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EBR-II SPECTRAL PARAMETERS RUN 75D

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RUN 75D

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ABSTRACT

A dosimetry flux mapping experiment was performed in the EBR-II reactor during Run 75D. Fission and reaction rate data were analyzed from 54 flux spectral sets, containing up to 18 dosimeters and numerous interspersed Fe gradient wires, located in six subassemblies from Row 2 out through Row 8. The dosimeters were located axially from 70 cm below to 75 cm above reactor midplane.

The fission and reaction rate data were used to generate neutron spectra from which r, z matrices of nuclear parameters were generated. This report includes parameter matrices for total flux, flux with $E > 0.1$ MeV, neutron average energy ($\bar{E}$), and atom displacement cross section values for stainless steel.

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EBR-II SPECTRAL PARAMETERS - RUN 75D (FF028)

1.0 SUMMARY AND CONCLUSIONS

The EBR-II, Run 75D,⁽¹⁾ dosimetry experiment was irradiated for 583 MWd in January 1975, in order to characterize changes in the neutron environment since previous measurements. These changes include substitution of a stainless steel radial reflector for the depleted uranium blanket, addition of high worth control rods in Row 5, and added fuel in Row 7. Similar dosimetry experiments for other reactor configurations were conducted during Runs 31F⁽²⁾ and 50H,⁽³⁾ with a depleted uranium blanket. Analyses of 54 dosimetry sets from the 75D test, located at positions above core, in core, and below core in Rows 2, 4, 7, and 8, together with 297 Fe gradient wires interspersed between, provided sufficient information to establish a two dimensional (r,z) reaction rate matrix. Flux and damage matrices were derived from this reaction rate matrix, so that EBR-II fuels and materials irradiation test results could be better evaluated and subsequently applied to other Breeder Reactor Program environs.

The neutron environment in Row 8 was affected by the type of neighboring subassemblies. Row 8 subassemblies next to fuel in Row 7, as opposed to structurals in Row 7, had about a 10% higher total flux (defined here as $E > 10^{-10}$ MeV), but the neutron flux with energy greater than 1.0 MeV was about 50% higher. Analysis of dosimetry spectral sets located next to high worth, as compared to normal control rods, indicate a maximum 25% reduction in total flux.

These, as well as previous results,^(1,2,4) demonstrate the need for adjustment of reactor physics calculations by multiple foil measurements to achieve higher accuracy neutronics characterization of EBR-II and other Fast Test Reactor environments.⁽⁵⁻¹⁸⁾ Present uncertainties for this characterization are estimated to be in the 5 to 15% (1σ) range. A reduction to the 2 to 5% (1σ) range will meet current and future breeder reactor fuels, materials and absorber development program needs, Figure 1.^(6,8,12,13,15,16)

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FIGURE 1. Estimated Uncertainty Ranges for Fast Neutron Environmental Characterization.

2.0 INTRODUCTION

The Experimental Breeder Reactor-II (EBR-II) has been the primary U.S. irradiation facility for fast reactor fuels and materials irradiation programs since 1965. Full-power dosimetry experiments were conducted during EBR-II Runs 31F⁽²⁾ and 50H.⁽³⁾ Results of these experiments provided a means of predicting irradiation conditions for experiments that were planned to be inserted in reactor configurations similar to those of Runs 31F and 50H. In addition, neutron environment characterization for experimental planning could be reasonably approximated from flux-spectra maps generated by measured reaction rate data of these dosimetry tests.

After Run 55 the radial depleted uranium blanket was replaced with a stainless steel reflector in Rows 7 to 10. This appreciably altered the nuclear environment of the core and reflector regions of the EBR-II. In addition, high worth control rods have been introduced in Row 5, and driver fuel and experimental fuel subassemblies now occupy approximately one-half of the Row 7 subassembly positions. Thus, the reaction rate and flux maps generated for Run 50H are no longer applicable to on-going irradiation experiments after Run 55. Therefore, a new high-power dosimetry experiment was designed and irradiated in Run 75D to measure the effects of these changes on the reactor environment. A description of the Run 75D dosimetry test and a compilation of the measured reaction rate data are presented elsewhere.⁽¹⁾

The purpose of this report is to provide the reaction rate and flux-spectral parameter maps derived from the measured Run 75D reaction rate data, as an update to those presented earlier for Run 50H.⁽¹⁹⁾

3.0 RESULTS

The reaction rate data for Run 75D consists of results of the analysis of 54 multiple-monitor spectral sets (see Table 1) located at positions above core, in core, and below core in Rows 2, 4, 7, and 8, interspersed with 297 two-reaction gradient sets. A plan view of location of subassemblies with dosimetry elements and the type of adjacent subassemblies is shown in Figure 2. The Row 2 location provides a direct comparison with the Run 50H high power dosimetry experiment results.

The Row 4 locations provide results on the perturbation due to a high worth (B_4C) EBR-II control rod. The Row 7 and 8 locations provide results on the differences between structural subassemblies located in Rows 7 and 8 as compared with a structural subassembly located in Row 8 which is adjacent to a fuels subassembly in Row 7. Comparisons of these new results with similar results from the run 50H experiment also indicate the changes in neutron flux due to the replacement of the depleted uranium blanket by stainless steel and addition of fuel in Row 7.

In Figure 3, the axial distribution of the dosimeters in different subassembly pins is indicated by the rectangles. The letters in each box refer to the type of dosimetry set, as shown in Table 1. The vertical lines represent gradient wire dosimeters, which are utilized to interpolate axial reaction rate distributions (see Reference 1 for more detailed information).

The ten radial positions of the reaction rate maps were selected to coincide with the radial positions of the dosimetry pins. One extra radial position at 13 cm was obtained by interpolation of surrounding dosimetry to assist in interpreting data across gaps in the dosimetry.

Table 1 lists the dosimetry materials, which resulted in 24 reaction and/or fission rates being monitored at selected locations in the 75D dosimetry experiment. Eight of these reactions were present in less than a

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FIGURE 2. Plan View of Location of Subassemblies with Dosimetry Elements.

TABLE 1
HIGH POWER DOSIMETRY TEST
SPECTRAL SET CLASSIFICATION AND IDENTIFICATION

No.	Material	Type											Total Number of Dosimeters
		A	B	C	D	E	F	G	H	I	J	K	
1	Enriched U_3O_8 in V	1	1	3	3	1	1	1	1	1	1	1	60
2	Depleted U_3O_8 in V	1	1	3	3	1	1	1			1	1	48
3	$^{237}NpO_2$ in V	1	1	3	3	1	1	1	1	1	1	1	60
4	$^{239}PuO_2$ in V	1	1	3	3	1	1	1	1	1	1	1	60
5	$^{240}PuO_2$ in V			3	3								9
6	$^{241}PuO_2$ in V			3	3								9
7	FTR Fuel in V			3	3								9
8	Sc Wire in V	1	1	1	1	1	1	1	1	1	1	1	54
9	Natural B in V	1		2	2	1	1	1	1		1		26
10	^6Li in V	1		1	1	1	1				1		19
11	^7Li in V			1		1							4
12	Mn Wire	1	1	1	1	1	1	1	1	1	1	1	54
13	Fe Wire	1	1	1	1	1	1	1	1	1	1	1	54
14	Ni Wire	1	1	1	1	1	1	1	1	1	1	1	54
15	Ti Wire	1	1	1	1	1	1	1	1	1	1	1	54
16	Cu Wire	1	1	1	1	1	1	1	1	1	1	1	54
17	Cu Foil	1	1	1	1	1	1	1	1	1	1	1	54
18	Al Wire	1	1	1	1	1	1	1	1	1	1	1	54
19	Al-0.1% Co Wire	1	1	1	1	1	1	1	1	1	1	1	54
20	Au Foil	1	1	1	1	1	1	1	1	1	1	1	54
21	Al-0.1% Ta Wire	1	1	1	1	1	1	1	1	1	1	1	54
22	SS (FTR) Wire Wrap	1		3	3	1							16
23	V Blank			1		1							4
Total No. of Sets of Each Type		5	10	2	1	2	4	2	2	10	5	11	918

Total Sets = 54

third of the spectral set locations and were not used in the generation of the reaction rate matrix. One fission reaction, $^{238}\text{U}(n,f)\text{FP}$, was present in 80% of these locations, but about 10% of the out-of-core monitor results were not useable because of the low neutron exposure. Three reactions; $^{63}\text{Cu}(n,\gamma)^{64}\text{Cu}$, $^{63}\text{Cu}(n,\alpha)^{60}\text{Co}$, and $^{181}\text{Ta}(n,\gamma)^{182}\text{Ta}$, were present in all locations, but were not included in the generation of the reaction rate matrix because of unresolved discrepancies in the measured-to-calculated values at some locations. The remaining twelve reactions, listed in Table 2, were used to generate the reaction rate matrix.

TABLE 2
REACTIONS USED IN THE REACTION RATE MAPS

<u>Broad Spectrum Reactions</u>	<u>Threshold Reactions</u>
$^{235}\text{U}(n,f)\text{FP}$	$^{237}\text{Np}(n,f)\text{FP}$
$^{239}\text{Pu}(n,f)\text{FP}$	$^{54}\text{Fe}(n,p)^{54}\text{Mn}$
$^{197}\text{Au}(n,\gamma)^{198}\text{Au}$	$^{46}\text{Ti}(n,p)^{46}\text{Sc}$
$^{59}\text{Co}(n,\gamma)^{60}\text{Co}$	$^{27}\text{Al}(n,\alpha)^{24}\text{Na}$
$^{45}\text{Sc}(n,\gamma)^{46}\text{Sc}$	$^{58}\text{Ni}(n,p)^{58}\text{Co}$
$^{58}\text{Fe}(n,\gamma)^{59}\text{Fe}$	$^{55}\text{Mn}(n,2n)^{54}\text{Mn}$

Iron gradient wires were present in 297 axial locations extending over nine radial positions. The threshold reaction from these gradient wires, $^{54}\text{Fe}(n,p)^{54}\text{Mn}$, was used to determine the axial distribution shape for interpolation of the other five threshold reactions, which were measured only at spectral set locations. Argonne National Laboratory physics (r,z) calculations were also used for interpolation. Similar adjustments were made to the broad spectrum reactions using the $^{58}\text{Fe}(n,\gamma)^{59}\text{Fe}$ reaction. The broad spectrum reactions have a more complicated axial distribution than the threshold reactions. The locations of maxima and minima of each of the

other five broad spectrum reactions were constrained to be identical to those of the ^{58}Fe reaction.

Reaction rate data from more than 1215 monitors were plotted to determine radial and axial distributions. The reaction rate maps were then generated for 42 axial points, at each of eleven radial positions. A cosine interpolation was used within the core and a log-linear interpolation outside the core. Flux spectral values were developed from these interpolated reaction rate maps by the SAND-II multiple foil method of spectral unfolding (4,16-18) at each of the 462 matrix locations for the nominal reactor configuration. Values were developed in a similar manner for perturbations caused by high worth control rods in Row 5 or fuel in Row 7. The designation, nominal reactor, in this report refers to a typical EBR-II reactor configuration, unaffected by a localized perturbation caused by fuel in out-of-core positions or high worth control rods.

Flux-spectral parameter maps are derived from measurements in structural material subassemblies. They are directly applicable to structural experiments that are adjacent to structural, fuel, or absorber material subassemblies, when the correct version of the maps are used. For structural experiments adjacent to fueled subassemblies, use the nominal reactor configuration version. For structural experiments adjacent to high worth control rods in Row 5, use the high worth control rod perturbation version. For structural experiments in Row 6, 7, or 8 adjacent to a fueled subassembly in Row 7, use the fuel in Row 7 perturbation version.

Previous work⁽³⁾ shows that the center of a fueled subassembly is approximately 6% higher in total flux than an adjacent structural subassembly in the same row. With due caution, and in the absence of in-situ dosimetry, these new 75D results can be used in conjunction with previous Reference 3 results, to obtain reasonably reliable flux spectral estimates for fueled subassembly experiments.

Control rod motion and perturbations due to surrounding experiments or loadings may result in large changes (as much as 50% in some cases) in the adjacent flux-spectrum and associated spectral-averaged parameters (such as displacement rates). The flux-spectral parameter maps provide a good "reference" basis for the design and approximate analysis of structural irradiation experiments without in-situ dosimetry.

The neutron environment in Row 8 is affected by the type of neighboring subassembly in Row 7. A Row 8 subassembly next to a fueled Row 7 subassembly, as opposed to structurals in Row 7, had about an 8-14% higher total flux. The radial variation of the total flux at reactor midplane is shown in Figure 4, for both the case with fuel in Row 7 and without. The higher energy flux (neutrons with energy greater than 1.0 MeV) exhibit an even larger difference (as large as 50%).

The neutron environment in Row 4 is affected by the type of neighboring subassembly in Row 5. Row 4 subassemblies next to a high worth control rod, as opposed to a normal control rod in Row 5, have about 25% lower total flux at the absorber section of the control rod. This is evidenced by the response of the $^{235}\text{U}(n,f)\text{FP}$ fission rate. A comparison of $^{235}\text{U}(n,f)\text{FP}$ fission rates from a subassembly (at 17.3 cm from core center) next to a normal control rod and from a subassembly (at 19.8 cm from core center) next to a high worth control rod is shown in Figure 5. Although the total flux in Row 4 next to a high worth control rod is depressed by 25% as compared to being next to a normal control rod, the flux with neutron energy greater than 1.0 MeV is approximately the same.

