 2P1.2200
UNIT  5
COM='MORE X-FACE MODERATOR'
CUBOID  3 1 4P1.2200 2P7.665
UNIT  6
COM='MORE Y-FACE MODERATOR'
CUBOID  3 1 2P7.665 4P1.2200
UNIT  7
COM='MORE Z-FACE MODERATOR'
CUBOID  3 1 2P1.2200 2P7.665 2P1.2200
UNIT  8
COM='LAST OF INTERSTITIAL MODERATOR'
CUBOID  3 1 6P1.2200
UNIT  9
COM='NORTH SPLIT TABLE CORE'
ARRAY 1 -33.1 2*0.0
CUBOID  5 1 0.0 -33.6 76.2 0.0 50.87 -30.5
CUBOID  0 1 0.0 -33.6 77.5 0.0 52.70 -30.5
CUBOID  5 1 0.0 -33.6 103.0 -25.5 78.2 -56.0
CUBOID  0 1 0.0 -34.3 103.0 -25.5 78.2 -56.0
CUBOID  5 1 0.0 -59.9 103.0 -25.5 78.2 -56.0
UNIT  10
COM='SOUTH SPLIT TABLE CORE'
ARRAY 2 3*0.0
CUBOID  5 1 44.4 0.0 76.2 0.0 50.87 -30.5
CUBOID  0 1 43.5 0.0 77.5 0.0 52.70 -30.5
CUBOID  5 1 73.0 0.0 103.0 -25.5 78.2 -56.0
HOLE  11 0.0 38.75 -56.0
HOLE  11 0.0 38.75 52.7
UNIT  11
CUBOID  0 1 10.2 0.0 2P2.55 25.5 0.0
UNIT  12
COM='NORTH SPLIT TABLE FACEPLATE'
CUBOID  3 1 2P0.6150 2P64.2500 2P67.1
UNIT  13
COM='FACEPLATE FOR SOUTH SPLIT TABLE'
CUBOID  3 1 2P0.6150  2P64.2500 2P67.1
UNIT  14
COM='AIR GAP'
CUBOID  0 1 2P0.2850 2P64.2500 2P67.1
GLOBAL
UNIT  15
COM='TOTAL'
ARRAY 3 3*0.0
UNIT  56
COM='EMPTY FUEL LOCATION'
CUBOID  0 1 6P7.6650
UNIT  61
COM='Y-FACE MODERATOR VOID'
CUBOID  0 1 2P7.665 2P1.2200 2P7.665
END GEOMETRY
READ ARRAY
ARA=1  NUX=3 NUY=7 NUZ=5
COM='NORTH SPLIT TABLE CORE'
FILL  1 2 1 3 5 3 206 1 2 1
      4 7 4 6 8 6 206 4 7 4
      1042
      56 2 1 61 5 3 206 56 2 1  END FILL
ARA=2  NUX=3 NUY=7 NUZ=5
COM='SOUTH SPLIT TABLE CORE'
FILL  1 2 1 3 5 3 206 1 2 1
      4 7 4 6 8 6 206 4 7 4
      1042
      1 2 56 3 5 61 206 1 2 56  END FILL
ARA=3  NUX=5 NUY=1 NUZ=1
COM='TOTAL'
FILL  9 12 14 13 10  END FILL
END ARRAY
READ PLOT TTL='XZ SLICE OF RFP1 SHOWING MATERIAL REGIONS'
XUL=-2  YUL=64.05 ZUL=136
XLR=137 YLR=64.05 ZLR=-2
UAX=1  WDW=-1 MAX=130  MCH='0123456'END
TTL='YZ SLICE OF NORTH CORE SECOND ROW'
XUL=28  YUL=-2  ZUL=136
XLR=28  YLR=136 ZLR=-2
VAX=1  WDW=-1 MAX=130  MCH='0123456'END
TTL='YZ SLICE OF SOUTH CORE SECOND ROW'
XUL=90 YUL=-2  ZUL=136
XLR=90 YLR=136  ZLR=-2
VAX=1  WDW=-1 MAX=130  MCH='0123456'
END PLOT
READ START  MST=1
XSP=15 YSP=122 YSR=15 YSP=122 ZSR=30 ZSP=122  END START
END DATA
END
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086 (CAR05)

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#CSAS25
ROCKY FLATS CRITICALS NUREG/CR-1071 EXPERIMENT NUMBER 15 (27 GROUP)
27GR   LATTICECELL
U308  1 5.4078E-1 293.0 92234 0.03 92235 4.46 92236 0.08 92238 95.43 END
H20  1 8.9514E-2 END
ARBM-BAGGIE  1.0 3 0 0 0 1001 14.01 6012 84.9 8016 1.20 1 1.9134E-2
   END
ARBM-AL1100  1.0 3 0 0 0 1 13027 99.18 26000 0.5 29000 0.2 2 9.5390E-1
   END
ARBM-TAPE(VINYL)  1.0 7 0 0 0 0 1001 5.92 6012 45.91 8016 10.82 17000
   25.73 20000 6.9 22000 1.4 82000 1.1 2 1.1115E-2 END
ARBM-TAPE(MYLAR)  1.0 3 0 0 0 0 1001 6.83 6012 65.50 8016 27.02 2
   1.7491E-2 END
ARBM-MODERATOR  1.185 3 0 0 0 0 1001 7.83 6012 59.49 8016 32.48 3 END
RFCONCRETE   S  1.0 END
END COMP
SPHTRIANGP  19.0000 18.5857 1 3 18.9579 2 END
ROCKY FLATS CRITICALS NUREG/CR-1071 EXPERIMENT NUMBER 15 (27 GROUP)
READ PARM  RUN=YES NPG=600 PLT=NO
FDN=YES RUB=YES
END PARM
READ GEOM
UNIT  1
COM='FUEL BOX 15.28 CM ON A SIDE WITH .15 CM WALLS .05CM STACKING VOID'
CUBOID  1 1 6P7.49
CUBOID  2 1 6P7.64
CUBOID  0 1 6P7.6450
UNIT  2
COM='X-FACE INTERSTITIAL MODERATOR'
CUBOID  3 1 2P0.4445 4P7.665
UNIT  3
COM='Y-FACE INTERSTITIAL MODERATOR'
CUBOID  3 1 2P7.665 2P0.4445 2P7.665
UNIT  4
COM='Z-FACE INTERSTITIAL MODERATOR'
CUBOID  3 1 4P7.665 2P0.4645
UNIT  5
COM='MORE X-FACE MODERATOR'
CUBOID  3 1 4P0.4445 2P7.665
UNIT  6
COM='MORE Y-FACE MODERATOR'
CUBOID  3 1 2P7.665 4P0.4445
UNIT  7
COM='MORE Z-FACE MODERATOR'
CUBOID  3 1 2P0.4645 2P7.665 2P0.4445
UNIT  8
COM='LAST OF INTERSTITIAL MODERATOR'
CUBOID  3 1 6P0.4445
UNIT  9
COM='NORTH SPLIT TABLE CORE'
ARRAY 1 -31.589 2*0.0
CUBOID  5 1 0.0 -31.589 76.207 0.0  80.366 -25.5
CUBOID  0 1 0.0 -32.3   77.5   0.0  83.2   -25.5
CUBOID  5 1 0.0 -57.8  103.0 -25.5 106.7   -25.5
UNIT  10
COM='SOUTH SPLIT TABLE CORE'
ARRAY 2 3*0.0
CUBOID  5 1 47.848 0.0  76.207 0.0  80.366 -25.5
HOLE  11 0.0 38.75 -25.5
CUBOID  0 1 47.848 0.0  77.5   0.0  83.2   -25.5
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CUBOID  5 1 47.848 0.0 103.0 -25.5 108.7   -25.5
HOLE   11 0.0 38.75  83.2
CUBOID  0 1 48.848 0.0 103.0 -25.5 108.7   -25.5
CUBOID  5 1 74.348 0.0 103.0 -25.5 108.7   -25.5
UNIT  11
CUBOID  0 1 10.2 0.0 2P2.55 25.5 0.0
UNIT  12
COM='NORTH SPLIT TABLE FACEPLATE'
CUBOID  3 1 2P0.0 2P64.2500 2P67.1
UNIT  13
COM='FACEPLATE FOR SOUTH SPLIT TABLE'
CUBOID  3 1 2P0.4620  2P64.2500 2P67.1
UNIT  14
COM='AIR GAP'
CUBOID  0 1 2P0.2850 2P64.2500 2P67.1
GLOBAL
UNIT  15
COM='TOTAL'
ARRAY 3 3*0.0
UNIT  56
COM='EMPTY FUEL LOCATION'
CUBOID  0 1 6P7.6450
UNIT  61
COM='Y-FACE MODERATOR VOID'
CUBOID  0 1 2P7.665 2P0.4645 2P7.665
END GEOMETRY
READ ARRAY
ARA=1  NUX=3 NUY=7 NUZ=9
COM='NORTH SPLIT TABLE CORE'
FILL  1 2 1 3 5 3 206 1 2 1
      4 7 4 6 8 6 206 4 7 4
      3042
      1 2 1 3 5 3 206 1 2 1  END FILL
ARA=2  NUX=5 NUY=7 NUZ=9
COM='SOUTH SPLIT TABLE CORE'
FILL  1 2 1 2 1 3 5 3 5 3 2010 1 2 1 2 1
      4 7 4 7 4 6 8 6 8 6 2010 4 7 4 7 4
      2020
      1 2 1 2 1 3 5 3 5 3
      56 2 1 2 1 61 5 3 5 3
      56 2 1 2 1 3 5 3 5 3
      1 2 1 2 1              END FILL
ARA=3  NUX=5 NUY=1 NUZ=1
COM='TOTAL'
FILL  9 12 14 13 10  END FILL
END ARRAY
READ PLOT TTL='XZ SLICE OF RFP1 SHOWING MATERIAL REGIONS'
XUL=-2  YUL=64.05 ZUL=136
XLP=137 YLP=64.05 ZLP=-2
UAX=1  WDH=-1 MAX=130  MCH='0123456'END
TTL='YZ SLICE OF NORTH CORE SECOND ROW'
XUL=28  YUL=-2    ZUL=136
XLP=29  YLP=136 ZLP=-2
VAX=1  WDH=-1 MAX=130  MCH='0123456'END
TTL='YZ SLICE OF SOUTH CORE SECOND ROW'
XUL=80 YUL=-2    ZUL=136
XLP=80 YLP=136   ZLP=-2
VAX=1  WDH=-1 MAX=130  MCH='0123456'
END PLOT
READ START  MST=1
XSM=15 XSP=122 YSM=15 YSP=122 ZSM=30 ZSP=122  END START
END DATA
END
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087 (CAR06)

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#CSAS25
ROCKY FLATS CRITICALS MUREG/CR-0674 EXPERIMENT NUMBER 7 (27 GROUP MODEL)
' FUEL CUBE 15.28 CM, U(4.46)308 @ H/U=0.77, MI ENRICHED SPHERE DRIVEN
27GR   INFHOMMEDIUM
U308   1 5.4078E-1 293.0 92234 0.03 92235 4.46 92236 0.08 92238 95.43 END
H20    1 8.9516E-2 END
ARBM-BAGGIE  1.0 3 0 0 0 1001 14.01 6012 84.9 8016 1.20 1 1.9134E-2
     END
ARBM-AL1100  1.0 3 0 0 0 1 13027 99.18 26000 0.5 29000 0.2 2 9.5390E-1
     END
ARBM-TAPE(VINYL)  1.0 7 0 0 0 1001 5.92 6012 45.91 8016 10.82 17000
  25.73 20000 6.9 22000 1.6 82000 1.1 2 1.1115E-2 END
ARBM-TAPE(MYLAR)  1.0 3 0 0 0 1001 6.83 6012 65.50 8016 27.02 2
     1.7491E-2 END
ARBM-MODERATOR  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 3 END
ARBM-PLEX(REG)  1.0 3 0 0 0 1001 7.84 6012 59.59 8016 32.23 4
     1.1773 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 4
     3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 4
     1.1648E-3 END
ARBM-PLEX(TRIS)  1.0 8 0 0 1 1001 7.16 6012 52.03 7014 0.16 8016 29.82
  15031 1.02 17000 1.81 35079 4.260 35081 2.840 5 1.2757 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 5
     3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 5
     1.1648E-3 END
ARBM-FILLER  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 6 0.7 END
' THIS MATERIAL IS ACTUALLY MODERATOR ADJUSTED FOR THE VOLUME
' FRACTION OF THE VOID FILLED BETWEEN CORE AND REFLECTOR.
ARBM-AL1100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 7 2.715  END
URANIUM  8 0.9516 293.0 92234 1.0 92235 93.19 92236 0.4 92238  5.41 END
ARBM-PJ  0.816 2 0 0 0 1001 85.1 6012 14.9 8 0.0041  END
SS304  9 1.0 END
END COMP
ROCKY FLATS CRITICALS MUREG/CR-0674 EXPERIMENT NUMBER 7 (27 GROUP MODEL)
' FUEL CUBE 15.28 CM, U(4.46)308 @ H/U=0.77, MI ENRICHED SPHERE DRIVEN
READ PARM  NPG=600 NUB=YES FDN=YES PLT=NO  END PARM
READ GEOM
UNIT  1
COM='FUEL BOX WITH VOID AND PART OF AL BOX'
CUBOID  0 1 9.80  0.0 3.75   0.0   14.98 0.0
CUBOID  2 1 9.95  0.0 3.90  -0.15  14.98 0.0
CUBOID  1 1 14.98 0.0 9.365 -5.615 14.98 0.0
UNIT  2
COM='FRONT OF FUEL BOX'
CUBOID  2 1 0.15 0.0  5.615 0.0 14.98 0.0
CUBOID  0 1 0.15 0.0  9.365 0.0 14.98 0.0
CUBOID  2 1 0.15 0.0 14.98  0.0 14.98 0.0
UNIT  3
COM='REAR OF FUEL BOX'
CUBOID  2 1 0.15 0.0 14.98  0.0 14.98 0.0
UNIT  4
COM='ARRAY TO ASSEMBLE PART OF BOX'
ARRAY 26 3*0
UNIT  5
COM='TOP AND BOTTOM OF BOX'
CUBOID  0 1  9.80 0.0 3.750  0.0   0.15 0.0
CUBOID  2 1 15.28 0.0 9.365 -5.615 0.15 0.0
GLOBAL
UNIT  6
COM='ARRAY TO ASSEMBLE TOP AND BOTTOM'
ARRAY 27 3*0
CUBOID  2 1 15.28   0.0   15.13  -0.15  15.28   0.0
CUBOID  0 1 15.305 -0.025 15.155 -0.175 15.305 -0.025
UNIT  7
COM='FUEL BOX 15.28 CM ON A SIDE WITH .15 CM WALLS .05CM STACKING VOID'
CUBOID  1 1 6P7.49
CUBOID  2 1 6P7.64
CUBOID  0 1 6P7.6450
UNIT  8
COM='BOX FOR DRIVER'
CYLINDER  9 1 0.3175 2P7.32
HEMISPHE-X  8 1 7.334  CHORD 6.818
CUBOID  0 1 8.512 -6.818 2P7.665 2P7.665
HOLE  37 0.0 0.0 -7.665
UNIT  34
COM='ALUMINUM WEIGHT DISTRIBUTION PLATE FOR SPECIAL BOX'
CUBOID  0 1  9.80 0.0 3.750  0.0   0.16 0.0
CUBOID  7 1 15.33 0.0 9.54 -5.79 0.16 0.0
UNIT  35
COM='ALUMINUM WEIGHT DISTRIBUTION PLATE FOR BOXES'
CUBOID  7 1  4P7.665 0.16 0.0
UNIT  37
COM='DRIVER MOUNT'
CYLINDER  9 1 1.56 0.331 0.0
UNIT  9
COM='NORTH SPLIT TABLE CORE'
ARRAY 1 3*0.0
CUBOID  0 1 30.66 -0.94 77.5 0.0 83.475 0.0
UNIT  10
COM='SOUTH SPLIT TABLE CORE'
ARRAY 2 3*0.0
CUBOID  0 1 49.4 0.0 77.5 0.0 83.475 0.0
UNIT  11
COM='PLEXIGLASS REFLECTOR SHEET WITHOUT TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  4 1 2P15.8000 2P38.7500 2P0.6150
UNIT  12
COM='PLEXIGLASS REFLECTOR SHEET WITH TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  5 1 2P15.8000 2P38.7500 2P0.6150
UNIT  13
COM='UPPER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P8.24
UNIT  14
COM='LOWER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P3.69
UNIT  15
COM='NORTH BOTTOM REFLECTOR INCLUDES REGULAR AND TRIS'
ARRAY 3 3*0.0
UNIT  16
COM='PLEXIGLAS SHEET BOTTOM SOUTH REFLECTOR WITHOUT TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P0.6150
CUBOID  4 1 44.3 -5.1 2P38.75  2P0.615
UNIT  17
COM='PLEXIGLAS SHEET BOTTOM SOUTH REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P0.6150
CUBOID  5 1 44.3 -5.1 2P38.75 2P0.6150
UNIT  18
COM='LOWER PORTION SOUTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P8.855
CUBOID  5 1 44.3 -5.1 2P38.75 2P8.855
UNIT  19
COM='SOUTH BOTTOM REFLECTOR WITH REGULAR AND TRIS'
ARRAY 4 3*0.0
UNIT  20
COM='EAST AND WEST REFLECTORS FOR NORTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P12.65 2P54.2825
UNIT  21
COM='ARRAY FOR EAST AND WEST REFLECTORS FOR NORTH REFLECTOR'
ARRAY 5 3*0.0
UNIT  22
COM='EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P24.700 2P12.65 2P54.2825
UNIT  23
COM='ARRAY FOR EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR'
ARRAY 6 3*0.0
UNIT  24
COM='NORTH TOP REFLECTOR WITH TRIS'
CUBOID  5 1 2P28.35 2P64.05 2P12.15
UNIT  25
COM='ARRAY FOR NORTH TOP REFLECTOR'
ARRAY 7 3*0.0
UNIT  26
COM='SOUTH TOP REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P12.15
CUBOID  5 1 69.4 -5.1 2P64.05 2P12.15
UNIT  27
COM='ARRAY FOR SOUTH TOP REFLECTOR'
ARRAY 8 3*0.0
UNIT  28
COM='NORTH END REFLECTOR 9.8CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P4.9000 2P64.0500 2P54.2825
UNIT  29
COM='NORTH END RELFECTOR 5.2 CM PORTION WITH TRIS'
CUBOID  5 1 2P2.6 2P64.0500 2P54.2825
UNIT  30
COM='NORTH END RELFECTOR 10.1 CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P5.05 2P64.05 2P54.2825
UNIT  31
COM='ARRAY FOR NORTH END REFLECTOR'
ARRAY 9 3*0.0
UNIT  32
COM='SOUTH END REFLECTOR'
CUBOID  5 1 2P12.55 2P64.05 2P54.2825
UNIT  33
COM='ARRAY FOR SOUTH END REFLECTOR'
ARRAY 10 3*0.0
UNIT  38
COM='NORTH CORE WITH BOTTOM REFLECTOR'
ARRAY 13 3* 0.0
UNIT  39
COM='NORTH CORE WITH EAST AND WEST REFLECTOR'
ARRAY 14 3*0.0
UNIT  40
COM='NORTH CORE WITH END REFLECTOR'
ARRAY 15 3*0.0
UNIT  42
COM='NORTH CORE WITH TOP REFLECTOR'
ARRAY 16 3*0.0
UNIT  48
COM='SOUTH CORE WITH BOTTOM REFLECTORS'
ARRAY 20 3*0.0
UNIT  49
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 21 3*0.0
UNIT  50
COM='SOUTH CORE END REFLECTOR'
ARRAY 22 3*0.0
UNIT  52
COM='SOUTH CORE WITH TOP REFLECTOR'
ARRAY 23 3*0.0
UNIT  54
COM='AIR GAP'
HEMISPHE-X  8 1 7.334  CHORD -6.818
CUBOID  0 1 -6.818 -7.619 64.475 -63.625 69.13 -63.735
GLOBAL
UNIT  55
COM='TOTAL'
ARRAY 25 3*0.0
END GEOMETRY
READ ARRAY
ARA=1  NUX=2 NUY=5 NUZ=9
COM='NORTH SPLIT TABLE CORE'
FILL  10R7
      10R35
      10R7
      10R35
      10R7
      10R35
      10R7
      10R35
      10R7   END FILL
ARA=2  NUX=3 NUY=5 NUZ=9
COM='SOUTH SPLIT TABLE CORE'
FILL  6R7 6 8R7
      6R35 34 8R35
      6R7 6 8R7
      6R35 34 8R35
      6R7 8 8R7
      6R35 34 8R35
      6R7 6 8R7
      6R35 34 8R35
      6R7 6 8R7  END FILL
ARA=3  NUX=1 NUY=1 NUZ=3
COM='NORTH BOTTOM REFLECTOR'
FILL  14 11 13  END FILL
ARA=4  NUX=1 NUY=1 NUZ=7
COM='SOUTH BOTTOM REFLECTOR'
FILL  18 16 17 16 16 17 17  END FILL
ARA=5  NUX=1 NUY=1 NUZ=2
COM='EAST AND WEST WALLS OF NORTH REFLECTOR'
FILL  20 END FILL
ARA=6  NUX=1 NUY=1 NUZ=1
COM='EAST AND WEST WALLS OF SOUTH REFLECTOR'
FILL  22  END FILL
ARA=7  NUX=1 NUY=1 NUZ=1
COM='ARRAY FOR NORTH TOP REFLECTOR'
FILL  24  END FILL
ARA=8  NUX=1 NUY=1 NUZ=1
COM='ARRAY FOR SOUTH TOP REFLECTOR'
FILL  26 END FILL
ARA=9  NUX=3 NUY=1 NUZ=1
COM='ARRAY FOR NORTH END REFLECTOR'
FILL  28 29 30  END FILL
ARA=10  NUX=1 NUY=1 NUZ=1
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CON='ARRAY FOR SOUTH END REFLECTOR'
FILL  32  END FILL
ARA=13  MUX=1 MUY=1 MUZ=2
CON='COMBINATION OF NORTH CORE WITH BOTTOM REFLECTOR'
FILL  15 9  END FILL
ARA=14  MUX=1 MUY=3 MUZ=1
CON='NORTH CORE WITH SIDE REFLECTORS'
FILL  21 38 21  END FILL
ARA=15  MUX=2 MUY=1 MUZ=1
CON='NORTH CORE WITH END REFLECTOR'
FILL  31 39  END FILL
ARA=16  MUX=1 MUY=1 MUZ=2
CON='NORTH CORE WITH TOP REFLECTOR'
FILL  40 25  END FILL
ARA=20  MUX=1 MUY=1 MUZ=2
CON='SOUTH CORE WITH BOTTOM REFLECTOR'
FILL  19 10  END FILL
ARA=21 MUX=1 MUY=3 MUZ=1
CON='SOUTH CORE WITH EAST WEST REFLECTORS'
FILL  23 48 23  END FILL
ARA=22 MUX=2 MUY=1 MUZ=1
CON='SOUTH CORE WITH END REFLECTOR'
FILL  49 33  END FILL
ARA=23  MUX=1 MUY=1 MUZ=2
CON='COMBINATION OF CORE WITH TOP REFLECTOR'
FILL  50 27  END FILL
ARA=25  MUX=3 MUY=1 MUZ=1
CON='TOTAL'
FILL  42 54 52  END FILL
ARA=26  MUX=3 MUY=1 MUZ=1
CON='ASSEMBLY OF FUEL BOX FRONT AND REAR'
FILL  2 1 3  END FILL
ARA=27  MUX=1 MUY=1 MUZ=3
CON='ASSEMBLY OF FUEL BOX TOP AND BOTTOM'
FILL  5 4 5  END FILL
END ARRAY
READ PLOT TTL='YZ SLICE OF SOUTH CORE FIRST ROW'
XUL=64.319 YUL=55.625 ZUL=71.735
XLR=64.319 YLR=71.625 ZLR=55.735
VAX=1  VDM=.1 MAX=130  MCH='012345678'END
TTL='XZ SLICE OF SPHERE CUBOID'
XUL=56.0 YUL=63.625 ZUL=71.735
XLR=72.0 YLR=63.625 ZLR=55.735
VAX=1  VDM=.1 MAX=130  MCH='012345678'
END PLOT
' READ START  NST=6 TFX=65 TFY=63.625 TFZ=63.735 LNU=300  END START
READ START  NST=1 XSN=56.981 XSP=71.649 YSN=56.219 YSP=70.959
    ZSN=54.401 ZSP=71.069  END START
END DATA
END

                              088 (CAR07)

#CSAS25
ROCKY FLATS CRITICALS NUREG/CR-0674 EXPERIMENT NUMBER 7 (27 GROUP MODEL)
' FUEL CUBE 15.28 CM, U(4.46)308 @ H/U=0.77, HI CONC. SOLUTION DRIVEN
27GR  INFHOMMEDIUM
U308  1 5.4078E-1 293.0 92234 0.03 92235 4.46 92236 0.08 92238 95.43 END
H2O  1 8.9514E-2 END
AMBM-BAGGIE  1.0 3 0 0 0 1001 14.01 6012 84.9 8016 1.20 1 1.9134E-2
    END
AMBM-AL1100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 2 9.5390E-1
    END
AMBM-TAPE(VINYL)  1.0 7 0 0 0 1001 5.92 6012 45.91 8016 10.82 17000
   25.73 20000 6.9 22000 1.6 82000 1.1 2 1.1115E-2 END
AMBM-TAPE(MYLAR)  1.0 3 0 0 0 1001 6.83 6012 65.50 8016 27.02 2
   1.7491E-2 END
AMBM-MODERATOR  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 3 END
AMBM-PLEX(REG)  1.0 3 8 0 0 1001 7.84 6012 59.59 8016 32.23 4
   1.1773 END
AMBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 4
   3.7534E-3 END
AMBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 4
   1.1648E-3 END
AMBM-PLEX(TRIS)  1.0 8 0 0 1 1001 7.16 6012 52.03 7014 0.16 8016 29.82
   15031 1.02 17000 1.81 35079 4.260 35081 2.840 5 1.2757 END
AMBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 5
   3.7534E-3 END
AMBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 5
   1.1648E-3 END
AMBM-FILLER  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 6 0.7 END
' THIS MATERIAL IS ACTUALLY MODERATOR ADJUSTED FOR THE VOLUME
' FRACTION OF THE VOID FILLED BETWEEN CORE AND REFLECTOR.
AMBM-AL1100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 7 2.715  END
SOLNU02(NO3)2  8 351.18 0.549 1.0 293.0 92234 1.022 92235 93.172
   92236 0.434 92238 5.372  END
55304  9 1.0 END
END COMP
ROCKY FLATS CRITICALS NUREG/CR-0674 EXPERIMENT NUMBER 7 (27 GROUP MODEL)
' FUEL CUBE 15.28 CM, U(4.46)308 @ H/U=0.77, HI CONC. SOLUTION DRIVEN
READ PARM  NPG=400 NUB=YES TDN=YES PLT=NO  END PARM
READ GEOM
UNIT  1
CON='FUEL BOX WITH VOID AND PART OF AL BOX'
CUBOID  0 1 9.80  0.0 3.75  0.0  14.98 0.0
CUBOID  2 1 9.95  0.0 3.90  -0.15  14.98 0.0
CUBOID  1 1 14.98 0.0 9.365 -5.615 14.98 0.0
UNIT  2
CON='FRONT OF FUEL BOX'
CUBOID  2 1 0.15 0.0  5.615 0.0 14.98 0.0
CUBOID  0 1 0.15 0.0  9.365 0.0 14.98 0.0
CUBOID  2 1 0.15 0.0 14.98  0.0 14.98 0.0
UNIT  3
CON='REAR OF FUEL BOX'
CUBOID  2 1 0.15 0.0 14.98  0.0 14.98 0.0
UNIT  4
CON='ARRAY TO ASSEMBLE PART OF BOX'
ARRAY 26 3*0
UNIT  5
CON='TOP AND BOTTOM OF BOX'
CUBOID  0 1  9.80 0.0 3.750  0.0  0.15 0.0
CUBOID  2 1 15.28 0.0 9.365 -5.615 0.15 0.0
GLOBAL
UNIT  6
CON='ARRAY TO ASSEMBLE TOP AND BOTTOM'
ARRAY 27 3*0
CUBOID  2 1 15.28  0.0  15.13 -0.15 15.28  0.0
CUBOID  0 1 15.305 -0.025 15.155 -0.175 15.305 -0.025
UNIT  7
CON='FUEL BOX 15.28 CM ON A SIDE WITH .15 CM WALLS .05CM STACKING VOID'
CUBOID  1 1 6P7.49
CUBOID  2 1 6P7.64
CUBOID  0 1 6P7.6450
UNIT  34
CON='ALUMINUM WEIGHT DISTRIBUTION PLATE FOR SPECIAL BOX'
CUBOID  0 1  9.80 0.0 3.750  0.0  0.16 0.0
CUBOID  7 1 15.33 0.0 9.54 -5.79 0.16 0.0
UNIT  35
CON='ALUMINUM WEIGHT DISTRIBUTION PLATE FOR BOXES'
CUBOID  7 1  4P7.665 0.16 0.0
UNIT  9
CON='NORTH SPLIT TABLE CORE'
ARRAY 1 3*0.0
CUBOID  0 1 30.66 -0.94 77.5 0.0 83.475 0.0
UNIT  10
CON='SOUTH SPLIT TABLE CORE'
ARRAY 2 3*0.0
CUBOID  0 1 49.4 0.0 77.5 0.0 83.475 0.0
UNIT  11
CON='PLEXIGLASS REFLECTOR SHEET WITHOUT TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  4 1 2P15.8000 2P38.7500 2P0.6150
UNIT  12
CON='PLEXIGLASS REFLECTOR SHEET WITH TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  5 1 2P15.8000 2P38.7500 2P0.6150
UNIT  13
CON='UPPER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P8.24
UNIT  14
CON='LOWER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P3.69
UNIT  15
CON='NORTH BOTTOM REFLECTOR INCLUDES REGULAR AND TRIS'
ARRAY 3 3*0.0
UNIT  16
CON='PLEXIGLAS SHEET BOTTOM SOUTH REFLECTOR WITHOUT TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P0.6150
CUBOID  4 1 44.3 -5.1 2P38.75  2P0.615
UNIT  17
CON='PLEXIGLAS SHEET BOTTOM SOUTH REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P0.6150
CUBOID  5 1 44.3 -5.1 2P38.75 2P0.6150
UNIT  18
CON='LOWER PORTION SOUTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P8.855
CUBOID  5 1 44.3 -5.1 2P38.75 2P8.855
UNIT  19
CON='SOUTH BOTTOM REFLECTOR WITH REGULAR AND TRIS'
ARRAY 4 3*0.0
UNIT  20
CON='EAST AND WEST REFLECTORS FOR NORTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P12.65 2P54.2825
UNIT  21
CON='ARRAY FOR EAST AND WEST REFLECTORS FOR NORTH REFLECTOR'
ARRAY 5 3*0.0
UNIT  22
CON='EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P24.700 2P12.65 2P54.2825
UNIT  23
CON='ARRAY FOR EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR'
ARRAY 6 3*0.0
UNIT  24
CON='NORTH TOP REFLECTOR WITH TRIS'
CUBOID  5 1 2P28.35 2P64.05 2P12.15
UNIT  25
CON='ARRAY FOR NORTH TOP REFLECTOR'
ARRAY 7 3*0.0
UNIT  26
CON='SOUTH TOP REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P12.15
CUBOID  5 1 69.4 -5.1 2P64.05 2P12.15
UNIT  27
CON='ARRAY FOR SOUTH TOP REFLECTOR'
ARRAY 8 3*0.0
UNIT  28
CON='NORTH END REFLECTOR 9.8CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P4.9000 2P64.0500 2P54.2825
UNIT  29
CON='NORTH END RELFECTOR 5.2 CM PORTION WITH TRIS'
CUBOID  5 1 2P2.6 2P64.0500 2P54.2825
UNIT  30
CON='NORTH END RELFECTOR 10.1 CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P5.05 2P64.05 2P54.2825
UNIT  31
CON='ARRAY FOR NORTH END REFLECTOR'
ARRAY 9 3*0.0
UNIT  32
CON='SOUTH END REFLECTOR'
CUBOID  5 1 2P12.55 2P64.05 2P54.2825
UNIT  33
CON='ARRAY FOR SOUTH END REFLECTOR'
ARRAY 10 3*0.0
UNIT  38
CON='NORTH CORE WITH BOTTOM REFLECTOR'
ARRAY 13 3* 0.0
UNIT  39
CON='NORTH CORE WITH EAST AND WEST REFLECTOR'
ARRAY 14 3*0.0
UNIT  40
CON='NORTH CORE WITH END REFLECTOR'
ARRAY 15 3*0.0
UNIT  42
CON='NORTH CORE WITH TOP REFLECTOR'
ARRAY 16 3*0.0
UNIT  48
CON='SOUTH CORE WITH BOTTOM REFLECTORS'
ARRAY 20 3*0.0
UNIT  49
CON='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 21 3*0.0
UNIT  50
CON='SOUTH CORE END REFLECTOR'
ARRAY 22 3*0.0
UNIT  52
CON='SOUTH CORE WITH TOP REFLECTOR'
ARRAY 23 3*0.0
UNIT  54
CON='AIR GAP'
CUBOID  0 1 0.942 0.0 64.475 -63.625 69.13 -63.735
GLOBAL
UNIT  55
CON='TOTAL'
ARRAY 25 3*0.0
UNIT  56
CON='COMBINATION OF TWO REGULAR FUEL BOXES'
ARRAY 28 3*0.0
UNIT  57
CON='COMBINATION OF REGULAR FUEL BOX AND SPECIAL FUEL BOX'
ARRAY 29 3*0.0
UNIT  58
CON='COMBINATION OF TWO REGULAR WEIGHT DISTRIBUTION PLATES'
ARRAY 30 3*0.0
UNIT  59
CON='COMBINATION OF REGULAR AND SPECIAL WEIGHT DISTRIBUTION PLATES'
ARRAY 31 3*0.0
UNIT  60
CON='NORTH CORE SOLUTION DRIVER'
CUBOID  8 1 2P7.5 2P14.9 3.710 -7.5
CUBOID  0 1 2P7.5 2P14.9 2P7.5
CUBOID  9 1 2P7.65 2P15.05 2P7.65
CUBOID  0 1 2P7.665 2P15.33 2P7.665
UNIT  61
CON='NORTH CORE SOLUTION DRIVER'
CUBOID  8 1 2P7.5 2P14.9 3.630 -7.5
CUBOID  0 1 2P7.5 2P14.9 2P7.5
CUBOID  9 1 2P7.65 2P15.05 2P7.65
CUBOID  0 1 2P7.665 2P15.33 2P7.665
END GEOMETRY
READ ARRAY
ARA=1  NUX=2 NUY=4 NUZ=9
CON='NORTH SPLIT TABLE CORE'
FILL    2R7   2R56   4R7
       2R3S 2R58 4R3S
       2R7   2R56   4R7
       2R3S 2R58 4R3S
       2R7   56 60 4R7
       2R3S 2R58 4R3S
       2R7   2R56   4R7
       2R3S 2R58 4R3S
       2R7   2R56   4R7
END FILL
ARA=2  NUX=3 NUY=4 NUZ=9
CON='SOUTH SPLIT TABLE CORE'
FILL    3R7   3R56     6R7
       3R3S 3R58     6R3S
       3R7   3R56     6R7
       3R3S 3R58     6R3S
       3R7   61 56 56 6R7
       3R3S 3R58     6R3S
       3R7   57 56 56 6R7
       3R3S 59 58 58 6R3S
       3R7   57 56 56 6R7
END FILL
ARA=3  NUX=1 NUY=1 NUZ=3
CON='NORTH BOTTOM REFLECTOR'
FILL  14 11 13  END FILL
ARA=4  NUX=1 NUY=1 NUZ=7
CON='SOUTH BOTTOM REFLECTOR'
FILL  18 16 17 16 16 17 17  END FILL
ARA=5  NUX=1 NUY=1 NUZ=1
CON='EAST AND WEST WALLS OF NORTH REFLECTOR'
FILL  20 END FILL
ARA=6  NUX=1 NUY=1 NUZ=1
CON='EAST AND WEST WALLS OF SOUTH REFLECTOR'
FILL  22  END FILL
ARA=7  NUX=1 NUY=1 NUZ=1
CON='ARRAY FOR NORTH TOP REFLECTOR'
FILL  24  END FILL
ARA=8  NUX=1 NUY=1 NUZ=1
CON='ARRAY FOR SOUTH TOP REFLECTOR'
FILL  26 END FILL
ARA=9  NUX=3 NUY=1 NUZ=1
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CON='ARRAY FOR NORTH END REFLECTOR'
FILL  28 29 30  END FILL
ARA=10  MUX=1 MUY=1 MUZ=1
CON='ARRAY FOR SOUTH END REFLECTOR'
FILL  32  END FILL
ARA=13  MUX=1 MUY=1 MUZ=2
CON='COMBINATION OF NORTH CORE WITH BOTTOM REFLECTOR'
FILL  15 9  END FILL
ARA=14  MUX=1 MUY=3 MUZ=1
CON='NORTH CORE WITH SIDE REFLECTORS'
FILL  21 38 21  END FILL
ARA=15  MUX=2 MUY=1 MUZ=1
CON='NORTH CORE WITH END REFLECTOR'
FILL  31 39  END FILL
ARA=16  MUX=1 MUY=1 MUZ=2
CON='NORTH CORE WITH TOP REFLECTOR'
FILL  40 25  END FILL
ARA=20  MUX=1 MUY=1 MUZ=2
CON='SOUTH CORE WITH BOTTOM REFLECTOR'
FILL  19 10  END FILL
ARA=21 MUX=1 MUY=3 MUZ=1
CON='SOUTH CORE WITH EAST WEST REFLECTORS'
FILL  23 48 23  END FILL
ARA=22 MUX=2 MUY=1 MUZ=1
CON='SOUTH CORE WITH END REFLECTOR'
FILL  49 33  END FILL
ARA=23  MUX=1 MUY=1 MUZ=2
CON='COMBINATION OF CORE WITH TOP REFLECTOR'
FILL  50 27  END FILL
ARA=25  MUX=3 MUY=1 MUZ=1
CON='TOTAL'
FILL  42 54 52  END FILL
ARA=26  MUX=3 MUY=1 MUZ=1
CON='ASSEMBLY OF FUEL BOX FRONT AND REAR'
FILL  2 1 3  END FILL
ARA=27  MUX=1 MUY=1 MUZ=3
CON='ASSEMBLY OF FUEL BOX TOP AND BOTTOM'
FILL  5 4 5  END FILL
ARA=28  MUX=1 MUY=2 MUZ=1
CON='COMBINATION OF TWO FUEL BOXES'
FILL  7 7  END FILL
ARA=29  MUX=1 MUY=2 MUZ=1
CON='COMBINATION OF SPECIAL AND REGULAR FUEL BOXES'
FILL  7 6  END FILL
ARA=30  MUX=1 MUY=2 MUZ=1
CON='COMBINATION OF TWO WEIGHT DISTRIBUTION PLATES'
FILL  35 35  END FILL
ARA=31  MUX=1 MUY=2 MUZ=1
CON='COMBINATION OF SPECIAL AND REGULAR WEIGHT DISTRIBUTION PLATES'
FILL  35 34  END FILL
END ARRAY
READ PLOT TTL='YZ SLICE OF SOUTH CORE FIRST ROW'
XUL=64.319 YUL=40.000 ZUL=72.000
XLR=64.319 YLR=72.000 ZLR=56.000
VAX=1  WDW=-1 MAX=130  MCH='012345678'END
TTL='XZ SLICE OF SPHERE CUBOID'
XUL=56.0 YUL=63.625 ZUL=71.735
XLR=72.0 YLR=63.625 ZLR=55.735
UAX=1  WDW=-1 MAX=130  MCH='012345678'
END PLOT
READ START  NST=1 XSM=41.27 XSP=72.894 YSM=40.63 YSP=71.29
  ZSM=56.071 ZSP=71.4   END START
END DATA
END
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                        089 (CAROB)
#CSAS25
ROCKY FLATS CRITICALS NUREG/CR-0674 EXPERIMENT NUMBER 7 (27 CROUP MODEL)
* FUEL CUBE 15.28 CM, U(4.46)308 @ H/U=0.77, LOW CONC. SOLUTION DRIVEN
27GR   INFHOMMEDIUM
U308  1 5.4978E-1 293.0 92234 0.03 92235 4.46 92236 0.08 92238 95.43 END
H20   1 8.9514E-2 END
ARBM-BAGGIE  1.0 3 0 0 0 1001 14.01 6012 84.9 8016 1.20 1 1.9134E-2
   END
ARBM-ALI100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 2 9.5390E-1
   END
ARBM-TAPE(VINYL)  1.0 7 0 0 0 1001 5.92 6012 45.91 8016 10.82 17000
   25.73 20000  6.9 22000 1.6 82000 1.1 2 1.1115E-2 END
ARBM-TAPE(MYLAR)  1.0 3 0 0 0 1001 6.83 6012 65.50 8016 27.02 2
   1.7491E-2 END
ARBM-MODERATOR  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 3 END
ARBM-PLEX(REG)  1.0 3 0 0 0 1001 7.84 6012 59.59 8016 32.23 4
   1.1773 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 4
   3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 4
   1.1648E-3 END
ARBM-PLEX(TRIS)  1.0 8 0 0 1 1001 7.16 6012 52.03 7014 0.16 8016 29.82
   15031 1.02 17000 1.81 35079 4.260 35081 2.840 5 1.2757 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 5
   3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 5
   1.1648E-3 END
ARBM-FILLER  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 6 0.7 END
* THIS MATERIAL IS ACTUALLY MODERATOR ADJUSTED FOR THE VOLUME
* FRACTION OF THE VOID FILLED BETWEEN CORE AND REFLECTOR.
ARBM-ALI100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 7 2.715  END
SOLMU02(MO3)2  8 86.42 0.149 1.0 293.0 92234 1.022 92235 93.172
   92236 0.434 92238 5.372  END
SS304  9 1.0 END
END COMP
ROCKY FLATS CRITICALS NUREG/CR-0674 EXPERIMENT NUMBER 7 (27 CROUP MODEL)
* FUEL CUBE 15.28 CM, U(4.46)308 @ H/U=0.77, LOW CONC. SOLUTION DRIVEN
READ PARM  NPG=600 NUB=YES FDN=YES PLT=NO  END PARM
READ GEOM
UNIT  1
CON='FUEL BOX WITH VOID AND PART OF AL BOX'
CUBOID  0 1 9.80  0.0 3.75   0.0   14.98 0.0
CUBOID  2 1 9.55  0.0 3.90  -0.15  14.98 0.0
CUBOID  1 1 14.98 0.0 9.365 -5.615 14.98 0.0
UNIT  2
CON='FRONT OF FUEL BOX'
CUBOID  2 1 0.15 0.0  5.615 0.0 14.98 0.0
CUBOID  0 1 0.15 0.0  9.365 0.0 14.98 0.0
CUBOID  2 1 0.15 0.0 14.98  0.0 14.98 0.0
UNIT  3
CON='REAR OF FUEL BOX'
CUBOID  2 1 0.15 0.0 14.98  0.0 14.98 0.0
UNIT  4
CON='ARRAY TO ASSEMBLE PART OF BOX'
ARRAY 26 3*0
UNIT  5
CON='TOP AND BOTTOM OF BOX'
CUBOID  0 1  9.80 0.0 3.750  0.0   0.15 0.0
CUBOID  2 1 15.28 0.0 9.365 -5.615 0.15 0.0
GLOBAL
UNIT  6
CON='ARRAY TO ASSEMBLE TOP AND BOTTOM'
ARRAY 27 3*0
CUBOID  2 1 15.28  0.0  15.13  -0.15  15.28  0.0
CUBOID  0 1 15.305 -0.025 15.155 -0.175 15.305 -0.025
UNIT  7
CON='FUEL BOX 15.28 CM ON A SIDE WITH .15 CM WALLS .05CM STACKING VOID'
CUBOID  1 1 6P7.49
CUBOID  2 1 6P7.64
CUBOID  0 1 6P7.6650
UNIT  34
CON='ALUMINUM WEIGHT DISTRIBUTION PLATE FOR SPECIAL BOX'
CUBOID  0 1  9.80 0.0 3.750  0.0   0.16 0.0
CUBOID  7 1 15.33 0.0 9.54  -5.79 0.16 0.0
UNIT  35
CON='ALUMINUM WEIGHT DISTRIBUTION PLATE FOR BOXES'
CUBOID  7 1  4P7.665 0.16 0.0
UNIT  9
CON='NORTH SPLIT TABLE CORE'
ARRAY 1 3*0.0
CUBOID  0 1 30.66 -0.94 77.5 0.0 83.475 0.0
UNIT  10
CON='SOUTH SPLIT TABLE CORE'
ARRAY 2 3*0.0
CUBOID  0 1 49.4 0.0 77.5 0.0 83.475 0.0
UNIT  11
CON='PLEXIGLASS REFLECTOR SHEET WITHOUT TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  4 1 2P15.8000 2P38.7500 2P0.6150
UNIT  12
CON='PLEXIGLASS REFLECTOR SHEET WITH TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  5 1 2P15.8000 2P38.7500 2P0.6150
UNIT  13
CON='UPPER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P8.24
UNIT  14
CON='LOWER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P3.69
UNIT  15
CON='NORTH BOTTOM REFLECTOR INCLUDES REGULAR AND TRIS'
ARRAY 3 3*0.0
UNIT  16
CON='PLEXIGLAS SHEET BOTTOM SOUTH REFLECTOR WITHOUT TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P0.6150
CUBOID  4 1 44.3 -5.1 2P38.75  2P0.615
UNIT  17
CON='PLEXIGLAS SHEET BOTTOM SOUTH REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P0.6150
CUBOID  5 1 44.3 -5.1 2P38.75 2P0.6150
UNIT  18
CON='LOWER PORTION SOUTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P8.855
CUBOID  5 1 44.3 -5.1 2P38.75 2P8.855
UNIT  19
CON='SOUTH BOTTOM REFLECTOR WITH REGULAR AND TRIS'
ARRAY 4 3*0.0
UNIT  20
CON='EAST AND WEST REFLECTORS FOR NORTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P12.65 2P54.2825
UNIT  21
CON='ARRAY FOR EAST AND WEST REFLECTORS FOR NORTH REFLECTOR'
ARRAY 5 3*0.0
UNIT  22
CON='EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P24.700 2P12.65 2P54.2825
UNIT  23
CON='ARRAY FOR EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR'
ARRAY 6 3*0.0
UNIT  24
CON='NORTH TOP REFLECTOR WITH TRIS'
CUBOID  5 1 2P28.35 2P64.05 2P12.15
UNIT  25
CON='ARRAY FOR NORTH TOP REFLECTOR'
ARRAY 7 3*0.0
UNIT  26
CON='SOUTH TOP REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P12.15
CUBOID  5 1 69.4 -5.1 2P64.05 2P12.15
UNIT  27
CON='ARRAY FOR SOUTH TOP REFLECTOR'
ARRAY 8 3*0.0
UNIT  28
CON='NORTH END REFLECTOR 9.8CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P4.9000 2P64.0500 2P54.2825
UNIT  29
CON='NORTH END RELFECTOR 5.2 CM PORTION WITH TRIS'
CUBOID  5 1 2P2.6 2P64.0500 2P54.2825
UNIT  30
CON='NORTH END REFLECTOR 10.1 CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P5.05 2P64.05 2P54.2825
UNIT  31
CON='ARRAY FOR NORTH END REFLECTOR'
ARRAY 9 3*0.0
UNIT  32
CON='SOUTH END REFLECTOR'
CUBOID  5 1 2P12.55 2P64.05 2P54.2825
UNIT  33
CON='ARRAY FOR SOUTH END REFLECTOR'
ARRAY 10 3*0.0
UNIT  38
CON='NORTH CORE WITH BOTTOM REFLECTOR'
ARRAY 13 3* 0.0
UNIT  39
CON='NORTH CORE WITH EAST AND WEST REFLECTOR'
ARRAY 14 3*0.0
UNIT  40
CON='NORTH CORE WITH END REFLECTOR'
ARRAY 15 3*0.0
UNIT  42
CON='NORTH CORE WITH TOP REFLECTOR'
ARRAY 16 3*0.0
UNIT  48
CON='SOUTH CORE WITH BOTTOM REFLECTORS'
ARRAY 20 3*0.0
UNIT  49
CON='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 21 3*0.0
UNIT  50
CON='SOUTH CORE END REFLECTOR'
ARRAY 22 3*0.0
UNIT  52
CON='SOUTH CORE WITH TOP REFLECTOR'
ARRAY 23 3*0.0
UNIT  54
CON='AIR GAP'
CUBOID  0 1 0.912 0.0 64.475 -63.625 69.13 -63.735
GLOBAL
UNIT  55
CON='TOTAL'
ARRAY 25 3*0.0
UNIT  56
CON='COMBINATION OF TWO REGULAR FUEL BOXES'
ARRAY 28 3*0.0
UNIT  57
CON='COMBINATION OF REGULAR FUEL BOX AND SPECIAL FUEL BOX'
ARRAY 29 3*0.0
UNIT  58
CON='COMBINATION OF TWO REGULAR WEIGHT DISTRIBUTION PLATES'
ARRAY 30 3*0.0
UNIT  59
CON='COMBINATION OF REGULAR AND SPECIAL WEIGHT DISTRIBUTION PLATES'
ARRAY 31 3*0.0
UNIT  60
CON='NORTH CORE SOLUTION DRIVER'
CUBOID  8 1 2P7.5 2P14.9 5.374 -7.5
CUBOID  0 1 2P7.5 2P14.9 2P7.5
CUBOID  9 1 2P7.65 2P15.05 2P7.65
CUBOID  0 1 2P7.665 2P15.33 2P7.665
UNIT  61
CON='NORTH CORE SOLUTION DRIVER'
CUBOID  8 1 2P7.5 2P14.9 5.328 -7.5
CUBOID  0 1 2P7.5 2P14.9 2P7.5
CUBOID  9 1 2P7.65 2P15.05 2P7.65
CUBOID  0 1 2P7.665 2P15.33 2P7.665
END GEOMETRY
READ ARRAY
ARA=1  MUX=2 MUY=4 MUZ=9
CON='NORTH SPLIT TABLE CORE'
FILL    2R7  2R56  4R7
        2R35 2R58  4R35
        2R7  2R56  4R7
        2R35 2R58  4R35
        2R7  56 60 4R7
        2R35 2R58  4R35
        2R7  2R56  4R7
        2R35 2R58  4R35
        2R7  2R56  4R7
END FILL
ARA=2  MUX=3 MUY=4 MUZ=9
CON='SOUTH SPLIT TABLE CORE'
FILL    3R7  3R56      6R7
        3R35 3R58      6R35
        3R7  3R56      6R7
        3R35 3R58      6R35
        2R7  61 56 56  6R7
        3R35 2R58      6R35
        3R7  57 56 56  6R7
        3R35 59 58 58  6R35
        3R7  57 56 56  6R7
END FILL
ARA=3   MUX=1 MUY=1 MUZ=3
CON='NORTH BOTTOM REFLECTOR'
FILL  14 11 13  END FILL
ARA=4  MUX=1 MUY=1 MUZ=7
CON='SOUTH BOTTOM REFLECTOR'
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FILL  18 16 17 16 16 17 17  END FILL
ARA=5  MUX=1 MUY=1 MUZ=1
COM='EAST AND WEST WALLS OF NORTH REFLECTOR'
FILL  20 END FILL
ARA=6  MUX=1 MUY=1 MUZ=1
COM='EAST AND WEST WALLS OF SOUTH REFLECTOR'
FILL  22  END FILL
ARA=7  MUX=1 MUY=1 MUZ=1
COM='ARRAY FOR NORTH TOP REFLECTOR'
FILL  24  END FILL
ARA=8  MUX=1 MUY=1 MUZ=1
COM='ARRAY FOR SOUTH TOP REFLECTOR'
FILL  26 END FILL
ARA=9  MUX=3 MUY=1 MUZ=1
COM='ARRAY FOR NORTH END REFLECTOR'
FILL  28 29 30  END FILL
ARA=10  MUX=1 MUY=1 MUZ=1
COM='ARRAY FOR SOUTH END REFLECTOR'
FILL  32  END FILL
ARA=13  MUX=1 MUY=1 MUZ=2
COM='COMBINATION OF NORTH CORE WITH BOTTOM REFLECTOR'
FILL  15 9  END FILL
ARA=14  MUX=1 MUY=3 MUZ=1
COM='NORTH CORE WITH SIDE REFLECTORS'
FILL  21 36 21  END FILL
ARA=15  MUX=2 MUY=1 MUZ=1
COM='NORTH CORE WITH END REFLECTOR'
FILL  31 39  END FILL
ARA=16  MUX=1 MUY=1 MUZ=2
COM='NORTH CORE WITH TOP REFLECTOR'
FILL  40 25  END FILL
ARA=20  MUX=1 MUY=1 MUZ=2
COM='SOUTH CORE WITH BOTTOM REFLECTOR'
FILL  19 10  END FILL
ARA=21 MUX=1 MUY=3 MUZ=1
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
FILL  23 48 23  END FILL
ARA=22 MUX=2 MUY=1 MUZ=1
COM='SOUTH CORE WITH END REFLECTOR'
FILL  49 33  END FILL
ARA=23  MUX=1 MUY=1 MUZ=2
COM='COMBINATION OF CORE WITH TOP REFLECTOR'
FILL  50 27  END FILL
ARA=25  MUX=3 MUY=1 MUZ=1
COM='TOTAL'
FILL  42 54 52  END FILL
ARA=26  MUX=3 MUY=1 MUZ=1
COM='ASSEMBLY OF FUEL BOX FRONT AND REAR'
FILL  2 1 3  END FILL
ARA=27  MUX=1 MUY=1 MUZ=3
COM='ASSEMBLY OF FUEL BOX TOP AND BOTTOM'
FILL  5 4 5  END FILL
ARA=28  MUX=1 MUY=2 MUZ=1
COM='COMBINATION OF TWO FUEL BOXES'
FILL  7 7  END FILL
ARA=29  MUX=1 MUY=2 MUZ=1
COM='COMBINATION OF SPECIAL AND REGULAR FUEL BOXES'
FILL  7 6  END FILL
ARA=30  MUX=1 MUY=2 MUZ=1
COM='COMBINATION OF TWO WEIGHT DISTRIBUTION PLATES'
FILL  35 35  END FILL
ARA=31  MUX=1 MUY=2 MUZ=1
COM='COMBINATION OF SPECIAL AND REGULAR WEIGHT DISTRIBUTION PLATES'
FILL  35 34  END FILL
END ARRAY
READ PLOT TTL='YZ SLICE OF SOUTH CORE FIRST ROW'
XUL=64.319 YUL=40.000 ZUL=72.000
XLR=64.319 YLR=72.000 ZLR=56.000
VAX=1  VDN=-1 MAX=130  MCH='012345678'END
TTL='XZ SLICE OF SPHERE CUBOID'
XUL=54.0 YUL=63.625 ZUL=71.735
XLR=72.0 YLR=63.625 ZLR=55.735
UAX=1  VDN=-1 MAX=130  MCH='012345678'
END PLOT
READ START  MST=1 XSM=41.37 XSP=72.894 YSM=40.63 YSP=71.29
   ZSM=56.071 ZSP=71.4  END START
END DATA
END
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090 (CARD9)