Also, if a structural subassembly in Row 7 is between another structural and a fuel subassembly, with fueled subassemblies adjacent in Row 6 and structurals adjacent in Row 8, consideration must be given to the effect of each of these neighboring subassemblies. Use of only local effects or global effects can be misleading, and careful use of two or three versions of the maps might be needed for a given experiment, without in-situ dosimetry.

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FIGURE 4. Radial Variation of the Total Neutron Flux ($E > 10^{-10}$ MeV) Along Core Midplane With and Without Fuel in Row 7.

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FIGURE 5. Axial Variation of $^{235}\text{U}(\text{n},\text{f})\text{FP}$ Fission Rate Data from Dosimetry Near High Worth Control Rod and that Near Normal Control Rod.

The multiple foil technique utilizes a set of measured reaction rates to adjust an input spectrum (normally a multigroup physics calculation) in order to obtain a solution spectrum consistent with a set of measured reaction rates (or total number of reactions). This adjustment is carried out by an iterative procedure which minimizes the difference between the measured reaction rates and those calculated using iterative flux estimates. The total flux, ϕ_{TOT} , (n/cm^2 -sec), and its value as a function of position are listed in Tables A-1, A-2, and A-3 for the nominal reactor configuration, high worth control rod effects on Row 4, and the effects of fuel in Row 7 on Row 8 subassemblies, respectively.

Total flux is defined as:

$$\phi_{TOT} = \int_{10^{-10} \text{ MeV}}^{18 \text{ MeV}} \phi(E) dE \quad (1)$$

The following are also spectral parameters listed in this report.

Flux with $E > 0.1$ MeV, listed in Tables A-4, A-5, and A-6:

$$\phi_{E > 0.1 \text{ MeV}} = \int_{0.1 \text{ MeV}}^{18 \text{ MeV}} \phi(E) dE \quad (2)$$

where $\phi(E)$ is the energy dependent neutron spectrum.

Flux with $E > 1.0$ MeV, listed in Tables A-7, A-8, and A-9:

$$\phi_{E > 1.0 \text{ MeV}} = \int_{1 \text{ MeV}}^{18 \text{ MeV}} \phi(E) dE \quad (3)$$

Mean neutron energy, $\bar{E}$, (MeV), listed in Tables A-10, A-11, and A-12:

$$\bar{E} = \frac{\int_{10^{-10} \text{ MeV}}^{18 \text{ MeV}} E \phi(E) dE}{\int_{10^{-10} \text{ MeV}}^{18 \text{ MeV}} \phi(E) dE}, \quad (4)$$

where $\bar{E}$ as used in this report is defined by the mean value theorem.

The radial variation of $\bar{E}$ along core midplane is shown in Figure 6.

The radial variation along the core midplane for the nominal reactor configuration of the average atom displacement cross section (barns) for stainless steel^(20,21) is shown in Figure 7. The spectral averaged atom displacement cross section, $\bar{\sigma}_d$, is defined by the equation

$$\bar{\sigma}_d = \frac{\int_{10^{-10} \text{ MeV}}^{18 \text{ MeV}} \sigma_d(E) \phi(E) dE}{\int_{10^{-10} \text{ MeV}}^{18 \text{ MeV}} \phi(E) dE} \quad (5)$$

where $\sigma_d(E)$ is the energy-dependent displacement cross section. Values of $\bar{\sigma}_d$ are listed in Tables A-13, A-14, and A-15.

The information, given in Tables A-1 through A-15 in Appendix A, will be useful for general scoping and evaluation of structural and cladding experiments irradiated in EBR-II after the substitution of the stainless steel reflector, core enlargement (50% fueled subassemblies in Row 7) and the introduction of six high worth control rods after Run 55. The use of the appropriate tables allows a flux or damage correction/adjustment to be made for experiments adjacent to one of the perturbations (high worth control rod in row 5 and driver subassembly/fuel experiment in Row 7). Experiments not subject to such perturbations should make use of the information listed in Tables A-1, A-4, A-7, A-10 or A-13. Experiments adjacent to a high worth control rod should make use of the information listed in Tables A-2, A-5,

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FIGURE 6. Radial Variation of Average Neutron Energy, $\bar{E}$, Along Core Midplane for the Nominal Reactor Configuration.

FIGURE 7. Radial Variation of Spectral Averaged Displacement Cross Sections for Stainless Steel Along Core Midplane.

A-8, A-11 and A-14. Experiments in Row 8 near a fueled subassembly in Row 7 should make use of the information in Tables A-3, A-6, A-9, A-12, and A-15.

Since the high worth control rod perturbation was constructed for adjacent subassemblies, only the columns headed 17.3 and 19.8 of the high worth control rod perturbation configuration (Tables A-2, A-5, A-8, A-11, and A-14) differ from the columns in the nominal reactor configuration (Tables A-1, A-4, A-7, A-10, and A-13). All other columns of these two sets of tables are identical and are reproduced in the high worth control rod configuration tables for reader convenience. Similarly, only the columns headed 25.0, 30.4, 33.4, 34.5, 38.3, and 39.2 in the fuel in Row 7 perturbation configuration (Tables A-3, A-6, A-9, A-12, and A-15) are different from the corresponding columns in the normal reactor configuration. All other columns are identical, but are again included for reader convenience.

The reaction rate matrix, derived from measured data for the twelve reactions previously listed and used to generate the flux-spectral parameter matrices, is given in Appendix B in Tables B-1 through B-20, as a function of axial traverse at each radius from the reactor core centerline. Three additional reactions that were used to develop reaction rate matrices, but were not used in generating the flux-spectral parameter matrices, are given in Appendix C and listed in Tables C-1 through C-9. These are included for reference purposes because of the importance of the reactions.

4.0 RECOMMENDATIONS

Frequently, characterization of the neutron environment and exposure for irradiation effects evaluations has been incomplete, inexact and, at times, inconsistent among laboratories. The result can be improper or erroneous correlation of the irradiation effects data. All too frequently, property changes are reported with their only accompanying data being neutron fluence greater than 0.1 MeV. For other correlations it is impossible to determine parameters such as displacements/atom, unless those radial and axial reactor locations of the specimen are specified for which flux-spectral information is available or can be derived. Consequently, the Reactor Materials Dosimetry Center (RMDC) is recommending that all cladding and structural irradiation effects data be reported with the following minimum information:

- Charge and discharge date or reactor run number of the irradiation experiment
- Subassembly number and pin identification
- Radial and axial location of the specimen relative to core center-line and midplane
- Total neutron fluence
- Total neutron flux
- Fraction of flux with $E > 0.1$ MeV
- Fraction of flux with $E > 1.0$ MeV
- Mean neutron energy, $\bar{E}$
- Displacement per atom (dpa) based upon ASTM recommendations^(20,21)

The last six items on this list can be routinely provided to experimenters by the RMDC. This list provides those parameters commonly used to characterize the neutron environment and, in addition, provides sufficient information to calculate values for other parameters.

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A P P E N D I X   A

VARIATION OF THE NEUTRON PARAMETERS IN STRUCTURAL SUBASSEMBLIES AS A FUNCTION OF POSITION IN EBR-II DURING 75D

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TABLE A-1

TOTAL NEUTRON FLUX ($E > 10^{-10}$ MeV) IN NOMINAL REACTOR - EBR-II, RUN 75D

R= Z=	5.20	13.00	17.30	19.80	25.00	28.20	30.40	33.40	34.50	38.30	39.20
-70.00	2.43E+14	2.34E+14	2.09E+14	2.11E+14	1.94E+14	1.81E+14	1.77E+14	1.35E+14	1.31E+14	1.16E+14	1.18E+14
-65.00	3.03E+14	2.82E+14	2.64E+14	2.64E+14	2.40E+14	2.25E+14	2.12E+14	1.76E+14	1.69E+14	1.50E+14	1.54E+14
-60.00	3.83E+14	3.53E+14	3.38E+14	3.33E+14	2.88E+14	2.75E+14	2.49E+14	2.23E+14	2.07E+14	1.89E+14	1.92E+14
-55.00	4.66E+14	4.33E+14	4.13E+14	4.08E+14	3.55E+14	3.32E+14	3.07E+14	2.74E+14	2.59E+14	2.34E+14	2.36E+14
-50.00	5.66E+14	5.25E+14	5.01E+14	4.95E+14	4.28E+14	3.99E+14	3.68E+14	3.30E+14	3.16E+14	2.86E+14	2.90E+14
-45.00	6.88E+14	6.34E+14	6.07E+14	5.98E+14	5.31E+14	4.75E+14	4.38E+14	3.95E+14	3.81E+14	3.46E+14	3.53E+14
-40.00	8.24E+14	7.68E+14	7.35E+14	7.23E+14	6.34E+14	5.54E+14	5.19E+14	4.73E+14	4.53E+14	4.12E+14	4.22E+14
-35.00	9.91E+14	9.07E+14	8.60E+14	8.46E+14	7.50E+14	6.67E+14	6.15E+14	5.55E+14	5.39E+14	4.87E+14	5.04E+14
-30.00	1.14E+15	1.02E+15	1.01E+15	9.93E+14	8.30E+14	7.62E+14	7.18E+14	6.31E+14	6.24E+14	5.53E+14	5.96E+14
-25.00	1.40E+15	1.30E+15	1.31E+15	1.36E+15	1.11E+15	9.79E+14	9.19E+14	7.97E+14	7.82E+14	6.78E+14	7.08E+14
-20.00	1.67E+15	1.57E+15	1.56E+15	1.57E+15	1.36E+15	1.21E+15	1.13E+15	9.94E+14	9.22E+14	7.88E+14	7.89E+14
-18.00	1.81E+15	1.70E+15	1.67E+15	1.65E+15	1.48E+15	1.32E+15	1.24E+15	1.09E+15	1.00E+15	8.57E+14	8.41E+14
-16.00	1.96E+15	1.82E+15	1.77E+15	1.74E+15	1.58E+15	1.44E+15	1.33E+15	1.20E+15	1.09E+15	9.23E+14	9.02E+14
-14.00	2.09E+15	1.95E+15	1.86E+15	1.82E+15	1.65E+15	1.51E+15	1.37E+15	1.24E+15	1.16E+15	9.74E+14	9.40E+14
-12.00	2.17E+15	2.04E+15	1.96E+15	1.93E+15	1.71E+15	1.44E+15	1.43E+15	1.28E+15	1.19E+15	1.00E+15	9.52E+14
-10.00	2.28E+15	2.14E+15	2.08E+15	2.05E+15	1.79E+15	1.61E+15	1.50E+15	1.33E+15	1.23E+15	1.04E+15	9.84E+14
-8.00	2.37E+15	2.23E+15	2.14E+15	2.12E+15	1.87E+15	1.66E+15	1.53E+15	1.36E+15	1.26E+15	1.06E+15	1.01E+15
-6.00	2.42E+15	2.26E+15	2.18E+15	2.13E+15	1.91E+15	1.69E+15	1.55E+15	1.37E+15	1.28E+15	1.07E+15	1.02E+15
-4.00	2.45E+15	2.28E+15	2.21E+15	2.14E+15	1.93E+15	1.69E+15	1.55E+15	1.38E+15	1.28E+15	1.07E+15	1.02E+15
-2.00	2.49E+15	2.31E+15	2.23E+15	2.13E+15	1.95E+15	1.70E+15	1.55E+15	1.38E+15	1.28E+15	1.08E+15	1.02E+15
0.00	2.49E+15	2.32E+15	2.23E+15	2.13E+15	1.96E+15	1.70E+15	1.55E+15	1.38E+15	1.29E+15	1.07E+15	1.01E+15
2.00	2.45E+15	2.30E+15	2.21E+15	2.10E+15	1.95E+15	1.69E+15	1.53E+15	1.37E+15	1.28E+15	1.06E+15	1.01E+15
4.00	2.41E+15	2.24E+15	2.16E+15	2.05E+15	1.92E+15	1.65E+15	1.51E+15	1.36E+15	1.27E+15	1.05E+15	9.95E+14
6.00	2.32E+15	2.16E+15	2.10E+15	1.99E+15	1.88E+15	1.63E+15	1.49E+15	1.34E+15	1.26E+15	1.03E+15	9.90E+14
8.00	2.24E+15	2.08E+15	2.04E+15	1.90E+15	1.81E+15	1.57E+15	1.44E+15	1.31E+15	1.24E+15	1.01E+15	9.69E+14
10.00	2.17E+15	2.00E+15	1.97E+15	1.85E+15	1.71E+15	1.51E+15	1.40E+15	1.27E+15	1.21E+15	9.39E+14	9.38E+14
12.00	2.07E+15	1.90E+15	1.86E+15	1.76E+15	1.60E+15	1.41E+15	1.32E+15	1.23E+15	1.16E+15	9.54E+14	9.05E+14
14.00	1.95E+15	1.79E+15	1.74E+15	1.66E+15	1.51E+15	1.33E+15	1.27E+15	1.17E+15	1.12E+15	9.35E+14	8.93E+14
16.00	1.81E+15	1.67E+15	1.61E+15	1.55E+15	1.41E+15	1.25E+15	1.22E+15	1.10E+15	1.05E+15	8.94E+14	8.38E+14
18.00	1.70E+15	1.56E+15	1.50E+15	1.46E+15	1.30E+15	1.18E+15	1.17E+15	1.01E+15	9.70E+14	8.35E+14	7.84E+14
20.00	1.62E+15	1.47E+15	1.41E+15	1.38E+15	1.23E+15	1.12E+15	1.14E+15	9.62E+14	9.25E+14	8.02E+14	7.56E+14
25.00	1.33E+15	1.25E+15	1.16E+15	1.16E+15	1.04E+15	9.47E+14	9.11E+14	7.95E+14	7.66E+14	6.63E+14	6.58E+14
30.00	1.13E+15	1.07E+15	9.99E+14	1.05E+15	9.19E+14	8.38E+14	7.68E+14	6.80E+14	6.60E+14	5.68E+14	5.65E+14
35.00	9.99E+14	9.44E+14	9.01E+14	9.58E+14	8.28E+14	7.49E+14	6.71E+14	6.02E+14	5.75E+14	4.99E+14	4.91E+14
40.00	8.59E+14	8.10E+14	7.92E+14	8.46E+14	7.15E+14	6.36E+14	5.53E+14	4.94E+14	4.77E+14	4.13E+14	4.15E+14
45.00	7.47E+14	6.96E+14	6.93E+14	7.53E+14	6.17E+14	5.42E+14	4.72E+14	4.26E+14	4.02E+14	3.51E+14	3.49E+14
50.00	6.32E+14	5.98E+14	5.97E+14	6.60E+14	5.19E+14	4.45E+14	3.92E+14	3.51E+14	3.36E+14	2.93E+14	2.93E+14
55.00	5.36E+14	5.11E+14	5.05E+14	5.55E+14	4.18E+14	3.59E+14	3.21E+14	2.88E+14	2.78E+14	2.42E+14	2.41E+14
60.00	4.52E+14	4.26E+14	4.04E+14	4.05E+14	3.20E+14	2.85E+14	2.61E+14	2.35E+14	2.28E+14	1.98E+14	1.96E+14
65.00	3.86E+14	3.56E+14	3.40E+14	3.29E+14	2.62E+14	2.38E+14	2.18E+14	1.92E+14	1.99E+14	1.64E+14	1.63E+14
70.00	3.27E+14	2.91E+14	2.75E+14	2.59E+14	2.08E+14	1.94E+14	1.79E+14	1.57E+14	1.53E+14	1.35E+14	1.31E+14
75.00	2.78E+14	2.40E+14	2.28E+14	2.11E+14	1.71E+14	1.61E+14	1.48E+14	1.29E+14	1.25E+14	1.12E+14	1.07E+14

TABLE A-2
TOTAL NEUTRON FLUX ($E > 10^{-10}$ MeV) NEAR A HIGH WORTH CONTROL ROD - EBR-II, RUN 75D

R= Z=	5.20	13.00	17.30	19.80	25.00	28.20	30.40	33.40	34.50	38.30	39.20
-70.00	2.43E+14	2.34E+14	2.09E+14	2.08E+14	1.94E+14	1.81E+14	1.77E+14	1.35E+14	1.31E+14	1.16E+14	1.18E+14
-65.00	3.03E+14	2.82E+14	2.61E+14	2.60E+14	2.40E+14	2.25E+14	2.12E+14	1.76E+14	1.69E+14	1.50E+14	1.54E+14
-60.00	3.83E+14	3.53E+14	3.38E+14	3.31E+14	2.88E+14	2.75E+14	2.49E+14	2.23E+14	2.07E+14	1.89E+14	1.92E+14
-55.00	4.66E+14	4.33E+14	4.13E+14	4.07E+14	3.55E+14	3.32E+14	3.07E+14	2.74E+14	2.59E+14	2.34E+14	2.36E+14
-50.00	5.66E+14	5.25E+14	5.01E+14	4.93E+14	4.28E+14	3.99E+14	3.68E+14	3.30E+14	3.16E+14	2.86E+14	2.90E+14
-45.00	6.88E+14	6.34E+14	6.06E+14	5.97E+14	5.31E+14	4.75E+14	4.38E+14	3.95E+14	3.81E+14	3.46E+14	3.53E+14
-40.00	8.24E+14	7.68E+14	7.39E+14	7.22E+14	6.34E+14	5.54E+14	5.19E+14	4.73E+14	4.53E+14	4.12E+14	4.22E+14
-35.00	9.91E+14	9.07E+14	8.60E+14	8.42E+14	7.50E+14	6.67E+14	6.15E+14	5.55E+14	5.39E+14	4.87E+14	5.04E+14
-30.00	1.14E+15	1.02E+15	1.01E+15	9.57E+14	8.30E+14	7.62E+14	7.18E+14	6.31E+14	6.24E+14	5.53E+14	5.96E+14
-25.00	1.40E+15	1.30E+15	1.31E+15	1.34E+15	1.11E+15	9.79E+14	9.19E+14	7.97E+14	7.82E+14	6.78E+14	7.08E+14
-20.00	1.67E+15	1.57E+15	1.56E+15	1.55E+15	1.36E+15	1.21E+15	1.13E+15	9.94E+14	9.22E+14	7.88E+14	7.89E+14
-18.00	1.81E+15	1.70E+15	1.67E+15	1.64E+15	1.48E+15	1.32E+15	1.24E+15	1.09E+15	1.00E+15	8.57E+14	8.41E+14
-16.00	1.96E+15	1.82E+15	1.77E+15	1.73E+15	1.58E+15	1.44E+15	1.33E+15	1.20E+15	1.09E+15	9.23E+14	9.02E+14
-14.00	2.09E+15	1.95E+15	1.86E+15	1.80E+15	1.65E+15	1.51E+15	1.37E+15	1.24E+15	1.16E+15	9.74E+14	9.40E+14
-12.00	2.17E+15	2.04E+15	1.96E+15	1.88E+15	1.71E+15	1.44E+15	1.43E+15	1.28E+15	1.19E+15	1.00E+15	9.52E+14
-10.00	2.28E+15	2.14E+15	2.08E+15	2.00E+15	1.79E+15	1.61E+15	1.50E+15	1.33E+15	1.23E+15	1.04E+15	9.84E+14
-8.00	2.37E+15	2.23E+15	2.14E+15	2.07E+15	1.87E+15	1.66E+15	1.53E+15	1.36E+15	1.26E+15	1.06E+15	1.01E+15
-6.00	2.42E+15	2.26E+15	2.18E+15	2.10E+15	1.91E+15	1.69E+15	1.55E+15	1.37E+15	1.28E+15	1.07E+15	1.02E+15
-4.00	2.45E+15	2.28E+15	2.21E+15	2.11E+15	1.93E+15	1.69E+15	1.55E+15	1.39E+15	1.28E+15	1.07E+15	1.02E+15
-2.00	2.49E+15	2.31E+15	2.23E+15	2.12E+15	1.95E+15	1.70E+15	1.55E+15	1.38E+15	1.28E+15	1.08E+15	1.02E+15
0.00	2.49E+15	2.32E+15	2.23E+15	2.11E+15	1.96E+15	1.70E+15	1.55E+15	1.38E+15	1.29E+15	1.07E+15	1.01E+15
2.00	2.45E+15	2.30E+15	2.21E+15	2.08E+15	1.95E+15	1.69E+15	1.53E+15	1.37E+15	1.28E+15	1.06E+15	1.01E+15
4.00	2.41E+15	2.24E+15	2.16E+15	2.04E+15	1.92E+15	1.65E+15	1.51E+15	1.36E+15	1.27E+15	1.05E+15	9.95E+14
6.00	2.32E+15	2.16E+15	2.10E+15	1.99E+15	1.88E+15	1.63E+15	1.49E+15	1.34E+15	1.26E+15	1.03E+15	9.90E+14
8.00	2.24E+15	2.08E+15	2.04E+15	1.92E+15	1.81E+15	1.57E+15	1.44E+15	1.31E+15	1.24E+15	1.01E+15	9.69E+14
10.00	2.17E+15	2.00E+15	1.97E+15	1.84E+15	1.71E+15	1.51E+15	1.40E+15	1.27E+15	1.21E+15	9.89E+14	9.38E+14
12.00	2.07E+15	1.90E+15	1.86E+15	1.73E+15	1.60E+15	1.41E+15	1.32E+15	1.23E+15	1.16E+15	9.54E+14	9.05E+14
14.00	1.95E+15	1.79E+15	1.73E+15	1.64E+15	1.51E+15	1.33E+15	1.27E+15	1.17E+15	1.12E+15	9.35E+14	8.93E+14
16.00	1.81E+15	1.67E+15	1.58E+15	1.54E+15	1.41E+15	1.25E+15	1.22E+15	1.10E+15	1.05E+15	8.94E+14	8.38E+14
18.00	1.70E+15	1.56E+15	1.48E+15	1.44E+15	1.30E+15	1.18E+15	1.17E+15	1.01E+15	9.70E+14	8.35E+14	7.84E+14
20.00	1.62E+15	1.47E+15	1.41E+15	1.37E+15	1.23E+15	1.12E+15	1.14E+15	9.62E+14	9.25E+14	8.02E+14	7.56E+14
25.00	1.33E+15	1.25E+15	1.18E+15	1.10E+15	1.04E+15	9.47E+14	9.11E+14	7.95E+14	7.66E+14	6.63E+14	6.58E+14
30.00	1.13E+15	1.07E+15	1.04E+15	9.08E+14	9.19E+14	8.38E+14	7.68E+14	6.80E+14	6.60E+14	5.68E+14	5.65E+14
35.00	9.99E+14	9.44E+14	9.37E+14	7.73E+14	8.28E+14	7.49E+14	6.71E+14	6.02E+14	5.75E+14	4.99E+14	4.91E+14
40.00	8.59E+14	8.10E+14	8.22E+14	6.71E+14	7.15E+14	6.36E+14	5.53E+14	4.94E+14	4.77E+14	4.13E+14	4.15E+14
45.00	7.47E+14	6.96E+14	7.09E+14	5.92E+14	6.17E+14	5.42E+14	4.72E+14	4.26E+14	4.02E+14	3.51E+14	3.49E+14
50.00	6.32E+14	5.98E+14	6.13E+14	5.19E+14	5.19E+14	4.45E+14	3.92E+14	3.51E+14	3.36E+14	2.93E+14	2.93E+14
55.00	5.36E+14	5.11E+14	5.15E+14	4.37E+14	4.18E+14	3.59E+14	3.21E+14	2.88E+14	2.78E+14	2.42E+14	2.41E+14
60.00	4.52E+14	4.26E+14	3.92E+14	3.41E+14	3.20E+14	2.85E+14	2.61E+14	2.35E+14	2.28E+14	1.98E+14	1.96E+14
65.00	3.86E+14	3.56E+14	3.29E+14	2.85E+14	2.62E+14	2.38E+14	2.18E+14	1.92E+14	1.99E+14	1.64E+14	1.63E+14
70.00	3.27E+14	2.91E+14	2.63E+14	2.22E+14	2.08E+14	1.94E+14	1.79E+14	1.57E+14	1.53E+14	1.35E+14	1.31E+14
75.00	2.78E+14	2.40E+14	2.18E+14	1.82E+14	1.71E+14	1.61E+14	1.48E+14	1.29E+14	1.25E+14	1.12E+14	1.07E+14

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TABLE A-3
TOTAL NEUTRON FLUX ($E > 10^{-10}$ MeV) NEAR FUEL IN ROW 7 - EBR-II, RUN 75D