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#CSAS25
ROCKY FLATS CRITICALS MUREG/CR-0674 EXPERIMENT NUMBER 2 (27 GROUP MODEL)
* FUEL CUBE 15.28 CM, U(4.46)3O8 @ M/U=0.77, LOW CONC. SOLUTION DRIVEN
27GR    INFHOMMEDIUM
U3O8  1 5.4078E-1 293.0 92234 0.03 92235 4.46 92236 0.08 92238 95.43 END
H2O  1 8.9514E-2 END
ARBM-BAGGIE  1.0 3 0 0 0 1001 14.01 6012 84.9 8016 1.20 1 1.9134E-2
   END
ARBM-AL1100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 2 9.5390E-1
   END
ARBM-TAPE(VINYL)  1.0 7 0 0 0 1001 5.92 6012 45.91 8016 10.82 17000
   25.73 20000 6.9 22000 1.6 82000 1.1 2 1.1115E-2 END
ARBM-TAPE(MYLAR)  1.0 3 0 0 0 1001 6.83 6012 65.50 8016 27.02 2
   1.7491E-2 END
ARBM-MODERATOR  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 3 END
ARBM-PLEX(REG)  1.0 3 0 0 0 1001 7.84 6012 59.59 8016 32.23 4
   1.1773 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 4
   3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 4
   1.1648E-3 END
ARBM-PLEX(TRIS)  1.0 8 0 0 1 1001 7.16 6012 52.03 7014 0.16 8016 29.82
   15031 1.02 17000 1.81 35079 4.260 35081 2.840 5 1.2757 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 5
   3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 5
   1.1648E-3 END
ARBM-FILLER  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 6 0.7 END
* THIS MATERIAL IS ACTUALLY MODERATOR ADJUSTED FOR THE VOLUME
* FRACTION OF THE VOID FILLED BETWEEN CORE AND REFLECTOR.
ARBM-AL1100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 7 2.715  END
SOLMOD(MO313)  8 86.42 0.149 1.0 293.0 92234 1.022 92235 93.172
   92236 0.434 92238 5.372  END
55304  9 1.0 END
END COMP
ROCKY FLATS CRITICALS MUREG/CR-0674 EXPERIMENT NUMBER 2 (27 GROUP MODEL)
* FUEL CUBE 15.28 CM, U(4.46)3O8 @ M/U=0.77, LOW CONC. SOLUTION DRIVEN
READ PARM  NPG=600 MUB=YES FDN=YES PLT=NO  END PARM
READ GEOM
UNIT  1
COM='FUEL BOX WITH VOID AND PART OF AL BOX'
CUBOID  0 1 9.80  0.0 3.75   0.0   14.98 0.0
CUBOID  2 1 9.95  0.0 3.90  -0.15  14.98 0.0
CUBOID  1 1 14.98 0.0 9.365 -5.615 14.98 0.0
UNIT 2
COM='FRONT OF FUEL BOX'
CUBOID  2 1 0.15 0.0  5.615 0.0 14.98 0.0
CUBOID  0 1 0.15 0.0  9.365 0.0 14.98 0.0
CUBOID  2 1 0.15 0.0 14.98  0.0 14.98 0.0
UNIT 3
COM='REAR OF FUEL BOX'
CUBOID  2 1 0.15 0.0 14.98  0.0 14.98 0.0
UNIT  4
COM='ARRAY TO ASSEMBLE PART OF BOX'
ARRAY 26 3*0
UNIT  5
COM='TOP AND BOTTOM OF BOX'
CUBOID  0 1  9.80 0.0 3.750  0.0   0.15 0.0
CUBOID  2 1 15.28 0.0 9.365 -5.615 0.15 0.0
GLOBAL
UNIT  6
COM='ARRAY TO ASSEMBLE TOP AND BOTTOM'
ARRAY 27 3*0
CUBOID  2 1 15.28   0.0   15.13  -0.15  15.28   0.0
CUBOID  0 1 15.305 -0.025 15.155 -0.175 15.305 -0.025
UNIT  7
COM='FUEL BOX 15.28 CM ON A SIDE WITH .15 CM WALLS .05CM STACKING VOID'
CUBOID  1 1 6P7.49
CUBOID  2 1 6P7.64
CUBOID  0 1 6P7.6650
UNIT  34
COM='ALUMINUM WEIGHT DISTRIBUTION PLATE FOR SPECIAL BOX'
CUBOID  0 1  9.80 0.0 3.750  0.0   0.16 0.0
CUBOID  7 1 15.33 0.0 9.54 -5.79 0.16 0.0
UNIT 35
COM='ALUMINUM WEIGHT DISTRIBUTION PLATE FOR BOXES'
CUBOID  7 1  4P7.665 0.16 0.0
UNIT  9
COM='NORTH SPLIT TABLE CORE'
ARRAY 1 3*0.0
CUBOID  0 1 30.66 -0.94 77.5 0.0 83.475 0.0
UNIT  10
COM='SOUTH SPLIT TABLE CORE'
ARRAY 2 3*0.0
CUBOID  0 1 49.4 0.0 77.5 0.0 83.475 0.0
UNIT  11
COM='PLEXIGLASS REFLECTOR SHEET WITHOUT TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  4 1 2P15.8000 2P38.7500 2P0.6150
UNIT  12
COM='PLEXIGLASS REFLECTOR SHEET WITH TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  5 1 2P15.8000 2P38.7500 2P0.6150
UNIT  13
COM='UPPER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P8.24
UNIT  14
COM='LOWER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P3.69
UNIT  15
COM='NORTH BOTTOM REFLECTOR INCLUDES REGULAR AND TRIS'
ARRAY 3 3*0.0
UNIT  16
COM='PLEXICLAS SHEET BOTTOM SOUTH REFLECTOR WITHOUT TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P0.6150
CUBOID  4 1 44.3 -5.1 2P38.75  2P0.615
UNIT  17
COM='PLEXICLAS SHEET BOTTOM SOUTH REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P0.6150
CUBOID  5 1 44.3 -5.1 2P38.75 2P0.6150
UNIT  18
COM='LOWER PORTION SOUTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P8.855
CUBOID  5 1 44.3 -5.1 2P38.75 2P8.855
UNIT  19
COM='SOUTH BOTTOM REFLECTOR WITH REGULAR AND TRIS'
ARRAY 4 3*0.0
UNIT  20
COM='EAST AND WEST REFLECTORS FOR NORTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P12.65 2P54.2825
UNIT  21
COM='ARRAY FOR EAST AND WEST REFLECTORS FOR NORTH REFLECTOR'
ARRAY 5 3*0.0
UNIT  22
COM='EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P24.700 2P12.65 2P54.2825
UNIT  23
COM='ARRAY FOR EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR'
ARRAY 6 3*0.0
UNIT  24
COM='NORTH TOP REFLECTOR WITH TRIS'
CUBOID  5 1 2P28.35 2P64.05 2P12.15
UNIT  25
COM='ARRAY FOR NORTH TOP REFLECTOR'
ARRAY 7 3*0.0
UNIT  26
COM='SOUTH TOP REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P12.15
CUBOID  5 1 69.4 -5.1 2P64.05 2P12.15
UNIT  27
COM='ARRAY FOR SOUTH TOP REFLECTOR'
ARRAY 8 3*0.0
UNIT  28
COM='NORTH END REFLECTOR 9.8CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P4.9000 2P64.0500 2P54.2825
UNIT  29
COM='NORTH END RELFECTOR 5.2 CM PORTION WITH TRIS'
CUBOID  5 1 2P2.6 2P64.0500 2P54.2825
UNIT  30
COM='NORTH END RELFECTOR 10.1 CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P5.05 2P64.05 2P54.2825
UNIT  31
COM='ARRAY FOR NORTH END REFLECTOR'
ARRAY 9 3*0.0
UNIT  32
COM='SOUTH END REFLECTOR'
CUBOID  5 1 2P12.55 2P64.05 2P54.2825
UNIT  33
COM='ARRAY FOR SOUTH END REFLECTOR'
ARRAY 10 3*0.0
UNIT  38
COM='NORTH CORE WITH BOTTOM REFLECTOR'
ARRAY 13 3* 0.0
UNIT  39
COM='NORTH CORE WITH EAST AND WEST REFLECTOR'
ARRAY 14 3*0.0
UNIT  40
COM='NORTH CORE WITH END REFLECTOR'
ARRAY 15 3*0.0
UNIT  42
COM='NORTH CORE WITH TOP REFLECTOR'
ARRAY 16 3*0.0
UNIT  48
COM='SOUTH CORE WITH BOTTOM REFLECTORS'
ARRAY 20 3*0.0
UNIT  49
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 21 3*0.0
UNIT  50
COM='SOUTH CORE END REFLECTOR'
ARRAY 22 3*0.0
UNIT  52
COM='SOUTH CORE WITH TOP REFLECTOR'
ARRAY 23 3*0.0
UNIT  54
COM='AIR GAP'
CUBOID  0 1 1.117 0.0 64.475 -63.625 69.13 -63.735
GLOBAL
UNIT  55
COM='TOTAL'
ARRAY 25 3*0.0
UNIT  56
COM='COMBINATION OF TWO REGULAR FUEL BOXES'
ARRAY 28 3*0.0
UNIT  57
COM='COMBINATION OF REGULAR FUEL BOX AND SPECIAL FUEL BOX'
ARRAY 29 3*0.0
UNIT  58
COM='COMBINATION OF TWO REGULAR WEIGHT DISTRIBUTION PLATES'
ARRAY 30 3*0.0
UNIT  59
COM='COMBINATION OF REGULAR AND SPECIAL WEIGHT DISTRIBUTION PLATES'
ARRAY 31 3*0.0
UNIT  60
COM='NORTH CORE SOLUTION DRIVER'
CUBOID  8 1 2P7.5 2P14.9 5.499 -7.5
CUBOID  0 1 2P7.5 2P14.9 2P7.5
CUBOID  9 1 2P7.65 2P15.05 2P7.65
CUBOID  0 1 2P7.665 2P15.33 2P7.665
UNIT  61
COM='NORTH CORE SOLUTION DRIVER'
CUBOID  8 1 2P7.5 2P14.9 5.445 -7.5
CUBOID  0 1 2P7.5 2P14.9 2P7.5
CUBOID  9 1 2P7.65 2P15.05 2P7.65
CUBOID  0 1 2P7.665 2P15.33 2P7.665
END GEOMETRY
READ ARRAY
ARA=1  MUX=2 MUY=4 MUZ=9
COM='NORTH SPLIT TABLE CORE'
FILL    2R7  2R56  4R7
        2R35 2R58  4R35
        2R7  2R56  4R7
        2R35 2R58  4R35
        2R7  56 60 4R7
        2R35 2R58  4R35
        2R7  2R56  4R7
        2R35 2R58  4R35
        2R7  2R56  4R7
END FILL
ARA=2  MUX=3 MUY=4 MUZ=9
COM='SOUTH SPLIT TABLE CORE'
FILL   3R7  3R56     6R7
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        3R35 3R58     6R35
        3R7  3R56     6R7
        3R35 3R58     6R35
        3R7  61 56 56 6R7
        3R35 3R58     6R35
        3R7  57 56 56 6R7
        3R35 59 58 58 6R35
        3R7  57 56 56 6R7
END FILL
ARA=3   MUX=1 MUY=1 MUZ=3
CON='NORTH BOTTOM REFLECTOR'
FILL  14 11 13  END FILL
ARA=4   MUX=1 MUY=1 MUZ=7
CON='SOUTH BOTTOM REFLECTOR'
FILL  18 16 17 16 16 17 17  END FILL
ARA=5   MUX=1 MUY=1 MUZ=1
CON='EAST AND WEST WALLS OF NORTH REFLECTOR'
FILL  20 END FILL
ARA=6   MUX=1 MUY=1 MUZ=1
CON='EAST AND WEST WALLS OF SOUTH REFLECTOR'
FILL  22  END FILL
ARA=7   MUX=1 MUY=1 MUZ=1
CON='ARRAY FOR NORTH TOP REFLECTOR'
FILL  24  END FILL
ARA=8   MUX=1 MUY=1 MUZ=1
CON='ARRAY FOR SOUTH TOP REFLECTOR'
FILL  26 END FILL
ARA=9   MUX=3 MUY=1 MUZ=1
CON='ARRAY FOR NORTH END REFLECTOR'
FILL  28 29 30  END FILL
ARA=10  MUX=1 MUY=1 MUZ=1
CON='ARRAY FOR SOUTH END REFLECTOR'
FILL  32  END FILL
ARA=13  MUX=1 MUY=1 MUZ=2
CON='COMBINATION OF NORTH CORE WITH BOTTOM REFLECTOR'
FILL  15 9  END FILL
ARA=14  MUX=1 MUY=2 MUZ=1
CON='NORTH CORE WITH SIDE REFLECTORS'
FILL  21 38 21  END FILL
ARA=15  MUX=2 MUY=1 MUZ=1
CON='NORTH CORE WITH END REFLECTOR'
FILL  31 39  END FILL
ARA=16  MUX=1 MUY=1 MUZ=2
CON='NORTH CORE WITH TOP REFLECTOR'
FILL  40 25  END FILL
ARA=20  MUX=1 MUY=1 MUZ=2
CON='SOUTH CORE WITH BOTTOM REFLECTOR'
FILL  19 10  END FILL
ARA=21 MUX=1 MUY=3 MUZ=1
CON='SOUTH CORE WITH EAST WEST REFLECTORS'
FILL  23 48 23  END FILL
ARA=22 MUX=2 MUY=1 MUZ=1
CON='SOUTH CORE WITH END REFLECTOR'
FILL  49 33  END FILL
ARA=23  MUX=1 MUY=1 MUZ=2
CON='COMBINATION OF CORE WITH TOP REFLECTOR'
FILL  50 27  END FILL
ARA=25  MUX=3 MUY=1 MUZ=1
CON='TOTAL'
FILL  42 54 52  END FILL
ARA=26  MUX=3 MUY=1 MUZ=1
CON='ASSEMBLY OF FUEL BOX FRONT AND REAR'
FILL  2 1 3  END FILL
ARA=27  MUX=1 MUY=1 MUZ=3
CON='ASSEMBLY OF FUEL BOX TOP AND BOTTOM'
FILL  5 4 5  END FILL
ARA=28  MUX=1 MUY=2 MUZ=1
CON='COMBINATION OF TWO FUEL BOXES'
FILL  7 7  END FILL
ARA=29  MUX=1 MUY=2 MUZ=1
CON='COMBINATION OF SPECIAL AND REGULAR FUEL BOXES'
FILL  7 6  END FILL
ARA=30  MUX=1 MUY=2 MUZ=1
CON='COMBINATION OF TWO WEIGHT DISTRIBUTION PLATES'
FILL  35 35  END FILL
ARA=31  MUX=1 MUY=2 MUZ=1
CON='COMBINATION OF SPECIAL AND REGULAR WEIGHT DISTRIBUTION PLATES'
FILL  35 34  END FILL
END ARRAY
READ PLOT TTL='YZ SLICE OF SOUTH CORE FIRST ROW'
XUL=64.319 YUL=40.000 ZUL=72.000
XLR=64.319 YLR=72.000 ZLR=56.000
VAX=1  WDH=-1 MAX=130  MCH='012345678'END
TTL='XZ SLICE OF SPHERE CUBOID'
XUL=56.0 YUL=63.625 ZUL=71.735
XLR=72.0 YLR=63.625 ZLR=55.735
UAX=1  WDH=-1 MAX=130  MCH='012345678'
END PLOT
READ START  MST=1 XSM=41.37 XSP=72.894 YSM=40.63 YSP=71.29
  ZSM=56.071 ZSP=71.4   END START
END DATA
END
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091 (CAR10)

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#CSAS25
ROCKY FLATS CRITICALS NUREG/CR-0674 CONCRETE REFLECTED (27 GROUP MODEL)
* FUEL CUBE 15.28 CM, U(4.46)308 @ H/U=0.77, HI CONC. SOLUTION DRIVEN
27GR   INFHOMMEDIUM
U308   1 5.4078E-1 293.0 92234 0.03 92235 4.46 92236 0.08 92238 95.43 END
H20    1 8.9514E-2 END
ARBM-BAGGIE  1.0 3 0 0 0 1001 14.01 6012 84.9 8016 1.20 1 1.9134E-2
   END
ARBM-AL1100  1.0 3 0 0 0 1 13027 99.18 26000 0.5 29000 0.2 2 9.5390E-1
   END
ARBM-TAPE(VINYL)  1.0 7 0 0 0 1001 5.92 6012 45.91 8016 10.82 17000
   25.73 20000 6.9 22000 1.6 82000 1.1 2 1.1115E-2 END
ARBM-TAPE(MYLAR)  1.0 3 0 0 0 1001 6.83 6012 65.50 8016 27.02 2
   1.7491E-2 END
ARBM-AL1100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 7 2.715  END
RFCONCRETE   5  1.0  END
SOLNMIX2(MX3)2  8 351.18 0.549 1.0 293.0 92234 1.022 92235 93.172
   92236 0.434 92238 5.372  END
SS304  9 1.0 END
END COMP
ROCKY FLATS CRITICALS NUREG/CR-0674 CONCRETE REFLECTED (27 GROUP MODEL)
* FUEL CUBE 15.28 CM, U(4.46)308 @ H/U=0.77, HI CONC. SOLUTION DRIVEN
READ PARM  NPG=600 NUB=YES FDN=YES PLT=NO  END PARM
READ GEOM
UNIT  1
CON='FUEL BOX WITH VOID AND PART OF AL BOX'
CUBOID  0 1 9.80 0.0 3.75  0.0   14.98 0.0
CUBOID  2 1 9.95 0.0 3.90  -0.15  14.98 0.0
CUBOID  1 1 14.98 0.0 9.365 -5.615 14.98 0.0
UNIT  2
CON='FRONT OF FUEL BOX'
CUBOID  2 1 0.15 0.0  5.615 0.0 14.98 0.0
CUBOID  0 1 0.15 0.0  9.365 0.0 14.98 0.0
CUBOID  2 1 0.15 0.0 14.98  0.0 14.98 0.0
UNIT  3
CON='REAR OF FUEL BOX'
CUBOID  2 1 0.15 0.0 14.98  0.0 14.98 0.0
UNIT  4
CON='ARRAY TO ASSEMBLE PART OF BOX'
ARRAY 26 3*0
UNIT  5
CON='TOP AND BOTTOM OF BOX'
CUBOID  0 1  9.80 0.0 3.750  0.0   0.15 0.0
CUBOID  2 1 15.28 0.0 9.365 -5.615 0.15 0.0
GLOBAL
UNIT  6
CON='ARRAY TO ASSEMBLE TOP AND BOTTOM'
ARRAY 27 3*0
CUBOID  2 1 15.28  0.0   15.13  -0.15  15.28  0.0
CUBOID  0 1 15.305 -0.025 15.155 -0.175 15.305 -0.025
UNIT  7
CON='FUEL BOX 15.28 CM ON A SIDE WITH .15 CM WALLS .05CM STACKING VOID'
CUBOID  1 1 6P7.49
CUBOID  2 1 6P7.64
CUBOID  0 1 6P7.6450
UNIT  34
CON='ALUMINUM WEIGHT DISTRIBUTION PLATE FOR SPECIAL BOX'
CUBOID  0 1  9.80 0.0 3.750  0.0   0.16 0.0
CUBOID  7 1 15.33 0.0 9.54 -5.79 0.16 0.0
UNIT  35
CON='ALUMINUM WEIGHT DISTRIBUTION PLATE FOR BOXES'
CUBOID  7 1  4P7.665 0.16 0.0
UNIT  9
CON='NORTH SPLIT TABLE CORE AND REFLECTOR'
ARRAY 1 -30.66 0.0 0.0
CUBOID  0 1 0.0 -22.3 77.5 0.0 83.2 0.0
CUBOID  5 1 0.0 -57.8 103.0 -25.5 108.7 -25.5
UNIT  10
CON='SOUTH SPLIT TABLE CORE AND REFLECTOR'
ARRAY 2 3*0.0
CUBOID  0 1 47.5 0.0 77.5 0.0 83.2 0.0
CUBOID  5 1 73.0 0.0 103.0 -25.5 108.7 -25.5
HOLE    11 0.0 38.75 -25.5
HOLE    11 0.0 38.75  83.2
UNIT  11
CUBOID  0 1 10.2 0.0 2P2.55 25.5 0.0
UNIT  54
CON='AIR GAP'
CUBOID  0 1  2P.334 2P64.25 2P67.1
GLOBAL
UNIT  55
CON='TOTAL'
ARRAY 25 3*0.0
UNIT  56
CON='COMBINATION OF TWO REGULAR FUEL BOXES'
ARRAY 28 3*0.0
UNIT  57
CON='COMBINATION OF REGULAR FUEL BOX AND SPECIAL FUEL BOX'
ARRAY 29 3*0.0
UNIT  58
CON='COMBINATION OF TWO REGULAR WEIGHT DISTRIBUTION PLATES'
ARRAY 30 3*0.0
UNIT  59
CON='COMBINATION OF REGULAR AND SPECIAL WEIGHT DISTRIBUTION PLATES'
ARRAY 31 3*0.0
UNIT  60
CON='NORTH CORE SOLUTION DRIVER'
CUBOID  8 1 2P7.5 2P14.9 3.122 -7.5
CUBOID  0 1 2P7.5 2P14.9 2P7.5
CUBOID  9 1 2P7.65 2P15.05 2P7.65
CUBOID  0 1 2P7.665 2P15.33 2P7.665
UNIT  61
CON='SOUTH CORE SOLUTION DRIVER'
CUBOID  8 1 2P7.5 2P14.9 3.047 -7.5
CUBOID  0 1 2P7.5 2P14.9 2P7.5
CUBOID  9 1 2P7.65 2P15.05 2P7.65
CUBOID  0 1 2P7.665 2P15.33 2P7.665
END GEOMETRY
READ ARRAY
ARA=1   MUX=2 MUY=4 MUZ=9
CON='NORTH SPLIT TABLE CORE'
FILL    2R7  2R56  4R7
        2R35 2R58  4R35
        2R7  2R56  4R7
        2R35 2R58  4R35
        2R7  56 60 4R7
        2R35 2R58  4R35
        2R7  2R56  4R7
        2R35 2R58  4R35
        2R7  2R56  4R7
END FILL
ARA=2   MUX=3 MUY=4 MUZ=9
CON='SOUTH SPLIT TABLE CORE'
FILL    3R7  3R56     6R7
        3R35 3R58     6R35
        3R7  3R56     6R7
        3R35 3R58     6R35
        3R7  61 56 56 6R7
        3R35 3R58     6R35
        3R7  57 56 56 6R7
        3R35 59 58 58 6R35
        3R7  57 56 56 6R7
END FILL
ARA=25  MUX=3 MUY=1 MUZ=1
CON='TOTAL'
FILL  9 54 10  END FILL
ARA=26  MUX=3 MUY=1 MUZ=1
CON='ASSEMBLY OF FUEL BOX FRONT AND REAR'
FILL  2 1 3  END FILL
ARA=27  MUX=1 MUY=1 MUZ=3
CON='ASSEMBLY OF FUEL BOX TOP AND BOTTOM'
FILL  5 4 5  END FILL
ARA=28  MUX=1 MUY=2 MUZ=1
CON='COMBINATION OF TWO FUEL BOXES'
FILL  7 7  END FILL
ARA=29  MUX=1 MUY=2 MUZ=1
CON='COMBINATION OF SPECIAL AND REGULAR FUEL BOXES'
FILL  7 6  END FILL
ARA=30  MUX=1 MUY=2 MUZ=1
CON='COMBINATION OF TWO WEIGHT DISTRIBUTION PLATES'
FILL  35 35  END FILL
ARA=31  MUX=1 MUY=2 MUZ=1
CON='COMBINATION OF SPECIAL AND REGULAR WEIGHT DISTRIBUTION PLATES'
FILL  35 34  END FILL
END ARRAY
READ PLOT TTL='YZ SLICE OF SOUTH CORE FIRST ROW'
XUL=64.319 YUL=40.000 ZUL=72.000
XLR=64.319 YLR=72.000 ZLR=56.000
VAX=1  WDH=-1 MAX=130  MCH='012345678'END
TTL='XZ SLICE OF SPHERE CUBOID'
XUL=56.0 YUL=63.625 ZUL=71.735
XLR=72.0 YLR=63.625 ZLR=55.735
UAX=1  WDH=-1 MAX=130  MCH='012345678'
END PLOT
READ START  MST=1 XSM=15.0 XSP=122.0 YSM=15.0 YSP=122.0
  ZSM=15.0 ZSP=122.0  END START
END DATA
END
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092 (CAR11)

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#CSAS25
ROCKY FLATS CRITICALS NUREG/CR-1653 EXPERIMENT A (27 GROUP)
* 48 FUEL CANS 2.44 CM MODERATOR GEE.MU125.DATA(OPT)
27GR   LATTICECELL
U308   1 5.4078E-1 293.0 92234 0.03 92235 4.46 92236 0.08 92238 95.43 END
H20    1 1.5427E-1 END
ARBM-BAGGIE  1.0 3 0 0 0 1001 14.01 6012 84.9 8016 1.20 1 1.9134E-2
   END
ARBM-AL1100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 2 9.5390E-1
   END
ARBM-TAPE(VINYL)  1.0 7 0 0 0 1001 5.92 6012 45.91 8016 10.82 17000
   25.73 20040 6.9 22000 1.6 82000 1.1 2 1.1115E-2 END
ARBM-TAPE(MYLAR)  1.0 3 0 0 0 1001 6.83 6012 65.50 8016 27.02 2
   1.7491E-2 END
ARBM-MODERATOR  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 3 END
ARBM-PLEX(REG)  1.0 3 0 0 0 1001 7.84 6012 59.59 8016 32.23 4
   1.1773 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 4
   3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 4
   1.1648E-3 END
ARBM-PLEX(TRIS)  1.0 8 0 0 1 1001 7.16 6012 52.03 7014 0.16 8016 29.82
   15031 1.02 17000 1.81 35079 4.260 35081 2.840 5 1.2757 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 5
   3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 5
   1.1648E-3 END
ARBM-FILLER  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 6 .888 END
* THIS MATERIAL IS ACTUALLY MODERATOR ADJUSTED FOR THE VOLUME
* FRACTION OF THE VOID FILLED BETWEEN CORE AND REFLECTOR.
END COMP
SPHTRIANGP  19.9462 18.5857 1 3 18.9579 2 END
ROCKY FLATS CRITICALS NUREG/CR-1653 EXPERIMENT A (27 GROUP)
* 48 FUEL CANS 2.44 CM MODERATOR GEE.MU125.DATA(OPT)
READ PARM  RUN=YES NPG=600 FDN=YES NUB=YES PLT=NO  END PARM
READ GEOM
UNIT  1
CON='FUEL BOX 15.28 CM ON A SIDE WITH .15 CM WALLS .05CM STACKING VOID'
CUBOID  1 1 6P7.49
CUBOID  2 1 6P7.64
CUBOID  0 1 6P7.6450
UNIT  2
CON='X-FACE INTERSTITIAL MODERATOR'
CUBOID  3 1 2P1.2200 4P7.665
UNIT  3
CON='Y-FACE INTERSTITIAL MODERATOR'
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CUBOID  3 1 2P7.665 2P1.2200 2P7.665
UNIT  4
COM='Z-FACE INTERSTITIAL MODERATOR'
CUBOID  3 1 4P7.665 2P1.2200
UNIT  5
COM='MORE X-FACE MODERATOR'
CUBOID  3 1 4P1.2200 2P7.665
UNIT  6
COM='MORE Y-FACE MODERATOR'
CUBOID  3 1 2P7.665 4P1.2200
UNIT  7
COM='MORE Z-FACE MODERATOR'
CUBOID  3 1 2P1.2200 2P7.665 2P1.2200
UNIT  8
COM='LAST OF INTERSTITIAL MODERATOR'
CUBOID  3 1 6P1.2200
UNIT  9
COM='NORTH SPLIT TABLE CORE'
ARRAY 1 3*0.0
UNIT  10
COM='SOUTH SPLIT TABLE CORE'
ARRAY 2 3*0.0
UNIT  11
COM='PLEXIGLASS REFLECTOR SHEET WITHOUT TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  4 1 2P16.5500 2P38.7500 2P0.6150
UNIT  12
COM='PLEXIGLASS REFLECTOR SHEET WITH TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  5 1 2P16.5500 2P38.7500 2P0.6150
UNIT  13
COM='UPPER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P16.550 2P38.75 2P8.24
UNIT  14
COM='LOWER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P16.550 2P38.75 2P3.69
UNIT  15
COM='NORTH BOTTOM REFLECTOR INCLUDES REGULAR AND TRIS'
ARRAY 3 3*0.0
UNIT  16
COM='PLEXICLAS SHEET BOTTOM SOUTH REFLECTOR WITHOUT TRIS'
CUBOID  0 1 2P5.1 2P2.55 2P0.615
CUBOID  4 1 44.3 -5.1 2P38.75  2P0.615
UNIT  17
COM='PLEXICLAS SHEET BOTTOM SOUTH REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.55 2P0.615
CUBOID  5 1 44.3 -5.1 2P38.75 2P0.6150
UNIT  18
COM='LOWER PORTION SOUTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.55 2P8.855
CUBOID  5 1 44.3 -5.1 2P38.75 2P8.855
UNIT  19
COM='SOUTH BOTTOM REFLECTOR WITH REGULAR AND TRIS'
ARRAY 4 3*0.0
UNIT  20
COM='EAST AND WEST REFLECTORS FOR NORTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P16.550 2P12.65 2P54.2825
UNIT  21
COM='ARRAY FOR EAST AND WEST REFLECTORS FOR NORTH REFLECTOR'
ARRAY 5 3*0.0
UNIT  22
COM='EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P24.700 2P12.65 2P54.2825
UNIT  23
COM='ARRAY FOR EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR'
ARRAY 6 3*0.0
UNIT  24
COM='NORTH TOP REFLECTOR WITH TRIS'
CUBOID  5 1 2P29.100 2P64.05 2P12.15
UNIT  25
COM='ARRAY FOR NORTH TOP REFLECTOR'
ARRAY 7 3*0.0
UNIT  26
COM='SOUTH TOP REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.55 2P12.15
CUBOID  5 1 69.4 -5.1 2P64.05 2P12.15
UNIT  27
COM='ARRAY FOR SOUTH TOP REFLECTOR'
ARRAY 8 3*0.0
UNIT  28
COM='NORTH END REFLECTOR 9.8CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P4.9000 2P64.0500 2P54.2825
UNIT  29
COM='NORTH END RELFECTOR 5.2 CM PORTION WITH TRIS'
CUBOID  5 1 2P2.6 2P64.0500 2P54.2825
UNIT  30
COM='NORTH END RELFECTOR 10.1 CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P5.05 2P64.05 2P54.2825
UNIT  31
COM='ARRAY FOR NORTH END REFLECTOR'
ARRAY 9 3*0.0
UNIT  32
COM='SOUTH END REFLECTOR'
CUBOID  5 1 2P12.55 2P64.05 2P54.2825
UNIT  33
COM='ARRAY FOR SOUTH END REFLECTOR'
ARRAY 10 3*0.0
UNIT  34
COM='BOTTOM MODERATING PLASTIC NORTH CORE'
CUBOID  6 1 2P16.550 2P38.7500 2P13.0500
UNIT  35
COM='TOP MODERATING PLASTIC NORTH CORE'
CUBOID  6 1 2P16.550 2P38.7500 2P3.2525
UNIT  36
ARRAY 11 3*0.0
UNIT  37
ARRAY 12 3*0.0
UNIT  38
COM='NORTH CORE WITH BOTTOM REFLECTOR'
ARRAY 13 3* 0.0
UNIT  39
COM='NORTH CORE WITH EAST AND WEST REFLECTOR'
ARRAY 14 3*0.0
UNIT  40
COM='NORTH CORE WITH END REFLECTOR'
ARRAY 15 3*0.0
UNIT  41
COM='NORTH SPLIT TABLE FACEPLATE'
CUBOID  3 1 2P0.6150 2P64.0500 2P66.4325
UNIT  42
COM='NORTH CORE WITH TOP REFLECTOR'
ARRAY 16 3*0.0
UNIT  43
COM='NORTH CORE WITH FACEPLATE'
ARRAY 17 3*0.0
UNIT  44
COM='12.95 CM THICK MODERATOR SOUTH CORE'
CUBOID  6 1 2P23.924 2P6.475 2P40.183
UNIT  45
COM='2.95 THICK MODERATOR SOUTH CORE'
CUBOID  6 1 2P23.924 2P38.528S 2P1.475
UNIT  46
COM='COMBINATION OF CORE WITH 12.95 THICK MODERATOR'
ARRAY 18 3*0.0
UNIT  47
COM='COMBINATION OF CORE WITH 2.95 THICK MODERATOR'
ARRAY 19 3*0.0
UNIT  48
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 20 3*0.0
UNIT  49
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 21 3*0.0
UNIT  50
COM='SOUTH CORE END REFLECTOR'
ARRAY 22 3*0.0
UNIT  51
COM='FACEPLATE FOR SOUTH SPLIT TABLE'
CUBOID  3 1 2P0.4420  2P64.0500 2P66.4325
UNIT  52
COM='SOUTH CORE WITH TOP REFLECTOR'
ARRAY 23 3*0.0
UNIT  53
COM='SOUTH CORE WITH FACEPLATE'
ARRAY 24 3*0.0
UNIT  54
COM='AIR GAP'
CUBOID  0 1 2P0.1550 2P64.0500 2P66.4325
GLOBAL
UNIT  55
COM='TOTAL'
ARRAY 25 3*0.0
UNIT  56
COM='EMPTY FUEL LOCATION'
CUBOID  0 1 6P7.6650
UNIT  57
COM='SIDE MODERATOR'
CUBOID  5 1 2P16.550 2P4.4300 2P25.4350
UNIT  58
COM='END MODERATOR'
CUBOID  6 1 2P8.1500 2P38.7500 2P25.4350
UNIT  59
COM='SOUTH CORE BOTTOM MODERATING PLASTIC'
CUBOID  6 1 2P24.7000 2P38.7500 2P13.0500
UNIT  60
COM='SOUTH CORE TOP MODERATING PLASTIC'
CUBOID  6 1 2P24.7000 2P38.7500 2P3.2525
UNIT  61
COM='Y-FACE MODERATOR VOID'
CUBOID  0 1 2P7.665 2P1.2200 2P7.665
UNIT  62
COM='X-FACE MODERATOR VOID'
CUBOID  0 1 2P1.2200 4P7.665
END GEOMETRY
READ ARRAY
ARA=1  NUX=3 NUY=7 NUZ=5
COM='NORTH SPLIT TABLE CORE'
FILL  1 2 1 3 5 3 206 1 2 1
      4 7 4 6 8 6 206 4 7 4
      1042
      54 2 1 61 5 3 56 2 1 61 5 3 106 56 62 56  END FILL
ARA=2  NUX=3 NUY=7 NUZ=5
COM='SOUTH SPLIT TABLE CORE'
FILL  1 2 1 3 5 3 206 1 2 1
      4 7 4 6 8 6 206 4 7 4
      1042
      1 2 56 3 5 61 206 56 62 56  END FILL
ARA=3  NUX=1 NUY=1 NUZ=3
COM='NORTH BOTTOM REFLECTOR'
FILL  14 11 13  END FILL
ARA=4  NUX=1 NUY=1 NUZ=7
COM='SOUTH BOTTOM REFLECTOR'
FILL  18 16 17 16 16 17 17  END FILL
ARA=5  NUX=1 NUY=1 NUZ=1
COM='EAST AND WEST WALLS OF NORTH REFLECTOR'
FILL  20 END FILL
ARA=6  NUX=1 NUY=1 NUZ=1
COM='EAST AND WEST WALLS OF SOUTH REFLECTOR'
FILL  22  END FILL
ARA=7  NUX=1 NUY=1 NUZ=1
COM='ARRAY FOR NORTH TOP REFLECTOR'
FILL  24  END FILL
ARA=8  NUX=1 NUY=1 NUZ=1
COM='ARRAY FOR SOUTH TOP REFLECTOR'
FILL  26 END FILL
ARA=9  NUX=3 NUY=1 NUZ=1
COM='ARRAY FOR NORTH END REFLECTOR'
FILL  28 29 30  END FILL
ARA=10  NUX=1 NUY=1 NUZ=1
COM='ARRAY FOR SOUTH END REFLECTOR'
FILL  32  END FILL
ARA=11  NUX=1 NUY=2 NUZ=1
COM='COMBINARION OF CORE WITH SIDE MODERATOR'
FILL  9 57  END FILL
ARA=12 NUX=1 NUY=1 NUZ=3
COM='COMBINATION OF PREVIOUS ARRAY WITH TOP AND BOTTOM MODERATOR'
FILL  34 36 35  END FILL
ARA=13  NUX=1 NUY=1 NUZ=2
COM='COMBINATION OF NORTH CORE WITH BOTTOM REFLECTOR'
FILL  15 37  END FILL
ARA=14  NUX=1 NUY=3 NUZ=1
COM='NORTH CORE WITH SIDE REFLECTORS'
FILL  21 38 21  END FILL
ARA=15  NUX=2 NUY=1 NUZ=1
COM='NORTH CORE WITH END REFLECTOR'
FILL  31 39  END FILL
ARA=16  NUX=1 NUY=1 NUZ=2
COM='NORTH CORE WITH TOP REFLECTOR'
FILL  40 25  END FILL
ARA=17  NUX=2 NUY=1 NUZ=1
COM='NORTH CORE WITH FACEPLATE'
FILL  42 41  END FILL
ARA=18  NUX=1 NUY=2 NUZ=1
COM='COMBINATION OF S. CORE WITH SIDE MODERATOR'
FILL  10 57  END FILL
ARA=19  NUX=2 NUY=1 NUZ=1
COM='COMBINATION OF CORE WITH END MODERATOR'
FILL  44 58  END FILL
ARA=20  NUX=1 NUY=1 NUZ=4
COM='SOUTH CORE WITH BOTTOM MODERATOR AND REFLECTOR'
FILL  19 59 47 60  END FILL
ARA=21 NUX=1 NUY=3 NUZ=1
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
FILL  23 48 23  END FILL
ARA=22 NUX=2 NUY=1 NUZ=1
COM='SOUTH CORE WITH END REFLECTOR'
FILL  49 33  END FILL
ARA=23  NUX=1 NUY=1 NUZ=2
COM='COMBINATION OF CORE WITH TOP REFLECTOR'
FILL  50 27  END FILL
ARA=24  NUX=2 NUY=1 NUZ=1
COM='SOUTH CORE WITH FACEPLATE'
FILL  51 52  END FILL
ARA=25  NUX=3 NUY=1 NUZ=1
COM='TOTAL'
FILL  43 54 53  END FILL
  END ARRAY
READ PLOT TTL='XZ SLICE OF RFP1 SHOWING MATERIAL REGIONS'
XUL=-2  YUL=64.05 ZUL=136
XLR=137 YLR=64.05 ZLR=-2
UAX=1  WDW=-1 MAX=130  NCH='0123456'END
TTL='YZ SLICE OF NORTH CORE FIRST ROW'
XUL=48  YUL=-2  ZUL=136
XLR=48  YLR=136 ZLR=-2
VAX=1  WDW=-1 MAX=130  NCH='0123456'END
TTL='YZ SLICE OF NORTH CORE SECOND ROW'
XUL=28  YUL=-2  ZUL=136
XLR=28  YLR=136 ZLR=-2
VAX=1  WDW=-1 MAX=130  NCH='0123456'END
TTL='YZ SLICE OF SOUTH CORE FIRST ROW'
XUL=62 YUL=-2  ZUL=136
XLR=62 YLR=136  ZLR=-2
VAX=1  WDW=-1 MAX=130  NCH='0123456'END
TTL='YZ SLICE OF SOUTH CORE SECOND ROW'
XUL=80 YUL=-2  ZUL=136
XLR=80 YLR=136  ZLR=-2
VAX=1  WDW=-1 MAX=130  NCH='0123456'END
END PLOT
END DATA
END
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093 (CAR12)