R= Z=	5.20	13.00	17.30	19.80	25.00	28.20	30.40	33.40	34.50	38.30	39.20
-70.00	2.43E+14	2.34E+14	2.09E+14	2.11E+14	1.94E+14	1.80E+14	1.77E+14	1.36E+14	1.33E+14	1.16E+14	1.18E+14
-65.00	3.03E+14	2.82E+14	2.64E+14	2.64E+14	2.40E+14	2.14E+14	2.12E+14	1.75E+14	1.72E+14	1.44E+14	1.54E+14
-60.00	3.83E+14	3.53E+14	3.38E+14	3.33E+14	2.88E+14	2.75E+14	2.49E+14	2.23E+14	2.07E+14	1.89E+14	1.92E+14
-55.00	4.66E+14	4.33E+14	4.13E+14	4.08E+14	3.55E+14	3.31E+14	3.07E+14	2.73E+14	2.62E+14	2.33E+14	2.36E+14
-50.00	5.66E+14	5.25E+14	5.01E+14	4.95E+14	4.28E+14	3.97E+14	3.68E+14	3.31E+14	3.19E+14	2.85E+14	2.90E+14
-45.00	6.88E+14	6.34E+14	6.07E+14	5.98E+14	5.31E+14	4.75E+14	4.38E+14	3.95E+14	3.82E+14	3.46E+14	3.54E+14
-40.00	8.24E+14	7.68E+14	7.35E+14	7.23E+14	6.34E+14	5.54E+14	5.19E+14	4.72E+14	4.54E+14	4.13E+14	4.20E+14
-35.00	9.91E+14	9.07E+14	8.60E+14	8.46E+14	7.54E+14	6.66E+14	6.06E+14	5.56E+14	5.37E+14	4.82E+14	4.98E+14
-30.00	1.14E+15	1.02E+15	1.01E+15	9.93E+14	8.45E+14	7.62E+14	7.05E+14	6.38E+14	6.16E+14	5.54E+14	5.66E+14
-25.00	1.40E+15	1.30E+15	1.31E+15	1.36E+15	1.15E+15	1.00E+15	9.36E+14	8.10E+14	7.70E+14	6.62E+14	6.49E+14
-20.00	1.67E+15	1.57E+15	1.56E+15	1.57E+15	1.41E+15	1.29E+15	1.19E+15	1.02E+15	9.48E+14	7.59E+14	7.33E+14
-18.00	1.81E+15	1.70E+15	1.67E+15	1.65E+15	1.53E+15	1.43E+15	1.32E+15	1.12E+15	1.04E+15	8.57E+14	8.02E+14
-16.00	1.96E+15	1.82E+15	1.77E+15	1.74E+15	1.65E+15	1.56E+15	1.46E+15	1.25E+15	1.13E+15	9.30E+14	8.45E+14
-14.00	2.09E+15	1.95E+15	1.86E+15	1.82E+15	1.73E+15	1.65E+15	1.55E+15	1.32E+15	1.21E+15	9.96E+14	9.00E+14
-12.00	2.17E+15	2.04E+15	1.96E+15	1.93E+15	1.80E+15	1.56E+15	1.63E+15	1.38E+15	1.25E+15	1.01E+15	9.28E+14
-10.00	2.28E+15	2.14E+15	2.08E+15	2.05E+15	1.88E+15	1.76E+15	1.69E+15	1.44E+15	1.30E+15	1.03E+15	9.91E+14
-8.00	2.37E+15	2.23E+15	2.14E+15	2.12E+15	1.92E+15	1.81E+15	1.73E+15	1.48E+15	1.33E+15	1.05E+15	1.02E+15
-6.00	2.42E+15	2.26E+15	2.18E+15	2.13E+15	1.97E+15	1.85E+15	1.75E+15	1.50E+15	1.35E+15	1.06E+15	1.04E+15
-4.00	2.45E+15	2.28E+15	2.21E+15	2.14E+15	2.00E+15	1.87E+15	1.76E+15	1.50E+15	1.36E+15	1.06E+15	1.04E+15
-2.00	2.49E+15	2.31E+15	2.23E+15	2.13E+15	2.03E+15	1.90E+15	1.78E+15	1.51E+15	1.36E+15	1.06E+15	1.05E+15
0.00	2.49E+15	2.32E+15	2.23E+15	2.13E+15	2.04E+15	1.91E+15	1.79E+15	1.51E+15	1.36E+15	1.06E+15	1.01E+15
2.00	2.45E+15	2.30E+15	2.21E+15	2.10E+15	2.02E+15	1.89E+15	1.77E+15	1.51E+15	1.35E+15	1.05E+15	1.03E+15
4.00	2.41E+15	2.24E+15	2.16E+15	2.05E+15	1.98E+15	1.84E+15	1.74E+15	1.49E+15	1.33E+15	1.05E+15	1.03E+15
6.00	2.32E+15	2.16E+15	2.10E+15	1.99E+15	1.93E+15	1.82E+15	1.69E+15	1.47E+15	1.31E+15	1.04E+15	1.02E+15
8.00	2.24E+15	2.08E+15	2.04E+15	1.90E+15	1.86E+15	1.75E+15	1.64E+15	1.45E+15	1.28E+15	1.04E+15	9.94E+14
10.00	2.17E+15	2.00E+15	1.97E+15	1.85E+15	1.80E+15	1.68E+15	1.58E+15	1.41E+15	1.24E+15	1.01E+15	9.59E+14
12.00	2.07E+15	1.90E+15	1.86E+15	1.76E+15	1.68E+15	1.57E+15	1.48E+15	1.33E+15	1.18E+15	9.71E+14	9.21E+14
14.00	1.95E+15	1.79E+15	1.74E+15	1.66E+15	1.59E+15	1.47E+15	1.39E+15	1.26E+15	1.13E+15	9.39E+14	8.83E+14
16.00	1.81E+15	1.67E+15	1.61E+15	1.55E+15	1.47E+15	1.37E+15	1.30E+15	1.15E+15	1.03E+15	8.81E+14	8.25E+14
18.00	1.70E+15	1.56E+15	1.50E+15	1.46E+15	1.37E+15	1.24E+15	1.18E+15	1.03E+15	9.41E+14	8.20E+14	7.63E+14
20.00	1.62E+15	1.47E+15	1.41E+15	1.38E+15	1.28E+15	1.19E+15	1.11E+15	9.66E+14	9.10E+14	7.82E+14	7.39E+14
25.00	1.33E+15	1.25E+15	1.16E+15	1.16E+15	1.07E+15	9.62E+14	8.84E+14	7.91E+14	7.47E+14	6.38E+14	6.23E+14
30.00	1.13E+15	1.07E+15	9.99E+14	1.05E+15	9.27E+14	8.18E+14	7.51E+14	6.88E+14	6.63E+14	5.62E+14	5.44E+14
35.00	9.99E+14	9.44E+14	9.01E+14	9.58E+14	8.30E+14	7.20E+14	6.66E+14	5.99E+14	5.86E+14	4.98E+14	4.75E+14
40.00	8.59E+14	8.10E+14	7.92E+14	8.46E+14	7.15E+14	6.02E+14	5.53E+14	4.95E+14	4.98E+14	4.13E+14	4.00E+14
45.00	7.47E+14	6.96E+14	6.93E+14	7.53E+14	6.17E+14	5.05E+14	4.72E+14	4.25E+14	4.24E+14	3.49E+14	3.44E+14
50.00	6.32E+14	5.98E+14	5.97E+14	6.60E+14	5.19E+14	4.17E+14	3.92E+14	3.51E+14	3.53E+14	2.92E+14	2.90E+14
55.00	5.36E+14	5.11E+14	5.05E+14	5.55E+14	4.18E+14	3.32E+14	3.21E+14	2.88E+14	2.93E+14	2.42E+14	2.40E+14
60.00	4.52E+14	4.26E+14	4.04E+14	4.05E+14	3.20E+14	2.73E+14	2.61E+14	2.33E+14	2.20E+14	2.02E+14	1.96E+14
65.00	3.86E+14	3.56E+14	3.40E+14	3.29E+14	2.62E+14	2.29E+14	2.18E+14	1.92E+14	2.00E+14	1.64E+14	1.63E+14
70.00	3.27E+14	2.91E+14	2.75E+14	2.59E+14	2.08E+14	1.87E+14	1.79E+14	1.54E+14	1.64E+14	1.35E+14	1.31E+14
75.00	2.78E+14	2.40E+14	2.28E+14	2.11E+14	1.71E+14	1.57E+14	1.46E+14	1.27E+14	1.35E+14	1.12E+14	1.07E+14

TABLE A-4

NEUTRON FLUX ($E > 0.1$ MeV) IN NOMINAL REACTOR - EBR-II, RUN 75D

R=	5.20	13.00	17.30	19.80	25.00	29.20	30.40	33.40	34.50	38.30	39.20
Z=											
-70.00	8.63E+13	8.17E+13	7.11E+13	6.99E+13	5.88E+13	5.87E+13	5.78E+13	4.50E+13	4.12E+13	3.70E+13	3.62E+13
-65.00	1.13E+14	1.04E+14	9.50E+13	9.51E+13	8.07E+13	7.85E+13	7.30E+13	6.06E+13	5.65E+13	4.97E+13	5.03E+13
-60.00	1.52E+14	1.37E+14	1.28E+14	1.26E+14	1.07E+14	1.02E+14	9.11E+13	8.02E+13	7.35E+13	6.54E+13	6.68E+13
-55.00	1.96E+14	1.80E+14	1.67E+14	1.68E+14	1.44E+14	1.32E+14	1.19E+14	1.04E+14	9.89E+13	8.58E+13	8.80E+13
-50.00	2.53E+14	2.33E+14	2.16E+14	2.18E+14	1.88E+14	1.72E+14	1.53E+14	1.34E+14	1.30E+14	1.12E+14	1.16E+14
-45.00	3.30E+14	3.00E+14	2.79E+14	2.83E+14	2.52E+14	2.21E+14	1.96E+14	1.71E+14	1.66E+14	1.44E+14	1.50E+14
-40.00	4.24E+14	3.90E+14	3.67E+14	3.69E+14	3.23E+14	2.80E+14	2.49E+14	2.21E+14	2.11E+14	1.84E+14	1.89E+14
-35.00	5.56E+14	4.97E+14	4.59E+14	4.56E+14	4.13E+14	3.72E+14	3.23E+14	2.80E+14	2.74E+14	2.36E+14	2.49E+14
-30.00	7.05E+14	6.09E+14	5.95E+14	5.95E+14	5.01E+14	4.67E+14	4.15E+14	3.47E+14	3.47E+14	2.88E+14	3.08E+14
-25.00	9.67E+14	8.70E+14	8.76E+14	9.11E+14	7.42E+14	6.47E+14	5.83E+14	4.74E+14	4.67E+14	3.82E+14	3.92E+14
-20.00	1.29E+15	1.18E+15	1.17E+15	1.16E+15	1.01E+15	9.68E+14	7.77E+14	6.39E+14	5.85E+14	4.76E+14	4.59E+14
-18.00	1.44E+15	1.32E+15	1.29E+15	1.26E+15	1.12E+15	9.76E+14	8.82E+14	7.20E+14	6.48E+14	5.31E+14	5.05E+14
-16.00	1.60E+15	1.46E+15	1.41E+15	1.37E+15	1.24E+15	1.09E+15	9.64E+14	8.04E+14	7.14E+14	5.83E+14	5.52E+14
-14.00	1.73E+15	1.60E+15	1.51E+15	1.47E+15	1.32E+15	1.18E+15	1.01E+15	8.47E+14	7.74E+14	6.26E+14	5.87E+14
-12.00	1.83E+15	1.70E+15	1.63E+15	1.59E+15	1.38E+15	1.09E+15	1.07E+15	8.87E+14	8.11E+14	6.49E+14	6.06E+14
-10.00	1.96E+15	1.81E+15	1.76E+15	1.74E+15	1.48E+15	1.30E+15	1.15E+15	9.39E+14	8.57E+14	6.81E+14	6.37E+14
-8.00	2.07E+15	1.91E+15	1.85E+15	1.81E+15	1.56E+15	1.35E+15	1.18E+15	9.75E+14	8.86E+14	7.00E+14	6.58E+14
-6.00	2.13E+15	1.96E+15	1.90E+15	1.84E+15	1.61E+15	1.37E+15	1.21E+15	9.96E+14	9.10E+14	7.14E+14	6.70E+14
-4.00	2.15E+15	1.99E+15	1.93E+15	1.85E+15	1.64E+15	1.38E+15	1.21E+15	1.01E+15	9.21E+14	7.17E+14	6.76E+14
-2.00	2.18E+15	2.01E+15	1.95E+15	1.85E+15	1.65E+15	1.39E+15	1.21E+15	1.01E+15	9.24E+14	7.29E+14	6.80E+14
0.00	2.18E+15	2.02E+15	1.95E+15	1.84E+15	1.66E+15	1.39E+15	1.22E+15	1.01E+15	9.29E+14	7.24E+14	6.76E+14
2.00	2.14E+15	2.00E+15	1.92E+15	1.82E+15	1.66E+15	1.37E+15	1.20E+15	1.01E+15	9.24E+14	7.17E+14	6.71E+14
4.00	2.10E+15	1.94E+15	1.88E+15	1.76E+15	1.63E+15	1.34E+15	1.19E+15	9.96E+14	9.20E+14	7.03E+14	6.63E+14
6.00	2.03E+15	1.85E+15	1.83E+15	1.70E+15	1.59E+15	1.32E+15	1.16E+15	9.86E+14	9.13E+14	6.92E+14	6.60E+14
8.00	1.97E+15	1.76E+15	1.76E+15	1.62E+15	1.52E+15	1.27E+15	1.12E+15	9.56E+14	8.91E+14	6.75E+14	6.40E+14
10.00	1.87E+15	1.67E+15	1.69E+15	1.55E+15	1.42E+15	1.21E+15	1.07E+15	9.21E+14	8.62E+14	6.53E+14	6.11E+14
12.00	1.75E+15	1.55E+15	1.55E+15	1.45E+15	1.30E+15	1.10E+15	9.83E+14	8.75E+14	8.19E+14	6.22E+14	5.82E+14
14.00	1.62E+15	1.44E+15	1.43E+15	1.35E+15	1.21E+15	1.02E+15	9.30E+14	8.26E+14	7.76E+14	6.05E+14	5.66E+14
16.00	1.46E+15	1.30E+15	1.28E+15	1.23E+15	1.10E+15	9.34E+14	8.75E+14	7.50E+14	7.08E+14	5.68E+14	5.18E+14
18.00	1.32E+15	1.19E+15	1.15E+15	1.12E+15	9.90E+14	9.50E+14	8.20E+14	6.69E+14	6.33E+14	5.13E+14	4.70E+14
20.00	1.22E+15	1.10E+15	1.05E+15	1.02E+15	9.21E+14	7.85E+14	7.76E+14	6.23E+14	5.86E+14	4.83E+14	4.41E+14
25.00	8.99E+14	8.65E+14	7.74E+14	7.74E+14	7.06E+14	6.03E+14	5.77E+14	4.76E+14	4.48E+14	3.69E+14	3.56E+14
30.00	6.92E+14	6.75E+14	6.05E+14	6.50E+14	5.69E+14	4.89E+14	4.49E+14	3.78E+14	3.60E+14	2.95E+14	2.82E+14
35.00	5.56E+14	5.43E+14	5.06E+14	5.43E+14	4.71E+14	4.08E+14	3.72E+14	3.09E+14	2.92E+14	2.39E+14	2.26E+14
40.00	4.37E+14	4.19E+14	4.05E+14	4.34E+14	3.71E+14	3.18E+14	2.81E+14	2.32E+14	2.24E+14	1.86E+14	1.77E+14
45.00	3.51E+14	3.27E+14	3.24E+14	3.48E+14	2.93E+14	2.50E+14	2.20E+14	1.87E+14	1.76E+14	1.47E+14	1.44E+14
50.00	2.73E+14	2.54E+14	2.54E+14	2.76E+14	2.26E+14	1.88E+14	1.66E+14	1.43E+14	1.36E+14	1.16E+14	1.14E+14
55.00	2.12E+14	2.02E+14	1.98E+14	2.12E+14	1.65E+14	1.40E+14	1.25E+14	1.11E+14	1.06E+14	9.11E+13	9.07E+13
60.00	1.65E+14	1.55E+14	1.47E+14	1.49E+14	1.16E+14	1.01E+14	9.54E+13	8.49E+13	8.13E+13	7.10E+13	7.03E+13
65.00	1.30E+14	1.19E+14	1.13E+14	1.12E+14	8.62E+13	7.74E+13	7.30E+13	6.51E+13	6.09E+13	5.54E+13	5.56E+13
70.00	1.00E+14	8.91E+13	8.41E+13	8.13E+13	6.11E+13	5.70E+13	5.46E+13	5.03E+13	4.76E+13	4.39E+13	4.27E+13
75.00	7.73E+13	6.58E+13	6.39E+13	5.95E+13	4.39E+13	4.23E+13	4.08E+13	3.83E+13	3.60E+13	3.39E+13	3.30E+13

TABLE A-5

NEUTRON FLUX ($E > 0.1$ MeV) NEAR A HIGH WORTH CONTROL ROD - EBR-II, RUN 75D

R=	5.20	13.00	17.30	19.80	25.00	28.20	30.40	33.40	34.50	38.30	39.20
Z=											
-70.00	8.63E+13	8.17E+13	7.11E+13	6.95E+13	5.88E+13	5.87E+13	5.78E+13	4.50E+13	4.12E+13	3.70E+13	3.62E+13
-65.00	1.13E+14	1.04E+14	9.35E+13	9.47E+13	8.07E+13	7.85E+13	7.30E+13	6.06E+13	5.65E+13	4.97E+13	5.03E+13
-60.00	1.52E+14	1.37E+14	1.28E+14	1.26E+14	1.07E+14	1.02E+14	9.11E+13	8.02E+13	7.35E+13	6.54E+13	6.68E+13
-55.00	1.96E+14	1.80E+14	1.67E+14	1.68E+14	1.44E+14	1.32E+14	1.19E+14	1.04E+14	9.89E+13	8.58E+13	8.80E+13
-50.00	2.53E+14	2.33E+14	2.16E+14	2.18E+14	1.88E+14	1.72E+14	1.53E+14	1.34E+14	1.30E+14	1.12E+14	1.16E+14
-45.00	3.30E+14	3.00E+14	2.78E+14	2.83E+14	2.52E+14	2.21E+14	1.96E+14	1.71E+14	1.66E+14	1.44E+14	1.50E+14
-40.00	4.24E+14	3.90E+14	3.70E+14	3.69E+14	3.23E+14	2.80E+14	2.49E+14	2.21E+14	2.11E+14	1.84E+14	1.89E+14
-35.00	5.56E+14	4.97E+14	4.59E+14	4.55E+14	4.13E+14	3.72E+14	3.23E+14	2.80E+14	2.74E+14	2.36E+14	2.49E+14
-30.00	7.05E+14	6.09E+14	5.95E+14	5.77E+14	5.01E+14	4.67E+14	4.15E+14	3.47E+14	3.47E+14	2.88E+14	3.08E+14
-25.00	9.67E+14	8.70E+14	8.76E+14	9.03E+14	7.42E+14	5.47E+14	5.83E+14	4.74E+14	4.67E+14	3.82E+14	3.92E+14
-20.00	1.29E+15	1.18E+15	1.17E+15	1.15E+15	1.01E+15	8.68E+14	7.77E+14	6.39E+14	5.85E+14	4.76E+14	4.59E+14
-18.00	1.44E+15	1.32E+15	1.29E+15	1.25E+15	1.12E+15	9.76E+14	8.82E+14	7.20E+14	6.48E+14	5.31E+14	5.05E+14
-16.00	1.60E+15	1.46E+15	1.41E+15	1.36E+15	1.24E+15	1.09E+15	9.64E+14	8.04E+14	7.14E+14	5.83E+14	5.52E+14
-14.00	1.73E+15	1.60E+15	1.51E+15	1.46E+15	1.32E+15	1.18E+15	1.01E+15	8.47E+14	7.74E+14	6.26E+14	5.87E+14
-12.00	1.83E+15	1.70E+15	1.63E+15	1.55E+15	1.38E+15	1.09E+15	1.07E+15	8.87E+14	8.11E+14	6.49E+14	6.06E+14
-10.00	1.96E+15	1.81E+15	1.76E+15	1.68E+15	1.48E+15	1.30E+15	1.15E+15	9.39E+14	8.57E+14	6.81E+14	6.37E+14
-8.00	2.07E+15	1.91E+15	1.85E+15	1.76E+15	1.56E+15	1.35E+15	1.18E+15	9.75E+14	8.86E+14	7.00E+14	6.58E+14
-6.00	2.13E+15	1.96E+15	1.90E+15	1.80E+15	1.61E+15	1.37E+15	1.21E+15	9.96E+14	9.10E+14	7.14E+14	6.70E+14
-4.00	2.15E+15	1.99E+15	1.93E+15	1.82E+15	1.64E+15	1.38E+15	1.21E+15	1.01E+15	9.21E+14	7.17E+14	6.76E+14
-2.00	2.18E+15	2.01E+15	1.95E+15	1.83E+15	1.65E+15	1.39E+15	1.21E+15	1.01E+15	9.24E+14	7.29E+14	6.80E+14
0.00	2.18E+15	2.02E+15	1.95E+15	1.82E+15	1.66E+15	1.39E+15	1.22E+15	1.01E+15	9.29E+14	7.24E+14	6.76E+14
2.00	2.14E+15	2.00E+15	1.92E+15	1.79E+15	1.66E+15	1.37E+15	1.20E+15	1.01E+15	9.24E+14	7.17E+14	6.71E+14
4.00	2.10E+15	1.94E+15	1.88E+15	1.75E+15	1.63E+15	1.34E+15	1.19E+15	9.96E+14	9.20E+14	7.03E+14	6.63E+14
6.00	2.03E+15	1.85E+15	1.83E+15	1.70E+15	1.59E+15	1.32E+15	1.16E+15	9.86E+14	9.13E+14	6.92E+14	6.60E+14
8.00	1.97E+15	1.76E+15	1.76E+15	1.63E+15	1.52E+15	1.27E+15	1.12E+15	9.56E+14	8.91E+14	6.75E+14	6.40E+14
10.00	1.87E+15	1.67E+15	1.64E+15	1.54E+15	1.42E+15	1.21E+15	1.07E+15	9.21E+14	8.62E+14	6.53E+14	6.11E+14
12.00	1.75E+15	1.55E+15	1.55E+15	1.42E+15	1.30E+15	1.10E+15	9.83E+14	8.75E+14	8.19E+14	6.22E+14	5.82E+14
14.00	1.62E+15	1.44E+15	1.42E+15	1.32E+15	1.21E+15	1.02E+15	9.30E+14	8.26E+14	7.76E+14	6.05E+14	5.66E+14
16.00	1.46E+15	1.30E+15	1.25E+15	1.21E+15	1.10E+15	9.34E+14	8.75E+14	7.50E+14	7.08E+14	5.68E+14	5.18E+14
18.00	1.32E+15	1.19E+15	1.12E+15	1.10E+15	9.90E+14	8.50E+14	8.20E+14	6.69E+14	6.33E+14	5.13E+14	4.70E+14
20.00	1.22E+15	1.10E+15	1.05E+15	1.01E+15	9.21E+14	7.85E+14	7.76E+14	6.23E+14	5.86E+14	4.83E+14	4.41E+14
25.00	8.99E+14	8.65E+14	7.93E+14	7.22E+14	7.06E+14	5.03E+14	5.77E+14	4.76E+14	4.48E+14	3.69E+14	3.56E+14
30.00	6.92E+14	6.75E+14	6.43E+14	5.25E+14	5.69E+14	4.89E+14	4.49E+14	3.78E+14	3.60E+14	2.95E+14	2.82E+14
35.00	5.56E+14	5.43E+14	5.42E+14	4.01E+14	4.71E+14	4.08E+14	3.72E+14	3.09E+14	2.92E+14	2.39E+14	2.26E+14
40.00	4.37E+14	4.19E+14	4.32E+14	3.19E+14	3.71E+14	3.18E+14	2.81E+14	2.32E+14	2.24E+14	1.86E+14	1.77E+14
45.00	3.51E+14	3.27E+14	3.43E+14	2.60E+14	2.93E+14	2.50E+14	2.20E+14	1.87E+14	1.76E+14	1.47E+14	1.44E+14
50.00	2.73E+14	2.54E+14	2.69E+14	2.14E+14	2.26E+14	1.88E+14	1.66E+14	1.43E+14	1.36E+14	1.16E+14	1.14E+14
55.00	2.12E+14	2.02E+14	2.06E+14	1.69E+14	1.65E+14	1.40E+14	1.25E+14	1.11E+14	1.06E+14	9.11E+13	9.07E+13
60.00	1.65E+14	1.55E+14	1.46E+14	1.26E+14	1.16E+14	1.01E+14	9.54E+13	8.49E+13	8.13E+13	7.10E+13	7.03E+13
65.00	1.30E+14	1.19E+14	1.12E+14	1.03E+14	8.62E+13	7.74E+13	7.30E+13	6.51E+13	6.09E+13	5.54E+13	5.56E+13
70.00	1.00E+14	8.91E+13	8.16E+13	7.03E+13	6.11E+13	5.70E+13	5.46E+13	5.03E+13	4.76E+13	4.39E+13	4.27E+13
75.00	7.73E+13	6.58E+13	6.13E+13	5.17E+13	4.39E+13	4.23E+13	4.08E+13	3.83E+13	3.60E+13	3.39E+13	3.30E+13