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=CSAS25
ROCKY FLATS CRITICALS NUREG/CR-1653 EXPERIMENT B (27 GROUP)
' 78 FUEL CANS 0.929 CM MODERATOR GEE.MU12S.DATA(UNO1)
27GR   LATTICECELL
U308   1 5.4078E-1 293.0 92234 0.03 92235 4.46 92236 0.08 92238 95.43 END
H20    1 1.5627E-1 END
ARBM-BAGGIE  1.0 3 0 0 0 1001 14.01 6012 84.9 8016 1.20 1 1.9134E-2
    END
ARBM-AL1100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 2 9.5390E-2
    END
ARBM-TAPE(YINTL)  1.0 7 0 0 0 1001 5.92 6012 45.91 8016 10.82 17000
    25.73 20040 6.9 22000 1.6 82000 1.1 2 1.1115E-2 END
ARBM-TAPE(MYLAR)  1.0 3 0 0 0 1001 6.83 6012 65.50 8016 27.02 2
    1.7491E-2 END
ARBM-MODERATOR  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 3 END
ARBM-PLEX(REG)  1.0 3 0 0 0 1001 7.84 6012 59.59 8016 32.23 4
    1.1773 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 4
    3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 4
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   1.1648E-3 END
ARBM-PLEX(TRIS)  1.0 8 0 0 0 1 1001 7.16 6012 52.03 7014 0.16 8016 29.82
   15031 1.02 17000 1.81 35079 4.260 35081 2.840 5 1.2757 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 0 1001 6.48 6012 42.17 8016 49.5 5
   3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 0 1001 11.67 6012 86.29 8016 1.20 5
   1.1648E-3 END
ARBM-FILLED  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 6 .854 END
* THIS MATERIAL IS ACTUALLY MODERATOR ADJUSTED FOR THE VOLUME
* FRACTION OF THE VOID FILLED BETWEEN CORE AND REFLECTOR.
END COMP
SPNTRIANGP  19.09 18.5857 1 3 18.9579 2 END
ROCKY FLATS CRITICALS NUREG/CR-1653 EXPERIMENT B (27 GROUP)
* 78 FUEL CANS 0.929 CM MODERATOR GEE.HU125.DATA(UN01)
READ PARM  RUN=YES MPG=600 FDN=YES MUB=YES PLT=NO  END PARM
READ GEOM
UNIT 1
COM='FUEL BOX 15.28 CM ON A SIDE WITH .15 CM WALLS .05CM STACKING VOID'
CUBOID  1 1 6P7.49
CUBOID  2 1 6P7.64
CUBOID  0 1 6P7.6450
UNIT 2
COM='X-FACE INTERSTITIAL MODERATOR'
CUBOID  3 1 2P0.4645 4P7.665
UNIT 3
COM='Y-FACE INTERSTITIAL MODERATOR'
CUBOID  3 1 2P7.665 2P0.4645 2P7.665
UNIT 4
COM='Z-FACE INTERSTITIAL MODERATOR'
CUBOID  3 1 4P7.665 2P0.4645
UNIT 5
COM='MORE X-FACE MODERATOR'
CUBOID  3 1 4P0.4645 2P7.665
UNIT 6
COM='MORE Y-FACE MODERATOR'
CUBOID  3 1 2P7.665 4P0.4645
UNIT 7
COM='MORE Z-FACE MODERATOR'
CUBOID  3 1 2P0.4645 2P7.665 2P0.4645
UNIT 8
COM='LAST OF INTERSTITIAL MODERATOR'
CUBOID  3 1 6P0.4645
UNIT 9
COM='NORTH SPLIT TABLE CORE'
ARRAY 1 3*0.0
UNIT 10
COM='SOUTH SPLIT TABLE CORE'
ARRAY 2 3*0.0
UNIT 11
COM='PLEXIGLASS REFLECTOR SHEET WITHOUT TRIS, NORTH BOTTON REFLECTOR'
CUBOID  4 1 2P15.8000 2P38.7500 2P0.6150
UNIT 12
COM='PLEXIGLASS REFLECTOR SHEET WITH TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  5 1 2P15.8000 2P38.7500 2P0.6150
UNIT 13
COM='UPPER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P8.24
UNIT 14
COM='LOWER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P3.69
UNIT 15
COM='NORTH BOTTON REFLECTOR INCLUDES REGULAR AND TRIS'
ARRAY 3 3*0.0
UNIT 16
COM='PLEXICLAS SHEET BOTTON SOUTH REFLECTOR WITHOUT TRIS'
CUBOID  0 1 2P5.1 2P2.55 2P0.615
CUBOID  4 1 44.3 -5.1 2P38.75  2P0.615
UNIT 17
COM='PLEXICLAS SHEET BOTTON SOUTH REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.55 2P0.615
CUBOID  5 1 44.3 -5.1 2P38.75 2P0.6150
UNIT 18
COM='LOWER PORTION SOUTH BOTTON REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.55 2P8.855
CUBOID  5 1 44.3 -5.1 2P38.75 2P8.855
UNIT 19
COM='SOUTH BOTTON REFLECTOR WITH REGULAR AND TRIS'
ARRAY 4 3*0.0
UNIT 20
COM='EAST AND WEST REFLECTORS FOR NORTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P12.65 2P54.2825
UNIT 21
COM='ARRAY FOR EAST AND WEST REFLECTORS FOR NORTH REFLECTOR'
ARRAY 5 3*0.0
UNIT 22
COM='EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P24.700 2P12.65 2P54.2825
UNIT 23
COM='ARRAY FOR EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR'
ARRAY 6 3*0.0
UNIT 24
COM='NORTH TOP REFLECTOR WITH TRIS'
CUBOID  5 1 2P28.35 2P64.05 2P12.15
UNIT 25
COM='ARRAY FOR NORTH TOP REFLECTOR'
ARRAY 7 3*0.0
UNIT 26
COM='SOUTH TOP REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.55 2P12.15
CUBOID  5 1 69.4 -5.1 2P64.05 2P12.15
UNIT 27
COM='ARRAY FOR SOUTH TOP REFLECTOR'
ARRAY 8 3*0.0
UNIT 28
COM='NORTH END REFLECTOR 9.8CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P4.9000 2P64.0500 2P54.2825
UNIT 29
COM='NORTH END RELFECTOR 5.2 CM PORTION WITH TRIS'
CUBOID  5 1 2P2.6 2P64.0500 2P54.2825
UNIT 30
COM='NORTH END RELFECTOR 10.1 CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P5.05 2P64.05 2P54.2825
UNIT 31
COM='ARRAY FOR NORTH END REFLECTOR'
ARRAY 9 3*0.0
UNIT 32
COM='SOUTH END REFLECTOR'
CUBOID  5 1 2P12.55 2P64.05 2P54.2825
UNIT 33
COM='ARRAY FOR SOUTH END REFLECTOR'
ARRAY 10 3*0.0
UNIT 34
COM='12.95 THICK MODERATING PLASTIC NORTH CORE'
CUBOID  6 1 2P15.7945 2P6.4750 2P32.0535
UNIT 35
COM='2.95 THICK MODERATING PLASTIC NORTH CORE'
CUBOID  6 1 2P15.7945 2P38.5285 2P1.475
UNIT 36
ARRAY 11 3*0.0
UNIT 37
ARRAY 12 3*0.0
REPLICATE  0 1 0.0 0.011 0.443 0.0 0.1590 0.0 1
UNIT 38
COM='NORTH CORE WITH BOTTON REFLECTOR'
ARRAY 13 3* 0.0
UNIT 39
COM='NORTH CORE WITH EAST AND WEST REFLECTOR'
ARRAY 14 3*0.0
UNIT 40
COM='NORTH CORE WITH END REFLECTOR'
ARRAY 15 3*0.0
UNIT 41
COM='NORTH SPLIT TABLE FACEPLATE'
CUBOID  3 1 2P0.6150 2P64.0500 2P66.4325
UNIT 42
COM='NORTH CORE WITH TOP REFLECTOR'
ARRAY 16 3*0.0
UNIT 43
COM='NORTH CORE WITH FACEPLATE'
ARRAY 17 3*0.0
UNIT 44
COM='12.95 CM THICK MODERATOR SOUTH CORE'
CUBOID  6 1 2P23.924 2P6.475 2P32.0535
UNIT 45
COM='2.95 THICK MODERATOR SOUTH CORE'
CUBOID  6 1 2P23.924 2P38.5285 2P1.475
UNIT 46
COM='COMBINATION OF CORE WITH 12.95 THICK MODERATOR'
ARRAY 18 3*0.0
UNIT 47
COM='COMBINATION OF CORE WITH 2.95 THICK MODERATOR'
ARRAY 19 3*0.0
REPLICATE  0 1 1.552 0.0 0.4430 0.0 0.159 0.0 1
UNIT 48
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 20 3*0.0
UNIT 49
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 21 3*0.0
UNIT 50
COM='SOUTH CORE END REFLECTOR'
ARRAY 22 3*0.0
UNIT 51
COM='FACEPLATE FOR SOUTH SPLIT TABLE'
CUBOID  3 1 2P0.4620  2P64.0500 2P66.4325
UNIT 52
COM='SOUTH CORE WITH TOP REFLECTOR'
ARRAY 23 3*0.0
UNIT 53
COM='SOUTH CORE WITH FACEPLATE'
ARRAY 24 3*0.0
UNIT 54
COM='AIR GAP'
CUBOID  0 1 2P0.3990 2P64.0500 2P66.4325
GLOBAL
UNIT 55
COM='TOTAL'
ARRAY 25 3*0.0
UNIT 56
COM='NORTH BOTTON MODERATOR'
CUBOID  6 1 2P15.8000 2P38.7500 2P8.1295
UNIT 57
COM='BOTTOM SOUTH MODERATOR'
CUBOID  6 1 2P24.700 2P38.75  2P8.1295
UNIT 58
COM='EMPTY FUEL LOCATION'
CUBOID  0 1 6P7.665
END GEOMETRY
READ ARRAY
ARA=1  NUX=3 NUY=7 NUZ=7
COM='NORTH SPLIT TABLE CORE'
FILL  1 2 1 3 5 3 206 1 2 1
      4 7 4 6 8 6 206 4 7 4
      2042
      1 2 1 3 5 3 206 58 2 58  END FILL
ARA=2  NUX=5 NUY=7 NUZ=7
COM='SOUTH SPLIT TABLE CORE'
FILL  1 2 1 2 1 3 5 3 5 3 2010 1 2 1 2 1
      4 7 4 7 4 6 8 6 8 6 2010 4 7 4 7 4
      2070
      1 2 1 2 1 3 5 3 5 3 2010 1 2 1 2 1  END FILL
ARA=3  NUX=1 NUY=1 NUZ=4
COM='NORTH BOTTOM MODERATOR AND REFLECTOR'
FILL  14 11 13 56  END FILL
ARA=4  NUX=1 NUY=1 NUZ=8
COM='SOUTH BOTTOM MODERATOR AND REFLECTOR'
FILL  18 16 17 16 16 17 17 57  END FILL
ARA=5  NUX=1 NUY=1 NUZ=1
COM='EAST AND WEST WALLS OF NORTH REFLECTOR'
FILL  20 END FILL
ARA=6  NUX=1 NUY=1 NUZ=1
COM='EAST AND WEST WALLS OF SOUTH REFLECTOR'
FILL  22  END FILL
ARA=7  NUX=1 NUY=1 NUZ=1
COM='ARRAY FOR NORTH TOP REFLECTOR'
FILL  24  END FILL
ARA=8  NUX=1 NUY=1 NUZ=1
COM='ARRAY FOR SOUTH TOP REFLECTOR'
FILL  26 END FILL
ARA=9  NUX=3 NUY=1 NUZ=1
COM='ARRAY FOR NORTH END REFLECTOR'
FILL  28 29 30  END FILL
ARA=10  NUX=1 NUY=1 NUZ=1
COM='ARRAY FOR SOUTH END REFLECTOR'
FILL  32  END FILL
ARA=11  NUX=1 NUY=2 NUZ=1
COM='COMBINATION OF CORE WITH 12.95CM THICK MODERATOR'
FILL  9 34  END FILL
ARA=12 NUX=1 NUY=1 NUZ=2
COM='COMBINATION OF PREVIOUS ARRAY WITH 2.95CM THICK MODERATOR'
FILL  36 35  END FILL
ARA=13  NUX=1 NUY=1 NUZ=2
COM='COMBINATION OF NORTH CORE WITH BOTTON REFLECTOR'
FILL  15 37  END FILL
ARA=14  NUX=1 NUY=3 NUZ=1
COM='NORTH CORE WITH SIDE REFLECTORS'
FILL  21 38 21  END FILL
ARA=15  NUX=2 NUY=1 NUZ=1
COM='NORTH CORE WITH END REFLECTOR'
FILL  31 39  END FILL
ARA=16  NUX=1 NUY=1 NUZ=2
COM='NORTH CORE WITH TOP REFLECTOR'
FILL  40 25  END FILL
ARA=17  NUX=2 NUY=1 NUZ=1
COM='NORTH CORE WITH FACEPLATE'
FILL  42 41  END FILL
ARA=18  NUX=1 NUY=2 NUZ=1
COM='COMBINATION OF S. CORE WITH 12.95 CM THICK MODERATOR'
FILL  10 44  END FILL
ARA=19  NUX=1 NUY=1 NUZ=2
COM='COMBINATION OF CORE WITH 2.95 CM THICK MODERATOR'
FILL  46 45  END FILL
ARA=20  NUX=1 NUY=1 NUZ=2
COM='SOUTH CORE WITH BOTTON REFLECTOR'
FILL  19 47  END FILL
ARA=21 NUX=1 NUY=3 NUZ=1
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
FILL  23 48 23  END FILL
ARA=22 NUX=2 NUY=1 NUZ=1
COM='SOUTH CORE WITH END REFLECTOR'
FILL  49 33  END FILL
ARA=23  NUX=1 NUY=1 NUZ=2
COM='COMBINATION OF CORE WITH TOP REFLECTOR'
FILL  50 27  END FILL
ARA=24  NUX=2 NUY=1 NUZ=1
COM='SOUTH CORE WITH FACEPLATE'
FILL  51 52  END FILL
ARA=25  NUX=3 NUY=1 NUZ=1
COM='TOTAL'
FILL  43 54 53  END FILL
END ARRAY
READ PLOT TTL='XZ SLICE OF RFP3 SHOWING MATERIAL REGIONS'
XUL=-1  YUL=64.05 ZUL=135
XLR=136 YLR=64.05 ZLR=-2
UAX=1  WDN=-1 MAX=130  NCH='0123456'END
TTL='YZ SLICE OF NORTH CORE FIRST ROW'
XUL=48  YUL=-2  ZUL=136
XLR=48  YLR=136 ZLR=-2
VAX=1  WDN=-1 MAX=130  NCH='0123456'END
TTL='YZ SLICE OF NORTH CORE SECOND ROW'
XUL=28  YUL=-2  ZUL=136
XLR=28  YLR=136 ZLR=-2
VAX=1  WDN=-1 MAX=130  NCH='0123456'END
TTL='YZ SLICE OF SOUTH CORE SECOND ROW'
XUL=80 YUL=-2  ZUL=136
XLR=80 YLR=136  ZLR=-2
VAX=1  WDN=-1 MAX=130  NCH='0123456'
END PLOT
END DATA
END

                              094 (CAR13)

#CSAS25
ROCKY FLATS CRITICALS NUREG/CR-1653 EXPERIMENT C (27 GROUP)
' 80 FUEL CANS 0.929 CM MODERATOR GEE.HU125.DATA(UN02)
27GR  LATTICECELL
U308  1 5.4078E-1 293.0 92234 0.03 92235 4.46 92236 0.08 92238 95.43 END
H2O  1 1.5622E-1 END
ARBM-BAGGIE  1.0 3 0 0 0 1001 14.01 6012 84.9 8016 1.20 1 1.9134E-2
   END
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ARBM-AL1100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 2 9.5390E-1
   END
ARBM-TAPE(VINYL)  1.0 7 0 0 0 1001 5.92 6012 45.91 8016 10.82 17000
   35.73 20040 6.9 22000 1.6 82000 1.1 2 1.1115E-2 END
ARBM-TAPE(MYLAR)  1.0 3 0 0 0 1001 6.83 6012 65.50 8016 27.02 2
   1.7491E-2 END
ARBM-MODERATOR  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 3 END
ARBM-PLEX(REC)  1.0 3 0 0 0 1001 7.84 6012 59.59 8016 32.23 4
   1.1773 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 4
   3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 4
   1.1648E-3 END
ARBM-PLEX(TRIS)  1.0 8 0 0 1 1001 7.16 6012 52.03 7014 0.16 8016 29.82
   15031 1.82 17000 1.81 35079 4.260 35081 2.840 5 1.2757 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 5
   3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 5
   1.1648E-3 END
ARBM-FILLER  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 6 .854 END
' THIS MATERIAL IS ACTUALLY MODERATOR ADJUSTED FOR THE VOLUME
' FRACTION OF THE VOID FILLED BETWEEN CORE AND REFLECTOR.
END COMP
SPHTRIANGP  19.00 18.5857 1 3 18.9579 2 END
ROCKY FLATS CRITICALS NUREG/CR-1653 EXPERIMENT C (27 GROUP)
' 30 FUEL CANS 0.929 CM MODERATOR GEE.MU125.DATA(UNB2)
READ PARM  RUN=YES MPC=600 FDN=YES MUB=YES PLT=NO  END PARM
READ GEOM
UNIT  1
CON='FUEL BOX 15.28 CM ON A SIDE WITH .15 CM WALLS .05CM STACKING VOID'
CUBOID  1 1 6P7.49
CUBOID  2 1 6P7.64
CUBOID  0 1 6P7.6650
UNIT  2
CON='X-FACE INTERSTITIAL MODERATOR'
CUBOID  3 1 2P0.4645 4P7.665
UNIT  3
CON='Y-FACE INTERSTITIAL MODERATOR'
CUBOID  3 1 2P7.665 2P0.4645 2P7.665
UNIT  4
CON='Z-FACE INTERSTITIAL MODERATOR'
CUBOID  3 1 4P7.665 2P0.4645
UNIT  5
CON='MORE X-FACE MODERATOR'
CUBOID  3 1 4P0.4645 2P7.665
UNIT  6
CON='MORE Y-FACE MODERATOR'
CUBOID  3 1 2P7.665 4P0.4645
UNIT  7
CON='MORE Z-FACE MODERATOR'
CUBOID  3 1 2P0.4645 2P7.665 2P0.4645
UNIT  8
CON='LAST OF INTERSTITIAL MODERATOR'
CUBOID  3 1 6P0.4645
UNIT  9
CON='NORTH SPLIT TABLE CORE'
ARRAY 1 3*0.0
UNIT  10
CON='SOUTH SPLIT TABLE CORE'
ARRAY 2 3*0.0
UNIT  11
CON='PLEXIGLASS REFLECTOR SHEET WITHOUT TRIS, NORTH BOTTON REFLECTOR'
CUBOID  4 1 2P15.8000 2P38.7500 2P0.6150
UNIT  12
CON='PLEXIGLASS REFLECTOR SHEET WITH TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  5 1 2P15.8000 2P38.7500 2P0.6150
UNIT  13
CON='UPPER PORTION NORTH BOTTON REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P8.24
UNIT  14
CON='LOWER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P3.69
UNIT  15
CON='NORTH BOTTOM REFLECTOR INCLUDES REGULAR AND TRIS'
ARRAY 3 3*0.0
UNIT  16
CON='PLEXIGLAS SHEET BOTTOM SOUTH REFLECTOR WITHOUT TRIS'
CUBOID  0 1 2P5.1 2P2.55 2P0.615
CUBOID  4 1 44.3 -5.1 2P38.75  2P0.615
UNIT  17
CON='PLEXIGLAS SHEET BOTTOM SOUTH REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.55 2P0.615
CUBOID  5 1 44.3 -5.1 2P38.75 2P0.6150
UNIT  18
CON='LOWER PORTION SOUTH BOTTON REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.55 2P8.855
CUBOID  5 1 44.3 -5.1 2P38.75 2P8.855
UNIT  19
CON='SOUTH BOTTON REFLECTOR WITH REGULAR AND TRIS'
ARRAY 4 3*0.0
UNIT  20
CON='EAST AND WEST REFLECTORS FOR NORTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P12.65 2P54.2825
UNIT  21
CON='ARRAY FOR EAST AND WEST REFLECTORS FOR NORTH REFLECTOR'
ARRAY 5 3*0.0
UNIT  22
CON='EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P24.700 2P12.65 2P54.2825
UNIT  23
CON='ARRAY FOR EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR'
ARRAY 6 3*0.0
UNIT  24
CON='NORTH TOP REFLECTOR WITH TRIS'
CUBOID  5 1 2P28.35 2P64.05 2P12.15
UNIT  25
CON='ARRAY FOR NORTH TOP REFLECTOR'
ARRAY 7 3*0.0
UNIT  26
CON='SOUTH TOP REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.55 2P12.15
CUBOID  5 1 69.4 -5.1 2P64.05 2P12.15
UNIT  27
CON='ARRAY FOR SOUTH TOP REFLECTOR'
ARRAY 8 3*0.0
UNIT  28
CON='NORTH END REFLECTOR 9.8CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P4.9000 2P64.0500 2P54.2825
UNIT  29
CON='NORTH END RELFECTOR 5.2 CM PORTION WITH TRIS'
CUBOID  5 1 2P2.6 2P64.0500 2P54.2825
UNIT  30
CON='NORTH END RELFECTOR 10.1 CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P5.05 2P64.05 2P54.2825
UNIT  31
CON='ARRAY FOR NORTH END REFLECTOR'
ARRAY 9 3*0.0
UNIT  32
CON='SOUTH END REFLECTOR'
CUBOID  5 1 2P12.55 2P64.05 2P54.2825
UNIT  33
CON='ARRAY FOR SOUTH END REFLECTOR'
ARRAY 10 3*0.0
UNIT  34
CON='12.95 THICK MODERATING PLASTIC NORTH CORE'
CUBOID  6 1 2P15.7945 2P6.4750 2P32.0535
UNIT  35
CON='2.95 THICK MODERATING PLASTIC NORTH CORE'
CUBOID  6 1 2P15.7945 2P38.5285 2P1.475
UNIT  36
ARRAY 11 3*0.0
UNIT  37
ARRAY 12 3*0.0
REPLICATE  0 1 0.0 0.011 0.443 0.0 0.1590 0.0 1
UNIT  38
CON='NORTH CORE WITH BOTTOM REFLECTOR'
ARRAY 13 3* 0.0
UNIT  39
CON='NORTH CORE WITH EAST AND WEST REFLECTOR'
ARRAY 14 3*0.0
UNIT  40
CON='NORTH CORE WITH END REFLECTOR'
ARRAY 15 3*0.0
UNIT  41
CON='NORTH SPLIT TABLE FACEPLATE'
CUBOID  3 1 2P0.6150 2P64.0500 2P66.4325
UNIT  42
CON='NORTH CORE WITH TOP REFLECTOR'
ARRAY 16 3*0.0
UNIT  43
CON='NORTH CORE WITH FACEPLATE'
ARRAY 17 3*0.0
UNIT  44
CON='12.95 CM THICK MODERATOR SOUTH CORE'
CUBOID  6 1 2P23.924 2P6.475 2P32.0535
UNIT  45
CON='2.95 THICK MODERATOR SOUTH CORE'
CUBOID  6 1 2P23.924 2P38.5285 2P1.475
UNIT  46
CON='COMBINATION OF CORE WITH 12.95 THICK MODERATOR'
ARRAY 18 3*0.0
UNIT  47
CON='COMBINATION OF CORE WITH 2.95 THICK MODERATOR'
ARRAY 19 3*0.0
REPLICATE  0 1 1.552 0.0 0.4430 0.0 0.159 0.0 1
UNIT  48
CON='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 20 3*0.0
UNIT  49
CON='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 21 3*0.0
UNIT  50
CON='SOUTH CORE END REFLECTOR'
ARRAY 22 3*0.0
UNIT  51
CON='FACEPLATE FOR SOUTH SPLIT TABLE'
CUBOID  3 1 2P0.4620  2P64.0500 2P66.4325
UNIT  52
CON='SOUTH CORE WITH TOP REFLECTOR'
ARRAY 23 3*0.0
UNIT  53
CON='SOUTH CORE WITH FACEPLATE'
ARRAY 24 3*0.0
UNIT  54
CON='AIR GAP'
CUBOID  0 1 2P0.7805 2P64.0500 2P66.4325
GLOBAL
UNIT  55
CON='TOTAL'
ARRAY 25 3*0.0
UNIT  56
CON='NORTH BOTTOM MODERATOR'
CUBOID  6 1 2P15.8000 2P38.7500 2P8.1295
UNIT  57
CON='BOTTOM SOUTH MODERATOR'
CUBOID  6 1 2P24.700 2P38.75  2P8.1295
UNIT  58
CON='SOUTH REAR MODERATOR'
CUBOID  3 1
END GEOMETRY
READ ARRAY
ARA=1  NUX=3 NUY=7 NUZ=7
CON='NORTH SPLIT TABLE CORE'
FILL  1 2 1 3 5 3 206 1 2 1
      4 7 4 6 8 6 206 4 7 4
      2042
      1 2 1 3 5 3 206 1 2 1  END FILL
ARA=2  NUX=5 NUY=7 NUZ=7
CON='SOUTH SPLIT TABLE CORE'
FILL  1 2 1 2 1 3 5 3 5 3 2010 1 2 1 2 1
      4 7 4 7 4 6 8 6 8 6 2010 4 7 4 7 4
      2070
      1 2 1 2 1 3 5 3 5 3 2010 1 2 1 2 1  END FILL
ARA=3  NUX=1 NUY=1 NUZ=4
CON='NORTH BOTTOM MODERATOR AND REFLECTOR'
FILL  14 11 13 56  END FILL
ARA=4  NUX=1 NUY=1 NUZ=8
CON='SOUTH BOTTOM MODERATOR AND REFLECTOR'
FILL  18 16 17 16 16 17 17 57  END FILL
ARA=5  NUX=1 NUY=1 NUZ=1
CON='EAST AND WEST WALLS OF NORTH REFLECTOR'
FILL  20 END FILL
ARA=6  NUX=1 NUY=1 NUZ=1
CON='EAST AND WEST WALLS OF SOUTH REFLECTOR'
FILL  22  END FILL
ARA=7  NUX=1 NUY=1 NUZ=1
CON='ARRAY FOR NORTH TOP REFLECTOR'
FILL  24  END FILL
ARA=8  NUX=1 NUY=1 NUZ=1
CON='ARRAY FOR SOUTH TOP REFLECTOR'
FILL  26  END FILL
ARA=9  NUX=3 NUY=1 NUZ=1
CON='ARRAY FOR NORTH END REFLECTOR'
FILL  28 29 30  END FILL
ARA=10  NUX=1 NUY=1 NUZ=1
CON='ARRAY FOR SOUTH END REFLECTOR'
FILL  32  END FILL
ARA=11  NUX=1 NUY=2 NUZ=1
CON='COMBINATION OF CORE WITH 12.95CM THICK MODERATOR'
FILL  9 34  END FILL
ARA=12 NUX=1 NUY=1 NUZ=2
CON='COMBINATION OF PREVIOUS ARRAY WITH 2.95CM THICK MODERATOR'
FILL  36 35  END FILL
ARA=13  NUX=1 NUY=1 NUZ=2
CON='COMBINATION OF NORTH CORE WITH BOTTOM REFLECTOR'
FILL  15 37  END FILL
ARA=14  NUX=1 NUY=3 NUZ=1
CON='NORTH CORE WITH SIDE REFLECTORS'
FILL  21 38 21  END FILL
ARA=15  NUX=2 NUY=1 NUZ=1
CON='NORTH CORE WITH END REFLECTOR'
FILL  31 39  END FILL
ARA=16  NUX=1 NUY=1 NUZ=2
CON='NORTH CORE WITH TOP REFLECTOR'
FILL  40 25  END FILL
ARA=17  NUX=2 NUY=1 NUZ=1
CON='NORTH CORE WITH FACEPLATE'
FILL  42 41  END FILL
ARA=18  NUX=1 NUY=2 NUZ=1
CON='COMBINATION OF S. CORE WITH 12.95 CM THICK MODERATOR'
FILL  10 44  END FILL
ARA=19  NUX=1 NUY=1 NUZ=2
CON='COMBINATION OF CORE WITH 2.95 CM THICK MODERATOR'
FILL  46 45  END FILL
ARA=20  NUX=1 NUY=1 NUZ=2
CON='SOUTH CORE WITH BOTTOM REFLECTOR'
FILL  19 47  END FILL
ARA=21 NUX=1 NUY=3 NUZ=1
CON='SOUTH CORE WITH EAST WEST REFLECTORS'
FILL  23 48 23  END FILL
ARA=22 NUX=2 NUY=1 NUZ=1
CON='SOUTH CORE WITH END REFLECTOR'
FILL  49 33  END FILL
ARA=23  NUX=1 NUY=1 NUZ=2
CON='COMBINATION OF CORE WITH TOP REFLECTOR'
FILL  50 27  END FILL
ARA=24  NUX=2 NUY=1 NUZ=1
CON='SOUTH CORE WITH FACEPLATE'
FILL  51 52  END FILL
ARA=25  NUX=3 NUY=1 NUZ=1
CON='TOTAL'
FILL  43 54 53  END FILL
END ARRAY
READ PLOT TTL='XZ SLICE OF RFP3 SHOWING MATERIAL REGIONS'
XUL=-1  YUL=64.05 ZUL=135
XLR=136 YLR=64.05 ZLR=-2
UAX=1  NCH=-1 MAX=130  NCH='0123456'END
TTL='YZ SLICE OF NORTH CORE SECOND ROW'
XUL=28  YUL=-2  ZUL=136
XLR=28  YLR=136 ZLR=-2
VAX=1  NCH=-1 MAX=130  NCH='0123456'END
TTL='YZ SLICE OF SOUTH CORE SECOND ROW'
XUL=80 YUL=-2  ZUL=136
XLR=80 YLR=136  ZLR=-2
VAX=1  NCH=-1 MAX=130  NCH='0123456'
END PLOT
END DATA
END
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095 (CAR14)

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=CSAS25
ROCKY FLATS CRITICALS MUREG/CR-1653 EXPERIMENT NUMBER 7 (27 GROUP MODEL)
* FUEL CUBE 15.28 CM, U(4.46)308 @ H/U=1.25, HI CONC. SOLUTION DRIVEN
27GR   IMFHOMMEDIUM
U308   1 5.4078E-1 293.0 92234 0.03 92235 4.46 92236 0.08 92238 95.43 END
H20    1 1.5627E-1 END
ARBM-BAGGIE  1.0 3 0 0 0 1001 14.01 6012 84.9 8016 1.20 1 1.9134E-2
   END
ARBM-AL1100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 2 9.5390E-1
   END
ARBM-TAPE(VINYL)  1.0 7 0 0 0 1001 5.92 6012 45.91 8016 10.82 17000
  25.73 20040 6.9 22000 1.6 82000 1.1 2 1.1115E-2 END
ARBM-TAPE(MYLAR)  1.0 3 0 0 0 1001 6.83 6012 65.50 8016 27.02 2
  1.7491E-2 END
ARBM-MODERATOR  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 3 END
ARBM-PLEX(REG)  1.0 3 0 0 0 1001 7.84 6012 59.59 8016 32.23 4
  1.1773 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 4
  3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 4
  1.1648E-3 END
ARBM-PLEX(TRIS)  1.0 8 0 0 1 1001 7.16 6012 52.03 7014 0.16 8016 29.82
  15031 1.02 17000 1.81 35079 4.260 35081 2.840 5 1.2757 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 5
  3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 5
  1.1648E-3 END
ARBM-FILLER  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 6 0.7 END
* THIS MATERIAL IS ACTUALLY MODERATOR ADJUSTED FOR THE VOLUME
* FRACTION OF THE VOID FILLED BETWEEN CORE AND REFLECTOR.
ARBM-AL1100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 7 2.715  END
SOLMUO2(MO3)2  @ 351.18 0.549 1.0 293.0 92234 1.022 92235 93.172
   92236 0.434 92238 5.372  END
SS304  9 1.0 END
END COMP
ROCKY FLATS CRITICALS MUREG/CR-1653 EXPERIMENT NUMBER 7 (27 GROUP MODEL)
* FUEL CUBE 15.28 CM, U(4.46)308 @ H/U=1.25, HI CONC. SOLUTION DRIVEN
READ PARM  NPG=600 MUB=YES FDN=YES PLT=NO  END PARM
READ GEOM
UNIT  1
COM='FUEL BOX WITH VOID AND PART OF AL BOX'
CUBOID  0 1 9.80  0.0 3.75   0.0   14.98 0.0
CUBOID  2 1 9.95  0.0 3.90  -0.15  14.98 0.0
CUBOID  1 1 14.98 0.0 9.365 -5.615 14.98 0.0
UNIT  2
COM='FRONT OF FUEL BOX'
CUBOID  2 1 0.15 0.0  5.615 0.0 14.98 0.0
CUBOID  0 1 0.15 0.0  9.365 0.0 14.98 0.0
CUBOID  2 1 0.15 0.0 14.98  0.0 14.98 0.0
UNIT  3
COM='REAR OF FUEL BOX'
CUBOID  2 1 0.15 0.0 14.98  0.0 14.98 0.0
UNIT  4
COM='ARRAY TO ASSEMBLE PART OF BOX'
ARRAY 26 3*0
UNIT  5
COM='TOP AND BOTTOM OF BOX'
CUBOID  0 1  9.80 0.0 3.750  0.0   0.15 0.0
CUBOID  2 1 15.28 0.0 9.365 -5.615 0.15 0.0
GLOBAL
UNIT  6
COM='ARRAY TO ASSEMBLE TOP AND BOTTOM'
ARRAY 27 3*0
CUBOID  2 1 15.28  0.0   15.13  -0.15  15.28   0.0
CUBOID  0 1 15.305 -0.025 15.155 -0.175 15.305 -0.025
UNIT  7
COM='FUEL BOX 15.28 CM ON A SIDE WITH .15 CM WALLS .05CM STACKING VOID'
CUBOID  1 1 6P7.49
CUBOID  2 1 6P7.64
CUBOID  0 1 6P7.6650
UNIT 34
COM='ALUMINUM WEIGHT DISTRIBUTION PLATE FOR SPECIAL BOX'
CUBOID  0 1  9.80 0.0 3.750  0.0   0.16 0.0
CUBOID  7 1 15.33 0.0 9.54  -5.79  0.16 0.0
UNIT 35
COM='ALUMINUM WEIGHT DISTRIBUTION PLATE FOR BOXES'
CUBOID  7 1  4P7.665 0.16 0.0
UNIT  9
COM='NORTH SPLIT TABLE CORE'
ARRAY 1 3*0.0
CUBOID  0 1 30.66 -0.94 77.5 0.0 83.475 0.0
UNIT  10
COM='SOUTH SPLIT TABLE CORE'
ARRAY 2 3*0.0
CUBOID  0 1 49.4 0.0 77.5 0.0 83.475 0.0
UNIT  11
COM='PLEXIGLASS REFLECTOR SHEET WITHOUT TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  4 1 2P15.8000 2P38.7500 2P0.6150
UNIT  12
COM='PLEXIGLASS REFLECTOR SHEET WITH TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  5 1 2P15.8000 2P38.7500 2P0.6150
UNIT  13
COM='UPPER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P8.24
UNIT  14
COM='LOWER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P3.69
UNIT  15
COM='NORTH BOTTOM REFLECTOR INCLUDES REGULAR AND TRIS'
ARRAY 3 3*0.0
UNIT  16
COM='PLEXIGLAS SHEET BOTTOM SOUTH REFLECTOR WITHOUT TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P0.6150
CUBOID  4 1 44.3 -5.1 2P38.75  2P0.615
UNIT  17
COM='PLEXIGLAS SHEET BOTTOM SOUTH REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P0.6150
CUBOID  5 1 44.3 -5.1 2P38.75 2P0.6150
UNIT  18
COM='LOWER PORTION SOUTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P8.855
CUBOID  5 1 44.3 -5.1 2P38.75 2P8.855
UNIT  19
COM='SOUTH BOTTOM REFLECTOR WITH REGULAR AND TRIS'
ARRAY 4 3*0.0
UNIT  20
COM='EAST AND WEST REFLECTORS FOR NORTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P12.65 2P54.2825
UNIT 21
COM='ARRAY FOR EAST AND WEST REFLECTORS FOR NORTH REFLECTOR'
ARRAY 5 3*0.0
UNIT  22
COM='EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P24.700 2P12.65 2P54.2825
UNIT  23
COM='ARRAY FOR EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR'
ARRAY 6 3*0.0
UNIT  24
COM='NORTH TOP REFLECTOR WITH TRIS'
CUBOID  5 1 2P28.35 2P64.05 2P12.15
UNIT  25
COM='ARRAY FOR NORTH TOP REFLECTOR'
ARRAY 7 3*0.0
UNIT  26
COM='SOUTH TOP REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P12.15
CUBOID  5 1 69.4 -5.1 2P64.05 2P12.15
UNIT  27
COM='ARRAY FOR SOUTH TOP REFLECTOR'
ARRAY 8 3*0.0
UNIT  28
COM='NORTH END REFLECTOR 9.8CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P4.9000 2P64.0500 2P54.2825
UNIT  29
COM='NORTH END RELFECTOR 5.2 CM PORTION WITH TRIS'
CUBOID  5 1 2P2.6 2P64.0500 2P54.2825
UNIT  30
COM='NORTH END RELFECTOR 10.1 CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P5.05 2P64.05 2P54.2825
UNIT  31
COM='ARRAY FOR NORTH END REFLECTOR'
ARRAY 9 3*0.0
UNIT  32
COM='SOUTH END REFLECTOR'
CUBOID  5 1 2P12.55 2P64.05 2P54.2825
UNIT  33
COM='ARRAY FOR SOUTH END REFLECTOR'
ARRAY 10 3*0.0
UNIT  38
COM='NORTH CORE WITH BOTTOM REFLECTOR'
ARRAY 13 3* 0.0
UNIT  39
COM='NORTH CORE WITH EAST AND WEST REFLECTOR'
ARRAY 14 3*0.0
UNIT  40
COM='NORTH CORE WITH END REFLECTOR'
ARRAY 15 3*0.0
UNIT  42
COM='NORTH CORE WITH TOP REFLECTOR'
ARRAY 16 3*0.0
UNIT  48
COM='SOUTH CORE WITH BOTTOM REFLECTORS'
ARRAY 20 3*0.0
UNIT  49
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 21 3*0.0
UNIT  50
COM='SOUTH CORE END REFLECTOR'
ARRAY 22 3*0.0
UNIT  52
COM='SOUTH CORE WITH TOP REFLECTOR'
ARRAY 23 3*0.0
UNIT  54
COM='AIR GAP'
CUBOID  0 1 0.500 0.0 64.475 -63.625 69.13 -63.735
GLOBAL
UNIT  55
COM='TOTAL'
ARRAY 25 3*0.0
UNIT  56
COM='COMBINATION OF TWO REGULAR FUEL BOXES'
ARRAY 28 3*0.0
UNIT  57
COM='COMBINATION OF REGULAR FUEL BOX AND SPECIAL FUEL BOX'
ARRAY 29 3*0.0
UNIT  58
COM='COMBINATION OF TWO REGULAR WEIGHT DISTRIBUTION PLATES'
ARRAY 30 3*0.0
UNIT  59
COM='COMBINATION OF REGULAR AND SPECIAL WEIGHT DISTRIBUTION PLATES'
ARRAY 31 3*0.0
UNIT  60
COM='NORTH CORE SOLUTION DRIVER'
CUBOID  8 1 2P7.5 2P14.9 1.763 -7.5
CUBOID  0 1 2P7.5 2P14.9 2P7.5
CUBOID  9 1 2P7.65 2P15.05 2P7.65
CUBOID  0 1 2P7.665 2P15.33 2P7.665
UNIT 61
COM='SOUTH CORE SOLUTION DRIVER'
CUBOID  8 1 2P7.5 2P14.9 1.695 -7.5
CUBOID  0 1 2P7.5 2P14.9 2P7.5
CUBOID  9 1 2P7.65 2P15.05 2P7.65
CUBOID  0 1 2P7.665 2P15.33 2P7.665
END GEOMETRY
READ ARRAY
ARA=1  NUX=2 NUY=4 NUZ=9
COM='NORTH SPLIT TABLE CORE'
FILL   2R7   2R56  4R7
       2R3S 2R58  4R3S
       2R7  2R56  4R7
       2R3S 2R58  4R3S
       2R7  56 60 4R7
       2R3S 2R58  4R3S
       2R7  2R56  4R7
       2R3S 2R58  4R3S
       2R7  2R56  4R7

END FILL
ARA=2  NUX=3 NUY=4 NUZ=9
COM='SOUTH SPLIT TABLE CORE'
FILL     3R7   3R56     6R7
       3R3S 3R58     6R3S
       3R7  3R56     6R7
       3R3S 3R58     6R3S
       3R7  61 56 56 6R7
       3R3S 3R58     6R3S
       3R7  57 56 56 6R7
       3R3S 59 58 58 6R3S
       3R7  57 56 56 6R7
END FILL
ARA=3  NUX=1 NUY=1 NUZ=3
COM='NORTH BOTTOM REFLECTOR'
FILL  14 11 13  END FILL
ARA=4  NUX=1 NUY=1 NUZ=7
COM='SOUTH BOTTOM REFLECTOR'
FILL  18 16 17 16 16 17 17  END FILL
ARA=5  NUX=1 NUY=1 NUZ=1
COM='EAST AND WEST WALLS OF NORTH REFLECTOR'
FILL  20 END FILL
ARA=6  NUX=1 NUY=1 NUZ=1
COM='EAST AND WEST WALLS OF SOUTH REFLECTOR'
FILL  22  END FILL
ARA=7  NUX=1 NUY=1 NUZ=1
COM='ARRAY FOR NORTH TOP REFLECTOR'
FILL  24  END FILL
ARA=8  NUX=1 NUY=1 NUZ=1
COM='ARRAY FOR SOUTH TOP REFLECTOR'
FILL  26 END FILL
ARA=9  NUX=3 NUY=1 NUZ=1
COM='ARRAY FOR NORTH END REFLECTOR'
FILL  28 29 30  END FILL
ARA=10  NUX=1 NUY=1 NUZ=1
COM='ARRAY FOR SOUTH END REFLECTOR'
FILL  32  END FILL
ARA=13  NUX=1 NUY=3 NUZ=2
COM='COMBINATION OF NORTH CORE WITH BOTTON REFLECTOR'
FILL  15 9  END FILL
ARA=14  NUX=1 NUY=3 NUZ=1
COM='NORTH CORE WITH SIDE REFLECTORS'
FILL  21 38 21  END FILL
ARA=15  NUX=2 NUY=1 NUZ=1
COM='NORTH CORE WITH END REFLECTOR'
FILL  31 39  END FILL
ARA=16  NUX=1 NUY=1 NUZ=2
COM='NORTH CORE WITH TOP REFLECTOR'
FILL  40 25  END FILL
ARA=20  NUX=1 NUY=1 NUZ=2
COM='SOUTH CORE WITH BOTTOM REFLECTOR'
FILL  19 10  END FILL
ARA=21 NUX=1 NUY=3 NUZ=1
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
FILL  23 48 23  END FILL
ARA=22 NUX=2 NUY=1 NUZ=1
COM='SOUTH CORE WITH END REFLECTOR'
FILL  49 33  END FILL
ARA=23  NUX=1 NUY=1 NUZ=2
COM='COMBINATION OF CORE WITH TOP REFLECTOR'
FILL  50 27  END FILL
ARA=25  NUX=3 NUY=1 NUZ=1
COM='TOTAL'
FILL  42 54 52  END FILL
ARA=26  NUX=3 NUY=1 NUZ=1
COM='ASSEMBLY OF FUEL BOX FRONT AND REAR'
FILL  2 1 3  END FILL
ARA=27  NUX=1 NUY=1 NUZ=3
COM='ASSEMBLY OF FUEL BOX TOP AND BOTTOM'
FILL  5 4 5  END FILL
ARA=28  NUX=1 NUY=2 NUZ=1
COM='COMBINATION OF TWO FUEL BOXES'
FILL  7 7  END FILL
ARA=29  NUX=1 NUY=2 NUZ=1
COM='COMBINATION OF SPECIAL AND REGULAR FUEL BOXES'
FILL  7 6  END FILL
ARA=30  NUX=1 NUY=2 NUZ=1
COM='COMBINATION OF TWO WEIGHT DISTRIBUTION PLATES'
FILL  35 35  END FILL
ARA=31  NUX=1 NUY=2 NUZ=1
COM='COMBINATION OF SPECIAL AND REGULAR WEIGHT DISTRIBUTION PLATES'
FILL  35 34  END FILL
END ARRAY
READ PLOT TTL='YZ SLICE OF SOUTH CORE FIRST ROW'
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```
XUL=44.319 YUL=40.000 ZUL=72.000
XLR=44.319 YLR=72.000 ZLR=56.000
VAX=1  WDW=-1 MAX=130  MCH='012345678'END
TTL='XZ SLICE OF SPHERE CUBOID'
XUL=56.0 YUL=63.625 ZUL=71.735
XLR=72.0 YLR=63.625 ZLR=55.735
VAX=1  WDW=-1 MAX=130  MCH='012345678'
END PLOT
READ START  MSY=1 XSM=41.37 XSP=72.894 YSM=40.63 YSP=71.29
 ZSM=54.071 ZSP=71.4   END START
END DATA
END
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096 (CAR15)

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#CS4325
ROCKY FLATS CRITICALS NUREG/CR-1653 EXPERIMENT NUMBER 7 (27 GROUP MODEL)
* FUEL CUBE 15.28 CM, U(4.46)3O8 @ H/U=1.25, HI CONC. SOLUTION DRIVEN
27GR   INTERMEDIUM
U3O8  1 5.4078E-1 293.0 92234 0.03 92235 4.46 92236 0.08 92238 95.43 END
H2O   1 1.5627E-1 END
ARRM-BAGGIE  1.0 3 0 0 0 1001 14.01 6012 84.9 8016 1.20 1 1.9134E-2
   END
ARRM-ALI100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 2 9.5390E-1
   END
ARRM-TAPE(VINYL)  1.0 7 0 0 0 1001 5.92 6012 45.91 8016 10.82 17000
  25.73 35040 6.9 22000 1.6 82000 1.1 2 1.1115E-2 END
ARRM-TAPE(MYLAR)  1.0 3 0 0 0 1001 6.83 6012 65.50 8016 27.02 2
  1.7491E-2 END
ARRM-MODERATOR  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 3 END
ARRM-PLEX(REG)  1.0 3 0 0 0 1001 7.84 6012 59.59 8016 32.23 4
  1.1773 END
ARRM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 4
  9.7534E-3 END
ARRM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 4
  1.1648E-3 END
ARRM-PLEX(TRIS)  1.0 8 0 0 1 1001 7.16 6012 52.03 7014 0.16 8016 29.82
  15021 1.02 17000 1.81 35079 4.240 35081 2.840 5 1.2757 END
ARRM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 5
  9.7534E-3 END
ARRM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 5
  1.1648E-3 END
ARRM-FILLER  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 6 0.7 END
* THIS MATERIAL IS ACTUALLY MODERATOR ADJUSTED FOR THE VOLUME
* FRACTION OF THE VOID FILLED BETWEEN CORE AND REFLECTOR.
ARRM-ALI100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 7 2.715  END
SOLMUO2(NO3)2  8 351.18 0.549 1.0 293.0 92234 1.022 92235 93.172
  92236 0.434 92238 5.372  END
SS304  9 1.0 END
END COMP
ROCKY FLATS CRITICALS NUREG/CR-1653 EXPERIMENT NUMBER 7 (27 GROUP MODEL)
* FUEL CUBE 15.28 CM, U(4.46)3O8 @ H/U=1.25, HI CONC. SOLUTION DRIVEN
READ PARM  NPG=600 NUB=YES FDN=YES PLT=NO  END PARM
READ GEOM
UNIT  1
CON='FUEL BOX WITH VOID AND PART OF AL BOX'
CUBOID   8 1 9.80  0.0 3.75   0.0   14.98 0.0
CUBOID   2 1 9.95  0.0 3.90  -0.15  14.98 0.0
CUBOID   1 1 14.98 0.0 9.365 -5.615 14.98 0.0
UNIT  2
CON='FRONT OF FUEL BOX'
CUBOID  2 1 0.15 0.0  5.615 0.0 14.98 0.0
CUBOID  8 1 0.15 0.0  9.365 0.0 14.98 0.0
CUBOID  2 1 0.15 0.0 14.98  0.0 14.98 0.0
UNIT  3
CON='REAR OF FUEL BOX'
CUBOID  2 1 0.15 0.0 14.98  0.0 14.98 0.0
UNIT  4
CON='ARRAY TO ASSEMBLE PART OF BOX'
ARRAY 26 3*0
UNIT  5
CON='TOP AND BOTTOM OF BOX'
CUBOID  8 1  9.80 0.0 3.750  0.0   0.15 0.0
CUBOID  2 1 15.28 0.0 9.365 -5.615 0.15 0.0
GLOBAL
UNIT  6
CON='ARRAY TO ASSEMBLE TOP AND BOTTOM'
ARRAY 27 3*0
CUBOID  2 1 15.28   0.0   15.13  -0.15  15.28   0.0
CUBOID  8 1 15.305 -0.025 15.155 -0.175 15.305 -0.025
UNIT  7
CON='FUEL BOX 15.28 CM ON A SIDE WITH .15 CM WALLS .05CM STACKING VOID'
CUBOID   1 1 6P7.49
CUBOID   2 1 6P7.64
CUBOID   8 1 6P7.6450
UNIT  34
CON='ALUMINUM WEIGHT DISTRIBUTION PLATE FOR SPECIAL BOX'
CUBOID  8 1  9.80 0.0 3.750  0.0   0.16 0.0
CUBOID  7 1 15.33 0.0 9.54 -5.79 0.16 0.0
UNIT  35
CON='ALUMINUM WEIGHT DISTRIBUTION PLATE FOR BOXES'
CUBOID  7 1  4P7.645 0.16 0.0
UNIT  9
CON='NORTH SPLIT TABLE CORE'
ARRAY 1 3*0.0
CUBOID  8 1 30.66 -0.94 77.5 0.0 83.475 0.0
UNIT  10
CON='SOUTH SPLIT TABLE CORE'
ARRAY 2 3*0.0
CUBOID  8 1 49.4 0.0 77.5 0.0 83.475 0.0
UNIT  11
CON='PLEXIGLASS REFLECTOR SHEET WITHOUT TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  4 1 2P15.8000 2P38.7500 2P0.6150
UNIT  12
CON='PLEXIGLASS REFLECTOR SHEET WITH TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  5 1 2P15.8000 2P38.7500 2P0.6150
UNIT  13
CON='UPPER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P8.24
UNIT  14
CON='LOWER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P3.69
UNIT  15
CON='NORTH BOTTOM REFLECTOR INCLUDES REGULAR AND TRIS'
ARRAY 3 3*0.0
UNIT  16
CON='PLEXIGLAS SHEET BOTTOM SOUTH REFLECTOR WITHOUT TRIS'
CUBOID  8 1 2P5.1 2P2.5 2P0.6150
CUBOID  4 1 44.3 -5.1 2P38.75  2P0.615
UNIT  17
CON='PLIGLAS SHEET BOTTOM SOUTH REFLECTOR WITH TRIS'
CUBOID  8 1 2P5.1 2P2.5 2P0.6150
CUBOID  5 1 44.3 -5.1 2P38.75 2P0.6150
UNIT  18
CON='LOWER PORTION SOUTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  8 1 2P5.1 2P2.5 2P8.855
CUBOID  5 1 44.3 -5.1 2P38.75 2P8.855
UNIT  19
CON='SOUTH BOTTOM REFLECTOR WITH REGULAR AND TRIS'
ARRAY 4 3*0.0
UNIT  20
CON='EAST AND WEST REFLECTORS FOR NORTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P12.65 2P54.2825
UNIT  21
CON='ARRAY FOR EAST AND WEST REFLECTORS FOR NORTH REFLECTOR'
ARRAY 5 3*0.0
UNIT  22
CON='EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P24.700 2P12.65 2P54.2825
UNIT  23
CON='ARRAY FOR EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR'
ARRAY 6 3*0.0
UNIT  24
CON='NORTH TOP REFLECTOR WITH TRIS'
CUBOID  5 1 2P28.35 2P64.05 2P12.15
UNIT  25
CON='ARRAY FOR NORTH TOP REFLECTOR'
ARRAY 7 3*0.0
UNIT  26
CON='SOUTH TOP REFLECTOR WITH TRIS'
CUBOID  8 1 2P5.1 2P2.5 2P12.15
CUBOID  5 1 69.4 -5.1 2P64.05 2P12.15
UNIT  27
CON='ARRAY FOR SOUTH TOP REFLECTOR'
ARRAY 8 3*0.0
UNIT  28
CON='NORTH END REFLECTOR 9.8CM PORTION WITHOUT TRIS'
CUBOID   4 1 2P4.9000 2P64.0500 2P54.2825
UNIT  29
CON='NORTH END REFLECTOR 5.2 CM PORTION WITH TRIS'
CUBOID  5 1 2P2.6 2P64.0500 2P54.2825
UNIT  30
CON='NORTH END REFLECTOR 10.1 CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P5.05 2P64.05 2P54.2825
UNIT  31
CON='ARRAY FOR NORTH END REFLECTOR'
ARRAY 9 3*0.0
UNIT  32
CON='SOUTH END REFLECTOR'
CUBOID   5 1 2P12.55 2P64.05 2P54.2825
UNIT  33
CON='ARRAY FOR SOUTH END REFLECTOR'
ARRAY 10 3*0.0
UNIT  28
CON='NORTH CORE WITH BOTTOM REFLECTOR'
ARRAY 13 3* 0.0
UNIT  29
CON='NORTH CORE WITH EAST AND WEST REFLECTOR'
ARRAY 14 3*0.0
UNIT  40
CON='NORTH CORE WITH END REFLECTOR'
ARRAY 15 3*0.0
UNIT  42
CON='NORTH CORE WITH TOP REFLECTOR'
ARRAY 16 3*0.0
UNIT  48
CON='SOUTH CORE WITH BOTTOM REFLECTORS'
ARRAY 20 3*0.0
UNIT  49
CON='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 21 3*0.0
UNIT  50
CON='SOUTH CORE CORE END REFLECTOR'
ARRAY 22 3*0.0
UNIT  52
CON='SOUTH CORE WITH TOP REFLECTOR'
ARRAY 23 3*0.0
UNIT  54
CON='AIR GAP'
CUBOID  0 1 0.732 0.0 64.475 -63.625 69.13 -63.735
GLOBAL
UNIT  55
CON='TOTAL'
ARRAY 25 3*0.0
UNIT  56
CON='COMBINATION OF TWO REGULAR FUEL BOXES'
ARRAY 28 3*0.0
UNIT  57
CON='COMBINATION OF REGULAR FUEL BOX AND SPECIAL FUEL BOX'
ARRAY 29 3*0.0
UNIT  58
CON='COMBINATION OF TWO REGULAR WEIGHT DISTRIBUTION PLATES'
ARRAY 30 3*0.0
UNIT  59
CON='COMBINATION OF REGULAR AND SPECIAL WEIGHT DISTRIBUTION PLATES'
ARRAY 31 3*0.0
UNIT  60
CON='NORTH CORE SOLUTION DRIVER'
CUBOID  8 1 2P7.5 2P14.9 1.863 -7.5
CUBOID  0 1 2P7.5 2P14.9 2P7.5
CUBOID  9 1 2P7.65 2P15.05 2P7.65
CUBOID  0 1 2P7.665 2P15.33 2P7.665
UNIT  61
CON='SOUTH CORE SOLUTION DRIVER'
CUBOID  8 1 2P7.5 2P14.9 1.794 -7.5
CUBOID  0 1 2P7.5 2P14.9 2P7.5
CUBOID  9 1 2P7.65 2P15.05 2P7.65
CUBOID  0 1 2P7.665 2P15.33 2P7.665
END GEOMETRY
READ ARRAY
ARA=1  NUX=2 NUY=4 NUZ=9
CON='NORTH SPLIT TABLE CORE'
FILL    2R7  2R56  4R7
        2R35 2R58  4R35
        2R7  2R56  4R7
        2R35 2R58  4R35
        2R7  56 60 4R7
        2R35 2R58  4R35
        2R7  2R56  4R7
        2R35 2R58  4R35
        2R7  2R56  4R7
END FILL
ARA=2  NUX=3 NUY=4 NUZ=9
CON='SOUTH SPLIT TABLE CORE'
FILL    3R7  3R56     6R7
        3R35 3R58     6R35
        3R7  3R56     6R7
        3R35 3R58     6R35
        3R7  61 56 56 6R7
        3R35 3R58     6R35
        3R7  57 56 56 6R7
        3R35 59 58 58 6R35
        3R7  57 56 56 6R7
END FILL
ARA=3  NUX=1 NUY=1 NUZ=3
CON='NORTH BOTTOM REFLECTOR'
FILL   14 11 13  END FILL
ARA=4  NUX=1 NUY=1 NUZ=7
CON='SOUTH BOTTOM REFLECTOR'
FILL  18 16 17 16 16 16 17 17  END FILL
ARA=5  NUX=1 NUY=1 NUZ=1
CON='EAST AND WEST WALLS OF NORTH REFLECTOR'
FILL  20 END FILL
ARA=6  NUX=1 NUY=1 NUZ=1
CON='EAST AND WEST WALLS OF SOUTH REFLECTOR'
FILL  22  END FILL
ARA=7  NUX=1 NUY=1 NUZ=1
CON='ARRAY FOR NORTH TOP REFLECTOR'
FILL  24  END FILL
ARA=8  NUX=1 NUY=1 NUZ=1
CON='ARRAY FOR SOUTH TOP REFLECTOR'
FILL  26 END FILL
ARA=9  NUX=3 NUY=1 NUZ=1
CON='ARRAY FOR NORTH END REFLECTOR'
FILL  28 29 30  END FILL
ARA=10  NUX=1 NUY=1 NUZ=1
CON='ARRAY FOR SOUTH END REFLECTOR'
FILL  32  END FILL
ARA=13  NUX=1 NUY=1 NUZ=2
CON='COMBINATION OF NORTH CORE WITH BOTTOM REFLECTOR'
FILL  15 9  END FILL
ARA=14  NUX=1 NUY=3 NUZ=1
CON='NORTH CORE WITH SIDE REFLECTORS'
FILL  21 28 21  END FILL
ARA=15  NUX=2 NUY=1 NUZ=1
CON='NORTH CORE WITH END REFLECTOR'
FILL  29 29  END FILL
ARA=16  NUX=1 NUY=1 NUZ=2
CON='NORTH CORE WITH TOP REFLECTOR'
FILL  40 25  END FILL
ARA=20  NUX=1 NUY=1 NUZ=2
CON='SOUTH CORE WITH BOTTOM REFLECTOR'
FILL  19 10  END FILL
ARA=21 NUX=1 NUY=3 NUZ=1
CON='SOUTH CORE WITH EAST WEST REFLECTORS'
FILL  23 48 23  END FILL
ARA=22 NUX=2 NUY=1 NUZ=1
CON='SOUTH CORE WITH END REFLECTOR'
FILL  49 33  END FILL
ARA=23  NUX=1 NUY=1 NUZ=2
CON='COMBINATION OF CORE WITH TOP REFLECTOR'
FILL  50 27  END FILL
ARA=25  NUX=3 NUY=1 NUZ=1
CON='TOTAL'
FILL  42 54 52  END FILL
ARA=26  NUX=3 NUY=1 NUZ=1
CON='ASSEMBLY OF FUEL BOX FRONT AND REAR'
FILL  2 1 3  END FILL
ARA=27  NUX=1 NUY=1 NUZ=3
CON='ASSEMBLY OF FUEL BOX TOP AND BOTTOM'
FILL  5 4 5  END FILL
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ARA=28  MUX=1 MUY=2 MUZ=1
COM='COMBINATION OF TWO FUEL BOXES'
FILL  7 7  END FILL
ARA=29  MUX=1 MUY=2 MUZ=1
COM='COMBINATION OF SPECIAL AND REGULAR FUEL BOXES'
FILL  7 6  END FILL
ARA=30  MUX=1 MUY=2 MUZ=1
COM='COMBINATION OF TWO WEIGHT DISTRIBUTION PLATES'
FILL  35 35  END FILL
ARA=31  MUX=1 MUY=2 MUZ=1
COM='COMBINATION OF SPECIAL AND REGULAR WEIGHT DISTRIBUTION PLATES'
FILL  25 34  END FILL
END ARRAY
READ PLOT TTL='YZ SLICE OF SOUTH CORE FIRST ROW'
XUL=64.319 YUL=40.000 ZUL=72.000
XLR=64.319 YLR=72.000 ZLR=56.000
VAX=1  WDW=-1 MAX=130  MCH='012345678'END
TTL='XZ SLICE OF SPHERE CUBOID'
XUL=56.0 YUL=63.625 ZUL=71.735
XLR=72.0 YLR=63.625 ZLR=55.735
UAX=1  WDW=-1 MAX=130  MCH='012345678'
END PLOT
' READ START  MST=1 XSN=41.27 XSP=72.894 YSN=40.63 YSP=71.29
'    ZSN=56.071 ZSP=71.4    END START
READ START  MST=1  END START
END DATA
END
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097 (CAR16)

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#CSAS25
ROCKY FLATS CRITICALS MUREG/CR-1653 EXPERIMENT NUMBER 7 (27 GROUP NODEL)
' FUEL CUBE 15.28 CM, U(4.46)308 @ H/U=1.25, LOW CONC. SOLUTION DRIVEN
27GR   INFHOMMEDIUM
U308  1 5.4078E-1 293.0 92234 0.03 92235 4.46 92236 0.08 92238 95.43 END
H2O  1 1.5622E-1 END
ARBM-BAGGIE  1.0 3 0 0 0 1001 14.01 6012 84.9 8016 1.20 1 1.9134E-2
   END
ARBM-AL1100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 2 9.5390E-1
   END
ARBM-TAPE(VINYL)  1.0 7 0 0 0 1001 5.92 6012 45.91 8016 10.82 17000
  25.73 20040 6.9 22000 1.6 82000 1.1 2 1.1115E-2 END
ARBM-TAPE(MYLAR)  1.0 3 0 0 0 1001 6.83 6012 65.50 8016 27.02 2
  1.7491E-2 END
ARBM-MODERATOR  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 3 END
ARBM-PLEX(REG)  1.0 3 0 0 0 1001 7.84 6012 59.59 8016 32.23 4
  1.1773 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 4
  3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 4
  1.1648E-3 END
ARBM-PLEX(TRIS)  1.0 8 0 0 1 1001 7.16 6012 52.03 7014 0.16 8016 29.82
  15031 1.02 17000 1.81 35079 4.260 35081 2.840 5 1.2757 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 5
  3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 5
  1.1648E-3 END
ARBM-FILLER  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 6 0.7 END
' THIS MATERIAL IS ACTUALLY MODERATOR ADJUSTED FOR THE VOLUME
' FRACTION OF THE VOID FILLED BETWEEN CORE AND REFLECTOR.
ARBM-AL1100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 7 2.715  END
SOLMU02(MO3)2  8 86.42 0.149 1.0 293.0 92234 1.022 92235 93.172
  92236 0.434 92238 5.372  END
SS304  9 1.0 END
END COMP
ROCKY FLATS CRITICALS MUREG/CR-1653 EXPERIMENT NUMBER 7 (27 GROUP NODEL)
' FUEL CUBE 15.28 CM, U(4.46)308 @ H/U=1.25, LOW CONC. SOLUTION DRIVEN
READ PARM  MPC=600 MUB=YES FDN=YES PLT=YES  END PARM
READ GEOM
UNIT  1
COM='FUEL BOX WITH VOID AND PART OF AL BOX'
CUBOID  0 1 9.80  0.0 3.75   0.0   14.98 0.0
CUBOID  2 1 9.95  0.0 3.90  -0.15  14.98 0.0
CUBOID  1 1 14.98 0.0 9.345 -5.615 14.98 0.0
UNIT  2
COM='FRONT OF FUEL BOX'
CUBOID  2 1 0.15 0.0  5.615 0.0 14.98 0.0
CUBOID  0 1 0.15 0.0  9.345 0.0 14.98 0.0
CUBOID  2 1 0.15 0.0 14.98  0.0 14.98 0.0
UNIT  3
COM='REAR OF FUEL BOX'
CUBOID  2 1 0.15 0.0 14.98  0.0 14.98 0.0
UNIT  4
COM='ARRAY TO ASSEMBLE PART OF BOX'
ARRAY 26 3*0
UNIT  5
COM='TOP AND BOTTOM OF BOX'
CUBOID  0 1  9.80 0.0 3.750  0.0   0.15 0.0
CUBOID  2 1 15.28 0.0 9.345 -5.615 0.15 0.0
GLOBAL
UNIT  6
COM='ARRAY TO ASSEMBLE TOP AND BOTTOM'
ARRAY 27 3*0
CUBOID  2 1 15.28   0.0   15.13  -0.15  15.28   0.0
CUBOID  0 1 15.305 -0.025 15.155 -0.175 15.305 -0.025
UNIT  7
COM='FUEL BOX 15.28 CM ON A SIDE WITH .15 CM WALLS .05CM STACKING VOID'
CUBOID  1 1 6P7.49
CUBOID  2 1 6P7.64
CUBOID  0 1 6P7.6650
UNIT  24
COM='ALUMINUM WEIGHT DISTRIBUTION PLATE FOR SPECIAL BOX'
CUBOID  0 1  9.80 0.0 3.750  0.0   0.16 0.0
CUBOID  7 1 15.33 0.0 9.54 -5.79 0.16 0.0
UNIT  25
COM='ALUMINUM WEIGHT DISTRIBUTION PLATE FOR BOXES'
CUBOID  7 1  4P7.665 0.16 0.0
UNIT  9
COM='NORTH SPLIT TABLE CORE'
ARRAY 1 3*0.0
CUBOID  0 1 30.66 -0.94 77.5 0.0 83.475 0.0
UNIT  10
COM='SOUTH SPLIT TABLE CORE'
ARRAY 2 3*0.0
CUBOID  0 1 49.4 0.0 77.5 0.0 83.475 0.0
UNIT  11
COM='PLEXIGLASS REFLECTOR SHEET WITHOUT TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  4 1 2P15.8000 2P38.7500 2P0.6150
UNIT  12
COM='PLEXIGLASS REFLECTOR SHEET WITH TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  5 1 2P15.8000 2P38.7500 2P0.6150
UNIT  13
COM='UPPER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P8.24
UNIT  14
COM='LOWER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P3.69
UNIT  15
COM='NORTH BOTTOM REFLECTOR INCLUDES REGULAR AND TRIS'
ARRAY 3 3*0.0
UNIT  16
COM='PLEXIGLAS SHEET BOTTOM SOUTH REFLECTOR WITHOUT TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P0.6150
CUBOID  4 1 44.3 -5.1 2P38.75  2P0.615
UNIT  17
COM='PLEXIGLAS SHEET BOTTOM SOUTH REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P0.6150
CUBOID  5 1 44.3 -5.1 2P38.75 2P0.6150
UNIT  18
COM='LOWER PORTION SOUTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P8.855
CUBOID  5 1 44.3 -5.1 2P38.75 2P8.855
UNIT  19
COM='SOUTH BOTTOM REFLECTOR WITH REGULAR AND TRIS'
ARRAY 4 3*0.0
UNIT  20
COM='EAST AND WEST REFLECTORS FOR NORTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P12.65 2P54.2825
UNIT  21
COM='ARRAY FOR EAST AND WEST REFLECTORS FOR NORTH REFLECTOR'
ARRAY 5 3*0.0
UNIT  22
COM='EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P24.700 2P12.65 2P54.2825
UNIT  23
COM='ARRAY FOR EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR'
ARRAY 6 3*0.0
UNIT  24
COM='NORTH TOP REFLECTOR WITH TRIS'
CUBOID  5 1 2P28.35 2P64.05 2P12.15
UNIT  25
COM='ARRAY FOR NORTH TOP REFLECTOR'
ARRAY 7 3*0.0
UNIT  26
COM='SOUTH TOP REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P12.15
CUBOID  5 1 69.4 -5.1 2P64.05 2P12.15
UNIT  27
COM='ARRAY FOR SOUTH TOP REFLECTOR'
ARRAY 8 3*0.0
UNIT  28
COM='NORTH END REFLECTOR 9.8CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P4.9000 2P64.0500 2P54.2825
UNIT  29
COM='NORTH END RELFECTOR 5.2 CM PORTION WITH TRIS'
CUBOID  5 1 2P2.6 2P64.0500 2P54.2825
UNIT  30
COM='NORTH END RELFECTOR 10.1 CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P5.05 2P64.05 2P54.2825
UNIT  31
COM='ARRAY FOR NORTH END REFLECTOR'
ARRAY 9 3*0.0
UNIT  32
COM='SOUTH END REFLECTOR'
CUBOID  5 1 2P12.55 2P64.05 2P54.2825
UNIT  33
COM='ARRAY FOR SOUTH END REFLECTOR'
ARRAY 10 3*0.0
UNIT  38
COM='NORTH CORE WITH BOTTOM REFLECTOR'
ARRAY 13 3* 0.0
UNIT  39
COM='NORTH CORE WITH EAST AND WEST REFLECTOR'
ARRAY 14 3*0.0
UNIT  40
COM='NORTH CORE WITH END REFLECTOR'
ARRAY 15 3*0.0
UNIT  42
COM='NORTH CORE WITH TOP REFLECTOR'
ARRAY 16 3*0.0
UNIT  48
COM='SOUTH CORE WITH BOTTOM REFLECTORS'
ARRAY 20 3*0.0
UNIT  49
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 21 3*0.0
UNIT  50
COM='SOUTH CORE END REFLECTOR'
ARRAY 22 3*0.0
UNIT  52
COM='SOUTH CORE WITH TOP REFLECTOR'
ARRAY 23 3*0.0
UNIT  54
COM='AIR GAP'
CUBOID  0 1 0.570 0.0 64.475 -63.625 69.13 -63.735
GLOBAL
UNIT  55
COM='TOTAL'
ARRAY 25 3*0.0
UNIT  56
COM='COMBINATION OF TWO REGULAR FUEL BOXES'
ARRAY 28 3*0.0
UNIT  57
COM='COMBINATION OF REGULAR FUEL BOX AND SPECIAL FUEL BOX'
ARRAY 29 3*0.0
UNIT  58
COM='COMBINATION OF TWO REGULAR WEIGHT DISTRIBUTION PLATES'
ARRAY 30 3*0.0
UNIT  59
COM='COMBINATION OF REGULAR AND SPECIAL WEIGHT DISTRIBUTION PLATES'
ARRAY 31 3*0.0
UNIT  60
COM='NORTH CORE SOLUTION DRIVER'
CUBOID  8 1 2P7.5 2P14.9 3.332 -7.5
CUBOID  0 1 2P7.5 2P14.9 2P7.5
CUBOID  9 1 2P7.65 2P15.05 2P7.65
CUBOID  0 1 2P7.665 2P15.33 2P7.665
UNIT  61
COM='SOUTH CORE SOLUTION DRIVER'
CUBOID  8 1 2P7.5 2P14.9 3.292 -7.5
CUBOID  0 1 2P7.5 2P14.9 2P7.5
CUBOID  9 1 2P7.65 2P15.05 2P7.65
CUBOID  0 1 2P7.665 2P15.33 2P7.665
END GEOMETRY
READ ARRAY
ARA=1  MUX=2 MUY=4 MUZ=9
COM='NORTH SPLIT TABLE CORE'
FILL    2R7   2R56  4R7
        2R35 2R58  4R35
        2R7   2R56  4R7
        2R35 2R58  4R35
        2R7   54 60 4R7
        2R35 2R58  4R35
        2R7   2R56  4R7
        2R35 2R58  4R35
        2R7   2R56  4R7
END FILL
ARA=2  MUX=3 MUY=4 MUZ=9
COM='SOUTH SPLIT TABLE CORE'
FILL    3R7   3R56      6R7
        3R35 3R58      6R35
        3R7   3R56      6R7
        3R35 3R58      6R35
        3R7   61 56 56 6R7
        3R35 3R58      6R35
        3R7   57 56 56 6R7
        3R35 59 58 58 6R35
        3R7   57 56 56 6R7
END FILL
ARA=3  MUX=1 MUY=1 MUZ=3
COM='NORTH BOTTOM REFLECTOR'
FILL  14 11 13  END FILL
ARA=4  MUX=1 MUY=1 MUZ=7
COM='SOUTH BOTTOM REFLECTOR'
FILL  18 16 17 16 16 17 17  END FILL
ARA=5  MUX=1 MUY=1 MUZ=1
COM='EAST AND WEST WALLS OF NORTH REFLECTOR'
FILL   20 END FILL
ARA=6  MUX=1 MUY=1 MUZ=1
COM='EAST AND WEST WALLS OF SOUTH REFLECTOR'
FILL   22  END FILL
ARA=7  MUX=1 MUY=1 MUZ=1
COM='ARRAY FOR NORTH TOP REFLECTOR'
FILL   24  END FILL
ARA=8  MUX=1 MUY=1 MUZ=1
COM='ARRAY FOR SOUTH TOP REFLECTOR'
FILL   26 END FILL
ARA=9  MUX=3 MUY=1 MUZ=1
COM='ARRAY FOR NORTH END REFLECTOR'
FILL  28 29 30  END FILL
ARA=10  MUX=1 MUY=1 MUZ=3
COM='ARRAY FOR SOUTH END REFLECTOR'
FILL   32  END FILL
ARA=13  MUX=1 MUY=1 MUZ=2
COM='COMBINATION OF NORTH CORE WITH BOTTOM REFLECTOR'
FILL  15 9  END FILL
ARA=14  MUX=1 MUY=3 MUZ=1
COM='NORTH CORE WITH SIDE REFLECTORS'
FILL  21 38 21  END FILL
ARA=15  MUX=2 MUY=1 MUZ=1
COM='NORTH CORE WITH END REFLECTOR'
FILL  31 39  END FILL
ARA=16  MUX=1 MUY=1 MUZ=2
COM='NORTH CORE WITH TOP REFLECTOR'
FILL  40 25  END FILL
ARA=20  MUX=1 MUY=1 MUZ=2
COM='SOUTH CORE WITH BOTTOM REFLECTOR'
FILL   19 10  END FILL
ARA=21 MUX=1 MUY=3 MUZ=1
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
FILL  23 48 23  END FILL
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ARA=22 MUX=2 MUY=1 MUZ=1
COM='SOUTH CORE WITH END REFLECTOR'
FILL  49 33  END FILL
ARA=23  MUX=1 MUY=1 MUZ=2
COM='COMBINATION OF CORE WITH TOP REFLECTOR'
FILL  50 27  END FILL
ARA=25  MUX=3 MUY=1 MUZ=1
COM='TOTAL'
FILL  42 54 52  END FILL
ARA=26  MUX=3 MUY=1 MUZ=1
COM='ASSEMBLY OF FUEL BOX FRONT AND REAR'
FILL  2 1 3  END FILL
ARA=27  MUX=1 MUY=1 MUZ=3
COM='ASSEMBLY OF FUEL BOX TOP AND BOTTOM'
FILL  5 4 5  END FILL
ARA=28  MUX=1 MUY=2 MUZ=1
COM='COMBINATION OF TWO FUEL BOXES'
FILL  7 7  END FILL
ARA=29  MUX=1 MUY=2 MUZ=1
COM='COMBINATION OF SPECIAL AND REGULAR FUEL BOXES'
FILL  7 6  END FILL
ARA=30  MUX=1 MUY=2 MUZ=1
COM='COMBINATION OF TWO WEIGHT DISTRIBUTION PLATES'
FILL  35 35  END FILL
ARA=31  MUX=1 MUY=2 MUZ=1
COM='COMBINATION OF SPECIAL AND REGULAR WEIGHT DISTRIBUTION PLATES'
FILL  35 34  END FILL
END ARRAY
READ PLOT TTL='YZ SLICE OF SOUTH CORE FIRST ROW'
XUL=44.319 YUL=40.000 ZUL=72.000
XLR=44.319 YLR=72.000 ZLR=56.000
UAX=1  VDN=-1 NAX=130  NCH='012345678'END
TTL='XZ SLICE OF SPHERE CUBOID'
XUL=56.0 YUL=63.625 ZUL=71.735
XLR=72.0 YLR=63.625 ZLR=55.735
UAX=1  VDN=-1 NAX=130  NCH='012345678'
END PLOT
READ START  NST=1 XSM=41.37 XSP=72.894 YSM=40.63 YSP=71.29
  ZSM=56.071 ZSP=71.4  END START
END DATA
END

                              098 (CAR17)

=CSAS25
ROCKY FLATS CRITICALS NUREG/CR-2500 EXPERIMENT F (27 GROUP)
' 4# FUEL CANS 0.929 CM MODERATOR GEE.MU203.DATA(UNDER)
27GR   LATTICECELL
U308  1 5.4078E-1 293.0 92234 0.03 92235 4.46 92236 0.08 92238 95.43 END
H20   1 2.6356E-1 END
ARBM-BUGGIE  1.0 3 0 0 0 1001 14.01 6012 84.9 8016 1.20 1 1.9134E-2
    END
ARBM-AL1100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 2 9.5390E-1
    END
ARBM-TAPE(VINYL)  1.0 7 0 0 0 1001 5.92 6012 45.91 8016 10.82 17000
  25.73 20040 6.9 22000 1.6 82000 1.1 2 1.1115E-2 END
ARBM-TAPE(MYLAR)  1.0 3 0 0 0 1001 6.83 6012 65.50 8016 27.02 2
  1.7491E-2 END
ARBM-MODERATOR  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 3 END
ARBM-PLEX(REG)  1.0 3 0 0 0 1001 7.84 6012 59.59 8016 32.23 4
  1.1773 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 4
  3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 4
  1.1648E-3 END
ARBM-PLEX(TRIS)  1.0 8 0 0 1 1001 7.16 6012 52.03 7014 0.16 8016 29.82
  15031 1.02 17000 1.81 35079 4.260 35081 2.840 5 1.2757 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 5
  3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 5
  1.1648E-3 END
ARBM-FILLER  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 6 1.0 END
' THIS MATERIAL IS ACTUALLY MODERATOR ADJUSTED FOR THE VOLUME
' FRACTION OF THE VOID FILLED BETWEEN CORE AND REFLECTOR.
END COMP
' SPHERICAL  VACUUM  REFLECTED  0.0  END
' 1 9.2929  DMEXTERMOD  3 10.0  MDEXTERMOD  END ZONE
SPHTRIANGP  19.00 18.5857 1 3 18.9579 2 END
ROCKY FLATS CRITICALS NUREG/CR-2500 EXPERIMENT F (27 GROUP)
' 4# FUEL CANS 0.929 CM MODERATOR GEE.MU203.DATA(UNDER)
READ PARM  RUN=YES MPC=600
PLT=NO  MUB=YES FDN=YES
END PARM
READ GEOM
UNIT  1
COM='FUEL BOX 15.28 CM ON A SIDE WITH .15 CM WALLS .05CM STACKING VOID'
CUBOID  1 1 6P7.49
CUBOID  2 1 6P7.64
CUBOID  0 1 6P7.6650
UNIT  2
COM='X-FACE INTERSTITIAL MODERATOR'
CUBOID  3 1 2P0.4645 4P7.645
UNIT  3
COM='Y-FACE INTERSTITIAL MODERATOR'
CUBOID  3 1 2P7.645 2P0.4645 2P7.645
UNIT  4
COM='Z-FACE INTERSTITIAL MODERATOR'
CUBOID  3 1 4P7.645 2P0.4645
UNIT  5
COM='MORE X-FACE MODERATOR'
CUBOID  3 1 4P0.4645 2P7.645
UNIT  6
COM='MORE Y-FACE MODERATOR'
CUBOID  3 1 2P7.645 4P0.4645
UNIT  7
COM='MORE Z-FACE MODERATOR'
CUBOID  3 1 2P0.4645 2P7.645 2P0.4645
UNIT  8
COM='LAST OF INTERSTITIAL MODERATOR'
CUBOID  3 1 6P0.4645
UNIT  9
COM='NORTH SPLIT TABLE CORE'
ARRAY 1 3*0.0
REPLICATE 0 1 0.0 0.0 0.0 0.0 17.8910 0.0 1
UNIT  10
COM='SOUTH SPLIT TABLE CORE'
ARRAY 2 3*0.0
REPLICATE 0 1 0.0 0.0 0.0 0.0 17.8910 0.0 1
UNIT  11
COM='PLEXIGLASS REFLECTOR SHEET WITHOUT TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  4 1 2P15.8000 2P38.7500 2P0.6150
UNIT  12
COM='PLEXIGLASS REFLECTOR SHEET WITH TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  5 1 2P15.8000 2P38.7500 2P0.6150
UNIT  13
COM='UPPER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P8.24
UNIT  14
COM='LOWER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P3.69
UNIT  15
COM='NORTH BOTTOM REFLECTOR INCLUDES REGULAR AND TRIS'
ARRAY 3 3*0.0
UNIT  16
COM='PLEXICLAS SHEET BOTTOM SOUTH REFLECTOR WITHOUT TRIS'
CUBOID  0 1 2P5.1 2P2.55 2P0.615
CUBOID  4 1 44.3 -5.1 2P38.75 2P0.615
UNIT  17
COM='PLEXICLAS SHEET BOTTOM SOUTH REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.55 2P0.615
CUBOID  5 1 44.3 -5.1 2P38.75 2P0.6150
UNIT  18
COM='LOWER PORTION SOUTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.55 2P8.855
CUBOID  5 1 44.3 -5.1 2P38.75 2P8.855
UNIT  19
COM='SOUTH BOTTOM REFLECTOR WITH REGULAR AND TRIS'
ARRAY 4 3*0.0
UNIT  20
COM='EAST AND WEST REFLECTORS FOR NORTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P12.65 2P54.2825
UNIT  21
COM='ARRAY FOR EAST AND WEST REFLECTORS FOR NORTH REFLECTOR'
ARRAY 5 3*0.0
UNIT  22
COM='EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P24.700 2P12.65 2P54.2825
UNIT  23
COM='ARRAY FOR EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR'
ARRAY 6 3*0.0
UNIT  24
COM='NORTH TOP REFLECTOR WITH TRIS'
CUBOID  5 1 2P28.35 2P64.05 2P12.15
UNIT  25
COM='ARRAY FOR NORTH TOP REFLECTOR'
ARRAY 7 3*0.0
UNIT  26
COM='SOUTH TOP REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.55 2P12.15
CUBOID  5 1 69.4 -5.1 2P64.05 2P12.15
UNIT  27
COM='ARRAY FOR SOUTH TOP REFLECTOR'
ARRAY 8 3*0.0
UNIT  28
COM='NORTH END REFLECTOR 9.8CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P4.9000 2P64.0500 2P54.2825
UNIT  29
COM='NORTH END RELFECTOR 5.2 CM PORTION WITH TRIS'
CUBOID  5 1 2P2.6 2P64.0500 2P54.2825
UNIT  30
COM='NORTH END RELFECTOR 10.1 CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P5.05 2P64.05 2P54.2825
UNIT  31
COM='ARRAY FOR NORTH END REFLECTOR'
ARRAY 9 3*0.0
UNIT  32
COM='SOUTH END REFLECTOR'
CUBOID  5 1 2P12.55 2P64.05 2P54.2825
UNIT  33
COM='ARRAY FOR SOUTH END REFLECTOR'
ARRAY 10 3*0.0
UNIT  34
COM='12.95 THICK MODERATING PLASTIC NORTH CORE'
CUBOID  6 1 2P15.7945 2P6.6965 2P32.8695
UNIT  35
COM='2.95 THICK MODERATING PLASTIC NORTH CORE'
CUBOID  0 1 2P15.7945 2P38.75 2P1.5545
UNIT  36
ARRAY 11 3*0.0
UNIT  37
ARRAY 12 3*0.0
UNIT  38
COM='NORTH CORE WITH BOTTOM REFLECTOR'
ARRAY 13 3* 0.0
UNIT  39
COM='NORTH CORE WITH EAST AND WEST REFLECTOR'
ARRAY 14 3*0.0
UNIT  40
COM='NORTH CORE WITH END REFLECTOR'
ARRAY 15 3*0.0
UNIT  41
COM='NORTH SPLIT TABLE FACEPLATE FOR THIS CASE AIR GAP HALF THICK'
CUBOID  0 1 2P0.1025 2P64.0500 2P66.4325
UNIT  42
COM='NORTH CORE WITH TOP REFLECTOR'
ARRAY 16 3*0.0
UNIT  43
COM='NORTH CORE WITH FACEPLATE'
ARRAY 17 3*0.0
UNIT  44
COM='12.95 CM THICK MODERATOR SOUTH CORE'
CUBOID  6 1 2P15.7945 2P6.6965 2P32.8695
UNIT  45
COM='2.95 THICK MODERATOR SOUTH CORE'
CUBOID  0 1 2P15.7945 2P38.75 2P1.5545
UNIT  46
COM='COMBINATION OF CORE WITH 12.95 THICK MODERATOR'
ARRAY 18 3*0.0
UNIT  47
COM='COMBINATION OF CORE WITH 2.95 THICK MODERATOR'
ARRAY 19 3*0.0
UNIT  48
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 20 3*0.0
UNIT  49
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 21 3*0.0
UNIT  50
COM='SOUTH CORE END REFLECTOR'
ARRAY 22 3*0.0
UNIT  51
COM='FACEPLATE FOR SOUTH SPLIT TABLE'
CUBOID  3 1 2P0.4645  2P64.0500 2P66.4325
UNIT  52
COM='SOUTH CORE WITH TOP REFLECTOR'
ARRAY 23 3*0.0
UNIT  53
COM='SOUTH CORE WITH FACEPLATE'
ARRAY 24 3*0.0
UNIT  54
COM='AIR GAP HALF THICKNESS'
CUBOID  0 1 2P0.1025 2P64.0500 2P66.4325
GLOBAL
UNIT  55
COM='TOTAL'
ARRAY 25 3*0.0
UNIT  56
COM='NORTH BOTTOM MODERATOR'
CUBOID  6 1 2P15.8000 2P38.7500 2P7.3135
UNIT  57
COM='BOTTOM SOUTH MODERATOR'
CUBOID  6 1 2P24.700 2P38.75  2P7.3135
UNIT  58
COM='REAR FILLER'
CUBOID  6 1 2P8.9055 2P38.75 2P34.424
UNIT  59
COM='COMBINATION OF SOUTH CORE WITH REAR FILLER'
ARRAY 26 3*0.0
UNIT  60
COM='NORTH CORE REAR FILLER'
CUBOID  6 1 2P0.6055 2P38.75 2P34.424
UNIT  61
COM='COMBINATION OF NORTH CORE WITH REAR FILLER'
ARRAY 27 3*0.0
END GEOMETRY
READ ARRAY
ARA=1  MUX=3 MUY=7 MUZ=5
COM='NORTH SPLIT TABLE CORE'
FILL  1 2 1 3 5 3 206 1 2 1
      4 7 4 6 8 6 206 4 7 4
      1042
      1 2 1 3 5 3 206 1 2 1  END FILL
ARA=2  MUX=3 MUY=7 MUZ=5
COM='SOUTH SPLIT TABLE CORE'
FILL  1 2 1 3 5 3 206 1 2 1
      4 7 4 6 8 6 206 4 7 4
      1042
      1 2 1 3 5 3 206 1 2 1  END FILL
ARA=3  MUX=1 MUY=1 MUZ=4
COM='NORTH BOTTOM MODERATOR AND REFLECTOR'
FILL  14 11 13 56  END FILL
ARA=4  MUX=1 MUY=1 MUZ=8
COM='SOUTH BOTTOM MODERATOR AND REFLECTOR'
FILL  18 16 17 16 16 17 17 57  END FILL
ARA=5  MUX=1 MUY=1 MUZ=1
COM='EAST AND WEST WALLS OF NORTH REFLECTOR'
FILL  20 END FILL
ARA=6  MUX=1 MUY=1 MUZ=1
COM='EAST AND WEST WALLS OF SOUTH REFLECTOR'
FILL  22  END FILL
ARA=7  MUX=1 MUY=1 MUZ=1
COM='ARRAY FOR NORTH TOP REFLECTOR'
FILL  24  END FILL
ARA=8  MUX=1 MUY=1 MUZ=1
COM='ARRAY FOR SOUTH TOP REFLECTOR'
FILL  26 END FILL
ARA=9  MUX=3 MUY=1 MUZ=1
COM='ARRAY FOR NORTH END REFLECTOR'
FILL  28 29 30  END FILL
ARA=10  MUX=1 MUY=1 MUZ=1
COM='ARRAY FOR SOUTH END REFLECTOR'
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FILL  32  END FILL
ARA=11  MUX=1 MUY=2 MUZ=1
COM='COMBINARION OF CORE WITH 12.95CM THICK MODERATOR'
FILL  9 34  END FILL
ARA=12 MUX=1 MUY=1 MUZ=2
COM='COMBINATION OF PREVIOUS ARRAY WITH 2.95CM THICK MODERATOR'
FILL  36 35  END FILL
ARA=13  MUX=1 MUY=1 MUZ=2
COM='COMBINATION OF NORTH CORE WITH BOTTOM REFLECTOR'
FILL  15 61  END FILL
ARA=14  MUX=1 MUY=3 MUZ=1
COM='NORTH CORE WITH SIDE REFLECTORS'
FILL  21 38 21  END FILL
ARA=15  MUX=2 MUY=1 MUZ=1
COM='NORTH CORE WITH END REFLECTOR'
FILL  31 39  END FILL
ARA=16  MUX=1 MUY=1 MUZ=2
COM='NORTH CORE WITH TOP REFLECTOR'
FILL  40 25  END FILL
ARA=17  MUX=2 MUY=1 MUZ=1
COM='NORTH CORE WITH FACEPLATE'
FILL  42 41  END FILL
ARA=18  MUX=1 MUY=2 MUZ=1
COM='COMBINATION OF S. CORE WITH 12.95 CM THICK MODERATOR'
FILL  10 44  END FILL
ARA=19  MUX=1 MUY=1 MUZ=2
COM='COMBINATION OF CORE WITH 2.95 CM THICK MODERATOR'
FILL  46 45  END FILL
ARA=20  MUX=1 MUY=1 MUZ=2
COM='SOUTH CORE WITH BOTTOM REFLECTOR'
FILL  19 59  END FILL
ARA=21 MUX=1 MUY=3 MUZ=1
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
FILL  23 48 23  END FILL
ARA=22 MUX=2 MUY=1 MUZ=1
COM='SOUTH CORE WITH END REFLECTOR'
FILL  49 33  END FILL
ARA=23  MUX=1 MUY=1 MUZ=2
COM='COMBINATION OF CORE WITH TOP REFLECTOR'
FILL  50 27  END FILL
ARA=24  MUX=2 MUY=1 MUZ=1
COM='SOUTH CORE WITH FACEPLATE'
FILL  51 52  END FILL
ARA=25  MUX=3 MUY=1 MUZ=1
COM='TOTAL'
FILL  43 54 53  END FILL
ARA=26 MUX=2 MUY=1 MUZ=1
COM='COMBINATION OF SOUTH CORE WITH REAR FILLER'
FILL  47 58 END FILL
ARA=27 MUX=2 MUY=1 MUZ=1
COM='COMBINATION OF NORTH CORE WITH REAR FILLER'
FILL  37 60 END FILL
  END ARRAY
READ PLOT TTL='XZ SLICE OF RFDF SHOWING MATERIAL REGIONS'
XUL=-1  YUL=64.05 ZUL=135
XLR=136 YLR=64.05 ZLR=-2
UAX=1  VDN=-1 MAX=130  NCH='0123456'END
TTL='YZ SLICE OF NORTH CORE FIRST ROW'
XUL=48  YUL=-2  ZUL=136
XLR=48  YLR=136 ZLR=-2
VAX=1  WDN=-1 MAX=130  NCH='0123456'END
TTL='YZ SLICE OF NORTH CORE SECOND ROW'
XUL=28  YUL=-2  ZUL=136
XLR=28  YLR=136 ZLR=-2
VAX=1  WDN=-1 MAX=130  NCH='0123456'END
TTL='YZ SLICE OF SOUTH CORE FIRST ROW'
XUL=62 YUL=-2  ZUL=136
XLR=62 YLR=136  ZLR=-2
VAX=1  WDN=-1 MAX=130  NCH='0123456'END
TTL='TOP VIEV OF SOURCE SLOT'
XUL=-2 YUL=136  ZUL=125
XLR=138 YLR=-2  ZLR=125
UAX=1  VDN=-1 MAX=130  NCH='0123456'END
TTL='TOP VIEV OF TOP LAYER'
XUL=-2 YUL=136  ZUL=95
XLR=138 YLR=-2  ZLR=95
UAX=1  VDN=-1 MAX=130  NCH='0123456'
END PLOT
READ START NST=1
XSP=108.0 XSM=10.0
YSP=108.0 YSM=10.0
ZSP=123.0 ZSM=44.0
END START
END DATA
END
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099 (CAR18)