TABLE A-6
NEUTRON FLUX ($E > 0.1$ MeV) NEAR FUEL IN ROW 7 - EBR-II, RUN 75D

R=	5.20	13.00	17.30	19.80	25.00	28.20	30.40	33.40	34.50	38.30	39.20
Z=											
-70.00	8.63E+13	8.17E+13	7.11E+13	6.99E+13	5.88E+13	5.83E+13	5.78E+13	4.51E+13	4.05E+13	3.70E+13	3.62E+13
-65.00	1.13E+14	1.04E+14	9.50E+13	9.51E+13	8.07E+13	7.65E+13	7.30E+13	6.03E+13	5.67E+13	4.56E+13	5.03E+13
-60.00	1.52E+14	1.37E+14	1.28E+14	1.26E+14	1.07E+14	1.02E+14	9.11E+13	8.00E+13	7.25E+13	6.54E+13	6.68E+13
-55.00	1.96E+14	1.80E+14	1.67E+14	1.68E+14	1.44E+14	1.32E+14	1.19E+14	1.04E+14	9.95E+13	8.59E+13	8.80E+13
-50.00	2.53E+14	2.33E+14	2.16E+14	2.18E+14	1.88E+14	1.70E+14	1.53E+14	1.35E+14	1.30E+14	1.11E+14	1.16E+14
-45.00	3.30E+14	3.00E+14	2.79E+14	2.83E+14	2.52E+14	2.21E+14	1.96E+14	1.71E+14	1.66E+14	1.44E+14	1.52E+14
-40.00	4.24E+14	3.90E+14	3.67E+14	3.64E+14	3.23E+14	2.80E+14	2.49E+14	2.20E+14	2.11E+14	1.85E+14	1.90E+14
-35.00	5.56E+14	4.97E+14	4.59E+14	4.56E+14	4.16E+14	3.70E+14	3.16E+14	2.83E+14	2.70E+14	2.31E+14	2.46E+14
-30.00	7.05E+14	6.09E+14	5.95E+14	5.95E+14	5.14E+14	4.66E+14	4.06E+14	3.59E+14	3.38E+14	2.91E+14	3.02E+14
-25.00	9.67E+14	8.70E+14	8.76E+14	9.11E+14	7.77E+14	6.69E+14	6.08E+14	5.03E+14	4.69E+14	3.77E+14	3.70E+14
-20.00	1.29E+15	1.18E+15	1.17E+15	1.16E+15	1.04E+15	9.39E+14	8.51E+14	7.03E+14	6.38E+14	4.50E+14	4.38E+14
-18.00	1.44E+15	1.32E+15	1.29E+15	1.26E+15	1.16E+15	1.08E+15	9.81E+14	7.94E+14	7.23E+14	5.36E+14	4.93E+14
-16.00	1.60E+15	1.46E+15	1.41E+15	1.37E+15	1.29E+15	1.21E+15	1.11E+15	9.02E+14	8.03E+14	5.98E+14	5.30E+14
-14.00	1.73E+15	1.60E+15	1.51E+15	1.47E+15	1.38E+15	1.31E+15	1.20E+15	9.78E+14	8.89E+14	6.55E+14	5.78E+14
-12.00	1.83E+15	1.70E+15	1.63E+15	1.59E+15	1.47E+15	1.21E+15	1.30E+15	1.04E+15	9.35E+14	6.65E+14	6.11E+14
-10.00	1.96E+15	1.81E+15	1.76E+15	1.74E+15	1.57E+15	1.47E+15	1.37E+15	1.11E+15	9.92E+14	6.89E+14	6.69E+14
-8.00	2.07E+15	1.91E+15	1.85E+15	1.81E+15	1.64E+15	1.53E+15	1.43E+15	1.16E+15	1.03E+15	7.02E+14	6.97E+14
-6.00	2.13E+15	1.96E+15	1.90E+15	1.84E+15	1.70E+15	1.57E+15	1.46E+15	1.18E+15	1.05E+15	7.13E+14	7.14E+14
-4.00	2.15E+15	1.99E+15	1.93E+15	1.85E+15	1.73E+15	1.60E+15	1.48E+15	1.19E+15	1.06E+15	7.19E+14	7.20E+14
-2.00	2.18E+15	2.01E+15	1.95E+15	1.85E+15	1.76E+15	1.62E+15	1.49E+15	1.20E+15	1.06E+15	7.27E+14	7.27E+14
0.00	2.18E+15	2.02E+15	1.95E+15	1.84E+15	1.77E+15	1.64E+15	1.50E+15	1.20E+15	1.06E+15	7.27E+14	6.96E+14
2.00	2.14E+15	2.00E+15	1.92E+15	1.82E+15	1.76E+15	1.61E+15	1.49E+15	1.20E+15	1.05E+15	7.24E+14	7.12E+14
4.00	2.10E+15	1.94E+15	1.88E+15	1.76E+15	1.72E+15	1.57E+15	1.46E+15	1.18E+15	1.03E+15	7.19E+14	7.13E+14
6.00	2.03E+15	1.85E+15	1.83E+15	1.70E+15	1.67E+15	1.55E+15	1.41E+15	1.16E+15	1.01E+15	7.12E+14	7.03E+14
8.00	1.97E+15	1.76E+15	1.76E+15	1.62E+15	1.60E+15	1.49E+15	1.34E+15	1.13E+15	9.79E+14	7.13E+14	6.79E+14
10.00	1.87E+15	1.67E+15	1.69E+15	1.55E+15	1.51E+15	1.40E+15	1.27E+15	1.09E+15	9.36E+14	6.88E+14	6.44E+14
12.00	1.75E+15	1.55E+15	1.55E+15	1.45E+15	1.38E+15	1.27E+15	1.16E+15	1.01E+15	8.74E+14	6.50E+14	6.10E+14
14.00	1.62E+15	1.44E+15	1.43E+15	1.35E+15	1.28E+15	1.16E+15	1.07E+15	9.34E+14	8.16E+14	6.19E+14	5.73E+14
16.00	1.46E+15	1.30E+15	1.28E+15	1.23E+15	1.16E+15	1.06E+15	9.66E+14	8.33E+14	7.24E+14	5.66E+14	5.22E+14
18.00	1.32E+15	1.19E+15	1.15E+15	1.12E+15	1.05E+15	9.18E+14	8.54E+14	7.27E+14	6.43E+14	5.13E+14	4.66E+14
20.00	1.22E+15	1.10E+15	1.09E+15	1.02E+15	9.61E+14	8.50E+14	7.80E+14	6.55E+14	6.09E+14	4.74E+14	4.38E+14
25.00	8.99E+14	8.65E+14	7.74E+14	7.74E+14	7.31E+14	6.22E+14	5.72E+14	4.89E+14	4.56E+14	3.57E+14	3.43E+14
30.00	6.92E+14	6.75E+14	6.05E+14	6.50E+14	5.74E+14	4.81E+14	4.50E+14	3.84E+14	3.57E+14	2.91E+14	2.79E+14
35.00	5.56E+14	5.43E+14	5.06E+14	5.43E+14	4.73E+14	3.98E+14	3.72E+14	3.07E+14	2.85E+14	2.39E+14	2.28E+14
40.00	4.37E+14	4.19E+14	4.05E+14	4.34E+14	3.71E+14	3.06E+14	2.81E+14	2.33E+14	2.19E+14	1.86E+14	1.81E+14
45.00	3.51E+14	3.27E+14	3.24E+14	3.48E+14	2.93E+14	2.38E+14	2.20E+14	1.87E+14	1.71E+14	1.47E+14	1.46E+14
50.00	2.73E+14	2.54E+14	2.54E+14	2.76E+14	2.26E+14	1.81E+14	1.67E+14	1.43E+14	1.32E+14	1.16E+14	1.17E+14
55.00	2.12E+14	2.02E+14	1.98E+14	2.12E+14	1.65E+14	1.33E+14	1.25E+14	1.11E+14	1.02E+14	9.20E+13	9.08E+13
60.00	1.65E+14	1.55E+14	1.47E+14	1.49E+14	1.16E+14	1.00E+14	9.55E+13	8.57E+13	6.30E+13	7.23E+13	7.03E+13
65.00	1.30E+14	1.19E+14	1.13E+14	1.12E+14	8.62E+13	7.67E+13	7.30E+13	6.55E+13	6.07E+13	5.54E+13	5.56E+13
70.00	1.00E+14	8.91E+13	8.41E+13	8.13E+13	6.11E+13	5.71E+13	5.46E+13	4.83E+13	4.66E+13	4.39E+13	4.28E+13
75.00	7.73E+13	6.58E+13	6.39E+13	5.95E+13	4.39E+13	4.34E+13	4.05E+13	3.72E+13	3.52E+13	3.38E+13	3.30E+13

TABLE A-7

NEUTRON FLUX ($E > 1.0$ MeV) IN NOMINAL REACTOR - EBR-II, RUN 75D

R=	5.20	13.00	17.30	19.80	25.00	28.20	30.40	33.40	34.50	38.30	39.20
z=											
-70.00	2.42E+12	2.33E+12	2.19E+12	2.03E+12	2.12E+12	1.58E+12	1.32E+12	1.14E+12	1.35E+12	8.96E+11	9.29E+11
-65.00	3.99E+12	3.85E+12	3.52E+12	3.35E+12	3.28E+12	2.62E+12	2.22E+12	1.86E+12	2.06E+12	1.43E+12	1.37E+12
-60.00	6.68E+12	6.01E+12	5.74E+12	5.39E+12	4.88E+12	4.30E+12	3.76E+12	2.94E+12	2.98E+12	2.24E+12	2.14E+12
-55.00	1.06E+13	9.57E+12	9.07E+12	8.89E+12	8.05E+12	7.09E+12	5.91E+12	4.73E+12	4.57E+12	3.46E+12	3.35E+12
-50.00	1.66E+13	1.48E+13	1.47E+13	1.43E+13	1.28E+13	1.13E+13	9.35E+12	7.48E+12	6.92E+12	5.52E+12	5.11E+12
-45.00	2.62E+13	2.41E+13	2.35E+13	2.26E+13	2.02E+13	1.83E+13	1.52E+13	1.18E+13	1.06E+13	8.90E+12	7.88E+12
-40.00	4.38E+13	3.74E+13	3.79E+13	3.53E+13	3.27E+13	2.89E+13	2.45E+13	1.86E+13	1.72E+13	1.36E+13	1.29E+13
-35.00	7.12E+13	6.55E+13	6.50E+13	6.14E+13	5.04E+13	4.48E+13	3.87E+13	2.87E+13	2.59E+13	2.02E+13	1.96E+13
-30.00	1.11E+14	1.14E+14	1.04E+14	9.75E+13	8.34E+13	7.10E+13	6.16E+13	4.33E+13	3.97E+13	3.09E+13	2.86E+13
-25.00	1.85E+14	1.88E+14	1.71E+14	1.60E+14	1.36E+14	1.10E+14	9.29E+13	6.41E+13	5.91E+13	4.41E+13	4.14E+13
-20.00	3.00E+14	2.93E+14	2.66E+14	2.58E+14	2.36E+14	1.74E+14	1.39E+14	9.20E+13	8.71E+13	6.31E+13	6.16E+13
-18.00	3.52E+14	3.39E+14	3.13E+14	3.06E+14	2.78E+14	2.09E+14	1.60E+14	1.07E+14	1.01E+14	7.16E+13	6.80E+13
-16.00	4.09E+14	3.83E+14	3.59E+14	3.50E+14	3.20E+14	2.39E+14	1.82E+14	1.24E+14	1.15E+14	8.05E+13	7.52E+13
-14.00	4.64E+14	4.25E+14	4.03E+14	4.06E+14	3.57E+14	2.71E+14	2.08E+14	1.42E+14	1.27E+14	8.94E+13	8.33E+13
-12.00	5.25E+14	4.80E+14	4.55E+14	4.39E+14	3.87E+14	2.39E+14	2.38E+14	1.56E+14	1.37E+14	9.71E+13	8.86E+13
-10.00	5.72E+14	5.12E+14	4.87E+14	4.80E+14	4.11E+14	3.16E+14	2.55E+14	1.67E+14	1.44E+14	1.01E+14	9.24E+13
-8.00	6.08E+14	5.44E+14	5.10E+14	5.00E+14	4.24E+14	3.30E+14	2.67E+14	1.75E+14	1.51E+14	1.05E+14	9.52E+13
-6.00	6.39E+14	5.66E+14	5.29E+14	5.20E+14	4.30E+14	3.37E+14	2.74E+14	1.81E+14	1.56E+14	1.06E+14	9.79E+13
-4.00	6.49E+14	5.78E+14	5.45E+14	5.24E+14	4.31E+14	3.41E+14	2.79E+14	1.83E+14	1.59E+14	1.06E+14	9.95E+13
-2.00	6.54E+14	5.84E+14	5.47E+14	5.22E+14	4.32E+14	3.40E+14	2.80E+14	1.84E+14	1.62E+14	1.06E+14	9.90E+13
0.00	6.49E+14	5.81E+14	5.47E+14	5.19E+14	4.26E+14	3.40E+14	2.78E+14	1.83E+14	1.62E+14	1.05E+14	9.82E+13
2.00	6.44E+14	5.74E+14	5.35E+14	5.06E+14	4.21E+14	3.35E+14	2.73E+14	1.82E+14	1.62E+14	1.03E+14	9.89E+13
4.00	6.30E+14	5.63E+14	5.24E+14	4.94E+14	4.10E+14	3.29E+14	2.66E+14	1.76E+14	1.58E+14	1.02E+14	9.83E+13
6.00	6.13E+14	5.48E+14	5.11E+14	4.81E+14	3.95E+14	3.17E+14	2.53E+14	1.69E+14	1.53E+14	1.00E+14	9.75E+13
8.00	5.87E+14	5.20E+14	4.88E+14	4.57E+14	3.79E+14	3.04E+14	2.40E+14	1.65E+14	1.46E+14	9.80E+13	9.42E+13
10.00	5.44E+14	4.83E+14	4.59E+14	4.22E+14	3.46E+14	2.85E+14	2.26E+14	1.55E+14	1.39E+14	9.42E+13	9.12E+13
12.00	4.98E+14	4.37E+14	4.11E+14	3.94E+14	3.24E+14	2.61E+14	2.05E+14	1.47E+14	1.31E+14	9.03E+13	8.67E+13
14.00	4.38E+14	3.84E+14	3.64E+14	3.46E+14	2.92E+14	2.27E+14	1.85E+14	1.34E+14	1.19E+14	8.47E+13	7.84E+13
16.00	3.80E+14	3.35E+14	3.16E+14	2.97E+14	2.55E+14	1.99E+14	1.70E+14	1.21E+14	1.05E+14	7.68E+13	7.41E+13
18.00	3.24E+14	2.88E+14	2.72E+14	2.52E+14	2.27E+14	1.70E+14	1.42E+14	1.09E+14	9.30E+13	7.00E+13	6.80E+13
20.00	2.72E+14	2.43E+14	2.26E+14	2.18E+14	1.85E+14	1.40E+14	1.17E+14	9.17E+13	8.16E+13	6.26E+13	6.27E+13
25.00	1.82E+14	1.62E+14	1.52E+14	1.49E+14	1.22E+14	9.56E+13	8.16E+13	6.46E+13	5.58E+13	4.52E+13	4.27E+13
30.00	1.24E+14	1.09E+14	9.96E+13	9.73E+13	8.13E+13	6.44E+13	5.49E+13	4.48E+13	3.93E+13	3.22E+13	3.06E+13
35.00	8.37E+13	7.17E+13	6.40E+13	6.29E+13	5.39E+13	4.32E+13	3.63E+13	3.04E+13	2.62E+13	2.28E+13	2.23E+13
40.00	5.68E+13	4.80E+13	4.39E+13	4.16E+13	3.69E+13	2.99E+13	2.52E+13	2.12E+13	1.86E+13	1.60E+13	1.61E+13
45.00	3.75E+13	3.09E+13	2.90E+13	2.70E+13	2.40E+13	2.03E+13	1.64E+13	1.44E+13	1.23E+13	1.10E+13	1.07E+13
50.00	2.50E+13	2.04E+13	1.98E+13	1.80E+13	1.62E+13	1.29E+13	1.08E+13	9.70E+12	8.25E+12	7.48E+12	7.31E+12
55.00	1.62E+13	1.35E+13	1.29E+13	1.19E+13	1.12E+13	9.13E+12	7.24E+12	6.40E+12	5.67E+12	5.02E+12	4.87E+12
60.00	9.91E+12	8.90E+12	8.12E+12	8.04E+12	8.04E+12	5.52E+12	4.71E+12	4.25E+12	3.97E+12	3.30E+12	3.36E+12
65.00	6.19E+12	5.92E+12	5.29E+12	5.31E+12	5.44E+12	3.44E+12	3.32E+12	2.69E+12	2.69E+12	2.22E+12	2.28E+12
70.00	3.92E+12	3.95E+12	3.41E+12	3.49E+12	3.71E+12	2.23E+12	2.20E+12	1.71E+12	1.91E+12	1.41E+12	1.58E+12
75.00	2.43E+12	2.65E+12	2.15E+12	2.37E+12	2.52E+12	1.40E+12	1.49E+12	1.11E+12	1.30E+12	9.16E+11	1.04E+12