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#CSAS25
ROCKY FLATS CRITICALS MUREE/CR-2500 EXPERIMENT G (27 GROUP)
' 30 FUEL CANS 2.44 CM MODERATOR GEE.MU203.DATA(OPTUR)
27GR  LATTICECELL
U308  1 5.4078E-1 293.0 92234 0.03 92235 4.46 92236 0.08 92238 95.43 END
H20  1 2.6356E-1 END
ARBM-BAGGIE  1.0 3 0 0 0 1001 14.01 6012 84.9 8016 1.20 1 1.9134E-2
   END
ARBM-AL1100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 2 9.5390E-1
   END
ARBM-TAPE(VINYL)  1.0 7 0 0 0 1001 5.92 6012 45.91 8016 10.82 17000
   25.73 20040 6.9 22000 1.6 82000 1.1 2 1.1115E-2 END
ARBM-TAPE(MYLAR)  1.0 3 0 0 0 1001 6.83 6012 65.50 8016 27.02 2
   1.7491E-2 END
ARBM-MODERATOR  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 3 END
ARBM-PLEX(REG)  1.0 3 0 0 0 1001 7.84 6012 59.59 8016 32.23 4
   1.1773 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 4
   3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 4
   1.1648E-3 END
ARBM-PLEX(TRIS)  1.0 8 0 0 1 1001 7.16 6012 52.03 7014 0.16 8016 29.82
   15031 1.02 17000 1.81 35079 4.260 35081 2.840 5 1.2757 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 5
   3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 5
   1.1648E-3 END
ARBM-FILLER  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 6 1.0 END
' THIS MATERIAL IS ACTUALLY MODERATOR ADJUSTED FOR THE VOLUME
' FRACTION OF THE VOID FILLED BETWEEN CORE AND REFLECTOR.
END COMP
SPHTRIANGP  19.00 18.5857 1 3 18.9579 2 END
ROCKY FLATS CRITICALS MUREE/CR-2500 EXPERIMENT G (27 GROUP)
' 30 FUEL CANS 2.44 CM MODERATOR GEE.MU203.DATA(OPTUR)
READ PARM  RUN=YES NPG=600 FDN=YES NUB=YES PLT=NO
END PARM
READ GEOM
UNIT  1
COM='FUEL BOX 15.28 CM ON A SIDE WITH .15 CM WALLS .05CM STACKING VOID'
CUBOID  1 1 6P7.49
CUBOID  2 1 6P7.64
CUBOID  0 1 6P7.6650
UNIT  2
COM='X-FACE INTERSTITIAL MODERATOR'
CUBOID  3 1 2P1.2200 4P7.665
UNIT  3
COM='Y-FACE INTERSTITIAL MODERATOR'
CUBOID  3 1 2P7.665 2P1.2200 2P7.665
UNIT  4
COM='Z-FACE INTERSTITIAL MODERATOR'
CUBOID  3 1 4P7.665 2P1.2200
UNIT  5
COM='MORE X-FACE MODERATOR'
CUBOID  3 1 4P1.2200 2P7.665
UNIT  6
COM='MORE Y-FACE MODERATOR'
CUBOID  3 1 2P7.665 4P1.2200
UNIT  7
COM='MORE Z-FACE MODERATOR'
CUBOID  3 1 2P1.2200 2P7.665 2P1.2200
UNIT  8
COM='LAST OF INTERSTITIAL MODERATOR'
CUBOID  3 1 6P1.2200
UNIT  9
COM='NORTH SPLIT TABLE CORE'
ARRAY 1 3*0.0
UNIT  10
COM='SOUTH SPLIT TABLE CORE'
ARRAY 2 3*0.0
UNIT  11
COM='PLEXIGLASS REFLECTOR SHEET WITHOUT TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  4 1 2P16.5500 2P38.7500 2P0.6150
UNIT  12
COM='PLEXIGLASS REFLECTOR SHEET WITH TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  5 1 2P16.5500 2P38.7500 2P0.6150
UNIT  13
COM='UPPER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P16.5500 2P38.75 2P8.24
UNIT  14
COM='LOWER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P16.5500 2P38.75 2P3.69
UNIT  15
COM='NORTH BOTTOM REFLECTOR INCLUDES REGULAR AND TRIS'
ARRAY 3 3*0.0
UNIT  16
COM='PLEXIGLAS SHEET BOTTOM SOUTH REFLECTOR WITHOUT TRIS'
CUBOID  0 1 2P5.1 2P2.55 2P0.615
CUBOID  4 1 44.3 -5.1 2P38.75 2P0.615
UNIT  17
COM='PLEXIGLAS SHEET BOTTOM SOUTH REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.55 2P0.615
CUBOID  5 1 44.3 -5.1 2P38.75 2P0.6150
UNIT  18
COM='LOWER PORTION SOUTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.55 2P8.855
CUBOID  5 1 44.3 -5.1 2P38.75 2P8.855
UNIT  19
COM='SOUTH BOTTOM REFLECTOR WITH REGULAR AND TRIS'
ARRAY 4 3*0.0
UNIT  20
COM='EAST AND WEST REFLECTORS FOR NORTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P16.5500 2P12.65 2P52.7825
UNIT  21
COM='ARRAY FOR EAST AND WEST REFLECTORS FOR NORTH REFLECTOR'
ARRAY 5 3*0.0
UNIT  22
COM='EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P24.700 2P12.65 2P52.7825
UNIT  23
COM='ARRAY FOR EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR'
ARRAY 6 3*0.0
UNIT  24
COM='NORTH TOP REFLECTOR WITH TRIS'
CUBOID  5 1 2P29.1 2P64.05 2P12.15
UNIT  25
COM='ARRAY FOR NORTH TOP REFLECTOR'
ARRAY 7 3*0.0
UNIT  26
COM='SOUTH TOP REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.55 2P12.15
CUBOID  5 1 69.4 -5.1 2P64.05 2P12.15
UNIT  27
COM='ARRAY FOR SOUTH TOP REFLECTOR'
ARRAY 8 3*0.0
UNIT  28
COM='NORTH END REFLECTOR 9.8CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P4.9000 2P64.0500 2P52.7825
UNIT  29
COM='NORTH END RELFECTOR 5.2 CM PORTION WITH TRIS'
CUBOID  5 1 2P2.6 2P64.0500 2P52.7825
UNIT  30
COM='NORTH END RELFECTOR 10.1 CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P5.05 2P64.05 2P52.7825
UNIT  31
COM='ARRAY FOR NORTH END REFLECTOR'
ARRAY 9 3*0.0
UNIT  32
COM='SOUTH END REFLECTOR'
CUBOID  5 1 2P12.55 2P64.05 2P52.7825
UNIT  33
COM='ARRAY FOR SOUTH END REFLECTOR'
ARRAY 10 3*0.0
UNIT  34
COM='12.95 THICK MODERATING PLASTIC NORTH CORE'
CUBOID  0 1 2P16.5500 2P13.315 2P25.4350
UNIT  35
COM='2.95 THICK MODERATING PLASTIC NORTH CORE'
CUBOID  6 1 2P16.5500 2P38.75 2P1.7525
UNIT  36
ARRAY 11 3*0.0
UNIT  37
ARRAY 12 3*0.0
UNIT  38
COM='NORTH CORE WITH BOTTOM REFLECTOR'
ARRAY 13 3* 0.0
UNIT  39
COM='NORTH CORE WITH EAST AND WEST REFLECTOR'
ARRAY 14 3*0.0
UNIT  40
COM='NORTH CORE WITH END REFLECTOR'
ARRAY 15 3*0.0
UNIT  41
COM='NORTH SPLIT TABLE FACEPLATE'
CUBOID  3 1 2P0.61 2P64.0500 2P64.9325
UNIT  42
COM='NORTH CORE WITH TOP REFLECTOR'
ARRAY 16 3*0.0
UNIT  43
COM='NORTH CORE WITH FACEPLATE'
ARRAY 17 3*0.0
UNIT  44
COM='12.95 CM THICK MODERATOR SOUTH CORE'
CUBOID  0 1 2P16.5500 2P13.315 2P25.4350
UNIT  45
COM='2.95 THICK MODERATOR SOUTH CORE'
CUBOID  6 1 2P16.5500 2P38.75 2P1.7525
UNIT  46
COM='COMBINATION OF CORE WITH 12.95 THICK MODERATOR'
ARRAY 18 3*0.0
UNIT  47
COM='COMBINATION OF CORE WITH 2.95 THICK MODERATOR'
ARRAY 19 3*0.0
UNIT  48
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 20 3*0.0
UNIT  49
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 21 3*0.0
UNIT  50
COM='SOUTH CORE END REFLECTOR'
ARRAY 22 3*0.0
UNIT  51
COM='FACEPLATE FOR SOUTH SPLIT TABLE'
CUBOID  3 1 2P0.610  2P64.0500 2P64.9325
UNIT  52
COM='SOUTH CORE WITH TOP REFLECTOR'
ARRAY 23 3*0.0
UNIT  53
COM='SOUTH CORE WITH FACEPLATE'
ARRAY 24 3*0.0
UNIT  54
COM='AIR GAP'
CUBOID  0 1 2P0.2850 2P64.0500 2P64.9325
GLOBAL
UNIT  55
COM='TOTAL'
ARRAY 25 3*0.0
UNIT  56
COM='NORTH BOTTOM MODERATOR'
CUBOID  6 1 2P16.5500 2P38.7500 2P13.05
UNIT  57
COM='BOTTOM SOUTH MODERATOR'
CUBOID  6 1 2P24.700 2P38.75  2P13.05
UNIT  58
COM='REAR FILLER'
CUBOID  6 1 2P8.1500 2P38.75 2P27.1875
UNIT  59
COM='COMBINATION OF SOUTH CORE WITH REAR FILLER'
ARRAY 26 3*0.0
UNIT  60
COM='NORTH CORE REAR FILLER'
CUBOID  6 1 2P0.0 2P38.75 2P27.1875
UNIT  61
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CON='COMBINATION OF NORTH CORE WITH REAR FILLER'
ARRAY 27 3*0.0
UNIT  42
CON='EMPTY FUEL LOCATION'
CUBOID  0 1 6P7.6450
UNIT  43
CON='Y-FACE MODERATOR VOID'
CUBOID  0 1 2P7.645 2P1.22 2P7.665
END GEOMETRY
READ ARRAY
ARA=1  NUX=3 NUY=5 NUZ=5
CON='NORTH SPLIT TABLE CORE'
FILL  1 2 1 3 5 3 106 1 2 1
      4 7 4 6 8 6 106 4 7 4
      1030
      42 2 1 43 5 3 106 42 2 1  END FILL
ARA=2  NUX=3 NUY=5 NUZ=5
CON='SOUTH SPLIT TABLE CORE'
FILL  1 2 1 3 5 3 106 1 2 1
      4 7 4 6 8 6 106 4 7 4
      1030
      1 2 42 3 5 43 106 1 2 42  END FILL
ARA=3  NUX=1 NUY=1 NUZ=4
CON='NORTH BOTTOM MODERATOR AND REFLECTOR'
FILL  14 11 13 56  END FILL
ARA=4  NUX=1 NUY=1 NUZ=8
CON='SOUTH BOTTOM MODERATOR AND REFLECTOR'
FILL  18 16 17 16 16 17 17 57  END FILL
ARA=5  NUX=1 NUY=1 NUZ=1
CON='EAST AND WEST WALLS OF NORTH REFLECTOR'
FILL  20 END FILL
ARA=6  NUX=1 NUY=1 NUZ=1
CON='EAST AND WEST WALLS OF SOUTH REFLECTOR'
FILL  22  END FILL
ARA=7  NUX=1 NUY=1 NUZ=1
CON='ARRAY FOR NORTH TOP REFLECTOR'
FILL  24  END FILL
ARA=8  NUX=1 NUY=1 NUZ=1
CON='ARRAY FOR SOUTH TOP REFLECTOR'
FILL  26 END FILL
ARA=9  NUX=3 NUY=1 NUZ=1
CON='ARRAY FOR NORTH END REFLECTOR'
FILL  28 29 30  END FILL
ARA=10  NUX=1 NUY=1 NUZ=1
CON='ARRAY FOR SOUTH END REFLECTOR'
FILL  32  END FILL
ARA=11  NUX=1 NUY=2 NUZ=1
CON='COMBINARION OF CORE WITH 12.95CM THICK MODERATOR'
FILL  9 34  END FILL
ARA=12 NUX=1 NUY=1 NUZ=2
CON='COMBINATION OF PREVIOUS ARRAY WITH 2.95CM THICK MODERATOR'
FILL  36 35  END FILL
ARA=13  NUX=1 NUY=1 NUZ=2
CON='COMBINATION OF NORTH CORE WITH BOTTOM REFLECTOR'
FILL  15 61  END FILL
ARA=14  NUX=1 NUY=3 NUZ=1
CON='NORTH CORE WITH SIDE REFLECTORS'
FILL  31 38 21  END FILL
ARA=15  NUX=2 NUY=1 NUZ=1
CON='NORTH CORE WITH END REFLECTOR'
FILL  31 39  END FILL
ARA=16  NUX=1 NUY=1 NUZ=2
CON='NORTH CORE WITH TOP REFLECTOR'
FILL  40 25  END FILL
ARA=17  NUX=2 NUY=1 NUZ=1
CON='NORTH CORE WITH FACEPLATE'
FILL  42 41  END FILL
ARA=18  NUX=1 NUY=2 NUZ=1
CON='COMBINATION OF S. CORE WITH 12.95 CM THICK MODERATOR'
FILL  10 44  END FILL
ARA=19  NUX=1 NUY=1 NUZ=2
CON='COMBINATION OF CORE WITH 2.95 CM THICK MODERATOR'
FILL  46 45  END FILL
ARA=20  NUX=1 NUY=1 NUZ=2
CON='SOUTH CORE WITH BOTTOM REFLECTOR'
FILL  19 59  END FILL
ARA=21 NUX=1 NUY=3 NUZ=1
CON='SOUTH CORE WITH EAST WEST REFLECTORS'
FILL  23 48 23  END FILL
ARA=22 NUX=2 NUY=1 NUZ=1
CON='SOUTH CORE WITH END REFLECTOR'
FILL  49 33  END FILL
ARA=23  NUX=1 NUY=1 NUZ=2
CON='COMBINATION OF CORE WITH TOP REFLECTOR'
FILL  50 27  END FILL
ARA=24  NUX=2 NUY=1 NUZ=1
CON='SOUTH CORE WITH FACEPLATE'
FILL  51 52  END FILL
ARA=25  NUX=3 NUY=1 NUZ=1
CON='TOTAL'
FILL  43 54 53  END FILL
ARA=26 NUX=2 NUY=1 NUZ=1
CON='COMBINATION OF SOUTH CORE WITH REAR FILLER'
FILL  47 58 END FILL
ARA=27 NUX=2 NUY=1 NUZ=1
CON='COMBINATION OF NORTH CORE WITH REAR FILLER'
FILL  37 60 END FILL
END ARRAY
READ PLOT TTL='XZ SLICE OF RFPG SHOWING MATERIAL REGIONS'
XUL=-1  YUL=64.05 ZUL=135
XLR=136 YLR=64.05 ZLR=-2
UAX=1  WDW=-1 MAX=130  NCH='0123456'END
TTL='YZ SLICE OF NORTH CORE FIRST ROW'
XUL=48  YUL=-2  ZUL=136
XLR=48  YLR=136 ZLR=-2
VAX=1  WDW=-1 MAX=130  NCH='0123456'END
TTL='YZ SLICE OF NORTH CORE SECOND ROW'
XUL=28  YUL=-2  ZUL=136
XLR=28  YLR=136 ZLR=-2
VAX=1  WDW=-1 MAX=130  NCH='0123456'END
TTL='YZ SLICE OF SOUTH CORE FIRST ROW'
XUL=42 YUL=-2  ZUL=136
XLR=42 YLR=136 ZLR=-2
VAX=1  WDW=-1 MAX=130  NCH='0123456'END
TTL='TOP VIEW OF SOURCE SLOT'
XUL=-2 YUL=136  ZUL=125
XLR=138 YLR=-2  ZLR=125
UAX=1  WDW=-1 MAX=130  NCH='0123456'END
TTL='TOP VIEW OF TOP LAYER'
XUL=-2 YUL=136  ZUL=95
XLR=138 YLR=-2  ZLR=95
UAX=1  WDW=-1 MAX=130  NCH='0123456'
END PLOT
READ START     MST=1
XSP=100.0  XSM=10.0
YSP=100.0  YSM=10.0
ZSP=117.0  ZSM=60.0
END DATA
END
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100 (CAR19)

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#CSAS25
ROCKY FLATS CRITICALS NUREG/CR-2500 EXPERIMENT NUMBER 7 (27 GROUP MODEL)
' FUEL CUBE 15.28 CM, U(4.46)3O8 @ H/U=2.03, HI ENRICHED SPHERE DRIVEN
27GR  INFHOMMEDIUM
U3O8  1 5.4078E-1 293.0 92234 0.03 92235 4.46 92236 0.08 92238 95.43 END
H2O  1 2.6356E-1 END
ARBM-BAGGIE  1.0 3 0 0 0 1001 14.01 6012 84.9 8016 1.20 1 1.9134E-2
     END
ARBM-AL1100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 2 9.5390E-1
     END
ARBM-TAPE(VINYL)  1.0 7 0 0 0 1001 5.92 6012 45.91 8016 10.82 17000
     25.73 26040 6.9 22000 1.6 82000 1.1 2 1.1115E-2 END
ARBM-TAPE(MYLAR)  1.0 3 0 0 0 1001 6.83 6012 65.50 8016 27.02 2
     1.7491E-2 END
ARBM-MODERATOR  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 3 END
ARBM-PLEX(REG)  1.0 3 0 0 0 1001 7.84 6012 59.59 8016 32.23 4
     1.1773 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 4
     3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 4
     1.1648E-3 END
ARBM-PLEX(TRIS)  1.0 8 0 0 1 1001 7.16 6012 52.03 7014 0.16 8016 29.82
     15031 1.02 17000 1.81 25079 4.260 25081 2.840 5 1.2757 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 5
     3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 5
     1.1648E-3 END
ARBM-FILLER  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 6 0.7 END
' THIS MATERIAL IS ACTUALLY MODERATOR ADJUSTED FOR THE VOLUME
' FRACTION OF THE VOID FILLED BETWEEN CORE AND REFLECTOR.
ARBM-AL1100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 7 2.715  END
URANIUM  8 0.9483 293.0 92234 1.0 92235 93.19 92236 0.4 92238  5.41 END
ARBM-PJ  0.816 2 0 0 0 1001 85.1 6012 14.9 8 0.0089  END
SS304  9 1.0 END
END COMP
ROCKY FLATS CRITICALS NUREG/CR-2500 EXPERIMENT NUMBER 7 (27 GROUP MODEL)
' FUEL CUBE 15.28 CM, U(4.46)3O8 @ H/U=2.03, HI ENRICHED SPHERE DRIVEN
READ PARM  NPG=600 RUB=YES FDN=YES PLT=NO  END PARM
READ GEOM
UNIT  1
CON='FUEL BOX WITH VOID AND PART OF AL BOX'
CUBOID  0 1 9.80  0.0 3.75  0.0  14.98 0.0
CUBOID  2 1 9.95  0.0 3.90  -0.15  14.98 0.0
CUBOID  1 1 14.98 0.0 9.365 -5.615 14.98 0.0
UNIT  2
CON='FRONT OF FUEL BOX'
CUBOID  2 1 0.15 0.0  5.615 0.0 14.98 0.0
CUBOID  0 1 0.15 0.0  9.365 0.0 14.98 0.0
CUBOID  2 1 0.15 0.0 14.98  0.0 14.98 0.0
UNIT  3
CON='REAR OF FUEL BOX'
CUBOID  2 1 0.15 0.0 14.98  0.0 14.98 0.0
UNIT  4
CON='ARRAY TO ASSEMBLE PART OF BOX'
ARRAY 26 3*0
UNIT  5
CON='TOP AND BOTTOM OF BOX'
CUBOID  0 1  9.80 0.0 3.750  0.0  0.15 0.0
CUBOID  2 1 15.28 0.0 9.365 -5.615 0.15 0.0
GLOBAL
UNIT  6
CON='ARRAY TO ASSEMBLE TOP AND BOTTOM'
ARRAY 27 3*0
CUBOID  2 1 15.28  0.0  15.13 -0.15  15.28  0.0
CUBOID  0 1 15.305 -0.025 15.155 -0.175 15.305 -0.025
UNIT  7
CON='FUEL BOX 15.28 CM ON A SIDE WITH .15 CM WALLS .05CM STACKING VOID'
CUBOID  1 1 6P7.49
CUBOID  2 1 6P7.64
CUBOID  0 1 6P7.6450
UNIT  8
CON='BOX FOR DRIVER'
CYLINDER  9 1 0.3175 2PS.66
SPHERE  8 1 5.67
CUBOID  0 1 9.62 -5.71 2P7.665 7.365 -7.965
HOLE  37 0.0 0.0 -7.965
UNIT  34
CON='ALUMINUM WEIGHT DISTRIBUTION PLATE FOR SPECIAL BOX'
CUBOID  0 1  9.80 0.0 3.750  0.0  0.16 0.0
CUBOID  7 1 15.33 0.0 9.54 -5.79 0.16 0.0
UNIT  35
CON='ALUMINUM WEIGHT DISTRIBUTION PLATE FOR BOXES'
CUBOID  7 1  4P7.665 0.16 0.0
UNIT  37
CON='DRIVER MOUNT'
CYLINDER  9 1 1.56 2.2 0.0
UNIT  9
CON='NORTH SPLIT TABLE CORE'
ARRAY 1 3*0.0
CUBOID  0 1 30.66 -0.94 77.5 0.0 83.475 0.0
UNIT  10
CON='SOUTH SPLIT TABLE CORE'
ARRAY 2 3*0.0
CUBOID  0 1 49.4 0.0 77.5 0.0 83.475 0.0
UNIT  11
CON='PLEXICLASS REFLECTOR SHEET WITHOUT TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  4 1 2P15.8000 2P38.7500 2P0.6150
UNIT  12
CON='PLEXICLASS REFLECTOR SHEET WITH TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  5 1 2P15.8000 2P38.7500 2P0.6150
UNIT  13
CON='UPPER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P8.24
UNIT  14
CON='LOWER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P3.69
UNIT  15
CON='NORTH BOTTOM REFLECTOR INCLUDES REGULAR AND TRIS'
ARRAY 3 3*0.0
UNIT  16
CON='PLEXICLAS SHEET BOTTOM SOUTH REFLECTOR WITHOUT TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P0.6150
CUBOID  4 1 44.3 -5.1 2P38.75  2P0.615
UNIT  17
CON='PLEXICLAS SHEET BOTTOM SOUTH REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P0.6150
CUBOID  5 1 44.3 -5.1 2P38.75 2P0.6150
UNIT  18
CON='LOWER PORTION SOUTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P8.855
CUBOID  5 1 44.3 -5.1 2P38.75 2P8.855
UNIT  19
CON='SOUTH BOTTOM REFLECTOR WITH REGULAR AND TRIS'
ARRAY 4 3*0.0
UNIT  20
CON='EAST AND WEST REFLECTORS FOR NORTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P12.65 2P54.2825
UNIT  21
CON='ARRAY FOR EAST AND WEST REFLECTORS FOR NORTH REFLECTOR'
ARRAY 5 3*0.0
UNIT  22
CON='EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P24.700 2P12.65 2P54.2825
UNIT  23
CON='ARRAY FOR EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR'
ARRAY 6 3*0.0
UNIT  24
CON='NORTH TOP REFLECTOR WITH TRIS'
CUBOID  5 1 2P28.35 2P64.05 2P12.15
UNIT  25
CON='ARRAY FOR NORTH TOP REFLECTOR'
ARRAY 7 3*0.0
UNIT  26
CON='SOUTH TOP REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P12.15
CUBOID  5 1 69.4 -5.1 2P64.05 2P12.15
UNIT  27
CON='ARRAY FOR SOUTH TOP REFLECTOR'
ARRAY 8 3*0.0
UNIT  28
CON='NORTH END REFLECTOR 9.8CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P4.9000 2P64.0500 2P54.2825
UNIT  29
CON='NORTH END RELFECTOR 5.2 CM PORTION WITH TRIS'
CUBOID  5 1 2P2.6 2P64.0500 2P54.2825
UNIT  30
CON='NORTH END RELFECTOR 10.1 CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P5.05 2P64.05 2P54.2825
UNIT  31
CON='ARRAY FOR NORTH END REFLECTOR'
ARRAY 9 3*0.0
UNIT  32
CON='SOUTH END REFLECTOR'
CUBOID  5 1 2P12.55 2P64.05 2P54.2825
UNIT  33
CON='ARRAY FOR SOUTH END REFLECTOR'
ARRAY 10 3*0.0
UNIT  38
CON='NORTH CORE WITH BOTTOM REFLECTOR'
ARRAY 13 3* 0.0
UNIT  39
CON='NORTH CORE WITH EAST AND WEST REFLECTOR'
ARRAY 14 3*0.0
UNIT  40
CON='NORTH CORE WITH END REFLECTOR'
ARRAY 15 3*0.0
UNIT  42
CON='NORTH CORE WITH TOP REFLECTOR'
ARRAY 16 3*0.0
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UNIT  48
COM='SOUTH CORE WITH BOTTOM REFLECTORS'
ARRAY 20 3*0.0
UNIT  49
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
ARRAY 21 3*0.0
UNIT  50
COM='SOUTH CORE END REFLECTOR'
ARRAY 22 3*0.0
UNIT  52
COM='SOUTH CORE WITH TOP REFLECTOR'
ARRAY 23 3*0.0
UNIT  54
COM='AIR GAP'
CUBOID  0 1 1.49 0.0 64.475 -63.625 69.13 -63.735
GLOBAL
UNIT  55
COM='TOTAL'
ARRAY 25 3*0.0
END GEOMETRY
READ ARRAY
ARA=1  NUX=2 NUY=5 NUZ=9
COM='NORTH SPLIT TABLE CORE'
FILL  10R7
      10R35
      10R7
      10R35
      10R7
      10R35
      10R7
      10R35
      10R7    END FILL
ARA=2  NUX=3 NUY=5 NUZ=9
COM='SOUTH SPLIT TABLE CORE'
FILL  6R7 6 8R7
      6R35 34 8R35
      6R7 6 8R7
      6R35 34 8R35
      6R7 8 8R7
      6R35 34 8R35
      6R7 6 8R7
      6R35 34 8R35
      6R7 6 8R7  END FILL
ARA=3  NUX=1 NUY=1 NUZ=3
COM='NORTH BOTTOM REFLECTOR'
FILL  14 11 13  END FILL
ARA=4  NUX=1 NUY=1 NUZ=7
COM='SOUTH BOTTOM REFLECTOR'
FILL  18 16 17 16 16 17 17  END FILL
ARA=5  NUX=1 NUY=1 NUZ=1
COM='EAST AND WEST WALLS OF NORTH REFLECTOR'
FILL  20 END FILL
ARA=6  NUX=1 NUY=1 NUZ=1
COM='EAST AND WEST WALLS OF SOUTH REFLECTOR'
FILL  22  END FILL
ARA=7  NUX=1 NUY=1 NUZ=1
COM='ARRAY FOR NORTH TOP REFLECTOR'
FILL  24  END FILL
ARA=8  NUX=1 NUY=1 NUZ=1
COM='ARRAY FOR SOUTH TOP REFLECTOR'
FILL  26 END FILL
ARA=9  NUX=3 NUY=1 NUZ=1
COM='ARRAY FOR NORTH END REFLECTOR'
FILL  28 29 30  END FILL
ARA=10  NUX=1 NUY=1 NUZ=1
COM='ARRAY FOR SOUTH END REFLECTOR'
FILL  32  END FILL
ARA=13  NUX=1 NUY=1 NUZ=2
COM='COMBINATION OF NORTH CORE WITH BOTTOM REFLECTOR'
FILL  15 9  END FILL
ARA=14  NUX=1 NUY=3 NUZ=1
COM='NORTH CORE WITH SIDE REFLECTORS'
FILL  21 38 21  END FILL
ARA=15  NUX=2 NUY=1 NUZ=1
COM='NORTH CORE WITH END REFLECTOR'
FILL  31 29  END FILL
ARA=16  NUX=1 NUY=1 NUZ=2
COM='NORTH CORE WITH TOP REFLECTOR'
FILL  40 25  END FILL
ARA=20  NUX=1 NUY=1 NUZ=2
COM='SOUTH CORE WITH BOTTOM REFLECTOR'
FILL  19 10  END FILL
ARA=21 NUX=1 NUY=3 NUZ=1
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
FILL  23 48 23  END FILL
ARA=22 NUX=2 NUY=1 NUZ=1
COM='SOUTH CORE WITH END REFLECTOR'
FILL  49 33  END FILL
ARA=23  NUX=1 NUY=1 NUZ=2
COM='COMBINATION OF CORE WITH TOP REFLECTOR'
FILL  50 27  END FILL
ARA=25  NUX=3 NUY=1 NUZ=1
COM='TOTAL'
FILL  42 54 52  END FILL
ARA=26  NUX=3 NUY=1 NUZ=1
COM='ASSEMBLY OF FUEL BOX FRONT AND REAR'
FILL  2 1 3  END FILL
ARA=27  NUX=1 NUY=1 NUZ=3
COM='ASSEMBLY OF FUEL BOX TOP AND BOTTOM'
FILL  5 4 5  END FILL
END ARRAY
READ PLOT TTL='YZ SLICE OF SOUTH CORE FIRST ROW'
XUL=64.319 YUL=55.625 ZUL=71.735
XLR=64.319 YLR=71.625 ZLR=55.735
YAX=1  NCH=-1 MAX=130  NCH='012345678'END
TTL='XZ SLICE OF SPHERE CUBOID'
XUL=56.0 YUL=63.625 ZUL=71.735
XLR=72.0 YLR=63.625 ZLR=55.735
UAX=1  NCH=-1 MAX=130  NCH='012345678'
END PLOT
* READ START  NST=6 TFX=65 TFY=63.625 TFZ=63.735 LNU=300  END START
READ START  NST=1 XSM=56.981 XSP=71.649 YSM=56.219 YSP=70.959
   ZSM=54.401 ZSP=71.069   END START
END DATA
END

                              101 (CAR20)

#CSAS25
ROCKY FLATS CRITICALS MUREG/CR-2500 EXPERIMENT NUMBER 7 (27 GROUP MODEL)
* FUEL CUBE 15.28 CM, U(4.46)308 @ H/U=2.03, HI ENRICHED SPHERE DRIVEN
27GR  1MFHOMMEDIUM
U308  1 5.4078E-1 293.0 92234 0.03 92235 4.46 92236 0.08 92238 95.43 END
H20   1 2.4354E-1 END
ARBM-BAGGIE  1.0 3 0 0 0 1001 14.01 6012 84.9 8016 1.20 1 1.913ME-2
   END
ARBM-AL1100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 2 9.5390E-1
   END
ARBM-TAPE(VINYL)  1.0 7 0 0 0 1001 5.92 6012 45.91 8016 10.82 17000
   25.73 20040 6.9 22000 1.6 82000 1.1 2 1.1115E-2 END
ARBM-TAPE(MYLAR)  1.0 3 0 0 0 1001 6.83 6012 65.50 8016 27.02 2
   1.7491E-2 END
ARBM-MODERATOR  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 3 END
ARBM-PLEX(REG)  1.0 3 0 0 0 1001 7.84 6012 59.59 8016 32.23 4
   1.1773 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 4
   3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 4
   1.1648E-3 END
ARBM-PLEX(TRIS)  1.0 8 0 0 0 1 1001 7.16 6012 52.03 7014 0.16 8016 29.82
   15031 1.02 17000 1.81 35079 4.260 35081 2.840 5 1.2757 END
ARBM-PLEX(PAPER)  1.0 3 0 0 0 1001 6.48 6012 42.17 8016 49.5 5
   3.7534E-3 END
ARBM-PLEX(GLUE)  1.0 3 0 0 0 1001 11.67 6012 86.29 8016 1.20 5
   1.1648E-3 END
ARBM-FILLER  1.185 3 0 0 0 1001 7.83 6012 59.49 8016 32.48 6 0.7 END
* THIS MATERIAL IS ACTUALLY MODERATOR ADJUSTED FOR THE VOLUME
* FRACTION OF THE VOID FILLED BETWEEN CORE AND REFLECTOR.
ARBM-AL1100  1.0 3 0 0 1 13027 99.18 26000 0.5 29000 0.2 2 2.715  END
URANIUM  8 0.9483 293.0 92234 1.0 92235 93.19 92236 0.4 92238  5.41 END
ARBM-PU  0.816 2 0 0 0 1001 85.1 6012 14.9 8 0.0089  END
SS304  9 1.0 END
END COMP
ROCKY FLATS CRITICALS MUREG/CR-2500 EXPERIMENT NUMBER 7 (27 GROUP MODEL)
* FUEL CUBE 15.28 CM, U(4.46)308 @ H/U=2.03, HI ENRICHED SPHERE DRIVEN
READ PARM  NPG=600 NUB=YES FDN=YES PLT=NO  END PARM

READ GEOM
UNIT  1
COM='FUEL BOX WITH VOID AND PART OF AL BOX'
CUBOID  2 1 9.80  0.0 3.75   0.0   14.98 0.0
CUBOID  2 1 9.95  0.0 3.90  -0.15  14.98 0.0
CUBOID  1 1 14.98 0.0 9.365 -5.615 14.98 0.0
UNIT  2
COM='FRONT OF FUEL BOX'
CUBOID  2 1 0.15 0.0  5.615 0.0 14.98 0.0
CUBOID  0 1 0.15 0.0  9.365 0.0 14.98 0.0
CUBOID  2 1 0.15 0.0 14.98  0.0 14.98 0.0
UNIT  3
COM='REAR OF FUEL BOX'
CUBOID  2 1 0.15 0.0 14.98  0.0 14.98 0.0
UNIT  4
COM='ARRAY TO ASSEMBLE PART OF BOX'
ARRAY 26 3*0
UNIT  5
COM='TOP AND BOTTOM OF BOX'
CUBOID  0 1  9.80 0.0 3.750  0.0   0.15 0.0
CUBOID  2 1 15.28 0.0 9.365 -5.615 0.15 0.0
GLOBAL
UNIT  6
COM='ARRAY TO ASSEMBLE TOP AND BOTTOM'
ARRAY 27 3*0
CUBOID  2 1 15.28   0.0   15.13  -0.15  15.28   0.0
CUBOID  0 1 15.305 -0.025 15.155 -0.175 15.305 -0.025
UNIT  7
COM='FUEL BOX 15.28 CM ON A SIDE WITH .15 CM WALLS .05CM STACKING VOID'
CUBOID  1 1 6P7.49
CUBOID  2 1 6P7.64
CUBOID  0 1 6P7.6650
UNIT  8
COM='BOX FOR DRIVER'
CYLINDER  9 1 0.3175 2P2.318
SPHERE    0 1 2.34
SPHERE    8 1 5.67
HOLE   36 0.0 0.0  2.3401
HOLE  100 0.0 0.0 -2.3401
CUBOID  0 1 8.71 -6.62 2P7.645 7.365 -7.965
HOLE   37 0.0 0.0 -7.965
UNIT  34
COM='ALUMINUM WEIGHT DISTRIBUTION PLATE FOR SPECIAL BOX'
CUBOID  0 1  9.80 0.0 3.750  0.0   0.16 0.0
CUBOID  7 1 15.33 0.0 9.54  -5.79  0.16 0.0
UNIT  35
COM='ALUMINUM WEIGHT DISTRIBUTION PLATE FOR BOXES'
CUBOID  7 1  4P7.665 0.16 0.0
UNIT  36
COM='DRIVER SUPPORT'
CYLINDER  9 1 0.3175 3.32 0.0
UNIT  100
COM='DRIVER SUPPORT'
CYLINDER  9 1 0.3175 0.0 -3.32
UNIT  37
COM='DRIVER MOUNT'
CYLINDER  9 1 1.56 2.2 0.0
UNIT  9
COM='NORTH SPLIT TABLE CORE'
ARRAY 1 3*0.0
CUBOID  0 1 30.66 -0.94 77.5 0.0 83.475 0.0
UNIT  10
COM='SOUTH SPLIT TABLE CORE'
ARRAY 2 3*0.0
CUBOID  0 1 49.4 0.0 77.5 0.0 83.475 0.0
UNIT  11
COM='PLEXIGLASS REFLECTOR SHEET WITHOUT TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  4 1 2P15.8000 2P38.7500 2P0.6150
UNIT  12
COM='PLEXIGLASS REFLECTOR SHEET WITH TRIS, NORTH BOTTOM REFLECTOR'
CUBOID  5 1 2P15.8000 2P38.7500 2P0.6150
UNIT  13
COM='UPPER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P8.24
UNIT  14
COM='LOWER PORTION NORTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P38.75 2P3.69
UNIT  15
COM='NORTH BOTTOM REFLECTOR INCLUDES REGULAR AND TRIS'
ARRAY 3 3*0.0
UNIT  16
COM='PLEXIGLAS SHEET BOTTOM SOUTH REFLECTOR WITHOUT TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P0.6150
CUBOID  4 1 44.3 -5.1 2P38.75  2P0.615
UNIT  17
COM='PLEXIGLAS SHEET BOTTOM SOUTH REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P0.6150
CUBOID  5 1 44.3 -5.1 2P38.75 2P0.6150
UNIT  18
COM='LOWER PORTION SOUTH BOTTOM REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P8.855
CUBOID  5 1 44.3 -5.1 2P38.75 2P8.855
UNIT  19
COM='SOUTH BOTTOM REFLECTOR WITH REGULAR AND TRIS'
ARRAY 4 3*0.0
UNIT  20
COM='EAST AND WEST REFLECTORS FOR NORTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P15.8 2P12.65 2P54.2825
UNIT  21
COM='ARRAY FOR EAST AND WEST REFLECTORS FOR NORTH REFLECTOR'
ARRAY 5 3*0.0
UNIT  22
COM='EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR WITH TRIS'
CUBOID  5 1 2P24.700 2P12.65 2P54.2825
UNIT  23
COM='ARRAY FOR EAST AND WEST REFLECTORS FOR SOUTH REFLECTOR'
ARRAY 6 3*0.0
UNIT  24
COM='NORTH TOP REFLECTOR WITH TRIS'
CUBOID  5 1 2P28.35 2P64.05 2P12.15
UNIT  25
COM='ARRAY FOR NORTH TOP REFLECTOR'
ARRAY 7 3*0.0
UNIT  26
COM='SOUTH TOP REFLECTOR WITH TRIS'
CUBOID  0 1 2P5.1 2P2.5 2P12.15
CUBOID  5 1 69.4 -5.1 2P64.05 2P12.15
UNIT  27
COM='ARRAY FOR SOUTH TOP REFLECTOR'
ARRAY 8 3*0.0
UNIT  28
COM='NORTH END REFLECTOR 9.8CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P4.9000 2P64.0500 2P54.2825
UNIT  29
COM='NORTH END RELFECTOR 5.2 CM PORTION WITH TRIS'
CUBOID  5 1 2P2.6 2P64.0500 2P54.2825
UNIT  30
COM='NORTH END RELFECTOR 10.1 CM PORTION WITHOUT TRIS'
CUBOID  4 1 2P5.05 2P64.05 2P54.2825
UNIT  31
COM='ARRAY FOR NORTH END REFLECTOR'
ARRAY 9 3*0.0
UNIT  32
COM='SOUTH END REFLECTOR'
CUBOID  5 1 2P12.55 2P64.05 2P54.2825
UNIT  33
COM='ARRAY FOR SOUTH END REFLECTOR'
ARRAY 10 3*0.0
UNIT  38
COM='NORTH CORE WITH BOTTOM REFLECTOR'
ARRAY 13 3* 0.0
UNIT  39
COM='NORTH CORE WITH EAST AND WEST REFLECTOR'
ARRAY 14 3*0.0
UNIT  40
COM='NORTH CORE WITH END REFLECTOR'
ARRAY 15 3*0.0
UNIT  42
COM='NORTH CORE WITH TOP REFLECTOR'
ARRAY 16 3*0.0
UNIT  48
COM='SOUTH CORE WITH BOTTOM REFLECTORS'
ARRAY 20 3*0.0
UNIT  49
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
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ARRAY 21 3*0.0
UNIT  50
COM='SOUTH CORE END REFLECTOR'
ARRAY 22 3*0.0
UNIT  52
COM='SOUTH CORE WITH TOP REFLECTOR'
ARRAY 23 3*0.0
UNIT  54
COM='AIR GAP'
CUBOID  0 1 1.49 0.0 64.475 -63.625 69.13 -63.735
GLOBAL
UNIT  55
COM='TOTAL'
ARRAY 25 3*0.0
END GEOMETRY
READ ARRAY
ARA=1  MUX=2 MUY=5 MUZ=9
COM='NORTH SPLIT TABLE CORE'
FILL  10R7
      10R35
      10R7
      10R35
      10R7
      10R35
      10R7
      10R35
      10R7   END FILL
ARA=2  MUX=3 MUY=5 MUZ=9
COM='SOUTH SPLIT TABLE CORE'
FILL  6R7 6 8R7
      6R35 34 8R35
      6R7 6 8R7
      6R35 34 8R35
      6R7 6 8R7
      6R35 34 8R35
      6R7 6 8R7
      6R35 34 8R35
      6R7 6 8R7   END FILL
ARA=3  MUX=1 MUY=1 MUZ=3
COM='NORTH BOTTOM REFLECTOR'
FILL  14 11 13  END FILL
ARA=4  MUX=1 MUY=1 MUZ=7
COM='SOUTH BOTTOM REFLECTOR'
FILL  18 16 17 16 16 17 17  END FILL
ARA=5  MUX=1 MUY=1 MUZ=1
COM='EAST AND WEST WALLS OF NORTH REFLECTOR'
FILL  20 END FILL
ARA=6  MUX=1 MUY=1 MUZ=1
COM='EAST AND WEST WALLS OF SOUTH REFLECTOR'
FILL  22  END FILL
ARA=7  MUX=1 MUY=1 MUZ=1
COM='ARRAY FOR NORTH TOP REFLECTOR'
FILL  24  END FILL
ARA=8  MUX=1 MUY=1 MUZ=1
COM='ARRAY FOR SOUTH TOP REFLECTOR'
FILL  26 END FILL
ARA=9  MUX=3 MUY=1 MUZ=1
COM='ARRAY FOR NORTH END REFLECTOR'
FILL  28 29 30  END FILL
ARA=10  MUX=1 MUY=1 MUZ=1
COM='ARRAY FOR SOUTH END REFLECTOR'
FILL  32  END FILL
ARA=13  MUX=1 MUY=1 MUZ=2
COM='COMBINATION OF NORTH CORE WITH BOTTOM REFLECTOR'
FILL  15 9  END FILL
ARA=14  MUX=1 MUY=3 MUZ=1
COM='NORTH CORE WITH SIDE REFLECTORS'
FILL  21 38 21  END FILL
ARA=15  MUX=2 MUY=1 MUZ=1
COM='NORTH CORE WITH END REFLECTOR'
FILL  31 39  END FILL
ARA=16  MUX=1 MUY=1 MUZ=2
COM='NORTH CORE WITH TOP REFLECTOR'
FILL  40 25  END FILL
ARA=20  MUX=1 MUY=1 MUZ=2
COM='SOUTH CORE WITH BOTTOM REFLECTOR'
FILL  19 10  END FILL
ARA=21 MUX=1 MUY=3 MUZ=1
COM='SOUTH CORE WITH EAST WEST REFLECTORS'
FILL  23 48 23  END FILL
ARA=22 MUX=2 MUY=1 MUZ=1
COM='SOUTH CORE WITH END REFLECTOR'
FILL  49 33  END FILL
ARA=23  MUX=1 MUY=1 MUZ=2
COM='COMBINATION OF CORE WITH TOP REFLECTOR'
FILL  50 27  END FILL
ARA=25  MUX=3 MUY=1 MUZ=1
COM='TOTAL'
FILL  42 54 52  END FILL
ARA=26  MUX=3 MUY=1 MUZ=1
COM='ASSEMBLY OF FUEL BOX FRONT AND REAR'
FILL  2 1 3  END FILL
ARA=27  MUX=1 MUY=1 MUZ=3
COM='ASSEMBLY OF FUEL BOX TOP AND BOTTOM'
FILL  5 4 5  END FILL
END ARRAY
READ PLOT TTL='YZ SLICE OF SOUTH CORE FIRST ROW'
XUL=64.319 YUL=55.625 ZUL=71.735
XLR=64.319 YLR=71.625 ZLR=55.735
VAX=1  WDW=-1 MAX=130  MCH='012345678'END
TTL='XZ SLICE OF SPHERE CUBOID'
XUL=56.0 YUL=63.625 ZUL=71.735
XLR=72.0 YLR=63.625 ZLR=55.735
UAX=1  WDW=-1 MAX=130  MCH='012345678'
END PLOT
* READ START  WST=6 TFX=65 TFY=63.625 TFZ=63.735 LNU=300  END START
READ START  WST=1 XSM=56.981 XSP=71.649 YSM=56.219 YSP=70.959
  ZSM=56.401 ZSP=71.069   END START
END DATA
END
```

APPENDIX E4: TABLE 4 INPUTS

102 (CAA01)

```
=CSAS25
UO2F2 SOLN H/U-235=1112 BARE SPHERE CASE 1
27GROUPNDF4  MULTIREGION
U-234   1 0 7.360-7 END
U-235   1 0 5.990-5 END
U-238   1 0 3.592-4 END
H       1 0 6.661-2 END
O       1 0 3.343-2 END
F       1 0 1.285-4 END
AL      2 1 END
END COMP
SPHERICAL END
1 27.9 NOEXTERMOD  2 28.10 NOEXTERMOD  END ZONE
UO2F2 SOLN H/U-235=1112 BARE SPHERE CASE 1
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
SPHERE  1 1 27.9
SPHERE  2 1 28.1
END GEOM
END DATA
END
```

103 (CAA02)

```
=CSAS25
UO2F2 SOLN H/U-235=1393 BARE SPHERE CASE 2
27GROUPNDF4  MULTIREGION
U-234   1 0 5.880-7 END
U-235   1 0 4.786-5 END
U-238   1 0 2.870-4 END
H       1 0 6.667-2 END
O       1 0 3.344-2 END
F       1 0 1.026-4 END
AL      2 1 END
END COMP
SPHERICAL END
1 34.6 NOEXTERMOD  2 34.92 NOEXTERMOD  END ZONE
UO2F2 SOLN H/U-235=1393 BARE SPHERE CASE 2
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
SPHERE  1 1 34.6
SPHERE  2 1 34.92
END GEOM
END DATA
END
```

104 (CAA03)

```
=CSAS25
UO2(NO3)2 SOLN H/U-235=1379 BARE SPHERE CASE 3
27GROUPNDF4  MULTIREGION
U-234   1 0 5.400-7 END
U-235   1 0 4.815-5 END
U-236   1 0 1.390-7 END
U-238   1 0 2.811-4 END
N       1 0 6.640-2 END
O       1 0 3.379-2 END
H       1 0 1.753-4 END
AL      2 1 END
END COMP
SPHERICAL END
1 34.6 NOEXTERMOD  2 34.92 NOEXTERMOD  END ZONE
UO2(NO3)2 SOLN H/U-235=1379 BARE SPHERE CASE 3
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
SPHERE  1 1 34.6
SPHERE  2 1 34.92
END GEOM
END DATA
END
```

105 (CAA04)

```
=CSAS25
UO2F2 SOLN H/U-235=76.1 H2O REFL SPHERE CASE 4
27GROUPNDF4  MULTIREGION
U-234   1 0 8.795-6 END
U-235   1 0 8.327-4 END
U-236   1 0 4.449-6 END
U-238   1 0 4.729-5 END
H       1 0 5.537-2 END
O       1 0 3.347-2 END
F       1 0 1.786-3 END
AL      2 1 END
H2O     3 1 END
END COMP
SPHERICAL END
1 11.5 ONEEXTERMOD  2 11.66 NOEXTERMOD  3 29.66 NOEXTERMOD END ZONE
UO2F2 SOLN H/U-235=76.1 H2O REFL SPHERE CASE 4
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
SPHERE  1 1 11.5
SPHERE  2 1 11.66
REFLECTOR  3 2 3 6
END GEOM
READ BIAS ID=500 2 7 END BIAS
END DATA
END
```

106 (CAA05)

```
=CSAS25
UO2F2 SOLN H/U-235=126.5 H2O REFL SPHERE CASE 5
27GROUPNDF4  MULTIREGION
U-234   1 0 5.405-6 END
U-235   1 0 5.117-4 END
U-236   1 0 2.734-6 END
U-238   1 0 2.906-5 END
H       1 0 6.473-2 END
O       1 0 3.346-2 END
F       1 0 1.098-3 END
AL      2 1 END
H2O     3 1 END
END COMP
SPHERICAL END
1 11.8 ONEEXTERMOD  2 11.96 NOEXTERMOD  3 29.96 NOEXTERMOD END ZONE
UO2F2 SOLN H/U-235=126.5 H2O REFL SPHERE CASE 5
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
SPHERE  1 1 11.8
SPHERE  2 1 11.96
REFLECTOR  3 2 3 6
END GEOM
READ BIAS ID=500 2 7 END BIAS
END DATA
END
```

(CAA06)

```
=CSAS25
UO2F2 SOLN H/U-235=1270 H2O REFL SPHERE CASE 6
27GROUPNDF4  MULTIREGION
U-234   1 0 5.530-7 END
U-235   1 0 5.231-5 END
U-236   1 0 2.800-7 END
U-238   1 0 2.971-6 END
H       1 0 6.643-2 END
O       1 0 3.333-2 END
F       1 0 1.122-4 END
AL      2 1 END
H2O     3 1 END
END COMP
SPHERICAL END
1 27.9 ONEEXTERMOD  2 28.10 NOEXTERMOD  3 46.10 NOEXTERMOD END ZONE
UO2F2 SOLN H/U-235=1270 H2O REFL SPHERE CASE 6
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
SPHERE  1 1 27.9
SPHERE  2 1 28.1
REFLECTOR  3 2 3 6
END GEOM
READ BIAS ID=500 2 7 END BIAS
END DATA
END
```

113 (CAA12)

```
=CSAS25
ROCKY FLATS UO2(NO3)2 SOLN 142.92 G U/L
27GROUPNDF4  MULTIREGION
SOLNUO2(NO3)2  1 142.92 0.283 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL      2 1 END
END COMP
CYLINDRICAL END
1 14 NOEXTERMOD  2 14.3 NOEXTERMOD END ZONE
ROCKY FLATS UO2(NO3)2 SOLN 28.01 CM DIAM BARE 1
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER  1 1 14.005 33.55 0
CYLINDER  2 1 14.325 33.55 -.32
END GEOM
END DATA
END
```

114 (CAA13)

```
=CSAS25
ROCKY FLATS UO2(NO3)2 SOLN 357.71 G U/L
27GROUPNDF4  MULTIREGION
SOLNUO2(NO3)2  1 357.71 0.549 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL      2 1 END
END COMP
CYLINDRICAL END
1 14 NOEXTERMOD  2 14.3 NOEXTERMOD END ZONE
ROCKY FLATS UO2(NO3)2 SOLN 28.01 CM DIAM BARE 2
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER  1 1 14.005 30.91 0
CYLINDER  2 1 14.325 30.91 -.32
END GEOM
END DATA
END
```

115 (CAA14)

```
=CSAS25
ROCKY FLATS UO2(NO3)2 SOLN 54.89 G U/L
27GROUPNDF4  MULTIREGION
SOLNUO2(NO3)2  1 54.89 0.105 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL      2 1 END
END COMP
CYLINDRICAL END
1 16.5 NOEXTERMOD  2 16.8 NOEXTERMOD END ZONE
ROCKY FLATS UO2(NO3)2 SOLN 33.01 CM DIAM BARE 3
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER  1 1 16.505 39.48 0
CYLINDER  2 1 16.825 39.48 -.32
END GEOM
END DATA
END
```

116 (CAA15)

```
=CSAS25
ROCKY FLATS UO2(NO3)2 SOLN 137.40 G U/L
27GROUPNDF4  MULTIREGION
SOLNUO2(NO3)2  1 137.4 .287 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL      2 1 END
END COMP
CYLINDRICAL END
1 16.5 NOEXTERMOD  2 16.8 NOEXTERMOD END ZONE
ROCKY FLATS UO2(NO3)2 SOLN 33.01 CM DIAM BARE 4
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER  1 1 16.505 23.96 0
CYLINDER  2 1 16.825 23.96 -.32
END GEOM
END DATA
END
```

117 (CAA16)

```
=CSAS25
ROCKY FLATS UO2(NO3)2 SOLN 357.71 G U/L
27GROUPNDF4  MULTIREGION
SOLNUO2(NO3)2  1 357.71 .549 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL      2 1 END
END COMP
CYLINDRICAL END
1 16.5 NOEXTERMOD  2 16.8 NOEXTERMOD END ZONE
ROCKY FLATS UO2(NO3)2 SOLN 33.01 CM DIAM BARE 5
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER  1 1 16.505 22.53 0
CYLINDER  2 1 16.825 22.53 -.32
END GEOM
END DATA
END
```

118 (CAA17)

```
=CSAS25
ROCKY FLATS UO2(NO3)2 SOLN 144.38 G U/L
27GROUPNDF4  MULTIREGION
SOLNUO2(NO3)2  1 144.38 .272 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL      2 1 END
RFCONCRETE  3 1 END
END COMP
CYLINDRICAL END
1 14 NOEXTERMOD  2 14.3 NOEXTERMOD END ZONE
ROCKY FLATS UO2(NO3)2 SOLN 28.01 CM DIAM REFL 1 CONC REFL
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER  1 1 14.005 31.37 0
CYLINDER  2 1 14.325 31.37 -.32
CUBOID  0 1 64.6 -57.2 57.4 -64.8 80.8 -41.1
REFLECTOR 3 2 4RS.14 2R0 5
REFLECTOR 0 1 4R0 2R0.9  1
REFLECTOR 3 2 4R0 2RS.14 5
END GEOM
READ BIAS ID=301 2 6 END BIAS
END DATA
END
```

119 (CAA18)

```
=CSAS25
ROCKY FLATS UO2(NO3)2 SOLN 334.77 G U/L
27GROUPNDF4  MULTIREGION
SOLNUO2(NO3)2  1 334.77 .521 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL      2 1 END
RFCONCRETE  3 1 END
END COMP
CYLINDRICAL END
1 14 NOEXTERMOD  2 14.3 NOEXTERMOD END ZONE
ROCKY FLATS UO2(NO3)2 SOLN 28.01 CM DIAM REFL 2 CONC REFL
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER  1 1 14.005 28.60 0
CYLINDER  2 1 14.325 28.60 -.32
CUBOID  0 1 64.6 -57.2 57.4 -64.8 80.8 -41.1
REFLECTOR 3 2 4RS.14 2R0 5
REFLECTOR 0 1 4R0 2R0.9  1
REFLECTOR 3 2 4R0 2RS.14 5
END GEOM
READ BIAS ID=301 2 6 END BIAS
END DATA
END
```

120 (CAA19)

```
=CSAS25
ROCKY FLATS UO2(NO3)2 SOLN 144.38 G U/L
27GROUPNDF4  MULTIREGION
SOLNUO2(NO3)2  1 144.38 .272 1 293 92234 1.022 92235 93.172 92236 .434
```

```
92238 5.372 END
AL    2 1 END
RFCONCRETE  3 1 END
END COMP
CYLINDRICAL END
1 16.5 NOEXTERMOD  2 16.8 NOEXTERMOD END ZONE
ROCKY FLATS U02(NO3)2 SOLN 33.01 CM DIAM REFL 3 CONC REFL
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER   1 1 16.505 22.85 0
CYLINDER   2 1 16.825 22.85 -.32
CUBOID     0 1 64.6 -57.2 57.4 -64.8 80.8 -41.1
REFLECTOR 3 2 4R5.14 2R0 5
REFLECTOR 0 1 4R0 2R0.9  1
REFLECTOR 3 2 4R0 2R5.14 5
END GEOM
READ BIAS ID=301 2 6 END BIAS
END DATA
END
```

121 (CAA20)

```
#CSAS25
ROCKY FLATS U02(NO3)2 SOLN 334.77 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(NO3)2   1 334.77 .521 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL    2 1 END
RFCONCRETE  3 1 END
END COMP
CYLINDRICAL END
1 16.5 NOEXTERMOD  2 16.8 NOEXTERMOD END ZONE
ROCKY FLATS U02(NO3)2 SOLN 33.01 CM DIAM REFL 4 CONC REFL
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER   1 1 16.505 21.50 0
CYLINDER   2 1 16.825 21.50 -.32
CUBOID     0 1 64.6 -57.2 57.4 -64.8 80.8 -41.1
REFLECTOR 3 2 4R5.14 2R0 5
REFLECTOR 0 1 4R0 2R0.9  1
REFLECTOR 3 2 4R0 2R5.14 5
END GEOM
READ BIAS ID=301 2 6 END BIAS
END DATA
END
```

122 (CAA21)

```
#CSAS25
ROCKY FLATS U02(NO3)2 SOLN 144.38 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(NO3)2   1 144.38 .272 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL    2 1 END
RFCONCRETE  3 1 END
END COMP
CYLINDRICAL END
1 14 NOEXTERMOD  2 14.3 NOEXTERMOD END ZONE
ROCKY FLATS U02(NO3)2 SOLN 28.01 CM DIAM REFL 5 CONC REFL
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER   1 1 14.005 24.70 0
CYLINDER   2 1 14.325 24.70 -.32
CUBOID     0 1 104.0 -17.8 16.5 -105.7 121.58 -.32
REFLECTOR 3 2 4R5.14 2R0 5
REFLECTOR 0 1 4R0 2R0.9  1
REFLECTOR 3 2 4R0 2R5.14 5
END GEOM
READ BIAS ID=301 2 6 END BIAS
END DATA
END
```

123 (CAA22)

```
#CSAS25
ROCKY FLATS U02(NO3)2 SOLN 334.77 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(NO3)2   1 334.77 .521 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL    2 1 END
RFCONCRETE  3 1 END
END COMP
CYLINDRICAL END
1 16.5 NOEXTERMOD  2 16.8 NOEXTERMOD END ZONE
ROCKY FLATS U02(NO3)2 SOLN 33.01 CM DIAM REFL 6 CONC REFL
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER   1 1 16.505 16.78 0
CYLINDER   2 1 16.825 16.78 -.32
CUBOID     0 1 104.55 -17.25 16.825 -105.375 121.58 -.32
REFLECTOR 3 2 4R5.14 2R0 5
REFLECTOR 0 1 4R0 2R0.9  1
REFLECTOR 3 2 4R0 2R5.14 5
END GEOM
READ BIAS ID=301 2 6 END BIAS
END DATA
END
```

124 (CAA23)

```
#CSAS25
ROCKY FLATS U02(NO3)2 SOLN 147.66 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(NO3)2   1 147.66 .271 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL    2 1 END
PLEXIGLASS  3 1 END
H     4 0 5.5169-2 END
C     4 0 3.3967-2 END
O     4 0 1.4231-2 END
P     4 0 3.8500-4 END
CL    4 0 3.5610-4 END
BR-79  4 0 3.184-4 END
BR-81  4 0 3.116-4 END
END COMP
CYLINDRICAL END
1 14 NOEXTERMOD  2 14.3 NOEXTERMOD END ZONE
ROCKY FLATS U02(NO3)2 SOLN 28.01 CM DIAM REFL 7 PLEXIGLASS REFL
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER   1 1 14.005 31.26 0
CYLINDER   2 1 14.325 31.26 -.32
CUBOID     0 1 61.2 -61.7 60.4 -62.5 81.1 -41.8
REFLECTOR 3 2 4R2.971 2R0  7
REFLECTOR 4 2 5R0 2.971    7
REFLECTOR 4 2 4R0 2.886 0  7
END GEOM
READ BIAS ID=500 2 8 END BIAS
END DATA
END
```

125 (CAA24)

```
#CSAS25
ROCKY FLATS U02(NO3)2 SOLN 345.33 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(NO3)2   1 345.33 .534 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL    2 1 END
PLEXIGLASS  3 1 END
H     4 0 5.5169-2 END
C     4 0 3.3967-2 END
O     4 0 1.4231-2 END
P     4 0 3.8500-4 END
CL    4 0 3.5610-4 END
BR-79  4 0 3.184-4 END
BR-81  4 0 3.116-4 END
END COMP
CYLINDRICAL END
1 14 NOEXTERMOD  2 14.3 NOEXTERMOD END ZONE
ROCKY FLATS U02(NO3)2 SOLN 28.01 CM DIAM REFL 8 PLEXIGLASS REFL
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER   1 1 14.005 28.84 0
CYLINDER   2 1 14.325 28.84 -.32
CUBOID     0 1 61.2 -61.7 60.4 -62.5 81.1 -41.8
REFLECTOR 3 2 4R2.971 2R0  7
REFLECTOR 4 2 5R0 2.971    7
REFLECTOR 4 2 4R0 2.886 0  7
END GEOM
READ BIAS ID=500 2 8 END BIAS
END DATA
END
```

126 (CAA25)

```
#CSAS25
ROCKY FLATS U02(NO3)2 SOLN 147.66 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(NO3)2   1 147.66 .271 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL    2 1 END
PLEXIGLASS  3 1 END
H     4 0 5.5169-2 END
C     4 0 3.3967-2 END
O     4 0 1.4231-2 END
P     4 0 3.8500-4 END
CL    4 0 3.5610-4 END
BR-79  4 0 3.184-4 END
BR-81  4 0 3.116-4 END
END COMP
CYLINDRICAL END
1 16.5 NOEXTERMOD  2 16.8 NOEXTERMOD END ZONE
ROCKY FLATS U02(NO3)2 SOLN 33.01 CM DIAM REFL 9 PLEXIGLASS REFL
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER   1 1 16.505 22.78 0
CYLINDER   2 1 16.825 22.78 -.32
CUBOID     0 1 61.2 -61.7 60.4 -62.5 81.1 -41.8
REFLECTOR 3 2 4R2.971 2R0  7
REFLECTOR 4 2 5R0 2.971    7
REFLECTOR 4 2 4R0 2.886 0  7
END GEOM
READ BIAS ID=500 2 8 END BIAS
END DATA
END
```

127 (CAA26)

```
#CSAS25
ROCKY FLATS U02(NO3)2 SOLN 345.33 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(NO3)2   1 345.33 .534 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL    2 1 END
PLEXIGLASS  3 1 END
H     4 0 5.5169-2 END
C     4 0 3.3967-2 END
O     4 0 1.4231-2 END
P     4 0 3.8500-4 END
CL    4 0 3.5610-4 END
BR-79  4 0 3.184-4 END
BR-81  4 0 3.116-4 END
END COMP
CYLINDRICAL END
1 16.5 NOEXTERMOD  2 16.8 NOEXTERMOD END ZONE
ROCKY FLATS U02(NO3)2 SOLN 33.01 CM DIAM REFL 10 PLEXIGLASS REFL
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER   1 1 16.505 21.67 0
CYLINDER   2 1 16.825 21.67 -.32
CUBOID     0 1 61.2 -61.7 60.4 -62.5 81.1 -41.8
REFLECTOR 3 2 4R2.971 2R0  7
REFLECTOR 4 2 5R0 2.971    7
REFLECTOR 4 2 4R0 2.886 0  7
END GEOM
READ BIAS ID=500 2 8 END BIAS
END DATA
END
```

128 (CAA27)

```
#CSAS25
ROCKY FLATS U02(NO3)2 SOLN 147.66 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(NO3)2   1 147.66 .271 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL    2 1 END
PLEXIGLASS  3 1 END
H     4 0 5.5169-2 END
C     4 0 3.3967-2 END
O     4 0 1.4231-2 END
P     4 0 3.8500-4 END
CL    4 0 3.5610-4 END
BR-79  4 0 3.184-4 END
BR-81  4 0 3.116-4 END
END COMP
CYLINDRICAL END
1 14 NOEXTERMOD  2 14.3 NOEXTERMOD END ZONE
ROCKY FLATS U02(NO3)2 SOLN 28.01 CM DIAM REFL 11 PLEXIGLASS REFL
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER   1 1 14.005 25.26 0
CYLINDER   2 1 14.325 25.26 -.32
CUBOID     0 1 104.95 -17.95 17.52 -105.38 122.58 -.32
REFLECTOR 3 2 4R2.971 2R0  7
REFLECTOR 4 2 5R0 2.971    7
REFLECTOR 4 2 4R0 2.886 0  7
END GEOM
READ BIAS ID=500 2 8 END BIAS
END DATA
END
```

129 (CAA28)

```
#CSAS25
ROCKY FLATS U02(NO3)2 SOLN 345.33 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(NO3)2   1 345.33 .534 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL    2 1 END
PLEXIGLASS  3 1 END
H     4 0 5.5169-2 END
C     4 0 3.3967-2 END
O     4 0 1.4231-2 END
P     4 0 3.8500-4 END
CL    4 0 3.5610-4 END
BR-79  4 0 3.184-4 END
BR-81  4 0 3.116-4 END
END COMP
CYLINDRICAL END
1 16.5 NOEXTERMOD  2 16.8 NOEXTERMOD END ZONE
ROCKY FLATS U02(NO3)2 SOLN 33.01 CM DIAM REFL 12 PLEXIGLASS REFL
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER   1 1 16.505 17.2 0
CYLINDER   2 1 16.825 17.2 -.32
CUBOID     0 1 105.2 -17.7 17.3 -105.6 122.58 -.32
REFLECTOR 3 2 4R2.971 2R0  7
REFLECTOR 4 2 5R0 2.971    7
REFLECTOR 4 2 4R0 2.886 0  7
END GEOM
READ BIAS ID=500 2 8 END BIAS
END DATA
END
```

130 (CAA29)

```
#CSAS25
ROCKY FLATS U02(NO3)2 SOLN 67.28 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(NO3)2   1 67.28 .128 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL    2 1 END
RFCONCRETE  3 1 END
END COMP
CYLINDRICAL END
1 10.5 NOEXTERMOD  2 10.9 NOEXTERMOD END ZONE
ROCKY FLATS U02(NO3)2 SOLN 21.12 CM DIAM 4X4 ARRAY CONC REFL
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER   1 1 10.56 27.15 0
CYLINDER   2 1 10.96 27.15 -.32
CUBOID     0 1 4P15.24 121.58 -.32
CORE       0 1 2R-60.96 -.32
REFLECTOR 3 2 4R5.14 2R0 5
REFLECTOR 0 1 4R0 2R1.25  1
REFLECTOR 3 2 4R0 2R5.14 5
END GEOM
READ ARRAY NUX=4 NUY=4 NUZ=1 END ARRAY
```

```
READ BIAS ID=301 2 6 END BIAS
END DATA
END
```

131 (CAA30)

```
=CSAS25
ROCKY FLATS U02(N03)2 SOLN 364.11 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2  1 364.11 .584 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL     2 1 END
RFCONCRETE  3 1 END
END COMP
CYLINDRICAL END
1 10.5 NOEXTERMOD  2 10.9 NOEXTERMOD END ZONE
ROCKY FLATS U02(N03)2 SOLN 21.12 CM DIAM 4X4 ARRAY CONC REFL C2
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER  1 1 10.56 17.13 0
CYLINDER  2 1 10.96 17.13 -.32
CUBOID    0 1 4P15.24 121.58 -.32
CORE      0 1 2R-60.96 -.32
REFLECTOR 3 2 4R5.14 2R0 5
REFLECTOR 0 1 4R0 2R1.25  1
REFLECTOR 3 2 4R0 2R5.14 5
END GEOM
READ ARRAY NUX=4 NUY=4 NUZ=1 END ARRAY
READ BIAS ID=301 2 6 END BIAS
END DATA
END
```

132 (CAA31)

```
=CSAS25
ROCKY FLATS U02(N03)2 SOLN 83.49 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2  1 83.49 .151 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL     2 1 END
RFCONCRETE  3 1 END
END COMP
CYLINDRICAL END
1 8 NOEXTERMOD  2 8.3 NOEXTERMOD END ZONE
ROCKY FLATS U02(N03)2 SOLN 16.12 CM DIAM 4X4 ARRAY CONC REFL C3
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER  1 1 8.06 51.21 0
CYLINDER  2 1 8.38 51.21 -.32
CUBOID    0 1 4P15.24 121.58 -.32
CORE      0 1 2R-60.96 -.32
REFLECTOR 3 2 4R5.14 2R0 5
REFLECTOR 0 1 4R0 2R1.25  1
REFLECTOR 3 2 4R0 2R5.14 5
END GEOM
READ ARRAY NUX=4 NUY=4 NUZ=1 END ARRAY
READ BIAS ID=301 2 6 END BIAS
END DATA
END
```

133 (CAA32)

```
=CSAS25
ROCKY FLATS U02(N03)2 SOLN 359.55 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2  1 359.55 .578 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL     2 1 END
RFCONCRETE  3 1 END
END COMP
CYLINDRICAL END
1 8 NOEXTERMOD  2 8.3 NOEXTERMOD END ZONE
ROCKY FLATS U02(N03)2 SOLN 16.12 CM DIAM 4X4 ARRAY CONC REFL C4
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER  1 1 8.06 31.82 0
CYLINDER  2 1 8.38 31.82 -.32
CUBOID    0 1 4P15.24 121.58 -.32
CORE      0 1 2R-60.96 -.32
REFLECTOR 3 2 4R5.14 2R0 5
REFLECTOR 0 1 4R0 2R1.25  1
REFLECTOR 3 2 4R0 2R5.14 5
END GEOM
READ ARRAY NUX=4 NUY=4 NUZ=1 END ARRAY
READ BIAS ID=301 2 6 END BIAS
END DATA
END
```

134 (CAA33)

```
=CSAS25
ROCKY FLATS U02(N03)2 SOLN 76.09 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2  1 76.09 .137 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL     2 1 END
RFCONCRETE  3 1 END
END COMP
CYLINDRICAL END
1 10.5 NOEXTERMOD  2 10.9 NOEXTERMOD END ZONE
ROCKY FLATS U02(N03)2 SOLN 21.12 CM DIAM 2X2 ARRAY CONC REFL C5
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
UNIT 1
CYLINDER  1 1 10.56 62.34 0
CYLINDER  2 1 10.96 62.34 -.32
CUBOID    0 1 4P15.24 121.58 -.32
UNIT 2
CUBOID    0 1 4P15.24 121.58 -.32
CORE      0 1 2R-60.96 -.32
REFLECTOR 3 2 4R5.14 2R0 5
REFLECTOR 0 1 4R0 2R1.25  1
REFLECTOR 3 2 4R0 2R5.14 5
END GEOM
READ ARRAY NUX=4 NUY=4 NUZ=1
FILL SR2 2R1 2R2 2R1 SR2 END FILL
END ARRAY
READ BIAS ID=301 2 6 END BIAS
END DATA
END
```

135 (CAA34)

```
=CSAS25
ROCKY FLATS U02(N03)2 SOLN 364.11 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2  1 364.11 .584 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL     2 1 END
RFCONCRETE  3 1 END
END COMP
CYLINDRICAL END
1 10.5 NOEXTERMOD  2 10.9 NOEXTERMOD END ZONE
ROCKY FLATS U02(N03)2 SOLN 21.12 CM DIAM 2X2 ARRAY CONC REFL C6
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
UNIT 1
CYLINDER  1 1 10.56 31.11 0
CYLINDER  2 1 10.96 31.11 -.32
CUBOID    0 1 4P15.24 121.58 -.32
UNIT 2
CUBOID    0 1 4P15.24 121.58 -.32
CORE      0 1 2R-60.96 -.32
REFLECTOR 3 2 4R5.14 2R0 5
REFLECTOR 0 1 4R0 2R1.25  1
REFLECTOR 3 2 4R0 2R5.14 5
END GEOM
READ ARRAY NUX=4 NUY=4 NUZ=1
FILL SR2 2R1 2R2 2R1 SR2 END FILL
END ARRAY
READ BIAS ID=301 2 6 END BIAS
END DATA
END
```

136 (CAA35)

```
=CSAS25
ROCKY FLATS U02(N03)2 SOLN 359.55 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2  1 359.55 .578 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL     2 1 END
RFCONCRETE  3 1 END
END COMP
CYLINDRICAL END
1 8 NOEXTERMOD  2 8.3 NOEXTERMOD END ZONE
ROCKY FLATS U02(N03)2 SOLN 16.12 CM DIAM 2X2 ARRAY CONC REFL C7
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
UNIT 1
CYLINDER  1 1 8.06 104.04 0
CYLINDER  2 1 8.38 104.04 -.32
CUBOID    0 1 4P15.24 121.58 -.32
UNIT 2
CUBOID    0 1 4P15.24 121.58 -.32
CORE      0 1 2R-60.96 -.32
REFLECTOR 3 2 4R5.14 2R0 5
REFLECTOR 0 1 4R0 2R1.25  1
REFLECTOR 3 2 4R0 2R5.14 5
END GEOM
READ ARRAY NUX=4 NUY=4 NUZ=1
FILL BR2 2R1 2R2 2R1 2R2 END FILL
END ARRAY
READ BIAS ID=301 2 6 END BIAS
END DATA
END
```

137 (CAA36)

```
=CSAS25
ROCKY FLATS U02(N03)2 SOLN 359.55 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2  1 359.55 .578 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL     2 1 END
RFCONCRETE  3 1 END
END COMP
CYLINDRICAL END
1 8 NOEXTERMOD  2 8.3 NOEXTERMOD END ZONE
ROCKY FLATS U02(N03)2 SOLN 16.12 CM DIAM 2X4 ARRAY CONC REFL C8
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
UNIT 1
CYLINDER  1 1 8.06 51.45 0
CYLINDER  2 1 8.38 51.45 -.32
CUBOID    0 1 4P15.24 121.58 -.32
UNIT 2
CUBOID    0 1 4P15.24 121.58 -.32
CORE      0 1 2R-60.96 -.32
REFLECTOR 3 2 4R5.14 2R0 5
REFLECTOR 0 1 4R0 2R1.25  1
REFLECTOR 3 2 4R0 2R5.14 5
END GEOM
READ ARRAY NUX=4 NUY=4 NUZ=1
FILL 2R1 2R2 3X4 END FILL
END ARRAY
READ BIAS ID=301 2 6 END BIAS
END DATA
END
```

138 (CAA37)

```
=CSAS25
ROCKY FLATS U02(N03)2 SOLN 60.32 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2  1 60.32 .113 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL     2 1 END
PLEXIGLASS  3 1 END
H     4 0 5.5169-2 END
C     4 0 3.2967-2 END
O     4 0 1.4231-2 END
P     4 0 3.8500-4 END
CL    4 0 3.5610-4 END
BR-79  4 0 3.184-4 END
BR-81  4 0 3.116-4 END
END COMP
CYLINDRICAL END
1 10.5 NOEXTERMOD  2 10.9 NOEXTERMOD END ZONE
ROCKY FLATS U02(N03)2 SOLN 21.12 CM DIAM 4X4 ARRAY PLEXIGLASS REFL P1
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER  1 1 10.56 31.76 0
CYLINDER  2 1 10.96 31.76 -.32
CUBOID    0 1 4P15.24 122.58 -.32
CORE      0 1 2R-60.96 -.32
REFLECTOR 0 1 4R.49  2R0 1
REFLECTOR 3 2 4R2.971 2R0  7
REFLECTOR 4 2 5R0 2.971    7
REFLECTOR 4 2 4R0 2.886 0  7
END GEOM
READ ARRAY NUX=4 NUY=4 NUZ=1
END ARRAY
READ BIAS ID=500 2 8 END BIAS
END DATA
END
```

139 (CAA38)

```
=CSAS25
ROCKY FLATS U02(N03)2 SOLN 355.94 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2  1 355.94 .494 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL     2 1 END
PLEXIGLASS  3 1 END
H     4 0 5.5169-2 END
C     4 0 3.3967-2 END
O     4 0 1.4231-2 END
P     4 0 3.8500-4 END
CL    4 0 3.5610-4 END
BR-79  4 0 3.184-4 END
BR-81  4 0 3.116-4 END
END COMP
CYLINDRICAL END
1 10.5 NOEXTERMOD  2 10.9 NOEXTERMOD END ZONE
ROCKY FLATS U02(N03)2 SOLN 21.12 CM DIAM 4X4 ARRAY PLEXIGLASS REFL P2
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER  1 1 10.56 18.82 0
CYLINDER  2 1 10.96 18.82 -.32
CUBOID    0 1 4P15.24 122.58 -.32
CORE      0 1 2R-60.96 -.32
REFLECTOR 0 1 4R.49  2R0 1
REFLECTOR 3 2 4R2.971 2R0  7
REFLECTOR 4 2 5R0 2.971    7
REFLECTOR 4 2 4R0 2.886 0  7
END GEOM
READ ARRAY NUX=4 NUY=4 NUZ=1
END ARRAY
READ BIAS ID=500 2 8 END BIAS
END DATA
END
```

140 (CAA39)

```
=CSAS25
ROCKY FLATS U02(N03)2 SOLN 60.32 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2  1 60.32 .113 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL     2 1 END
PLEXIGLASS  3 1 END
H     4 0 5.5169-2 END
C     4 0 3.3967-2 END
O     4 0 1.4231-2 END
P     4 0 3.8500-4 END
CL    4 0 3.5610-4 END
BR-79  4 0 3.184-4 END
BR-81  4 0 3.116-4 END
END COMP
CYLINDRICAL END
1 8 NOEXTERMOD  2 8.3 NOEXTERMOD END ZONE
ROCKY FLATS U02(N03)2 SOLN 16.12 CM DIAM 4X4 ARRAY PLEXIGLASS REFL P3
READ PARAM NPG=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER  1 1 8.06 78.40 0
CYLINDER  2 1 8.38 78.40 -.32
CUBOID    0 1 4P15.24 122.58 -.32
CORE      0 1 2R-60.96 -.32
```

```
REFLECTOR 0 1 4R.49  2R0 1
REFLECTOR 3 2 4R2.971 2R0  7
REFLECTOR 4 2 5R0 2.971    7
REFLECTOR 4 2 4R0 2.886 0  7
END GEOM
READ ARRAY NUX=4 NUY=4 NUZ=1
END ARRAY
READ BIAS ID=500 2 8 END BIAS
END DATA
END
```

141 (CAA40)

```
=CSAS25
ROCKY FLATS U02(N03)2 SOLN 355.94 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2   1 355.94 .494 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL      2 1 END
PLEXIGLASS  3 1 END
H     4 0 5.5169-2 END
C     4 0 3.3967-2 END
O     4 0 1.4231-2 END
P     4 0 3.8500-4 END
CL    4 0 3.5610-4 END
BR-79   4 0 3.184-4 END
BR-81   4 0 3.116-4 END
END COMP
CYLINDRICAL END
1 8 NOEXTERNMOD  2 8.3 NOEXTERNMOD END ZONE
ROCKY FLATS U02(N03)2 SOLN 16.12 CM DIAM 4X4 ARRAY PLEXIGLASS REFL P4
READ PARAM MPC=600  NUB=YES FDN=YES END PARAM
READ GEOM
CYLINDER   1 1 8.06 35.56 0
CYLINDER   2 1 8.38 35.56 -.32
CUBOID     0 1 4P15.24 122.58 -.32
CORE       0 1 2R-60.96 -.32
REFLECTOR 0 1 4R.49  2R0 1
REFLECTOR 3 2 4R2.971 2R0  7
REFLECTOR 4 2 5R0 2.971    7
REFLECTOR 4 2 4R0 2.886 0  7
END GEOM
READ ARRAY NUX=4 NUY=4 NUZ=1
END ARRAY
READ BIAS ID=500 2 8 END BIAS
END DATA
END
```

142 (CAA41)

```
=CSAS25
ROCKY FLATS U02(N03)2 SOLN 60.32 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2   1 60.32 .113 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL      2 1 END
PLEXIGLASS  2 1 END
H     4 0 5.5169-2 END
C     4 0 3.3967-2 END
O     4 0 1.4231-2 END
P     4 0 3.8500-4 END
CL    4 0 3.5610-4 END
BR-79   4 0 3.184-4 END
BR-81   4 0 3.116-4 END
END COMP
CYLINDRICAL END
1 10.5 NOEXTERNMOD  2 10.9 NOEXTERNMOD END ZONE
ROCKY FLATS U02(N03)2 SOLN 21.12 CM DIAM 2X2 ARRAY PLEXIGLASS REFL P5
READ PARAM MPC=600  NUB=YES FDN=YES END PARAM
READ GEOM
UNIT 1
CYLINDER   1 1 10.56 102.29 0
CYLINDER   2 1 10.96 102.29 -.32
CUBOID     0 1 4P15.24 122.58 -.32
UNIT 2
CUBOID     0 1 4P15.24 122.58 -.32
CORE       0 1 2R-60.96 -.32
REFLECTOR 0 1 4R.49  2R0 1
REFLECTOR 3 2 4R2.971 2R0  7
REFLECTOR 4 2 5R0 2.971    7
REFLECTOR 4 2 4R0 2.886 0  7
END GEOM
READ ARRAY NUX=4 NUY=4 NUZ=1
FILL 5R2 2R1 2R2 2R1 5R2 END FILL
END ARRAY
READ BIAS ID=500 2 8 END BIAS
END DATA
END
```

143 (CAA42)

```
=CSAS25
ROCKY FLATS U02(N03)2 SOLN 355.94 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2   1 355.94 .494 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL      2 1 END
PLEXIGLASS  3 1 END
H     4 0 5.5169-2 END
C     4 0 3.3967-2 END
O     4 0 1.4231-2 END
P     4 0 3.8500-4 END
CL    4 0 3.5610-4 END
BR-79   4 0 3.184-4 END
BR-81   4 0 3.116-4 END
END COMP
CYLINDRICAL END
1 10.5 NOEXTERNMOD  2 10.9 NOEXTERNMOD END ZONE
ROCKY FLATS U02(N03)2 SOLN 21.12 CM DIAM 2X2 ARRAY PLEXIGLASS REFL P6
READ PARAM MPC=600  NUB=YES FDN=YES END PARAM
READ GEOM
UNIT 1
CYLINDER   1 1 10.56 33.20 0
CYLINDER   2 1 10.96 33.20 -.32
CUBOID     0 1 4P15.24 122.58 -.32
UNIT 2
CUBOID     0 1 4P15.24 122.58 -.32
CORE       0 1 2R-60.96 -.32
REFLECTOR 0 1 4R.49  2R0 1
REFLECTOR 3 2 4R2.971 2R0  7
REFLECTOR 4 2 5R0 2.971    7
REFLECTOR 4 2 4R0 2.886 0  7
END GEOM
READ ARRAY NUX=4 NUY=4 NUZ=1
FILL 5R2 2R1 2R2 2R1 5R2 END FILL
END ARRAY
READ BIAS ID=500 2 8 END BIAS
END DATA
END
```

144 (CAA43)

```
=CSAS25
ROCKY FLATS U02(N03)2 SOLN 355.94 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2   1 355.94 .494 1 293 92234 1.022 92235 93.172 92236 .434
92238 5.372 END
AL      2 1 END
PLEXIGLASS  3 1 END
H     4 0 5.5169-2 END
C     4 0 3.3967-2 END
O     4 0 1.4231-2 END
P     4 0 3.8500-4 END
CL    4 0 3.5610-4 END
BR-79   4 0 3.184-4 END
BR-81   4 0 3.116-4 END
END COMP
CYLINDRICAL END
1 8 NOEXTERNMOD  2 8.3 NOEXTERNMOD END ZONE
ROCKY FLATS U02(N03)2 SOLN 16.12 CM DIAM 3X2 ARRAY PLEXIGLASS REFL P7
READ PARAM MPC=600  NUB=YES FDN=YES END PARAM
READ GEOM
UNIT 1
CYLINDER   1 1 8.06 89.78 0
CYLINDER   2 1 8.38 89.78 -.32
CUBOID     0 1 4P15.24 122.58 -.32
UNIT 2
CUBOID     0 1 4P15.24 122.58 -.32
CORE       0 1 2R-60.96 -.32
REFLECTOR 0 1 4R.49  2R0 1
REFLECTOR 3 2 4R2.971 2R0  7
REFLECTOR 4 2 5R0 2.971    7
REFLECTOR 4 2 4R0 2.886 0  7
END GEOM
READ ARRAY NUX=4 NUY=4 NUZ=1
FILL 4R2 3R1 2 3R1 5R2 END FILL
END ARRAY
READ BIAS ID=500 2 8 END BIAS
END DATA
END
```

APPENDIX E5: TABLE 5 INPUTS

```
                                145 (CAS01)
=CSAS25
KENO-5 VALIDATION CASE A-1
27GROUPNDF4  MULTIREGION
URANIUM  1 .9837 293 92235 93.8 92238 6.2 END
END COMP
SPHERICAL  END
1 8.73136 NOEXTERMOD END ZONE
KENO-5 VALIDATION CASE A-1
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
SPHERE    1 1 8.73136
END GEOM
END DATA
END
                                148 (CAS04)
=CSAS25
KENO-5 VALIDATION CASE A-2
27GROUPNDF4  MULTIREGION
ARBRUMO  17.08 2 1 0 1 92000 90 42000 10 1 1 293 92235 93.2 92238 6.8 END
END COMP
CYLINDRICAL  END
1 7.62 NOEXTERMOD END ZONE
KENO-5 VALIDATION CASE A-2
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
CYLINDER  0 1 2.54 9.87 -9.87
CYLINDER  1 1 10.16 9.87 -9.87
CUBE      0 1 10.16 -10.16
END GEOM
END DATA
END
                                149 (CAS05)
=CSAS25
KENO-5 VALIDATION CASE A-3
27GROUPNDF4  MULTIREGION
SOLMUO2F2  1 19.992 0 1 293 92235 93.2 92238 6.8 END
AL         2 END
END COMP
SPHERICAL  END
1 34.6 ONEEXTERMOD  2 34.92 NOEXTERMOD END ZONE
KENO-5 VALIDATION CASE A-3
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
SPHERE    1 1 34.6
SPHERE    2 1 34.92
CUBE      0 1 35.0 -35.0
END GEOM
END DATA
END
                                150 (CAS06)
=CSAS25
KENO-5 VALIDATION CASE A-4
27GROUPNDF4  MULTIREGION
SOLMUO2(NO3)2  1 20.15 .139 1 293 92235 93.18 92238 6.82 END
AL             2 END
END COMP
SPHERICAL  END
1 34.6 ONEEXTERMOD  2 34.92 NOEXTERMOD END ZONE
KENO-5 VALIDATION CASE A-4
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
SPHERE    1 1 34.6
SPHERE    2 1 34.92
CUBE      0 1 35.0 -35.0
END GEOM
END DATA
END
                                151 (CAS07)
=CSAS25
KENO-5 VALIDATION CASE A-5
27GROUPNDF4  MULTIREGION
URANIUM  1  .9848 293 92235 93.5 92238 6.5 END
H2O      2 END
END COMP
SPHERICAL  END
1 12.7 ONEEXTERMOD  2 31. NOEXTERMOD END ZONE
KENO-5 VALIDATION CASE A-5
READ PARAM TME=60   NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
HEMISPHERE  2 1 12.7
HEMISPHERE  1 1 15.24
CUBOID      2 1 31.00 -31.00 31.00 -31.00 31.00 -16.
END GEOM
END DATA
END
                                152 (CAS08)
=CSAS25
KENO-5 VALIDATION CASE A-6
27GROUPNDF4  MULTIREGION
C       1 .7522 END
URANIUM  2 .9848 293 92235 93.2 92238 6.8 END
END COMP
CYLINDRICAL  END
1 8.89 NOEXTERMOD 2 13.97 TWOEXTERMOD  1 31.75 NOEXTERMOD  END ZONE
KENO-5 VALIDATION CASE A-6
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
CYLINDER  1 1  8.89 3.425 -3.425
CYLINDER  2 1 11.43 3.425 -3.425
CYLINDER  1 1 11.43 3.495 -3.425
CYLINDER  2 1 13.97 3.495 -3.425
CYLINDER  1 1 31.75 21.275 -21.205
CUBE      0 1 32.0 -32.0
END GEOM
END DATA
END
                                153 (CAS09)
=CSAS25
KENO-5 VALIDATION CASE A-7
27GROUPNDF4  MULTIREGION
URANIUM  1 .9848 293 92235 94 92238 6 END
URANIUM  2 END
END COMP
SLAB  END
1 7.62 NOEXTERMOD  2 52.02 NOEXTERMOD END ZONE
KENO-5 VALIDATION CASE A-7
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
CUBOID    1 1 3.81 -3.81 4.445 -4.445 7.62 -7.62
CUBOID    2 1 26.01 -26.01 26.645 -26.645 29.82 -29.82
CUBE      0 1 30.0 -30.0
END GEOM
END DATA
END
                                154 (CAS10)
=CSAS25
KENO-5 VALIDATION CASE A-8
27GROUPNDF4  MULTIREGION
ARBMOIL   .88 3 0 0 0 6012 86.82 1001 13.16 16032 .02 1 END
URANIUM   2 .9528 293 92235 93.1 92238 6.9 END
ARBMPJEL  .024 2 0 0 0 6012 85 1001 15 2 END
END COMP
SPHERICAL  END
1 6.679 NOEXTERMOD 2 25.5 TWOEXTERMOD  1 40.5 NOEXTERMOD  END ZONE
KENO-5 VALIDATION CASE A-8
READ PARAM TME=60   NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
HEMISPHERE   1 1 6.679
HEMISPHERE   2 1 10.5254
SPHERE       1 1 40.5254
CUBE         0 1 42.0 -42.0
END GEOM
END DATA
END
                                155 (CAS11)
=CSAS25
KENO-5 VALIDATION CASE A-9
27GROUPNDF4  MULTIREGION
ARBMOIL   .88 3 0 0 0 6012 86.82 1001 13.16 16032 .02 1 END
URANIUM   2 .9528 293 92235 93.1 92238 6.9 END
ARBMPJEL  .024 2 0 0 0 6012 85 1001 15 2 END
CARBONSTEEL 3 END
END COMP
SPHERICAL  END
2 8.2 ONEEXTERMOD  1 40.5 NOEXTERMOD END ZONE
KENO-5 VALIDATION CASE A-9
READ PARAM
TME=60   NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
HEMISPHERE   3 1 6.012
HEMISPHERE  2 1 10.488
SPHERE       1 1 40.488
CUBE         0 1 41.0 -41.0
END GEOM
END DATA
END
                                146 (CAS02)
=CSAS25
KENO-5 VALIDATION CASE A-10
27GROUPNDF4  MULTIREGION
URANIUM   1 .9866 293 92235 97.67 92238 2.33 END
H2O       2 END
PLEXIGLASS  3 END
END COMP
SPHERICAL  END
1 6.55 ONEEXTERMOD  2 12.7 NOEXTERMOD END ZONE
KENO-5 VALIDATION CASE A-10
READ PARAM TME=60    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
BOX TYPE  1
SPHERE     1 1 6.5537
CUBOID  2 1 12.7 -12.7 12.7 -12.7 6.5537 -6.5537
BOX TYPE  2
CYLINDER  2 1 4.1275 1.27 -1.27
CYLINDER  3 1 12.7 1.27 -1.27
CUBOID      2 1 12.7 -12.7 12.7 -12.7 1.27 -1.27
CORE        0 1 -12.7 -12.7 -7.8237
CYLINDER  2 1 30.48 24.3337 -39.5737
END GEOM
READ ARRAY NUX=1 NUY=1 NUZ=2 LOOP
1    1 1 1  1 1 1   2 2 1
2    1 1 1  1 1 1   1 1 1
END ARRAY
END DATA
END
                                147 (CAS03)
=CSAS25
KENO-5 VALIDATION CASE A11
27GROUPNDF4  MULTIREGION
SOLMUO2(NO3)2 1 346.73 .542 1 293 92235 93.172 92238 6.828 END
SS304  2 END
END COMP
CYLINDRICAL  END
1 13.96 ONEEXTERMOD  2 14.28 ONEEXTERMOD  END ZONE
KENO-5 VALIDATION CASE A11
READ PARAM     NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
CYLINDER  1 1 13.96 14.465 -14.465
CYLINDER  0 1 13.96 27.135 -14.465
CYLINDER  2 1 14.28 27.135 -15.105
END GEOM
END DATA
END
                                156 (CAS12)
=CSAS25
KENO-5 VALIDATION CASE B-1
27GROUPNDF4  MULTIREGION
URANIUM  1 .9848 293 92235 93.2 92238 6.8 END
END COMP
CYLINDRICAL  END
1 8.89 NOEXTERMOD END ZONE
KENO-5 VALIDATION CASE B-1
READ PARAM     NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
CYLINDER  1 1 8.89 10.1092 0. ORIGIN -5.08 0.
CYLINDER  0 1 13.97 10.1092 0.
CYLINDER  1 1 19.05 10.1092 0.
END GEOM
END DATA
END
                                166 (CAS22)
=CSAS25
KENO-5 VALIDATION CASE B-2
27GROUPNDF4  MULTIREGION
URANIUM  1 .9848 293 92235 93.2 92238 6.8 END
END COMP
CYLINDRICAL  END
1 8.89 NOEXTERMOD  END ZONE
KENO-5 VALIDATION CASE B-2
READ PARAM     NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
CUBOID    1 1 0.3434 -12.4434 6.35 -6.35 6.49 -6.49
CYLINDER  0 1 13.97 6.49 -6.49
CYLINDER  1 1 19.05 6.49 -6.49
CUBE      0 1 20.0 -20.0
END GEOM
END DATA
END
                                167 (CAS23)
=CSAS25
KENO-5 VALIDATION CASE B-3
27GROUPNDF4  MULTIREGION
URANIUM  1 .98231 293 92235 93.2 92238 6.8 END
END COMP
CYLINDRICAL  END
1 4.55 NOEXTERMOD  END ZONE
KENO-5 VALIDATION CASE B-3
READ PARAM    PLT=NO  NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
UNIT 1
CUBOID  1 1 2P6.3515 1.2685 -3.8115 13.377 13.058
CUBOID  0 1 2P6.3515 6.3515 -3.8115 13.377 13.058
CUBOID  1 1 2P6.3515 6.3515 -3.8115 13.377 11.155
CUBOID  0 1 4P6.3515 13.377 11.155
CUBOID  1 1 4P6.3515 13.377 0.
UNIT 2
CYLINDER  1 1 4.5555 12.918 0.
UNIT 3
CYLINDER  1 1 5.761  13.475 0.
UNIT 4
CYLINDER  1 1 4.5525 12.969 0.
UNIT 5
ARRAY     1 -4.573 -4.573 0.
UNIT 6
CYLINDER  1 1 4.5545 12.974 0.
UNIT 7
CYLINDER  1 1 5.7495 13.475 0.
UNIT 8
CYLINDER  1 1 4.5565 12.954 0.
UNIT 9
COM='CENTERPIECE'
ARRAY     2 -6.35 -6.35 0.
```

```
UNIT 10
COM='BOTTOM OF UNIT 5'
CUBOID    1 1 2P3.81 8.13 -4.573 8.91 0.
CUBOID    0 1 2P4.573 8.13 -4.573 8.91 0.
UNIT 11
COM='TOP OF UNIT 5'
CYLINDER  1 1 4.573 4.319 0.
CUBOID    0 1 2P4.573 8.13 -4.573 4.319 0.
UNIT 12
COM='BOTTOM OF CENTERPIECE'
CYLINDER  1 1 5.757 2.690 0.  ORIGIN -.593 -.593
CUBOID    0 1 4P6.35 2.690 0.
UNIT 13
COM='MIDDLE OF CENTERPIECE'
CUBOID    1 1 4P6.35 5.718 0.
UNIT 14
COM='TOP OF CENTERPIECE'
HEMISPHERE  1 1 6.082  ORIGIN  -.268 .268 0.
CUBOID    0 1 4P6.35 6.082 0.
GLOBAL
UNIT 15
CUBOID    0 1 4P25.0 15.0 -2.0
HOLE  1 0.0 -17.306 0.15
HOLE  2 -12.051 -9.247 0.111
HOLE  3   -16.194 1.845 0.174
HOLE  4  -9.394 10.999 0.156
HOLE  5  0.0 15.400 0.29
HOLE  6  9.727 10.803 0.134
HOLE  7   16.224 1.419 0.140
HOLE  8  11.931 -9.322 0.087
HOLE  9  0.0     0.0   -1.755
END GEOM
ARRAY
ARA=1 MUX=1 MUY=1 MUZ=2 FILL 10 11 END FILL
ARA=2 MUX=1 MUY=1 MUZ=3 FILL 12 13 14 END FILL
END ARRAY
READ PLOT TTL='GROTESQUE' PIC=MIX
XUL=-.25 YUL=25 ZUL=0.5   XLR=25 YLR=-25 ZLR=.5
UAX=1 VDN=-1  MAX=130  END
XUL=-.25 YUL=25 ZUL=2   XLR=25 YLR=-25 ZLR=2  END
XUL=-.25 YUL=25 ZUL=9.5   XLR=25 YLR=-25 ZLR=9.5  END
XUL=-.593 YUL=-.25 ZUL=15  XLR=-.593 YLR=25 ZLR=-2
UAX=0 VAX=1  VDN=0 WDN=-1 MAX=130  END
END PLOT
END DATA
END
```

160 (CAS24)

```
#CSAS25
KENO-5 VALIDATION CASE B-4
27GROUPNDF4  MULTIREGION
URANIUM   1 .9848 293 92235 93.2 92238 6.8 END
SS304     2 END
INCONEL   3 END
END COMP
CYLINDRICAL  END
2 .254 NOEXTERMOD  1 5.74 NOEXTERMOD END ZONE
KENO-5 VALIDATION CASE B-4
READ PARAM    NPG=600 FDN=YES NUB=YES PLT=NO END PARAM
READ GEOM
UNIT 1
COM='SS RODS IN FUEL'
CYLINDER 2 1 .254 2P2.691
UNIT 2
COM='SS ROD & INCONEL SLEEVE'
CYLINDER 2 1 .254 2P.987
CYLINDER 3 1 .381 2P.987
UNIT 3
COM='A6 CYLINDER & SUPPORT RODS'
CYLINDER 1 1 5.7405 2P2.691
HOLE     1 -4.2735 2R0
HOLE     1  4.2735 2R0
CUBOID   0 1 4P7.7165 2P4.667
HOLE     2 -4.2735 0  -3.679
HOLE     2 -4.2735 0   3.679
HOLE     2  4.2735 0  -3.679
HOLE     2 4.2735 0   3.679
 END GEOM
READ ARRAY
 MUX=4 MUY=4 MUZ=4 FILL F3 END FILL
 END ARRAY
READ PLOT TTL='A6 UNIT WITH SUPPORTS' PLT=NO
XUL=0 YUL=7.7165 ZUL=9.334 XLR=15.433 YLR=7.7165 ZLR=0
UAX=1 VDN=-1 MAX=125 END PLOT
END DATA
END
```

169 (CAS25)