TABLE A-8
NEUTRON FLUX ($E > 1.0$ MeV) NEAR A HIGH WORTH CONTROL ROD - EBR-II, RUN 75D

R=	5.20	13.00	17.30	19.80	25.00	28.20	30.40	33.40	34.50	38.30	39.20
Z=											
-70.00	2.42E+12	2.33E+12	2.19E+12	2.03E+12	2.12E+12	1.58E+12	1.32E+12	1.14E+12	1.35E+12	8.96E+11	9.29E+11
-65.00	3.99E+12	3.85E+12	3.54E+12	3.35E+12	3.28E+12	2.62E+12	2.22E+12	1.86E+12	2.06E+12	1.43E+12	1.37E+12
-60.00	6.68E+12	6.01E+12	5.74E+12	5.39E+12	4.88E+12	4.30E+12	3.76E+12	2.94E+12	2.98E+12	2.24E+12	2.14E+12
-55.00	1.06E+13	9.57E+12	9.07E+12	8.89E+12	8.05E+12	7.09E+12	5.91E+12	4.73E+12	4.57E+12	3.46E+12	3.35E+12
-50.00	1.66E+13	1.48E+13	1.47E+13	1.43E+13	1.28E+13	1.13E+13	9.35E+12	7.48E+12	6.92E+12	5.52E+12	5.11E+12
-45.00	2.62E+13	2.41E+13	2.35E+13	2.26E+13	2.02E+13	1.83E+13	1.52E+13	1.18E+13	1.06E+13	8.80E+12	7.88E+12
-40.00	4.38E+13	3.74E+13	3.60E+13	3.53E+13	3.27E+13	2.89E+13	2.45E+13	1.86E+13	1.72E+13	1.36E+13	1.29E+13
-35.00	7.12E+13	6.55E+13	6.50E+13	6.14E+13	5.04E+13	4.48E+13	3.87E+13	2.87E+13	2.59E+13	2.02E+13	1.96E+13
-30.00	1.11E+14	1.14E+14	1.04E+14	9.82E+13	8.34E+13	7.10E+13	6.16E+13	4.33E+13	3.97E+13	3.09E+13	2.86E+13
-25.00	1.85E+14	1.88E+14	1.71E+14	1.60E+14	1.36E+14	1.10E+14	9.29E+13	6.41E+13	5.91E+13	4.41E+13	4.14E+13
-20.00	3.00E+14	2.93E+14	2.66E+14	2.59E+14	2.36E+14	1.74E+14	1.39E+14	9.20E+13	8.71E+13	6.31E+13	6.16E+13
-18.00	3.52E+14	3.39E+14	3.13E+14	3.06E+14	2.78E+14	2.09E+14	1.60E+14	1.07E+14	1.01E+14	7.16E+13	6.80E+13
-16.00	4.09E+14	3.83E+14	3.59E+14	3.50E+14	3.20E+14	2.39E+14	1.82E+14	1.24E+14	1.15E+14	8.05E+13	7.52E+13
-14.00	4.64E+14	4.25E+14	4.03E+14	4.06E+14	3.57E+14	2.71E+14	2.08E+14	1.42E+14	1.27E+14	8.94E+13	8.33E+13
-12.00	5.25E+14	4.80E+14	4.55E+14	4.34E+14	3.87E+14	2.39E+14	2.38E+14	1.56E+14	1.37E+14	9.71E+13	8.86E+13
-10.00	5.72E+14	5.12E+14	4.87E+14	4.82E+14	4.11E+14	3.16E+14	2.55E+14	1.67E+14	1.44E+14	1.01E+14	9.24E+13
-8.00	6.08E+14	5.44E+14	5.12E+14	5.02E+14	4.24E+14	3.30E+14	2.67E+14	1.75E+14	1.51E+14	1.05E+14	9.52E+13
-6.00	6.39E+14	5.66E+14	5.29E+14	5.20E+14	4.30E+14	3.37E+14	2.74E+14	1.81E+14	1.56E+14	1.06E+14	9.79E+13
-4.00	6.49E+14	5.78E+14	5.45E+14	5.26E+14	4.31E+14	3.41E+14	2.79E+14	1.83E+14	1.59E+14	1.06E+14	9.95E+13
-2.00	6.54E+14	5.84E+14	5.47E+14	5.26E+14	4.32E+14	3.40E+14	2.80E+14	1.84E+14	1.62E+14	1.06E+14	9.90E+13
0.00	6.49E+14	5.81E+14	5.47E+14	5.25E+14	4.26E+14	3.40E+14	2.78E+14	1.83E+14	1.62E+14	1.05E+14	9.82E+13
2.00	6.44E+14	5.74E+14	5.35E+14	5.10E+14	4.21E+14	3.35E+14	2.73E+14	1.82E+14	1.62E+14	1.03E+14	9.89E+13
4.00	6.30E+14	5.63E+14	5.24E+14	4.96E+14	4.10E+14	3.29E+14	2.66E+14	1.76E+14	1.58E+14	1.02E+14	9.83E+13
6.00	6.13E+14	5.48E+14	5.11E+14	4.82E+14	3.95E+14	3.17E+14	2.53E+14	1.69E+14	1.53E+14	1.00E+14	9.75E+13
8.00	5.97E+14	5.20E+14	4.88E+14	4.56E+14	3.79E+14	3.04E+14	2.40E+14	1.65E+14	1.46E+14	9.80E+13	9.42E+13
10.00	5.44E+14	4.83E+14	4.59E+14	4.24E+14	3.46E+14	2.85E+14	2.26E+14	1.55E+14	1.39E+14	9.42E+13	9.12E+13
12.00	4.98E+14	4.37E+14	4.15E+14	3.76E+14	3.24E+14	2.61E+14	2.05E+14	1.47E+14	1.31E+14	9.03E+13	8.67E+13
14.00	4.38E+14	3.84E+14	3.63E+14	3.35E+14	2.92E+14	2.27E+14	1.85E+14	1.34E+14	1.19E+14	8.47E+13	7.84E+13
16.00	3.80E+14	3.35E+14	3.14E+14	2.85E+14	2.55E+14	1.99E+14	1.70E+14	1.21E+14	1.05E+14	7.68E+13	7.41E+13
18.00	3.24E+14	2.88E+14	2.70E+14	2.43E+14	2.27E+14	1.70E+14	1.42E+14	1.09E+14	9.30E+13	7.00E+13	6.80E+13
20.00	2.72E+14	2.43E+14	2.19E+14	2.07E+14	1.85E+14	1.40E+14	1.17E+14	9.17E+13	8.16E+13	6.26E+13	6.27E+13
25.00	1.92E+14	1.62E+14	1.46E+14	1.38E+14	1.22E+14	9.56E+13	8.16E+13	6.46E+13	5.58E+13	4.52E+13	4.27E+13
30.00	1.24E+14	1.09E+14	9.71E+13	9.33E+13	8.13E+13	6.44E+13	5.49E+13	4.48E+13	3.93E+13	3.22E+13	3.06E+13
35.00	8.37E+13	7.17E+13	6.31E+13	6.12E+13	5.39E+13	4.32E+13	3.63E+13	3.04E+13	2.62E+13	2.28E+13	2.23E+13
40.00	5.68E+13	4.80E+13	4.14E+13	4.03E+13	3.69E+13	2.99E+13	2.52E+13	2.12E+13	1.86E+13	1.60E+13	1.61E+13
45.00	3.75E+13	3.09E+13	2.84E+13	2.56E+13	2.40E+13	2.03E+13	1.64E+13	1.44E+13	1.23E+13	1.10E+13	1.07E+13
50.00	2.50E+13	2.04E+13	1.94E+13	1.66E+13	1.62E+13	1.29E+13	1.08E+13	9.70E+12	8.25E+12	7.48E+12	7.31E+12
55.00	1.62E+13	1.35E+13	1.25E+13	1.08E+13	1.12E+13	8.13E+12	7.24E+12	6.40E+12	5.67E+12	5.02E+12	4.87E+12
60.00	9.91E+12	8.90E+12	7.78E+12	7.03E+12	8.04E+12	5.52E+12	4.71E+12	4.25E+12	3.97E+12	3.30E+12	3.36E+12
65.00	6.19E+12	5.92E+12	5.20E+12	4.94E+12	5.44E+12	3.44E+12	3.32E+12	2.69E+12	2.69E+12	2.22E+12	2.28E+12
70.00	3.92E+12	3.95E+12	3.34E+12	3.12E+12	3.71E+12	2.23E+12	2.20E+12	1.71E+12	1.91E+12	1.41E+12	1.58E+12
75.00	2.43E+12	2.65E+12	2.11E+12	2.10E+12	2.52E+12	1.40E+12	1.49E+12	1.11E+12	1.30E+12	9.16E+11	1.04E+12

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TABLE A-9

NEUTRON FLUX ($E > 1.0$ MeV) NEAR FUEL IN ROW 7 - EBR-II, RUN 75D

R=	5.20	13.00	17.30	19.80	25.00	28.20	30.40	33.40	34.50	38.30	39.20
Z=											
-70.00	2.42E+12	2.33E+12	2.19E+12	2.03E+12	2.12E+12	1.57E+12	1.32E+12	1.14E+12	1.35E+12	8.96E+11	9.29E+11
-65.00	3.99E+12	3.85E+12	3.52E+12	3.35E+12	3.28E+12	2.64E+12	2.22E+12	1.85E+12	2.05E+12	1.37E+12	1.37E+12
-60.00	6.68E+12	6.01E+12	5.74E+12	5.39E+12	4.88E+12	4.31E+12	3.76E+12	2.94E+12	2.99E+12	2.24E+12	2.14E+12
-55.00	1.06E+13	9.57E+12	9.07E+12	8.89E+12	8.05E+12	7.09E+12	5.91E+12	4.72E+12	4.55E+12	3.46E+12	3.35E+12
-50.00	1.66E+13	1.48E+13	1.47E+13	1.43E+13	1.28E+13	1.13E+13	9.35E+12	7.48E+12	6.90E+12	5.50E+12	5.11E+12
-45.00	2.62E+13	2.41E+13	2.35E+13	2.26E+13	2.02E+13	1.83E+13	1.52E+13	1.18E+13	1.06E+13	8.79E+12	7.86E+12
-40.00	4.38E+13	3.74E+13	3.79E+13	3.53E+13	3.27E+13	2.89E+13	2.45E+13	1.85E+13	1.71E+13	1.36E+13	1.29E+13
-35.00	7.12E+13	6.55E+13	6.50E+13	6.14E+13	4.87E+13	4.48E+13	4.13E+13	2.93E+13	2.62E+13	2.23E+13	2.07E+13
-30.00	1.11E+14	1.14E+14	1.04E+14	9.75E+13	8.15E+13	7.12E+13	6.76E+13	4.60E+13	4.33E+13	3.00E+13	3.17E+13
-25.00	1.85E+14	1.88E+14	1.71E+14	1.60E+14	1.44E+14	1.22E+14	1.18E+14	7.88E+13	6.96E+13	4.61E+13	4.64E+13
-20.00	3.00E+14	2.93E+14	2.66E+14	2.58E+14	2.54E+14	2.23E+14	1.87E+14	1.40E+14	1.21E+14	8.93E+13	6.68E+13
-18.00	3.52E+14	3.39E+14	3.13E+14	3.06E+14	3.04E+14	2.68E+14	2.27E+14	1.61E+14	1.47E+14	8.67E+13	7.88E+13
-16.00	4.09E+14	3.83E+14	3.59E+14	3.50E+14	3.48E+14	3.09E+14	2.58E+14	1.87E+14	1.73E+14	1.03E+14	9.20E+13
-14.00	4.64E+14	4.25E+14	4.03E+14	4.06E+14	3.91E+14	3.51E+14	2.93E+14	2.20E+14	1.94E+14	1.17E+14	1.04E+14
-12.00	5.25E+14	4.80E+14	4.55E+14	4.39E+14	4.31E+14	3.09E+14	3.24E+14	2.47E+14	2.19E+14	1.28E+14	1.15E+14
-10.00	5.72E+14	5.12E+14	4.87E+14	4.80E+14	4.44E+14	4.01E+14	3.52E+14	2.67E+14	2.35E+14	1.36E+14	1.20E+14
-8.00	6.08E+14	5.44E+14	5.10E+14	5.00E+14	4.70E+14	4.17E+14	3.68E+14	2.75E+14	2.48E+14	1.41E+14	1.24E+14
-6.00	6.39E+14	5.66E+14	5.29E+14	5.20E+14	4.85E+14	4.30E+14	3.82E+14	2.82E+14	2.56E+14	1.45E+14	1.28E+14
-4.00	6.49E+14	5.78E+14	5.45E+14	5.24E+14	4.98E+14	4.33E+14	3.88E+14	2.84E+14	2.62E+14	1.47E+14	1.30E+14
-2.00	6.54E+14	5.84E+14	5.47E+14	5.22E+14	4.98E+14	4.33E+14	3.93E+14	2.85E+14	2.62E+14	1.49E+14	1.32E+14
0.00	6.49E+14	5.81E+14	5.47E+14	5.19E+14	4.97E+14	4.23E+14	3.93E+14	2.88E+14	2.61E+14	1.49E+14	1.35E+14
2.00	6.44E+14	5.74E+14	5.35E+14	5.06E+14	4.87E+14	4.31E+14	3.88E+14	2.84E+14	2.57E+14	1.47E+14	1.34E+14
4.00	6.30E+14	5.63E+14	5.24E+14	4.94E+14	4.72E+14	4.24E+14	3.83E+14	2.80E+14	2.50E+14	1.45E+14	1.33E+14
6.00	6.13E+14	5.48E+14	5.11E+14	4.81E+14	4.55E+14	4.14E+14	3.70E+14	2.70E+14	2.39E+14	1.43E+14	1.30E+14
8.00	5.87E+14	5.20E+14	4.88E+14	4.57E+14	4.39E+14	3.96E+14	3.54E+14	2.55E+14	2.28E+14	1.39E+14	1.25E+14
10.00	5.44E+14	4.83E+14	4.59E+14	4.22E+14	4.09E+14	3.61E+14	3.30E+14	2.41E+14	2.12E+14	1.32E+14	1.20E+14
12.00	4.98E+14	4.37E+14	4.11E+14	3.94E+14	3.84E+14	3.20E+14	2.96E+14	2.22E+14	1.92E+14	1.22E+14	1.10E+14
14.00	4.38E+14	3.84E+14	3.64E+14	3.46E+14	3.36E+14	2.79E+14	2.62E+14	2.07E+14	1.74E+14	1.12E+14	9.67E+13
16.00	3.80E+14	3.35E+14	3.16E+14	2.97E+14	2.79E+14	2.41E+14	2.25E+14	1.72E+14	1.51E+14	9.73E+13	8.75E+13
18.00	3.24E+14	2.88E+14	2.72E+14	2.52E+14	2.31E+14	2.08E+14	1.92E+14	1.48E+14	1.30E+14	8.35E+13	7.50E+13
20.00	2.72E+14	2.43E+14	2.26E+14	2.18E+14	1.97E+14	1.66E+14	1.56E+14	1.22E+14	1.09E+14	7.01E+13	6.62E+13
25.00	1.82E+14	1.62E+14	1.52E+14	1.49E+14	1.26E+14	1.10E+14	1.01E+14	7.79E+13	6.08E+13	4.87E+13	4.67E+13
30.00	1.24E+14	1.09E+14	9.96E+13	9.73E+13	8.19E+13	6.87E+13	6.23E+13	4.97E+13	4.00E+13	3.27E+13	3.26E+13
35.00	8.37E+13	7.17E+13	6.40E+13	6.29E+13	5.38E+13	4.43E+13	3.88E+13	3.13E+13	2.60E+13	2.30E+13	2.30E+13
40.00	5.68E+13	4.80E+13	4.39E+13	4.16E+13	3.69E+13	3.01E+13	2.49E+13	2.13E+13	1.84E+13	1.60E+13	1.61E+13
45.00	3.75E+13	3.09E+13	2.90E+13	2.70E+13	2.40E+13	2.04E+13	1.64E+13	1.44E+13	1.23E+13	1.10E+13	1.07E+13
50.00	2.50E+13	2.04E+13	1.98E+13	1.80E+13	1.62E+13	1.30E+13	1.08E+13	9.70E+12	8.24E+12	7.51E+12	7.30E+12
55.00	1.62E+13	1.35E+13	1.29E+13	1.19E+13	1.12E+13	8.20E+12	7.24E+12	6.45E+12	5.70E+12	5.05E+12	4.87E+12
60.00	9.91E+12	8.90E+12	8.12E+12	8.04E+12	8.04E+12	5.53E+12	4.71E+12	4.26E+12	3.39E+12	3.29E+12	3.36E+12
65.00	6.19E+12	5.92E+12	5.29E+12	5.31E+12	5.44E+12	3.45E+12	3.31E+12	2.70E+12	2.69E+12	2.22E+12	2.28E+12
70.00	3.92E+12	3.95E+12	3.41E+12	3.49E+12	3.71E+12	2.45E+12	2.20E+12	1.97E+12	1.89E+12	1.41E+12	1.58E+12
75.00	2.43E+12	2.65E+12	2.15E+12	2.37E+12	2.52E+12	1.32E+12	1.49E+12	1.12E+12	1.29E+12	9.17E+11	1.04E+12