```
#CSAS25
KENO-5 VALIDATION CASE B-5
27GROUPNDF4  MULTIREGION
URANIUM   1 .9809 293 92235 93.2 92238 6.8 END
 END COMP
CYLINDRICAL  END
1 4.56 NOEXTERMOD END ZONE
KENO-5 VALIDATION CASE B-5
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
BOX TYPE  1
CYLINDER  1 1 4.558 2.16 -2.16
CYLINDER  0 1 5.747 2.16 -2.16
CYLINDER  1 1 5.747 4.851 -4.851
CUBOID    0 1 5.8554 -5.8554 5.8554 -5.8554 4.9771 -4.9771
END GEOM
READ ARRAY MUX=2 MUY=2 MUZ=2 END ARRAY
END DATA
END
```

170 (CAS26)

```
#CSAS25
KENO-5 VALIDATION CASE B-6
27GROUPNDF4  MULTIREGION
URANIUM    1 .9809 293 92235 93.2 92238 6.8 END
PARA(H2O)   2 END
END COMP
CYLINDRICAL  END
1 4.56 NOEXTERMOD  END ZONE
KENO-5 VALIDATION CASE B-6
READ PARAM TRE=60  NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
BOX TYPE  1
CYLINDER  1 1 4.558 8.641 -8.641
CUBOID    0 1 9.7212 -9.7212 9.7212 -9.7212 13.8041 -13.8041
CORE      0 1 -19.4424 -19.4424 -27.6082
REFLECTOR  2 1 6R15.2 1
 END GEOM
READ ARRAY MUX=2 MUY=2 MUZ=2 END ARRAY
END DATA
END
```

171 (CAS27)

```
#CSAS25
KENO-5 VALIDATION CASE B-7
27GROUPNDF4  MULTIREGION
URANIUM  1 .9848 293 92235 93.2 92238 6.8 END
PARA(H2O) 2 END
END COMP
CYLINDRICAL  END
1 4.558 NOEXTERMOD  END ZONE
KENO-5 VALIDATION CASE B-7
READ PARAM TRE=60   NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
BOX TYPE  1
CYLINDER  1 1 4.558 2.160 -2.160
CYLINDER  0 1 5.747 2.160 -2.160
CYLINDER  1 1 5.747 4.851 -4.851
CUBOID    0 1 9.2083 -9.2083 9.2083 -9.2083 8.2875 -8.2875
CORE      0 1 -18.4166 -18.4166 -16.575
REFLECTOR  2 1 6R15.2 1
 END GEOM
READ ARRAY MUX=2 MUY=2 MUZ=2 END ARRAY
END DATA
END
```

172 (CAS28)

```
#CSAS25
KENO-5 VALIDATION CASE B-8
27GROUPNDF4  MULTIREGION
URANIUM  1 .9848 293 92235 93.2 92238 6.8 END
PLEXIGLASS  2 1 END
END COMP
CYLINDRICAL  END
1 5.753 NOEXTERMOD  END ZONE
KENO-5 VALIDATION CASE B-8
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
BOX TYPE  1
CYLINDER  1 1 5.753 5.3825 -5.3825
CUBOID    0 1 7.68 -7.68 7.68 -7.68 7.33 -7.33
CUBOID    2 1 8.95 -8.95 8.95 -8.95 8.6 -8.6
CUBOID    0 1 9.0599 -9.0599 9.0599 -9.0599 8.6975 -8.6975
END GEOM
READ ARRAY MUX=2 MUY=2 MUZ=2 END ARRAY
END DATA
END
```

158 (CAS14)

```
#CSAS25
KENO-5 VALIDATION CASE B-11
27GROUPNDF4  MULTIREGION
SOLNUO2(NO3)2   1 505 0 1 293 92235 93.2 92238 6.8 END
PLEXIGLASS  2 1 END
SS304  3 END
END COMP
CYLINDRICAL  END
1 6.8 NOEXTERMOD  2 7.08 NOEXTERMOD  END ZONE
KENO-5 VALIDATION CASE B-11
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
BOX TYPE  1
CYLINDER  1 1 6.8 1.76 -1.76
CYLINDER  3 1 7.08 1.76 -2.04
CUBOID    1 1 15.0875 -15.0875 15.0875 -15.0875 1.76 -2.04
BOX TYPE  2
CYLINDER  1 1 6.8 30.5 -30.5
CYLINDER  0 1 6.8 96.7 -30.5
CYLINDER  3 1 7.08 96.7 -30.5
CUBOID    0 1 15.0875 -15.0875 15.0875 -15.0875 125.7 -30.5
CORE      0 1  -60.35 -60.35 -80.0
REFLECTOR  3 1 SZ  .635 1
CUBOID    2 1 70.55 -70.55 70.55 -70.55 90.2 -90.835
CUBE      0 1 95.0 -95.0
END GEOM
READ ARRAY MUX=4 MUY=4 MUZ=2 LOOP
1   1 4 1   1 4 1   1 1 1    2  1 4 1   1 4 1   2 2 1
END LOOP END ARRAY
END DATA
END
```

159 (CAS15)

```
#CSAS25
KENO-5 VALIDATION CASE B-12
27GROUPNDF4  MULTIREGION
URANIUM  1 .9829 293 92235 93.2 92238 6.8 END
C        2 .8296 END
POLY(H2O)  3 1 END
END COMP
CYLINDRICAL  END
1 5.747 ONEEXTERMOD  2 10.92 NOEXTERMOD END ZONE
KENO-5 VALIDATION CASE B-12
READ PARAM TRE=60   NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
BOX TYPE  1
CYLINDER  1 1 5.747 3.9699 -4.1071
CYLINDER  0 1 5.777 4.1071 -4.1071
CUBOID    2 1 10.9195 -10.9195 10.9195 -10.9195 7.8755 -7.8755
CUBOID    0 1 15.047 -15.047 15.047 -15.047 12.0035 -12.0035
CORE      0 1 -30.094 -30.094 -24.007
CUBOID    2 1 45.344 -45.344 45.344 -45.344 39.247 -39.247
CUBE      0 1 46.0 -46.0
END GEOM
READ ARRAY MUX=2 MUY=2 MUZ=2 END ARRAY
END DATA
END
```

163 (CAS19)

```
#CSAS25
KENO-5 VALIDATION CASE B-16
27GROUPNDF4  MULTIREGION
SOLNUO2(NO3)2 1 1 450.8 .72 1 293 92235 93.1 92238 6.9 END
SS304           2 END
END COMP
CYLINDRICAL  END
1 8.128 NOEXTERMOD  2 8.4074 NOEXTERMOD  END ZONE
KENO-5 VALIDATION CASE B-16
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
BOX TYPE  1
XCYLINDER  1 1 8.128 68.3006 -68.3006
XCYLINDER  2 1 8.4074 68.58 -68.58
CUBOID     0 1 68.58 -68.58 9.2075 -9.2075 14.999 -110.32
BOX TYPE  2
YCYLINDER  1 1 8.128 68.3006 -68.3006
YCYLINDER  2 1 8.4074 68.58 -68.58
CUBOID     0 1 9.2075 -9.2075 68.58 -68.58 14.999 -110.32
BOX TYPE  3
XCYLINDER  1 1 8.128 68.3006 -68.3006
XCYLINDER  2 1 8.4074 68.58 -68.58
CUBOID     0 1 68.58 -68.58 9.2075 -9.2075 125.09 -14.999
BOX TYPE  4
YCYLINDER  1 1 8.128 68.3006 -68.3006
YCYLINDER  2 1 8.4074 68.58 -68.58
CUBOID     0 1 9.2075 -9.2075 68.58 -68.58 125.09 -14.999
BOX TYPE  5
CUBOID     1 1 8.89 -8.89 8.89 -8.89 14.999 -110.00
CUBOID     2 1 9.2075 -9.2075 9.2075 -9.2075 14.999 -110.32
BOX TYPE  6
CUBOID     1 1 8.89 -8.89 8.89 -8.89 125.09 -14.999
CUBOID     2 1 9.2075 -9.2075 9.2075 -9.2075 125.09 -14.999
BOX TYPE  7
CUBOID     0 1 68.58 -68.58 68.58 -68.58 14.999 -110.32
BOX TYPE  8
CUBOID     0 1 68.58 -68.58 68.58 -68.58 125.09 -14.999
END GEOM
READ ARRAY MUX=3 MUY=3 MUZ=2 LOOP
1  1 3 2 2 2 1 1 1 1  2  2 2 1 1 3 2 1 1 1   3  1 3 2 2 2 1 2 2 1
4  2 2 1 1 1 2 2 2 1  5  2 2 1 1 3 2 1 1 1   6  2 2 1 2 2 1 2 2 1
7  1 3 2 1 3 2 1 1 1  8  1 3 2 1 3 2 2 2 1
END LOOP END ARRAY
END DATA
END
```

174 (CAS30)

```
#CSAS25
93.2% UO2F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLNUO2F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL         2 1 END
CARBONSTEEL  3 1 END
PLEXIGLASS     4 1 END
ARMMOOD   .640525 3  0 0 0 6012 44.435 1001 6.2639 8016 49.301 5 END
REG-CONCRETE  6 END
END COMP
SLAB END
1 3.81 NOEXTERMOD  2 4.12 NOEXTERMOD END ZONE
93.2% UO2F2 3 IN AL SLAB 2X1X1 ARRAY 0 IN SEP ROOM
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
CUBOID     1 1 2P3.81 2P60.325 25.50 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P4.128 2P65. 150. -1.
CORE 0  1 -12.384 -65. -1.
CYLINDER  0 1 142.8 212. -60.
CYLINDER  3 1 144.8 212. -62.
CUBOID    0 1 275.5 -438.9 475. -744.2 588. -62.
REFLECTOR 4 1 SR0 .32 1
REFLECTOR 5 1 SR0 1.27 1
REFLECTOR 3 1 SR0 .64 1
```

```
REFLECTOR 0 1 SRO 365 1
REFLECTOR 6 2 6R3 10
REFLECTOR 6 12 0 3 4R0 10
END GEOM
READ BIAS ID=301 2 21 END BIAS
READ ARRAY MUX=3 MUY=1 MUZ=1 END ARRAY
END DATA
END
```

176 (CAS32)

```
=CSAS25
93.2% U02F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLMU02F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL          2 1 END
CARBONSTEEL  3 1 END
PLEXIGLASS      4 1 END
ARBMWOOD  .640525 3 0 0 0 6012 44.435 1001 6.2639 8016 49.301 5 END
REG-CONCRETE  6 END
END COMP
SLAB END
1 3.81 NOEXTERMOD  2 4.12 NOEXTERMOD END ZONE
93.2% U02F2 3 IN AL SLAB 3X1X1 ARRAY 1 IN SEP ROOM
READ PARAM    NPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
CUBOID     1 1 2P3.81 2P60.325 34.44 0
REFLECTOR  2 1 4R.318 0 .318 1
CUBOID     0 1 2P5.398 2P65. 150. -1.
CORE 0 1 -16.194 -65. -1.
CYLINDER   0 1 142.8 212. -60.
CYLINDER   3 1 144.8 212. -62.
CUBOID     0 1 275.5 -638.9 475. -744.2 588. -62.
REFLECTOR 4 1 SRO .32 1
REFLECTOR 5 1 SRO 1.27 1
REFLECTOR 3 1 SRO .64 1
REFLECTOR 0 1 SRO 365 1
REFLECTOR 6 2 6R3 10
REFLECTOR 6 12 0 3 4R0 10
END GEOM
READ BIAS ID=301 2 21 END BIAS
READ ARRAY MUX=3 MUY=1 MUZ=1 END ARRAY
END DATA
END
```

178 (CAS34)

```
=CSAS25
93.2% U02F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLMU02F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL          2 1 END
CARBONSTEEL  3 1 END
PLEXIGLASS      4 1 END
ARBMWOOD  .640525 3 0 0 0 6012 44.435 1001 6.2639 8016 49.301 5 END
REG-CONCRETE  6 END
END COMP
SLAB END
1 3.81 NOEXTERMOD  2 4.12 NOEXTERMOD END ZONE
93.2% U02F2 3 IN AL SLAB 3X1X1 ARRAY 3 IN SEP ROOM
READ PARAM    NPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
CUBOID     1 1 2P3.81 2P60.325 58.78 0
REFLECTOR  2 1 4R.318 0 .318 1
CUBOID     0 1 2P7.938 2P65. 150. -1.
CORE 0 1 -23.814 -65. -1.
CYLINDER   0 1 142.8 212. -60.
CYLINDER   3 1 144.8 212. -62.
CUBOID     0 1 275.5 -638.9 475. -744.2 588. -62.
REFLECTOR 4 1 SRO .32 1
REFLECTOR 5 1 SRO 1.27 1
REFLECTOR 3 1 SRO .64 1
REFLECTOR 0 1 SRO 365 1
REFLECTOR 6 2 6R3 10
REFLECTOR 6 12 0 3 4R0 10
END GEOM
READ BIAS ID=301 2 21 END BIAS
READ ARRAY MUX=3 MUY=1 MUZ=1 END ARRAY
END DATA
END
```

180 (CAS36)

```
=CSAS25
93.2% U02F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLMU02F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL          2 1 END
CARBONSTEEL  3 1 END
PLEXIGLASS      4 1 END
ARBMWOOD  .640525 3 0 0 0 6012 44.435 1001 6.2639 8016 49.301 5 END
REG-CONCRETE  6 END
END COMP
SLAB END
1 3.81 NOEXTERMOD  2 4.12 NOEXTERMOD END ZONE
93.2% U02F2 3 IN AL SLAB 3X1X1 ARRAY 4.5 IN SEP ROOM
READ PARAM    NPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
CUBOID     1 1 2P3.81 2P60.325 85.52 0
REFLECTOR  2 1 4R.318 0 .318 1
CUBOID     0 1 2P9.843 2P65. 150. -1.
CORE 0 1 -29.529 -65. -1.
CYLINDER   0 1 142.8 212. -60.
CYLINDER   3 1 144.8 212. -62.
CUBOID     0 1 275.5 -638.9 475. -744.2 588. -62.
REFLECTOR 4 1 SRO .32 1
REFLECTOR 5 1 SRO 1.27 1
REFLECTOR 3 1 SRO .64 1
REFLECTOR 0 1 SRO 365 1
REFLECTOR 6 2 6R3 10
REFLECTOR 6 12 0 3 4R0 10
END GEOM
READ BIAS ID=301 2 21 END BIAS
READ ARRAY MUX=3 MUY=1 MUZ=1 END ARRAY
END DATA
END
```

182 (CAS38)

```
=CSAS25
93.2% U02F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLMU02F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL          2 1 END
CARBONSTEEL  3 1 END
PLEXIGLASS      4 1 END
ARBMWOOD  .640525 3 0 0 0 6012 44.435 1001 6.2639 8016 49.301 5 END
REG-CONCRETE  6 END
END COMP
SLAB END
1 3.81 NOEXTERMOD  2 4.12 NOEXTERMOD END ZONE
93.2% U02F2 3 IN AL SLAB 3X1X1 ARRAY 5.5 IN SEP ROOM
READ PARAM    NPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
CUBOID     1 1 2P3.81 2P60.325 107.37 0
REFLECTOR  2 1 4R.318 0 .318 1
CUBOID     0 1 2P11.113 2P65. 150. -1.
CORE 0 1 -33.339 -65. -1.
CYLINDER   0 1 142.8 212. -60.
CYLINDER   3 1 144.8 212. -62.
CUBOID     0 1 275.5 -638.9 475. -744.2 588. -62.
REFLECTOR 4 1 SRO .32 1
REFLECTOR 5 1 SRO 1.27 1
REFLECTOR 3 1 SRO .64 1
REFLECTOR 0 1 SRO 365 1
REFLECTOR 6 2 6R3 10
REFLECTOR 6 12 0 3 4R0 10
END GEOM
READ BIAS ID=301 2 21 END BIAS
READ ARRAY MUX=3 MUY=1 MUZ=1 END ARRAY
END DATA
END
```

184 (CAS40)

```
=CSAS25
93.2% U02F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLMU02F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL          2 1 END
CARBONSTEEL  3 1 END
PLEXIGLASS      4 1 END
ARBMWOOD  .640525 3 0 0 0 6012 44.435 1001 6.2639 8016 49.301 5 END
REG-CONCRETE  6 END
END COMP
SLAB END
1 3.81 NOEXTERMOD  2 4.12 NOEXTERMOD END ZONE
93.2% U02F2 3 IN AL SLAB 3X1X1 ARRAY 6 IN SEP ROOM
READ PARAM    NPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
CUBOID     1 1 2P3.81 2P60.325 120.4 0
REFLECTOR  2 1 4R.318 0 .318 1
CUBOID     0 1 2P11.748 2P65. 150. -1.
CORE 0 1 -35.244 -65. -1.
CYLINDER   0 1 142.8 212. -60.
CYLINDER   3 1 144.8 212. -62.
CUBOID     0 1 275.5 -638.9 475. -744.2 588. -62.
REFLECTOR 4 1 SRO .32 1
REFLECTOR 5 1 SRO 1.27 1
REFLECTOR 3 1 SRO .64 1
REFLECTOR 0 1 SRO 365 1
REFLECTOR 6 2 6R3 10
REFLECTOR 6 12 0 3 4R0 10
END GEOM
READ BIAS ID=301 2 21 END BIAS
READ ARRAY MUX=3 MUY=1 MUZ=1 END ARRAY
END DATA
END
```

175 (CAS31)

```
=CSAS25
93.2% U02F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLMU02F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL          2 1 END
H2O         3 1 END
END COMP
SLAB END
1 3.81 ONEEXTERMOD  2 4.12 NOEXTERMOD 3 22.12 NOEXTERMOD END ZONE
93.2% U02F2 3 IN AL SLAB 3X1X1 ARRAY 0 IN SEP H2O REFL
READ PARAM    NPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
CUBOID     1 1 2P3.81 2P60.325 17.32 0
REFLECTOR  2 1 4R.318 0 .318 1
CUBOID     0 1 2P4.128 2P60.643 17.32 -.318
CORE       0 1 3R0
REFLECTOR  3 2 4R3 0 3 6
END GEOM
READ ARRAY MUX=3 MUY=1 MUZ=1 END ARRAY
READ BIAS ID=500 2 7 END BIAS
END DATA
END
```

177 (CAS33)

```
=CSAS25
93.2% U02F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLMU02F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL          2 1 END
H2O         3 1 END
END COMP
SLAB END
1 3.81 ONEEXTERMOD  2 4.12 NOEXTERMOD 3 22.12 NOEXTERMOD END ZONE
93.2% U02F2 3 IN AL SLAB 3X1X1 ARRAY 3 IN SEP H2O REFL
READ PARAM    NPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
UNIT 1
CUBOID     1 1 2P3.81 2P60.325 19.13 0
REFLECTOR  2 1 4R.318 0 .318 1
CUBOID     0 1 2P4.128 2P60.643 19.13 -.318
UNIT 2
CUBOID     3 1 2.54 0 2P60.643 19.13 -.318
CORE       0 1 3R0
REFLECTOR  3 2 4R3 0 3 6
END GEOM
READ ARRAY MUX=5 MUY=1 MUZ=1 FILL 1 2 1 2 1 END FILL END ARRAY
READ BIAS ID=500 2 7 END BIAS
END DATA
END
```

179 (CAS35)

```
=CSAS25
93.2% U02F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLMU02F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL          2 1 END
H2O         3 1 END
END COMP
SLAB END
1 3.81 ONEEXTERMOD  2 4.12 NOEXTERMOD 3 22.12 NOEXTERMOD END ZONE
93.2% U02F2 3 IN AL SLAB 3X1X1 ARRAY 3 IN SEP H2O REFL
READ PARAM    NPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
UNIT 1
CUBOID     1 1 2P3.81 2P60.325 32.92 0
REFLECTOR  2 1 4R.318 0 .318 1
CUBOID     0 1 2P4.128 2P60.643 32.92 -.318
UNIT 2
CUBOID     3 1 7.62 0 2P60.643 32.92 -.318
CORE       0 1 3R0
REFLECTOR  3 2 4R3 0 3 6
END GEOM
READ ARRAY MUX=5 MUY=1 MUZ=1 FILL 1 2 1 2 1 END FILL END ARRAY
READ BIAS ID=500 2 7 END BIAS
END DATA
END
```

181 (CAS37)

```
=CSAS25
93.2% U02F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLMU02F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL          2 1 END
H2O         3 1 END
END COMP
SLAB END
1 3.81 ONEEXTERMOD  2 4.12 NOEXTERMOD 3 22.12 NOEXTERMOD END ZONE
93.2% U02F2 3 IN AL SLAB 3X1X1 ARRAY 4.5 IN SEP H2O REFL
READ PARAM    NPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
UNIT 1
CUBOID     1 1 2P3.81 2P60.325 61.06 0
REFLECTOR  2 1 4R.318 0 .318 1
CUBOID     0 1 2P4.128 2P60.643 61.06 -.318
UNIT 2
CUBOID     3 1 11.43 0 2P60.643 61.06 -.318
CORE       0 1 3R0
REFLECTOR  3 2 4R3 0 3 6
END GEOM
READ ARRAY MUX=5 MUY=1 MUZ=1 FILL 1 2 1 2 1 END FILL END ARRAY
READ BIAS ID=500 2 7 END BIAS
END DATA
END
```

183 (CAS39)

```
=CSAS25
93.2% U02F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLMU02F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL          2 1 END
H2O         3 1 END
END COMP
SLAB END
1 3.81 ONEEXTERMOD  2 4.12 NOEXTERMOD 3 22.12 NOEXTERMOD END ZONE
93.2% U02F2 3 IN AL SLAB 3X1X1 ARRAY 5.5 IN SEP H2O REFL
```

```
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
UNIT 1
CUBOID      1 1 2P3.81 2P60.325 111.68 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P4.128 2P60.643 111.68 -.318
UNIT 2
CUBOID      3 1 13.97 0 2P60.643 111.68 -.318
CORE        0 1 3R0
REFLECTOR   3 2 4R3 0 3 6
END GEOM
READ ARRAY NUX=5 NUY=1 NUZ=1 FILL 1 2 1 2 1 END FILL END ARRAY
READ BIAS 1D=500 2 7 END BIAS
END DATA
END
```

186 (CAS42)

```
#CSAS25
93.2% UO2F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLNUO2F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL         2 1 END
END COMP
SLAB END
1 3.81 NOEXTERMOD  2 4.12 NOEXTERMOD END ZONE
93.2% UO2F2 3, 6 IN AL SLABS 2X1X1 ARRAY 2 IN SEP
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
UNIT 1
CUBOID      1 1 2P3.81 2P60.325 32.39 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P4.128 2P65. 150. -1.
UNIT 2
CUBOID      1 1 2P7.417 2P60.325 32.39 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P7.735 2P65. 150. -1.
UNIT 3
CUBOID      0 1 5.08 0 2P65. 150. -1.
END GEOM
READ ARRAY NUX=3 NUY=1 NUZ=1 FILL 2 3 1 END FILL END ARRAY
END DATA
END
```

185 (CAS41)

```
#CSAS25
93.2% UO2F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLNUO2F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL         2 1 END
END COMP
SLAB END
1 3.81 NOEXTERMOD  2 4.12 NOEXTERMOD END ZONE
93.2% UO2F2 3, 6 IN AL SLABS 2X1X1 ARRAY 15 IN SEP
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
UNIT 1
CUBOID      1 1 2P3.81 2P60.325 65.81 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P4.128 2P65. 150. -1.
UNIT 2
CUBOID      1 1 2P7.417 2P60.325 65.81 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P7.735 2P65. 150. -1.
UNIT 3
CUBOID      0 1 38.1 0 2P65. 150. -1.
END GEOM
READ ARRAY NUX=3 NUY=1 NUZ=1 FILL 2 3 1 END FILL END ARRAY
END DATA
END
```

187 (CAS43)

```
#CSAS25
93.2% UO2F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLNUO2F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL         2 1 END
END COMP
SLAB END
1 3.81 NOEXTERMOD  2 4.12 NOEXTERMOD END ZONE
93.2% UO2F2 3, 6 IN AL SLABS 2X1X1 ARRAY 30 IN SEP
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
UNIT 1
CUBOID      1 1 2P3.81 2P60.325 92.48 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P4.128 2P65. 150. -1.
UNIT 2
CUBOID      1 1 2P7.417 2P60.325 92.48 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P7.735 2P65. 150. -1.
UNIT 3
CUBOID      0 1 76.2 0 2P65. 150. -1.
END GEOM
READ ARRAY NUX=3 NUY=1 NUZ=1 FILL 2 3 1 END FILL END ARRAY
END DATA
END
```

188 (CAS44)

```
#CSAS25
93.2% UO2F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLNUO2F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL         2 1 END
END COMP
SLAB END
1 3.81 NOEXTERMOD  2 4.12 NOEXTERMOD END ZONE
93.2% UO2F2 3, 6 IN AL SLABS 2X1X1 ARRAY 48 IN SEP
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
UNIT 1
CUBOID      1 1 2P3.81 2P60.325 113.84 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P4.128 2P65. 150. -1.
UNIT 2
CUBOID      1 1 2P7.417 2P60.325 113.84 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P7.735 2P65. 150. -1.
UNIT 3
CUBOID      0 1 121.92 0 2P65. 150. -1.
END GEOM
READ ARRAY NUX=3 NUY=1 NUZ=1 FILL 2 3 1 END FILL END ARRAY
END DATA
END
```

189 (CAS45)

```
#CSAS25
93.2% UO2F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLNUO2F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL         2 1 END
END COMP
SLAB END
1 3.81 NOEXTERMOD  2 4.12 NOEXTERMOD END ZONE
93.2% UO2F2 3, 6, 3 IN AL SLABS 3X1X1 ARRAY 0 IN SEP
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
UNIT 1
CUBOID      1 1 2P3.81 2P60.325 19.63 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P4.128 2P65. 150. -1.
UNIT 2
CUBOID      1 1 2P7.417 2P60.325 19.63 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P7.735 2P65. 150. -1.
END GEOM
READ ARRAY NUX=3 NUY=1 NUZ=1 FILL 1 2 1 END FILL END ARRAY
END DATA
END
```

190 (CAS46)

```
#CSAS25
93.2% UO2F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLNUO2F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL         2 1 END
END COMP
SLAB END
1 3.81 NOEXTERMOD  2 4.12 NOEXTERMOD END ZONE
93.2% UO2F2 3, 6, 3 IN AL SLABS 3X1X1 ARRAY 10 IN SEP
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
UNIT 1
CUBOID      1 1 2P3.81 2P60.325 44.25 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P4.128 2P65. 150. -1.
UNIT 2
CUBOID      1 1 2P7.417 2P60.325 44.25 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P7.735 2P65. 150. -1.
UNIT 3
CUBOID      0 1 25.4 0 2P65. 150. -1.
END GEOM
READ ARRAY NUX=5 NUY=1 NUZ=1 FILL 1 3 2 3 1 END FILL END ARRAY
END DATA
END
```

191 (CAS47)

```
#CSAS25
93.2% UO2F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLNUO2F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL         2 1 END
END COMP
SLAB END
1 3.81 NOEXTERMOD  2 4.12 NOEXTERMOD END ZONE
93.2% UO2F2 3, 6, 3 IN AL SLABS 3X1X1 ARRAY 20 IN SEP
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
UNIT 1
CUBOID      1 1 2P3.81 2P60.325 62.56 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P4.128 2P65. 150. -1.
UNIT 2
CUBOID      1 1 2P7.417 2P60.325 62.56 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P7.735 2P65. 150. -1.
UNIT 3
CUBOID      0 1 50.8 0 2P65. 150. -1.
END GEOM
READ ARRAY NUX=5 NUY=1 NUZ=1 FILL 1 3 2 3 1 END FILL END ARRAY
END DATA
END
```

192 (CAS48)

```
#CSAS25
93.2% UO2F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLNUO2F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL         2 1 END
END COMP
SLAB END
1 3.81 NOEXTERMOD  2 4.12 NOEXTERMOD END ZONE
93.2% UO2F2 3, 6, 3 IN AL SLABS 3X1X1 ARRAY 32 IN SEP
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
UNIT 1
CUBOID      1 1 2P3.81 2P60.325 81.56 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P4.128 2P65. 150. -1.
UNIT 2
CUBOID      1 1 2P7.417 2P60.325 81.56 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P7.735 2P65. 150. -1.
UNIT 3
CUBOID      0 1 81.28 0 2P65. 150. -1.
END GEOM
READ ARRAY NUX=5 NUY=1 NUZ=1 FILL 1 3 2 3 1 END FILL END ARRAY
END DATA
END
```

196 (CAS52)

```
#CSAS25
93.2% UO2F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLNUO2F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL         2 1 END
END COMP
SLAB END
1 7.62 NOEXTERMOD  2 7.94 NOEXTERMOD END ZONE
93.2% UO2F2 6 & 3 IN AL SLABS 2X1X1 ARRAY 6 IN SEP
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
UNIT 1
CUBOID      1 1 2P3.81 2P60.325 45.03 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P4.128 2P65. 150. -1.
UNIT 2
CUBOID      2 1 2P.318 2P60.325 45.03 0
CUBOID      1 1 2P7.938 2P60.325 45.03 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P8.574 2P65. 150. -1.
UNIT 3
CUBOID      0 1 15.24 0 2P65. 150. -1.
END GEOM
READ ARRAY NUX=3 NUY=1 NUZ=1 FILL 2 3 1 END FILL END ARRAY
END DATA
END
```

193 (CAS49)

```
#CSAS25
93.2% UO2F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLNUO2F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL         2 1 END
END COMP
SLAB END
1 7.62 NOEXTERMOD  2 7.94 NOEXTERMOD END ZONE
93.2% UO2F2 6 & 3 IN AL SLABS 2X1X1 ARRAY 12 IN SEP
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
UNIT 1
CUBOID      1 1 2P3.81 2P60.325 58.19 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P4.128 2P65. 150. -1.
UNIT 2
CUBOID      2 1 2P.318 2P60.325 58.19 0
CUBOID      1 1 2P7.938 2P60.325 58.19 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P8.574 2P65. 150. -1.
UNIT 3
CUBOID      0 1 30.48 0 2P65. 150. -1.
END GEOM
READ ARRAY NUX=3 NUY=1 NUZ=1 FILL 2 3 1 END FILL END ARRAY
END DATA
END
```

194 (CAS50)

```
#CSAS25
93.2% UO2F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLNUO2F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL         2 1 END
END COMP
SLAB END
1 7.62 NOEXTERMOD  2 7.94 NOEXTERMOD END ZONE
93.2% UO2F2 6 & 3 IN AL SLABS 2X1X1 ARRAY 18 IN SEP
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
UNIT 1
```

```
CUBOID      1 1 2P3.81 2P60.325 68.3 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P4.128 2P65. 150. -1.
UNIT 2
CUBOID      2 1 2P.318 2P60.325 68.3 0
CUBOID      1 1 2P7.938 2P60.325 68.3 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P8.574 2P65. 150. -1.
UNIT 3
CUBOID      0 1 45.72 0 2P65. 150. -1.
END GEOM
READ ARRAY NUX=3 NUY=1 NUZ=1 FILL 2 3 1 END FILL END ARRAY
END DATA
END
```

195 (CAS51)

```
=CSAS25
93.2% U02F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLNUO2F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL      2 1 END
END COMP
SLAB END
1 7.62 NOEXTERNOO  2 7.94 NOEXTERNOO END ZONE
93.2% U02F2 6 & 3 IN AL SLABS 2X1X1 ARRAY 30 IN SEP
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
UNIT 1
CUBOID      1 1 2P3.81 2P60.325 83.11 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P4.128 2P65. 150. -1.
UNIT 2
CUBOID      2 1 2P.318 2P60.325 83.11 0
CUBOID      1 1 2P7.938 2P60.325 83.11 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P8.574 2P65. 150. -1.
UNIT 3
CUBOID      0 1 76.2 0 2P65. 150. -1.
END GEOM
READ ARRAY NUX=3 NUY=1 NUZ=1 FILL 2 3 1 END FILL END ARRAY
END DATA
END
```

198 (CAS54)

```
=CSAS25
93.2% U02F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLNUO2F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL      2 1 END
END COMP
SLAB END
1 7.62 NOEXTERNOO  2 7.94 NOEXTERNOO END ZONE
93.2% U02F2 6 IN AL SLAB 2X1X1 ARRAY 2 IN SEP
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
UNIT 1
CUBOID      1 1 2P7.417 2P60.325 25.43 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P10.274 2P65. 150. -1.
UNIT 2
CUBOUD      2 1 2P.318 2P60.325 25.43 0
CUBOID      1 1 2P7.938 2P60.325 25.43 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P10.795 2P65. 150. -1.
END GEOM
READ ARRAY NUX=2 NUY=1 NUZ=1 FILL 1 2 END FILL END ARRAY
END DATA
END
```

202 (CAS58)

```
=CSAS25
93.2% U02F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLNUO2F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL      2 1 END
END COMP
SLAB END
1 7.62 NOEXTERNOO  2 7.94 NOEXTERNOO END ZONE
93.2% U02F2 6 IN AL SLAB 2X1X1 ARRAY 6 IN SEP
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
UNIT 1
CUBOID      1 1 2P7.417 2P60.325 32.79 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P15.354 2P65. 150. -1.
UNIT 2
CUBOUD      2 1 2P.318 2P60.325 32.79 0
CUBOID      1 1 2P7.938 2P60.325 32.79 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P15.875 2P65. 150. -1.
END GEOM
READ ARRAY NUX=2 NUY=1 NUZ=1 FILL 1 2 END FILL END ARRAY
END DATA
END
```

197 (CAS53)

```
=CSAS25
93.2% U02F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLNUO2F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL      2 1 END
END COMP
SLAB END
1 7.62 NOEXTERNOO  2 7.94 NOEXTERNOO END ZONE
93.2% U02F2 6 IN AL SLAB 2X1X1 ARRAY 15 IN SEP
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
UNIT 1
CUBOID      1 1 2P7.417 2P60.325 44.88 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P26.784 2P65. 150. -1.
UNIT 2
CUBOUD      2 1 2P.318 2P60.325 44.88 0
CUBOID      1 1 2P7.938 2P60.325 44.88 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P27.305 2P65. 150. -1.
END GEOM
READ ARRAY NUX=2 NUY=1 NUZ=1 FILL 1 2 END FILL END ARRAY
END DATA
END
```

199 (CAS55)

```
=CSAS25
93.2% U02F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLNUO2F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL      2 1 END
END COMP
SLAB END
1 7.62 NOEXTERNOO  2 7.94 NOEXTERNOO END ZONE
93.2% U02F2 6 IN AL SLAB 2X1X1 ARRAY 20 IN SEP
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
UNIT 1
CUBOID      1 1 2P7.417 2P60.325 50.27 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P33.134 2P65. 150. -1.
UNIT 2
CUBOUD      2 1 2P.318 2P60.325 50.27 0
CUBOID      1 1 2P7.938 2P60.325 50.27 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P33.655 2P65. 150. -1.
END GEOM
READ ARRAY NUX=2 NUY=1 NUZ=1 FILL 1 2 END FILL END ARRAY
END DATA
END
```

200 (CAS56)

```
=CSAS25
93.2% U02F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLNUO2F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL      2 1 END
END COMP
SLAB END
1 7.62 NOEXTERNOO  2 7.94 NOEXTERNOO END ZONE
93.2% U02F2 6 IN AL SLAB 2X1X1 ARRAY 30 IN SEP
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
UNIT 1
CUBOID      1 1 2P7.417 2P60.325 59.72 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P45.834 2P65. 150. -1.
UNIT 2
CUBOUD      2 1 2P.318 2P60.325 59.72 0
CUBOID      1 1 2P7.938 2P60.325 59.72 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P46.355 2P65. 150. -1.
END GEOM
READ ARRAY NUX=2 NUY=1 NUZ=1 FILL 1 2 END FILL END ARRAY
END DATA
END
```

201 (CAS57)

```
=CSAS25
93.2% U02F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLNUO2F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL      2 1 END
END COMP
SLAB END
1 7.62 NOEXTERNOO  2 7.94 NOEXTERNOO END ZONE
93.2% U02F2 6 IN AL SLAB 2X1X1 ARRAY 48 IN SEP
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
UNIT 1
CUBOID      1 1 2P7.417 2P60.325 73.23 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P68.494 2P65. 150. -1.
UNIT 2
CUBOUD      2 1 2P.318 2P60.325 73.23 0
CUBOID      1 1 2P7.938 2P60.325 73.23 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P69.215 2P65. 150. -1.
END GEOM
READ ARRAY NUX=2 NUY=1 NUZ=1 FILL 1 2 END FILL END ARRAY
END DATA
END
```

203 (CAS59)

```
=CSAS25
93.2% U02F2 H/U-235=337
27GROUPNDF4  MULTIREGION
SOLNUO2F2  1 81.845 0 1 293  92235 93.2
92238 6.8 END
AL      2 1 END
END COMP
SLAB END
1 7.62 NOEXTERNOO  2 7.94 NOEXTERNOO END ZONE
93.2% U02F2 6 IN AL SLAB 2X1X1 ARRAY 66 IN SEP
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
UNIT 1
CUBOID      1 1 2P7.417 2P60.325 82.12 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P91.554 2P65. 150. -1.
UNIT 2
CUBOUD      2 1 2P.318 2P60.325 82.12 0
CUBOID      1 1 2P7.938 2P60.325 82.12 0
REFLECTOR   2 1 4R.318 0 .318 1
CUBOID      0 1 2P92.075 2P65. 150. -1.
END GEOM
READ ARRAY NUX=2 NUY=1 NUZ=1 FILL 1 2 END FILL END ARRAY
END DATA
END
```

235 (CAS91)

```
=CSAS25
U02(NO3)2 63.3 G U/L
27GROUPNDF4  MULTIREGION
SOLNUO2(NO3)2  1 63.3 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
ARBMWOOD  .640525 3 0 0 0 6012 44.435 1001 6.2639 8016 49.301 3 END
CARBONSTEEL   4 END
REG-CONCRETE  5 END
END COMP
CYLINDRICAL   END
1 9.52 ONEEXTERNOO   2 10.16 NOEXTERNOO END ZONE
U02(NO3)2 63.3 G U/L 3X3X3 ARRAY UNREFL, WALLS, FLOOR, & TANK
READ PARAM    NPG=600 FDN=YES NUB=YES PLT=NO END PARAM
READ GEOM
UNIT 1
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P11.365 19.615 -1.845
UNIT 2
ARRAY  1 2R-34.095 0.
CUBOID 0 1 4P200. 250. -50.
UNIT 3
CYLINDER  0 1 142.8 224. -48.
CYLINDER  4 1 144.8 224. -50.
CUBOID 0 1 218.1 -181.9 215. -185. 250. -50.
ARRAY  2 3RO.
REFLECTOR 0 1 57.4 57. 260. 559.2 400. 0. 1
REFLECTOR 2 1 SRO .32 1
REFLECTOR 3 1 SRO 1.27 1
REFLECTOR 4 1 SRO .64 1
REFLECTOR 0 1 SRO 365 1
REFLECTOR 5 2 6R3 10
REFLECTOR 5 12 0 3 4R0 10
END GEOM
READ START XSN=165 YSP=234 YSN=165 YSP=234 ZSN=50 ZSP=115 END START
READ BIAS ID=301 2 21 END BIAS
READ ARRAY ARA=1 NUX=3 NUY=3 NUZ=3 FILL F1 END FILL
ARA=2 NUX=2 NUY=1 NUZ=1 FILL 2 3 END FILL END ARRAY
READ PLOT
XUL=113.2 YUL=286.8 ZUL=60. XLR=286.8 YLR=113.2 ZLR=60.
UAX=1 VDN=-1 NAX=125  END
XUL=437.1 YUL=329.8 ZUL=60. XLR=726.7 YLR=40.2 ZLR=60. END
END PLOT
END DATA
END
```

204 (CAS60)

```
=CSAS25
U02(NO3)2 279 G U/L
27GROUPNDF4  MULTIREGION
SOLNUO2(NO3)2  1 279 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
ARBMWOOD  .640525 3 0 0 0 6012 44.435 1001 6.2639 8016 49.301 3 END
CARBONSTEEL   4 END
REG-CONCRETE  5 END
END COMP
CYLINDRICAL   END
1 9.52 ONEEXTERNOO   2 10.16 NOEXTERNOO END ZONE
U02(NO3)2 279 G U/L 3X3X3 ARRAY UNREFL, WALLS, TANK, & FLOOR
READ PARAM    NPG=600 FDN=YES NUB=YES PLT=NO END PARAM
READ GEOM
UNIT 1
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P13.36 21.61 -3.84
UNIT 2
ARRAY  1 2R-40.08 0.
CUBOID 0 1 4P200. 250. -50.
UNIT 3
CYLINDER  0 1 142.8 224. -48.
CYLINDER  4 1 144.8 224. -50.
CUBOID 0 1 218.1 -181.9 215. -185. 250. -50.
ARRAY  2 3RO.
REFLECTOR 0 1 57.4 57. 260. 559.2 400. 0. 1
```

```
REFLECTOR 2 1 SRO .32 1
REFLECTOR 3 1 SRO 1.27 1
REFLECTOR 4 1 SRO .64 1
REFLECTOR 0 1 SRO 365 1
REFLECTOR S 2 6R3 10
REFLECTOR S 12 0 3 4R0 10
END GEOM
READ START XSM=160 XSP=240 YSM=160 YSP=240 ZSM=50 ZSP=127 END START
READ BIAS ID=301 2 21 END BIAS
READ ARRAY ARA=1 MUX=3 MUY=3 MUZ=3 FILL F1 END FILL
ARA=2 MUX=2 MUY=1 MUZ=1 FILL 2 3 END FILL END ARRAY
READ PLOT PLT=M0
XUL=113.2 YUL=286.8 ZUL=60. XLR=286.8 YLR=113.2 ZLR=60.
UAX=1 VDN=-1 MAX=125  END
XUL=437.1 YUL=329.8 ZUL=60. XLR=726.7 YLR=40.2 ZLR=60. END
END PLOT
END DATA
END
```

205 (CAS61)

```
#CSAS25
UO2(NO3)2 279 G U/L
27GROUPNDF4  MULTIREGION
SOLMUO2(NO3)2  1 279 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS     2 1 END
ARBMWOOD  .640525 3 0 0 0 6012 44.435 1001 6.2639 8016 49.301 3 END
CARBONSTEEL    4 END
REG-CONCRETE  5 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERMOD  2 10.16 NOEXTERMOD END ZONE
UO2(NO3)2 279 G U/L 2X2X2 ARRAY UNREFL. WALLS, TANK, & FLOOR
READ PARAM   PLT=M0  MPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
UNIT 1
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P10.875 19.125 -1.355
UNIT 2
ARRAY  1 2R-21.75 0.
CUBOID 0 1 4P200. 250. -50.
UNIT 3
CYLINDER  0 1 142.8 224. -48.
CYLINDER  4 1 144.8 224. -50.
CUBOID 0 1 218.1 -181.9 215. -185. 250. -50.
ARRAY  2 3R0.
REFLECTOR 0 1 57.4 57. 260. 559.2 400. 0. 1
REFLECTOR 2 1 SRO .32 1
REFLECTOR 3 1 SRO 1.27 1
REFLECTOR 4 1 SRO .64 1
REFLECTOR 0 1 SRO 365 1
REFLECTOR S 2 6R3 10
REFLECTOR S 12 0 3 4R0 10
END GEOM
READ START XSM=178 XSP=222 YSM=178 YSP=222 ZSM=50 ZSP=91 END START
READ BIAS ID=301 2 21 END BIAS
READ ARRAY ARA=1 MUX=2 MUY=2 MUZ=2 FILL F1 END FILL
ARA=2 MUX=2 MUY=1 MUZ=1 FILL 2 3 END FILL END ARRAY
READ PLOT
XUL=113.2 YUL=286.8 ZUL=60. XLR=286.8 YLR=113.2 ZLR=60.
UAX=1 VDN=-1 MAX=125  END
XUL=437.1 YUL=329.8 ZUL=60. XLR=726.7 YLR=40.2 ZLR=60. END
END PLOT
END DATA
END
```

206 (CAS62)

```
#CSAS25
UO2(NO3)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLMUO2(NO3)2  1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS     2 1 END
ARBMWOOD  .640525 3 0 0 0 6012 44.435 1001 6.2639 8016 49.301 3 END
CARBONSTEEL    4 END
REG-CONCRETE  5 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERMOD  2 10.16 NOEXTERMOD END ZONE
UO2(NO3)2 415 G U/L 5IXSIX5 ARRAY UNREFL. WALLS, TANK, & FLOOR
READ PARAM   PLT=M0  MPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
UNIT 1
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P17.36 25.61 -7.84
UNIT 2
ARRAY  1 2R-86.8 0.
CUBOID 0 1 4P200. 250. -50.
UNIT 3
CYLINDER  0 1 142.8 224. -48.
CYLINDER  4 1 144.8 224. -50.
CUBOID 0 1 218.1 -181.9 215. -185. 250. -50.
ARRAY  2 3R0.
REFLECTOR 0 1 57.4 57. 260. 559.2 400. 0. 1
REFLECTOR 2 1 SRO .32 1
REFLECTOR 3 1 SRO 1.27 1
REFLECTOR 4 1 SRO .64 1
REFLECTOR 0 1 SRO 365 1
REFLECTOR S 2 6R3 10
REFLECTOR S 12 0 3 4R0 10
END GEOM
READ START XSM=113 XSP=287 YSM=113 YSP=287 ZSM=50 ZSP=151 END START
READ BIAS ID=301 2 21 END BIAS
READ ARRAY ARA=1 MUX=5 MUY=5 MUZ=5 FILL F1 END FILL
ARA=2 MUX=2 MUY=1 MUZ=1 FILL 2 3 END FILL END ARRAY
READ PLOT
XUL=113.2 YUL=286.8 ZUL=60. XLR=286.8 YLR=113.2 ZLR=60.
UAX=1 VDN=-1 MAX=125  END
XUL=437.1 YUL=329.8 ZUL=60. XLR=726.7 YLR=40.2 ZLR=60. END
END PLOT
END DATA
END
```

208 (CAS64)

```
#CSAS25
UO2(NO3)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLMUO2(NO3)2  1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS     2 1 END
ARBMWOOD  .640525 3 0 0 0 6012 44.435 1001 6.2639 8016 49.301 3 END
CARBONSTEEL    4 END
REG-CONCRETE  5 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERMOD  2 10.16 NOEXTERMOD END ZONE
UO2(NO3)2 415 G U/L 4X4X4 ARRAY UNREFL. WALLS, FLOOR, & TANK
READ PARAM   PLT=M0  MPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
UNIT 1
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P15.495 23.745 -5.975
UNIT 2
ARRAY  1 2R-61.98 0.
CUBOID 0 1 4P200. 250. -50.
UNIT 3
CYLINDER  0 1 142.8 224. -48.
CYLINDER  4 1 144.8 224. -50.
CUBOID 0 1 218.1 -181.9 215. -185. 250. -50.
ARRAY  2 3R0.
REFLECTOR 0 1 57.4 57. 260. 559.2 400. 0. 1
REFLECTOR 2 1 SRO .32 1
REFLECTOR 3 1 SRO 1.27 1
REFLECTOR 4 1 SRO .64 1
REFLECTOR 0 1 SRO 365 1
REFLECTOR S 2 6R3 10
REFLECTOR S 12 0 3 4R0 10
END GEOM
READ START XSM=138 XSP=262 YSM=138 YSP=262 ZSM=50 ZSP=169 END START
READ BIAS ID=301 2 21 END BIAS
READ ARRAY ARA=1 MUX=4 MUY=4 MUZ=4 FILL F1 END FILL
ARA=2 MUX=2 MUY=1 MUZ=1 FILL 2 3 END FILL END ARRAY
READ PLOT
XUL=113.2 YUL=286.8 ZUL=60. XLR=286.8 YLR=113.2 ZLR=60.
UAX=1 VDN=-1 MAX=125  END
XUL=437.1 YUL=329.8 ZUL=60. XLR=726.7 YLR=40.2 ZLR=60. END
END PLOT
END DATA
END
```

207 (CAS63)

```
#CSAS25
UO2(NO3)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLMUO2(NO3)2  1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS     2 1 END
ARBMWOOD  .640525 3 0 0 0 6012 44.435 1001 6.2639 8016 49.301 3 END
CARBONSTEEL    4 END
REG-CONCRETE  5 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERMOD  2 10.16 NOEXTERMOD END ZONE
UO2(NO3)2 415 G U/L 3X3X3 ARRAY UNREFL. WALLS, TANK, & FLOOR
READ PARAM   PLT=M0  MPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
UNIT 1
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P13.40 21.65 -3.88
UNIT 2
ARRAY  1 2R-40.2 0.
CUBOID 0 1 4P200. 250. -50.
UNIT 3
CYLINDER  0 1 142.8 224. -48.
CYLINDER  4 1 144.8 224. -50.
CUBOID 0 1 218.1 -181.9 215. -185. 250. -50.
ARRAY  2 3R0.
REFLECTOR 0 1 57.4 57. 260. 559.2 400. 0. 1
REFLECTOR 2 1 SRO .32 1
REFLECTOR 3 1 SRO 1.27 1
REFLECTOR 4 1 SRO .64 1
REFLECTOR 0 1 SRO 365 1
REFLECTOR S 2 6R3 10
REFLECTOR S 12 0 3 4R0 10
END GEOM
READ START XSM=160 XSP=240 YSM=160 YSP=240 ZSM=50 ZSP=127 END START
READ BIAS ID=301 2 21 END BIAS
READ ARRAY ARA=1 MUX=3 MUY=3 MUZ=3 FILL F1 END FILL
ARA=2 MUX=2 MUY=1 MUZ=1 FILL 2 3 END FILL END ARRAY
READ PLOT
XUL=113.2 YUL=286.8 ZUL=60. XLR=286.8 YLR=113.2 ZLR=60.
UAX=1 VDN=-1 MAX=125  END
XUL=437.1 YUL=329.8 ZUL=60. XLR=726.7 YLR=40.2 ZLR=60. END
END PLOT
END DATA
END
```

209 (CAS65)

```
#CSAS25
UO2(NO3)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLMUO2(NO3)2  1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS     2 1 END
ARBMWOOD  .640525 3 0 0 0 6012 44.435 1001 6.2639 8016 49.301 3 END
CARBONSTEEL    4 END
REG-CONCRETE  5 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERMOD  2 10.16 NOEXTERMOD END ZONE
UO2(NO3)2 415 G U/L 2X2X2 ARRAY UNREFL.  WALLS, FLOOR, & TANK
READ PARAM     PLT=M0  MPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
UNIT 1
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P10.875 19.125 -1.355
UNIT 2
ARRAY  1 2R-21.75 0.
CUBOID 0 1 4P200. 250. -50.
UNIT 3
CYLINDER  0 1 142.8 224. -48.
CYLINDER  4 1 144.8 224. -50.
CUBOID 0 1 218.1 -181.9 215. -185. 250. -50.
ARRAY  2 3R0.
REFLECTOR 0 1 57.4 57. 260. 559.2 400. 0. 1
REFLECTOR 2 1 SRO .32 1
REFLECTOR 3 1 SRO 1.27 1
REFLECTOR 4 1 SRO .64 1
REFLECTOR 0 1 SRO 365 1
REFLECTOR S 2 6R3 10
REFLECTOR S 12 0 3 4R0 10
END GEOM
READ START XSM=178 XSP=222 YSM=178 YSP=222 ZSM=50 ZSP=91 END START
READ BIAS ID=301 2 21 END BIAS
READ ARRAY ARA=1 MUX=2 MUY=2 MUZ=2 FILL F1 END FILL
ARA=2 MUX=2 MUY=1 MUZ=1 FILL 2 3 END FILL END ARRAY
READ PLOT
XUL=113.2 YUL=286.8 ZUL=60. XLR=286.8 YLR=113.2 ZLR=60.
UAX=1 VDN=-1 MAX=125  END
XUL=437.1 YUL=329.8 ZUL=60. XLR=726.7 YLR=40.2 ZLR=60. END
END PLOT
END DATA
END
```

234 (CAS90)

```
#CSAS25
UO2(NO3)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLMUO2(NO3)2  1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS     2 1 END
ARBMWOOD  .640525 3 0 0 0 6012 44.435 1001 6.2639 8016 49.301 3 END
CARBONSTEEL    4 END
REG-CONCRETE  5 END
SOLMUO2(NO3)2  6 279 0 1 293 92235 92.6 92238 7.4 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERMOD  2 10.16 NOEXTERMOD END ZONE
UO2(NO3)2 415 G U/L 3X3X3 ARRAY UNREFL. 279 G U/L 5 CONT. UNITS WALLS, FLOOR, &
READ PARAM     PLT=M0  MPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
UNIT 1
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P13.365 21.615 -3.845
UNIT 4
CYLINDER  6 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P13.365 21.615 -3.845
UNIT 2
ARRAY  1 2R-40.095 0.
CUBOID 0 1 4P200. 250. -50.
UNIT 3
CYLINDER  0 1 142.8 224. -48.
CYLINDER  4 1 144.8 224. -50.
CUBOID 0 1 218.1 -181.9 215. -185. 250. -50.
ARRAY  2 3R0.
REFLECTOR 0 1 57.4 57. 260. 559.2 400. 0. 1
REFLECTOR 2 1 SRO .32 1
REFLECTOR 3 1 SRO 1.27 1
REFLECTOR 4 1 SRO .64 1
REFLECTOR 0 1 SRO 365 1
REFLECTOR S 2 6R3 10
REFLECTOR S 12 0 3 4R0 10
END GEOM
READ START XSM=138 XSP=262 YSM=138 YSP=262 ZSM=50 ZSP=169 END START
READ BIAS ID=301 2 21 END BIAS
READ ARRAY ARA=1 MUX=3 MUY=3 MUZ=3 FILL 10R1 4 1 3R4 1 4 10R1 END FILL
ARA=2 MUX=2 MUY=1 MUZ=1 FILL 2 3 END FILL END ARRAY
READ PLOT
XUL=113.2 YUL=286.8 ZUL=60. XLR=286.8 YLR=113.2 ZLR=60.
UAX=1 VDN=-1 MAX=125  END
XUL=437.1 YUL=329.8 ZUL=60. XLR=726.7 YLR=40.2 ZLR=60. END
END PLOT
```

```
END DATA
END
```

210 (CAS66)

```
=CSAS25
U02(NO3)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(NO3)2  1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
PARA(H2O)       3 1 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERNOD   2 10.16 NOEXTERNOD END ZONE
U02(NO3)2 415 G U/L 3X3X3 ARRAY 15.24 CM PAR. BOT., 1.27 CM PLEX.
READ PARAM     MPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P14.95 23.20 -5.43
CORE  0 1 3R0.
REFLECTOR  2 2 SR1.27 0 1
REFLECTOR  3 2 SR0 3 4
REFLECTOR  3 6 SR0 3.24 1
END GEOM
READ BIAS ID=400 2 6 END BIAS
READ ARRAY NUX=3 NUY=3 NUZ=3 END ARRAY
END DATA
END
```

211 (CAS67)

```
=CSAS25
U02(NO3)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(NO3)2  1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
PARA(H2O)       3 1 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERNOD   2 10.16 NOEXTERNOD END ZONE
U02(NO3)2 415 G U/L 3X3X3 ARRAY 15.24 CM PAR. BOT., 2.54 CM PLEX.
READ PARAM     MPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P16.13 24.38 -6.61
CORE  0 1 3R0.
REFLECTOR  2 2 SR2.54 0 1
REFLECTOR  3 2 SR0 3 4
REFLECTOR  3 6 SR0 3.24 1
END GEOM
READ BIAS ID=400 2 6 END BIAS
READ ARRAY NUX=3 NUY=3 NUZ=3 END ARRAY
END DATA
END
```

212 (CAS68)

```
=CSAS25
U02(NO3)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(NO3)2  1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
PARA(H2O)       3 1 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERNOD   2 10.16 NOEXTERNOD END ZONE
U02(NO3)2 415 G U/L 3X3X3 ARRAY 15.24 CM PAR. BOT., 1.27 CM PAR.
READ PARAM     MPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P15.10 23.35 -5.58
CORE  0 1 3R0.
REFLECTOR  3 2 SR1.27 0 1
REFLECTOR  3 2 SR0 3 4
REFLECTOR  3 6 SR0 3.24 1
END GEOM
READ BIAS ID=400 2 6 END BIAS
READ ARRAY NUX=3 NUY=3 NUZ=3 END ARRAY
END DATA
END
```

213 (CAS69)

```
=CSAS25
U02(NO3)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(NO3)2  1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
PARA(H2O)       3 1 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERNOD   2 10.16 NOEXTERNOD END ZONE
U02(NO3)2 415 G U/L 3X3X3 ARRAY 15.24 CM PAR 5 FC, PLEX 1 FC
READ PARAM     MPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P18.615 26.865 -9.095
CORE  0 1 3R0.
REFLECTOR  3 2 0 SR3 4
REFLECTOR  3 6 0 SR3.24 1
REFLECTOR  2 2 3 SR0 4
REFLECTOR  2 6 3.24 SR0 1
END GEOM
READ BIAS ID=400 2 6 END BIAS
READ ARRAY NUX=3 NUY=3 NUZ=3 END ARRAY
END DATA
END
```

214 (CAS70)

```
=CSAS25
U02(NO3)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(NO3)2  1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
PARA(H2O)       3 1 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERNOD   2 10.16 NOEXTERNOD END ZONE
U02(NO3)2 415 G U/L 3X3X3 ARRAY 15.24 CM PAR. BOT., 3.81 CM PAR.
READ PARAM     MPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P17.295 25.545 -7.775
CORE  0 1 3R0.
REFLECTOR  3 2 SR3.81 0 1
REFLECTOR  3 2 SR0 3 4
REFLECTOR  3 6 SR0 3.24 1
END GEOM
READ BIAS ID=400 2 6 END BIAS
READ ARRAY NUX=3 NUY=3 NUZ=3 END ARRAY
END DATA
END
```

215 (CAS71)

```
=CSAS25
U02(NO3)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(NO3)2  1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
PARA(H2O)       3 1 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERNOD   2 10.16 NOEXTERNOD END ZONE
U02(NO3)2 415 G U/L 3X3X3 ARRAY 15.24 CM PAR. BOT., 7.62 CM PAR.
READ PARAM     MPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P18.085 26.335 -8.565
CORE  0 1 3R0.
REFLECTOR  3 2 SR3  0 2
REFLECTOR  3 4 SR1.62 0 1
REFLECTOR  3 2 SR0 3 4
REFLECTOR  3 6 SR0 3.24 1
END GEOM
READ BIAS ID=400 2 6 END BIAS
READ ARRAY NUX=3 NUY=3 NUZ=3 END ARRAY
END DATA
END
```

216 (CAS72)

```
=CSAS25
U02(NO3)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(NO3)2  1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
PARA(H2O)       3 1 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERNOD   2 10.16 NOEXTERNOD END ZONE
U02(NO3)2 415 G U/L 3X3X3 ARRAY 1.27 CM PLEXIGLASS REFL.
READ PARAM     MPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P14.54 22.79 -5.02
CORE  0 1 3R0.
REFLECTOR  2 2 6R1.27 1
END GEOM
READ BIAS ID=400 2 6 END BIAS
READ ARRAY NUX=3 NUY=3 NUZ=3 END ARRAY
END DATA
END
```

217 (CAS73)

```
=CSAS25
U02(NO3)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(NO3)2  1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
PARA(H2O)       3 1 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERNOD   2 10.16 NOEXTERNOD END ZONE
U02(NO3)2 415 G U/L 3X3X3 ARRAY 1.27 CM PARA(H2O) REFL.
READ PARAM     MPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P14.67 22.92 -5.15
CORE  0 1 3R0.
REFLECTOR  3 2 6R1.27 1
END GEOM
READ BIAS ID=400 2 6 END BIAS
READ ARRAY NUX=3 NUY=3 NUZ=3 END ARRAY
END DATA
END
```

219 (CAS75)

```
=CSAS25
U02(NO3)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(NO3)2  1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
PARA(H2O)       3 1 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERNOD   2 10.16 NOEXTERNOD END ZONE
U02(NO3)2 415 G U/L 3X3X3 ARRAY 3.81 CM PARA(H2O) REFL.
READ PARAM     MPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P17.005 25.255 -7.485
CORE  0 1 3R0.
REFLECTOR  3 2 6R3.81 1
END GEOM
READ BIAS ID=400 2 6 END BIAS
READ ARRAY NUX=3 NUY=3 NUZ=3 END ARRAY
END DATA
END
```

220 (CAS76)

```
=CSAS25
U02(NO3)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(NO3)2  1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
PARA(H2O)       3 1 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERNOD   2 10.16 NOEXTERNOD END ZONE
U02(NO3)2 415 G U/L 2X2X2 ARRAY 15.24 CM PAR. BOT., 1.27 CM PLEX.
READ PARAM     MPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P11.965 20.215 -2.445
CORE  0 1 3R0.
REFLECTOR  2 2 SR1.27 0 1
REFLECTOR  3 2 SR0 3 4
REFLECTOR  3 6 SR0 3.24 1
END GEOM
READ BIAS ID=400 2 6 END BIAS
READ ARRAY NUX=2 NUY=2 NUZ=2 END ARRAY
END DATA
END
```

221 (CAS77)

```
=CSAS25
U02(NO3)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(NO3)2  1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
PARA(H2O)       3 1 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERNOD   2 10.16 NOEXTERNOD END ZONE
U02(NO3)2 415 G U/L 2X2X2 ARRAY 15.24 CM PAR. BOT., 11.43 CM PLEX.
READ PARAM     MPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P14.925 23.175 -5.405
CORE  0 1 3R0.
REFLECTOR  2 2 SR3.0 0 3
REFLECTOR  2 5 SR2.43 0 1
REFLECTOR  3 2 SR0 3 4
REFLECTOR  3 6 SR0 3.24 1
END GEOM
READ BIAS ID=400 2 6 END BIAS
READ ARRAY NUX=2 NUY=2 NUZ=2 END ARRAY
END DATA
END
```

222 (CAS78)

```
=CSAS25
U02(NO3)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(NO3)2  1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
PARA(H2O)       3 1 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERNOD   2 10.16 NOEXTERNOD END ZONE
U02(NO3)2 415 G U/L 2X2X2 ARRAY 15.24 CM PAR. BOT., 15.24 CM PLEX.
READ PARAM     MPG=600 FDN=YES MUB=YES END PARAM
READ GEOM
```

```
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P14.96 23.21 -5.44
CORE  0 1 3R0.
REFLECTOR  2 2 SR3.0 0 4
REFLECTOR  2 6 SR3.24 0 1
REFLECTOR  3 2 SR0 3 4
REFLECTOR  3 6 SR0 3.24 1
END GEOM
READ BIAS ID=400 2 6 END BIAS
READ ARRAY NUX=2 NUY=2 NUZ=2 END ARRAY
END DATA
END
```

223 (CAS79)

```
=CSAS25
U02(N03)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2   1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
PARA(H20)       3 1 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERNOD   2 10.16 NOEXTERNOD END ZONE
U02(N03)2 415 G U/L 2X2X2 ARRAY 15.24 CM PAR. BOT., 2.54 CM PLEX.
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P12.865 21.115 -3.345
CORE  0 1 3R0.
REFLECTOR  2 2 SR2.54 0 1
REFLECTOR  3 2 SR0 3 4
REFLECTOR  3 6 SR0 3.24 1
END GEOM
READ BIAS ID=400 2 6 END BIAS
READ ARRAY NUX=2 NUY=2 NUZ=2 END ARRAY
END DATA
END
```

224 (CAS80)

```
=CSAS25
U02(N03)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2   1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
PARA(H20)       3 1 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERNOD   2 10.16 NOEXTERNOD END ZONE
U02(N03)2 415 G U/L 2X2X2 ARRAY 15.24 CM PAR. BOT., 4.45 CM PLEX.
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P13.855 22.105 -4.335
CORE  0 1 3R0.
REFLECTOR  2 2 SR3.0 0 1
REFLECTOR  2 3 SR1.45 0 1
REFLECTOR  3 2 SR0 3 4
REFLECTOR  3 6 SR0 3.24 1
END GEOM
READ BIAS ID=400 2 6 END BIAS
READ ARRAY NUX=2 NUY=2 NUZ=2 END ARRAY
END DATA
END
```

225 (CAS81)

```
=CSAS25
U02(N03)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2   1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
PARA(H20)       3 1 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERNOD   2 10.16 NOEXTERNOD END ZONE
U02(N03)2 415 G U/L 2X2X2 ARRAY 15.24 CM PAR. BOT., 6.35 CM PLEX.
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P14.48 22.73 -4.96
CORE  0 1 3R0.
REFLECTOR  2 2 SR3.0 0 1
REFLECTOR  2 3 SR3.35 0 1
REFLECTOR  3 2 SR0 3 4
REFLECTOR  3 6 SR0 3.24 1
END GEOM
READ BIAS ID=400 2 6 END BIAS
READ ARRAY NUX=2 NUY=2 NUZ=2 END ARRAY
END DATA
END
```

226 (CAS82)

```
=CSAS25
U02(N03)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2   1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
PARA(H20)       3 1 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERNOD   2 10.16 NOEXTERNOD END ZONE
U02(N03)2 415 G U/L 2X2X2 ARRAY 15.24 CM PAR. BOT., 1.27 CM PAR.
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P12.09 20.24 -2.57
CORE  0 1 3R0.
REFLECTOR  3 2 SR1.27 0 1
REFLECTOR  3 2 SR0 3 4
REFLECTOR  3 6 SR0 3.24 1
END GEOM
READ BIAS ID=400 2 6 END BIAS
READ ARRAY NUX=2 NUY=2 NUZ=2 END ARRAY
END DATA
END
```

227 (CAS83)

```
=CSAS25
U02(N03)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2   1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
PARA(H20)       3 1 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERNOD   2 10.16 NOEXTERNOD END ZONE
U02(N03)2 415 G U/L 2X2X2 ARRAY 15.24 CM PAR. BOT., 3.81 CM PAR.
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P13.79 22.04 -4.27
CORE  0 1 3R0.
REFLECTOR  3 2 SR3.81 0 1
REFLECTOR  3 2 SR0 3 4
REFLECTOR  3 6 SR0 3.24 1
END GEOM
READ BIAS ID=400 2 6 END BIAS
READ ARRAY NUX=2 NUY=2 NUZ=2 END ARRAY
END DATA
END
```

228 (CAS84)

```
=CSAS25
U02(N03)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2   1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
PARA(H20)       3 1 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERNOD   2 10.16 NOEXTERNOD END ZONE
U02(N03)2 415 G U/L 2X2X2 ARRAY 15.24 CM PAR. BOT., 7.62 CM PAR.
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P14.515 22.765 -4.995
CORE  0 1 3R0.
REFLECTOR  3 2 SR3  0 2
REFLECTOR  3 4 SR1.62 0 1
REFLECTOR  3 2 SR0 3 4
REFLECTOR  3 6 SR0 3.24 1
END GEOM
READ BIAS ID=400 2 6 END BIAS
READ ARRAY NUX=2 NUY=2 NUZ=2 END ARRAY
END DATA
END
```

229 (CAS85)

```
=CSAS25
U02(N03)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2   1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
PARA(H20)       3 1 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERNOD   2 10.16 NOEXTERNOD END ZONE
U02(N03)2 415 G U/L 2X2X2 ARRAY 1.27 CM PLEXIGLASS REFL.
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P11.66 19.91 -2.14
CORE  0 1 3R0.
REFLECTOR  2 2 6R1.27 1
END GEOM
READ BIAS ID=400 2 6 END BIAS
READ ARRAY NUX=2 NUY=2 NUZ=2 END ARRAY
END DATA
END
```

230 (CAS86)

```
=CSAS25
U02(N03)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2   1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
PARA(H20)       3 1 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERNOD   2 10.16 NOEXTERNOD END ZONE
U02(N03)2 415 G U/L 2X2X2 ARRAY 1.27 CM PARA(H20) REFL.
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P11.80 20.05 -2.28
CORE  0 1 3R0.
REFLECTOR  3 2 6R1.27 1
END GEOM
READ BIAS ID=400 2 6 END BIAS
READ ARRAY NUX=2 NUY=2 NUZ=2 END ARRAY
END DATA
END
```

231 (CAS87)

```
=CSAS25
U02(N03)2 415 G U/L
27GROUPNDF4  MULTIREGION
U-235  1 0 9.844-4 END
U-238  1 0 7.769-5 END
N      1 0 5.809-2 END
H      1 0 2.121-3 END
O      1 0 3.756-2 END
PLEXIGLASS      2 1 END
PARA(H20)       3 1 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERNOD   2 10.16 NOEXTERNOD END ZONE
U02(N03)2 415 G U/L 2X2X2 ARRAY 15.24 CM PARA(H20) REFL.
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P14.655 22.905 -5.135
CORE  0 1 3R0.
REFLECTOR  3 2 6R3 4
REFLECTOR  3 6 6R3.24 1
END GEOM
READ BIAS ID=400 2 6 END BIAS
READ ARRAY NUX=2 NUY=2 NUZ=2 END ARRAY
END DATA
END
```

232 (CAS88)

```
=CSAS25
U02(N03)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2   1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
PARA(H20)       3 1 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERNOD   2 10.16 NOEXTERNOD END ZONE
U02(N03)2 415 G U/L 2X2X2 ARRAY 3.81 CM PARA(H20) REFL.
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P13.615 21.845 -4.095
CORE  0 1 3R0.
REFLECTOR  3 2 6R3.81 1
END GEOM
READ BIAS ID=400 2 6 END BIAS
READ ARRAY NUX=2 NUY=2 NUZ=2 END ARRAY
END DATA
END
```

233 (CAS89)

```
=CSAS25
U02(N03)2 415 G U/L
27GROUPNDF4  MULTIREGION
SOLNU02(N03)2   1 415 0 1 293 92235 92.6 92238 7.4 END
PLEXIGLASS      2 1 END
PARA(H20)       3 1 END
END COMP
CYLINDRICAL  END
1 9.52 ONEEXTERNOD   2 10.16 NOEXTERNOD END ZONE
U02(N03)2 415 G U/L 2X2X2 ARRAY 7.62 CM PARA(H20) REFL.
READ PARAM    NPG=600 FDN=YES NUB=YES END PARAM
READ GEOM
CYLINDER  1 1 9.52 17.5609 0.
CYLINDER  0 1 9.52 17.77   0.
CYLINDER  2 1 10.16 18.41  -.64
CUBOID    0 1 4P14.40 22.65 -4.88
CORE  0 1 3R0.
REFLECTOR  3 2 6R3 2
REFLECTOR  3 4 6R1.62 1
END GEOM
READ BIAS ID=400 2 6 END BIAS
READ ARRAY NUX=2 NUY=2 NUZ=2 END ARRAY
END DATA
END
```

APPENDIX E6: TABLE 6 INPUTS

236 (CAS01)

```
=CSAS25
ETA EXPERIMENTS  EXP # 1
27GROUPNDF4  INFHOMMEDIUM
U-233          1  0  0.0              END
U-234          1  0  0.00538-4        END
U-235          1  0  0.48006-4        END
U-236          1  0  0.00138-4        END
U-238          1  0  0.02807-4        END
N              1  0  1.96-4           END
H              1  0  0.066328         END
O              1  0  0.033736         END
B-10           1  0  0.0              END
B-11           1  0  0.0              END
TH-232         1  0  0.0              END
AL             2  1                   END
SS316          3  1                   END
CARBONSTEEL    4  1                   END
END COMP
ETA EXPERIMENTS  # 1
READ PARAM NPG=600 FDN=YES  NUB=YES  TNE=59  END PARAM
READ GEOM
SPHERE  1 1 34.5948   SPHERE 2 1 34.9148   CUBOID 0 1 6P34.9148
END GEOM  READ START NST=1 END START
END DATA
END
```

237 (CAS02)

```
=CSAS25
ETA EXPERIMENTS  EXP # 2
27GROUPNDF4  INFHOMMEDIUM
U-233          1  0  0.0              END
U-234          1  0  0.00631-4        END
U-235          1  0  0.56206-4        END
U-236          1  0  0.00163-4        END
U-238          1  0  0.03281-4        END
N              1  0  2.129-4          END
H              1  0  0.066168         END
O              1  0  0.033800         END
B-10           1  0  0.01029-4        END
B-11           1  0  0.04166-4        END
TH-232         1  0  0.0              END
AL             2  1                   END
SS316          3  1                   END
CARBONSTEEL    4  1                   END
END COMP
ETA EXPERIMENTS  # 2
READ PARAM NPG=600 FDN=YES  NUB=YES  TNE=59  END PARAM
READ GEOM
SPHERE  1 1 34.5948   SPHERE 2 1 34.9148   CUBOID 0 1 6P34.9148
END GEOM  READ START NST=1 END START
END DATA
END
```

238 (CAS03)

```
=CSAS25
ETA EXPERIMENTS  EXP # 3
27GROUPNDF4  INFHOMMEDIUM
U-233          1  0  0.0              END
U-234          1  0  0.00716-4        END
U-235          1  0  0.67944-4        END
U-236          1  0  0.00184-4        END
U-238          1  0  0.03734-4        END
N              1  0  2.392-4          END
H              1  0  0.066070         END
O              1  0  0.033865         END
B-10           1  0  0.02057-4        END
B-11           1  0  0.08332-4        END
TH-232         1  0  0.0              END
AL             2  1                   END
SS316          3  1                   END
CARBONSTEEL    4  1                   END
END COMP
ETA EXPERIMENTS  # 3
READ PARAM NPG=600 FDN=YES  NUB=YES  TNE=59  END PARAM
READ GEOM
SPHERE  1 1 34.5948   SPHERE 2 1 34.9148   CUBOID 0 1 6P34.9148
END GEOM  READ START NST=1 END START
END DATA
END
```

239 (CAS04)

```
=CSAS25
ETA EXPERIMENTS  EXP # 4
27GROUPNDF4  INFHOMMEDIUM
U-233          1  0  0.0              END
U-234          1  0  0.00762-4        END
U-235          1  0  0.67959-4        END
U-236          1  0  0.00197-4        END
U-238          1  0  0.03967-4        END
N              1  0  2.548-4          END
H              1  0  0.066028         END
O              1  0  0.034028         END
B-10           1  0  0.02532-4        END
B-11           1  0  0.10255-4        END
TH-232         1  0  0.0              END
AL             2  1                   END
SS316          3  1                   END
CARBONSTEEL    4  1                   END
END COMP
ETA EXPERIMENTS  # 4
READ PARAM NPG=600 FDN=YES  NUB=YES  TNE=59  END PARAM
READ GEOM
SPHERE  1 1 34.5948   SPHERE 2 1 34.9148   CUBOID 0 1 6P34.9148
END GEOM  READ START NST=1 END START
END DATA
END
```

240 (CAS05)

```
=CSAS25
ETA EXPERIMENTS  EXP # 5
27GROUPNDF4  INFHOMMEDIUM
U-233          1  0  0.43284-4        END
U-234          1  0  0.00716-4        END
U-235          1  0  0.00018-4        END
U-236          1  0  0.0              END
U-238          1  0  0.00281-4        END
N              1  0  1.178-4          END
H              1  0  0.066360         END
O              1  0  0.033608         END
B-10           1  0  0.0              END
B-11           1  0  0.0              END
TH-232         1  0  0.000196-3       END
AL             2  1                   END
SS316          3  1                   END
CARBONSTEEL    4  1                   END
END COMP
ETA EXPERIMENTS  # 5
READ PARAM NPG=600 FDN=YES  NUB=YES  TNE=59  END PARAM
READ GEOM
SPHERE  1 1 34.5948   SPHERE 2 1 34.9148   CUBOID 0 1 6P34.9148
END GEOM  READ START NST=1 END START
END DATA
END
```

241 (CAS06)

```
=CSAS25
ETA EXPERIMENTS  EXP # 6
27GROUPNDF4  INFHOMMEDIUM
U-233          1  0  0.45120-4        END
U-234          1  0  0.00744-4        END
U-235          1  0  0.00018-4        END
U-236          1  0  0.0              END
U-238          1  0  0.00291-4        END
N              1  0  1.224-4          END
H              1  0  0.066345         END
O              1  0  0.033621         END
B-10           1  0  0.00263-4        END
B-11           1  0  0.01066-4        END
TH-232         1  0  0.000205-3       END
AL             2  1                   END
SS316          3  1                   END
CARBONSTEEL    4  1                   END
END COMP
ETA EXPERIMENTS  # 6
READ PARAM NPG=600 FDN=YES  NUB=YES  TNE=59  END PARAM
READ GEOM
SPHERE  1 1 34.5948   SPHERE 2 1 34.9148   CUBOID 0 1 6P34.9148
END GEOM  READ START NST=1 END START
END DATA
END
```

242 (CAS07)

```
=CSAS25
ETA EXPERIMENTS  EXP # 7
27GROUPNDF4  INFHOMMEDIUM
U-233          1  0  0.46798-4        END
U-234          1  0  0.00772-4        END
U-235          1  0  0.00018-4        END
U-236          1  0  0.0              END
U-238          1  0  0.00301-4        END
N              1  0  1.274-4          END
H              1  0  0.066329         END
O              1  0  0.033634         END
B-10           1  0  0.00512-4        END
B-11           1  0  0.02075-4        END
TH-232         1  0  0.000213-3       END
AL             2  1                   END
SS316          3  1                   END
CARBONSTEEL    4  1                   END
END COMP
ETA EXPERIMENTS  # 7
READ PARAM NPG=600 FDN=YES  NUB=YES  TNE=59  END PARAM
READ GEOM
SPHERE  1 1 34.5948   SPHERE 2 1 34.9148   CUBOID 0 1 6P34.9148
END GEOM  READ START NST=1 END START
END DATA
END
```

243 (CAS08)

```
=CSAS25
ETA EXPERIMENTS  EXP # 8
27GROUPNDF4  INFHOMMEDIUM
U-233          1  0  0.48455-4        END
U-234          1  0  0.00801-4        END
U-235          1  0  0.00021-4        END
U-236          1  0  0.0              END
U-238          1  0  0.00311-4        END
N              1  0  1.319-4          END
H              1  0  0.066315         END
O              1  0  0.033646         END
B-10           1  0  0.00758-4        END
B-11           1  0  0.03069-4        END
TH-232         1  0  0.000221-3       END
AL             2  1                   END
SS316          3  1                   END
CARBONSTEEL    4  1                   END
END COMP
ETA EXPERIMENTS  # 8
READ PARAM NPG=600 FDN=YES  NUB=YES  TNE=59  END PARAM
READ GEOM
SPHERE  1 1 34.5948   SPHERE 2 1 34.9148   CUBOID 0 1 6P34.9148
END GEOM  READ START NST=1 END START
END DATA
END
```

244 (CAS09)

```
=CSAS25
ETA EXPERIMENTS  EXP # 9
27GROUPNDF4  INFHOMMEDIUM
U-233          1  0  0.5066-4         END
U-234          1  0  0.00827-4        END
U-235          1  0  0.00021-4        END
U-236          1  0  0.0              END
U-238          1  0  0.00327-4        END
N              1  0  1.362-4          END
H              1  0  0.0663            END
O              1  0  0.033659         END
B-10           1  0  0.01005-4        END
B-11           1  0  0.04076-4        END
TH-232         1  0  0.000227-3       END
AL             2  1                   END
SS316          3  1                   END
CARBONSTEEL    4  1                   END
END COMP
ETA EXPERIMENTS  # 9
READ PARAM NPG=600 FDN=YES  NUB=YES  TNE=59  END PARAM
READ GEOM
SPHERE  1 1 34.5948   SPHERE 2 1 34.9148   CUBOID 0 1 6P34.9148
END GEOM  READ START NST=1 END START
END DATA
END
```

245 (CAS10)

```
=CSAS25
ETA EXPERIMENTS  EXP # 10
27GROUPNDF4  INFHOMMEDIUM
U-233          1  0  0.0              END
U-234          1  0  0.00409-4        END
U-235          1  0  0.36185-4        END
U-236          1  0  0.00220-4        END
U-238          1  0  0.01985-4        END
N              1  0  1.116-4          END
H              1  0  0.066394         END
O              1  0  0.033592         END
B-10           1  0  0.0              END
B-11           1  0  0.0              END
TH-232         1  0  0.0              END
AL             2  1                   END
SS316          3  1                   END
CARBONSTEEL    4  1                   END
END COMP
ETA EXPERIMENTS  # 10
READ PARAM NPG=600 FDN=YES  NUB=YES  TNE=59  END PARAM
READ GEOM
SPHERE  1 1 61.0108  SPHERE 2 1 61.7808  CUBOID 0 1 6P61.7808
END GEOM  READ START NST=1 END START
END DATA
END
```

246 (CAS11)

```
=CSAS25
ETA EXPERIMENTS  EXP # 11
27GROUPNDF4  INFHOMMEDIUM
U-233          1  0  0.33460-4        END
U-234          1  0  0.00525-4        END
U-235          1  0  0.00010-4        END
U-236          1  0  0.0              END
U-238          1  0  0.00256-4        END
N              1  0  0.753-4          END
H              1  0  0.066467         END
O              1  0  0.033525         END
B-10           1  0  0.0              END
B-11           1  0  0.0              END
TH-232         1  0  0.000148-3       END
AL             2  1                   END
SS316          3  1                   END
CARBONSTEEL    4  1                   END
END COMP
ETA EXPERIMENTS  # 11
READ PARAM NPG=600 FDN=YES  NUB=YES  TNE=59  END PARAM
READ GEOM
SPHERE  1 1 61.0108  SPHERE 2 1 61.7808  CUBOID 0 1 6P61.7808
END GEOM  READ START NST=1 END START
END DATA
END
```

```
                                247 (CAS12)
#CSAS25
ETA EXPERIMENTS  EXP # 12
27GROUPNDF4   INFHOMMEDIUM
U-233          1  0  0.00000-4  END
U-234          1  0  0.00469-4  END
U-235          1  0  0.41264-4  END
U-236          1  0  0.00243-4  END
U-238          1  0  0.02271-4  END
N              1  0  1.27200-4  END
H              1  0  0.066345   END
O              1  0  0.033624   END
B-10           1  0  0.0        END
B-11           1  0  0.0        END
TH-232         1  0  0.000000-3 END
AL             2  1              END
SS316          3  1              END
CARBONSTEEL    4  1              END
END COMP
ETA EXPERIMENTS  # 12
READ PARAM MPG=600 FDM=YES  NUB=YES  TME=59  END PARAM
READ GEOM  CYLINDER  1 1  77.3684     45.1358   0.0
CYLINDER  0 1  77.3684    264.0    0.0
CYLINDER  3 1  77.4984    264.13  -0.13
CUBOID    0 1  4P77.4984  264.13  -0.13
END GEOM
READ START NST=1 END START
END DATA
END

                                248 (CAS13)
#CSAS25
ETA EXPERIMENTS  EXP # 13
27GROUPNDF4   INFHOMMEDIUM
U-233          1  0  0.00000-4  END
U-234          1  0  0.00451-4  END
U-235          1  0  0.40595-4  END
U-236          1  0  0.00222-4  END
U-238          1  0  0.02339-4  END
N              1  0  1.40900-4  END
H              1  0  0.066343   END
O              1  0  0.033655   END
B-10           1  0  0.0        END
B-11           1  0  0.0        END
TH-232         1  0  0.000000-3 END
AL             2  1              END
SS316          3  1              END
CARBONSTEEL    4  1              END
END COMP
ETA EXPERIMENTS  # 13
READ PARAM MPG=600 FDM=YES  NUB=YES  TME=59  END PARAM
READ GEOM  CYLINDER  1 1  77.3684     47.4472   0.0
CYLINDER  0 1  77.3684    264.0    0.0
CYLINDER  3 1  77.4984    264.13  -0.13
CUBOID    0 1  4P77.4984  264.13  -0.13
END GEOM
READ START NST=1 END START
END DATA
END

                                249 (CAS14)
#CSAS25
ETA EXPERIMENTS  EXP # 14
27GROUPNDF4   INFHOMMEDIUM
U-233          1  0  0.00000-4  END
U-234          1  0  0.00409-4  END
U-235          1  0  0.36452-4  END
U-236          1  0  0.00209-4  END
U-238          1  0  0.02048-4  END
N              1  0  1.18500-4  END
H              1  0  0.066383   END
O              1  0  0.033605   END
B-10           1  0  0.0        END
B-11           1  0  0.0        END
TH-232         1  0  0.000000-3 END
AL             2  1              END
SS316          3  1              END
CARBONSTEEL    4  1              END
END COMP
ETA EXPERIMENTS  # 14
READ PARAM MPG=600 FDM=YES  NUB=YES  TME=59  END PARAM
READ GEOM  CYLINDER  1 1  77.3684     72.7456   0.0
CYLINDER  0 1  77.3684    264.0    0.0
CYLINDER  3 1  77.4984    264.13  -0.13
CUBOID    0 1  4P77.4984  264.13  -0.13
END GEOM
READ START NST=1 END START
END DATA
END

                                250 (CAS15)
#CSAS25
ETA EXPERIMENTS  EXP # 15
27GROUPNDF4   INFHOMMEDIUM
U-233          1  0  0.00000-4  END
U-234          1  0  0.00397-4  END
U-235          1  0  0.34845-4  END
U-236          1  0  0.00194-4  END
U-238          1  0  0.01942-4  END
N              1  0  1.20800-4  END
H              1  0  0.066389   END
O              1  0  0.033609   END
B-10           1  0  0.0        END
B-11           1  0  0.0        END
TH-232         1  0  0.000000-3 END
AL             2  1              END
SS316          3  1              END
CARBONSTEEL    4  1              END
END COMP
ETA EXPERIMENTS  # 15
READ PARAM MPG=600 FDM=YES  NUB=YES  TME=59  END PARAM
READ GEOM  CYLINDER  1 1  77.3684    105.2068   0.0
CYLINDER  0 1  77.3684    264.0    0.0
CYLINDER  3 1  77.4984    264.13  -0.13
CUBOID    0 1  4P77.4984  264.13  -0.13
END GEOM
READ START NST=1 END START
END DATA
END

                                251 (CAS16)
#CSAS25
ETA EXPERIMENTS  EXP # 16
27GROUPNDF4   INFHOMMEDIUM
U-233          1  0  0.00000-4  END
U-234          1  0  0.00384-4  END
U-235          1  0  0.33519-4  END
U-236          1  0  0.00186-4  END
U-238          1  0  0.01924-4  END
N              1  0  1.24400-4  END
H              1  0  0.066391   END
O              1  0  0.033615   END
B-10           1  0  0.0        END
B-11           1  0  0.0        END
TH-232         1  0  0.000000-3 END
AL             2  1              END
SS316          3  1              END
CARBONSTEEL    4  1              END
END COMP
ETA EXPERIMENTS  # 16
READ PARAM MPG=600 FDM=YES  NUB=YES  TME=59  END PARAM
READ GEOM  CYLINDER  1 1  77.3684    203.2762   0.0
CYLINDER  0 1  77.3684    264.0    0.0
CYLINDER  3 1  77.4984    264.13  -0.13
CUBOID    0 1  4P77.4984  264.13  -0.13
END GEOM
READ START NST=1 END START
END DATA
END

                                252 (CAS17)
#CSAS25
ETA EXPERIMENTS  EXP # 17
27GROUPNDF4   INFHOMMEDIUM
U-233          1  0  0.36517-4  END
U-234          1  0  0.00556-4  END
U-235          1  0  0.00000-4  END
U-236          1  0  0.00000-4  END
U-238          1  0  0.00410-4  END
N              1  0  0.82600-4  END
H              1  0  0.066439   END
O              1  0  0.033539   END
B-10           1  0  0.0        END
B-11           1  0  0.0        END
TH-232         1  0  0.000037-3 END
AL             2  1              END
SS316          3  1              END
CARBONSTEEL    4  1              END
END COMP
ETA EXPERIMENTS  # 17
READ PARAM MPG=600 FDM=YES  NUB=YES  TME=59  END PARAM
READ GEOM  CYLINDER  1 1  77.3684     49.5046   0.0
CYLINDER  0 1  77.3684    264.0    0.0
CYLINDER  3 1  77.4984    264.13  -0.13
CUBOID    0 1  4P77.4984  264.13  -0.13
END GEOM
READ START NST=1 END START
END DATA
END

                                253 (CAS18)
#CSAS25
ETA EXPERIMENTS  EXP # 18
27GROUPNDF4   INFHOMMEDIUM
U-233          1  0  0.34978-4  END
U-234          1  0  0.00525-4  END
U-235          1  0  0.00000-4  END
U-236          1  0  0.00000-4  END
U-238          1  0  0.00395-4  END
N              1  0  0.84900-4  END
H              1  0  0.066444   END
O              1  0  0.033542   END
B-10           1  0  0.0        END
B-11           1  0  0.0        END
TH-232         1  0  0.000032-3 END
AL             2  1              END
SS316          3  1              END
CARBONSTEEL    4  1              END
END COMP
ETA EXPERIMENTS  # 18
READ PARAM MPG=600 FDM=YES  NUB=YES  TME=59  END PARAM
READ GEOM  CYLINDER  1 1  77.3684     59.2074   0.0
CYLINDER  0 1  77.3684    264.0    0.0
CYLINDER  3 1  77.4984    264.13  -0.13
CUBOID    0 1  4P77.4984  264.13  -0.13
END GEOM
READ START NST=1 END START
END DATA
END

                                254 (CAS19)
#CSAS25
ETA EXPERIMENTS  EXP # 19
27GROUPNDF4   INFHOMMEDIUM
U-233          1  0  0.33282-4  END
U-234          1  0  0.00507-4  END
U-235          1  0  0.00000-4  END
U-236          1  0  0.00000-4  END
U-238          1  0  0.00375-4  END
N              1  0  0.80200-4  END
H              1  0  0.066459   END
O              1  0  0.033533   END
B-10           1  0  0.0        END
B-11           1  0  0.0        END
TH-232         1  0  0.000037-3 END
AL             2  1              END
SS316          3  1              END
CARBONSTEEL    4  1              END
END COMP
ETA EXPERIMENTS  # 19
READ PARAM MPG=600 FDM=YES  NUB=YES  TME=59  END PARAM
READ GEOM  CYLINDER  1 1  77.3684     77.6732   0.0
CYLINDER  0 1  77.3684    264.0    0.0
CYLINDER  3 1  77.4984    264.13  -0.13
CUBOID    0 1  4P77.4984  264.13  -0.13
END GEOM
READ START NST=1 END START
END DATA
END

                                255 (CAS20)
#CSAS25
ETA EXPERIMENTS  EXP # 20
27GROUPNDF4   INFHOMMEDIUM
U-233          1  0  0.31567-4  END
U-234          1  0  0.00481-4  END
U-235          1  0  0.00000-4  END
U-236          1  0  0.00000-4  END
U-238          1  0  0.00354-4  END
N              1  0  0.79500-4  END
H              1  0  0.066470   END
O              1  0  0.033531   END
B-10           1  0  0.0        END
B-11           1  0  0.0        END
TH-232         1  0  0.000258-3 END
AL             2  1              END
SS316          3  1              END
CARBONSTEEL    4  1              END
END COMP
ETA EXPERIMENTS  # 20
READ PARAM MPG=600 FDM=YES  NUB=YES  TME=59  END PARAM
READ GEOM  CYLINDER  1 1  77.3684    130.9126   0.0
CYLINDER  0 1  77.3684    264.0    0.0
CYLINDER  3 1  77.4984    264.13  -0.13
CUBOID    0 1  4P77.4984  264.13  -0.13
END GEOM
READ START NST=1 END START
END DATA
END

                                256 (CAS21)
#CSAS25
ETA EXPERIMENTS  EXP # 21
27GROUPNDF4   INFHOMMEDIUM
U-233          1  0  0.00000-4  END
U-234          1  0  0.00397-4  END
U-235          1  0  0.33940-4  END
U-236          1  0  0.00246-4  END
U-238          1  0  0.01975-4  END
N              1  0  1.40700-4  END
H              1  0  0.066367   END
O              1  0  0.033645   END
B-10           1  0  0.0        END
B-11           1  0  0.0        END
TH-232         1  0  0.000000-3 END
AL             2  1              END
SS316          3  1              END
CARBONSTEEL    4  1              END
END COMP
ETA EXPERIMENTS  # 21
READ PARAM MPG=600 FDM=YES  NUB=YES  TME=59  END PARAM
READ GEOM  CYLINDER  1 1 136.7790     90.8812   0.0
CYLINDER  0 1  136.7790   274.0    0.0
CYLINDER  4 1  138.6840   275.905 -1.905
CUBOID    0 1 4P138.6840  275.905 -1.905
END GEOM
READ START NST=1 END START
END DATA
END

                                257 (CAS22)
#CSAS25
ETA EXPERIMENTS  EXP # 22
27GROUPNDF4   INFHOMMEDIUM
U-233          1  0  0.00000-4  END
U-234          1  0  0.00381-4  END
U-235          1  0  0.33124-4  END
U-236          1  0  0.00232-4  END
U-238          1  0  0.01942-4  END
```

```
N             1  0  1.36700-4  END
H             1  0  0.066374   END
O             1  0  0.0338634  END
B-10          1  0  0.0        END
B-11          1  0  0.0        END
TH-232        1  0  0.000000-3 END
AL            2  1             END
SS316         3  1             END
CARBONSTEEL   4  1             END
END COMP
ETA EXPERIMENTS  # 22
READ PARAM NPG=600 FDM=YES  NUB=YES  TME=59  END PARAM
READ GEOM  CYLINDER   1 1 136.7790     122.4280   0.0
CYLINDER   0 1  136.7790    274.0      0.0
CYLINDER   4 1  138.6840    275.905 -1.905
CUBOID     0 1 4P138.6840   275.905 -1.905
END GEOM
READ START NST=1 END START
END DATA
END
```

258 (CAS23)

```
#CSAS25
ETA EXPERIMENTS  EXP # 23
22GROUPNDF4   INFINMEDIUM
U-233         1  0  0.00000-4  END
U-234         1  0  0.00368-4  END
U-235         1  0  0.32347-4  END
U-236         1  0  0.00220-4  END
U-238         1  0  0.01894-4  END
N             1  0  1.33800-4  END
H             1  0  0.066385   END
O             1  0  0.0338631  END
B-10          1  0  0.0        END
B-11          1  0  0.0        END
TH-232        1  0  0.000000-3 END
AL            2  1             END
SS316         3  1             END
CARBONSTEEL   4  1             END
END COMP
ETA EXPERIMENTS  # 23
READ PARAM NPG=600 FDM=YES  NUB=YES  TME=59  END PARAM
READ GEOM  CYLINDER   1 1 136.7790     241.1222   0.0
CYLINDER   0 1  136.7790    274.0      0.0
CYLINDER   4 1  138.6840    275.905 -1.905
CUBOID     0 1 4P138.6840   275.905 -1.905
END GEOM
READ START NST=1 END START
END DATA
END
```