TABLE A-10
MEAN NEUTRON ENERGY ($\bar{E}$ MeV) IN NOMINAL REACTOR - EBR-II, RUN 75D

$\frac{R}{Z}$	5.20	13.00	17.30	19.80	25.00	28.20	30.40	33.40	34.50	38.30	39.20
-70.00	1.31E-01	1.29E-01	1.24E-01	1.22E-01	1.14E-01	1.18E-01	1.17E-01	1.20E-01	1.16E-01	1.15E-01	1.12E-01
-65.00	1.43E-01	1.42E-01	1.37E-01	1.37E-01	1.29E-01	1.30E-01	1.28E-01	1.28E-01	1.27E-01	1.22E-01	1.20E-01
-60.00	1.58E-01	1.53E-01	1.50E-01	1.49E-01	1.47E-01	1.45E-01	1.43E-01	1.38E-01	1.37E-01	1.31E-01	1.30E-01
-55.00	1.78E-01	1.73E-01	1.68E-01	1.70E-01	1.69E-01	1.64E-01	1.56E-01	1.52E-01	1.52E-01	1.44E-01	1.45E-01
-50.00	1.99E-01	1.94E-01	1.91E-01	1.93E-01	1.93E-01	1.88E-01	1.76E-01	1.70E-01	1.70E-01	1.60E-01	1.61E-01
-45.00	2.27E-01	2.22E-01	2.18E-01	2.20E-01	2.20E-01	2.17E-01	2.03E-01	1.92E-01	1.89E-01	1.79E-01	1.79E-01
-40.00	2.62E-01	2.56E-01	2.54E-01	2.55E-01	2.57E-01	2.55E-01	2.35E-01	2.19E-01	2.16E-01	2.01E-01	2.00E-01
-35.00	3.10E-01	3.12E-01	3.06E-01	3.04E-01	3.06E-01	3.03E-01	2.81E-01	2.53E-01	2.49E-01	2.31E-01	2.30E-01
-30.00	3.84E-01	4.01E-01	3.83E-01	3.79E-01	3.90E-01	3.73E-01	3.43E-01	3.02E-01	2.96E-01	2.67E-01	2.56E-01
-25.00	4.75E-01	4.84E-01	4.70E-01	4.44E-01	4.59E-01	4.29E-01	3.93E-01	3.40E-01	3.32E-01	2.98E-01	2.87E-01
-20.00	5.97E-01	6.08E-01	5.88E-01	5.76E-01	5.93E-01	5.17E-01	4.59E-01	3.81E-01	3.83E-01	3.40E-01	3.29E-01
-18.00	6.42E-01	6.51E-01	6.37E-01	6.29E-01	6.35E-01	5.61E-01	4.83E-01	3.97E-01	3.99E-01	3.52E-01	3.42E-01
-16.00	6.83E-01	6.90E-01	6.81E-01	6.75E-01	6.75E-01	5.86E-01	5.05E-01	4.12E-01	4.13E-01	3.63E-01	3.51E-01
-14.00	7.22E-01	7.22E-01	7.19E-01	7.24E-01	7.12E-01	6.24E-01	5.43E-01	4.39E-01	4.24E-01	3.74E-01	3.64E-01
-12.00	7.69E-01	7.65E-01	7.58E-01	7.43E-01	7.39E-01	5.86E-01	5.73E-01	4.59E-01	4.41E-01	3.87E-01	3.78E-01
-10.00	7.95E-01	7.78E-01	7.70E-01	7.61E-01	7.51E-01	6.68E-01	5.86E-01	4.72E-01	4.50E-01	3.92E-01	3.84E-01
-8.00	8.14E-01	7.90E-01	7.86E-01	7.70E-01	7.50E-01	6.76E-01	5.97E-01	4.82E-01	4.58E-01	3.96E-01	3.89E-01
-6.00	8.35E-01	8.07E-01	7.96E-01	7.92E-01	7.47E-01	6.78E-01	6.03E-01	4.89E-01	4.65E-01	3.99E-01	3.93E-01
-4.00	8.37E-01	8.14E-01	8.02E-01	7.96E-01	7.45E-01	6.81E-01	6.10E-01	4.93E-01	4.70E-01	4.02E-01	3.97E-01
-2.00	8.29E-01	8.11E-01	7.97E-01	7.94E-01	7.40E-01	6.77E-01	6.11E-01	4.96E-01	4.75E-01	4.04E-01	3.98E-01
0.00	8.24E-01	8.07E-01	7.96E-01	7.92E-01	7.34E-01	6.76E-01	6.08E-01	4.95E-01	4.76E-01	4.03E-01	3.99E-01
2.00	8.26E-01	8.05E-01	7.91E-01	7.87E-01	7.33E-01	6.75E-01	6.06E-01	4.95E-01	4.75E-01	4.02E-01	3.99E-01
4.00	8.26E-01	8.07E-01	7.90E-01	7.88E-01	7.31E-01	6.74E-01	6.02E-01	4.88E-01	4.71E-01	4.00E-01	4.00E-01
6.00	8.29E-01	8.08E-01	7.90E-01	7.92E-01	7.23E-01	6.67E-01	5.92E-01	4.82E-01	4.64E-01	3.97E-01	3.99E-01
8.00	8.26E-01	7.93E-01	7.83E-01	7.82E-01	7.15E-01	6.61E-01	5.81E-01	4.79E-01	4.57E-01	3.96E-01	3.94E-01
10.00	7.99E-01	7.65E-01	7.63E-01	7.49E-01	6.96E-01	6.49E-01	5.68E-01	4.70E-01	4.49E-01	3.90E-01	3.90E-01
12.00	7.71E-01	7.36E-01	7.24E-01	7.25E-01	6.81E-01	6.35E-01	5.49E-01	4.58E-01	4.40E-01	3.84E-01	3.83E-01
14.00	7.29E-01	6.96E-01	6.90E-01	6.86E-01	6.55E-01	5.97E-01	5.27E-01	4.44E-01	4.23E-01	3.74E-01	3.66E-01
16.00	6.85E-01	6.57E-01	6.54E-01	6.43E-01	6.18E-01	5.58E-01	5.00E-01	4.28E-01	4.04E-01	3.61E-01	3.59E-01
18.00	6.30E-01	6.11E-01	6.08E-01	5.93E-01	5.90E-01	5.15E-01	4.57E-01	4.15E-01	3.89E-01	3.50E-01	3.50E-01
20.00	5.72E-01	5.65E-01	5.56E-01	5.51E-01	5.36E-01	4.66E-01	4.16E-01	3.86E-01	3.68E-01	3.33E-01	3.35E-01
25.00	4.78E-01	4.68E-01	4.64E-01	4.57E-01	4.44E-01	3.92E-01	3.68E-01	3.41E-01	3.21E-01	2.98E-01	2.90E-01
30.00	3.99E-01	3.88E-01	3.79E-01	3.67E-01	3.60E-01	3.24E-01	3.16E-01	2.95E-01	2.81E-01	2.64E-01	2.55E-01
35.00	3.31E-01	3.20E-01	3.09E-01	2.96E-01	2.95E-01	2.72E-01	2.72E-01	2.50E-01	2.42E-01	2.30E-01	2.25E-01
40.00	2.81E-01	2.69E-01	2.59E-01	2.47E-01	2.52E-01	2.35E-01	2.39E-01	2.23E-01	2.18E-01	2.09E-01	2.01E-01
45.00	2.37E-01	2.26E-01	2.19E-01	2.05E-01	2.13E-01	2.04E-01	2.07E-01	1.96E-01	1.92E-01	1.86E-01	1.82E-01
50.00	2.04E-01	1.93E-01	1.88E-01	1.74E-01	1.86E-01	1.78E-01	1.82E-01	1.76E-01	1.71E-01	1.69E-01	1.66E-01
55.00	1.75E-01	1.67E-01	1.64E-01	1.52E-01	1.65E-01	1.58E-01	1.62E-01	1.59E-01	1.56E-01	1.54E-01	1.53E-01
60.00	1.52E-01	1.48E-01	1.47E-01	1.46E-01	1.52E-01	1.42E-01	1.47E-01	1.46E-01	1.43E-01	1.42E-01	1.42E-01
65.00	1.32E-01	1.31E-01	1.30E-01	1.31E-01	1.34E-01	1.25E-01	1.30E-01	1.32E-01	1.22E-01	1.30E-01	1.32E-01
70.00	1.15E-01	1.17E-01	1.17E-01	1.19E-01	1.19E-01	1.11E-01	1.16E-01	1.21E-01	1.19E-01	1.21E-01	1.24E-01
75.00	1.01E-01	1.02E-01	1.04E-01	1.05E-01	1.03E-01	9.70E-02	1.02E-01	1.10E-01	1.08E-01	1.10E-01	1.14E-01

TABLE A-11

MEAN NEUTRON ENERGY ($\bar{E}$ MeV) NEAR A HIGH WORTH CONTROL ROD - EBR-II, RUN 75D

$\begin{matrix} R= \\ Z= \end{matrix}$	5.20	13.00	17.30	19.80	25.00	28.20	30.40	33.40	34.50	38.30	39.20
-70.00	1.31E-01	1.29E-01	1.24E-01	1.23E-01	1.14E-01	1.18E-01	1.17E-01	1.20E-01	1.16E-01	1.15E-01	1.12E-01
-65.00	1.43E-01	1.42E-01	1.38E-01	1.39E-01	1.29E-01	1.30E-01	1.28E-01	1.28E-01	1.27E-01	1.22E-01	1.20E-01
-60.00	1.58E-01	1.53E-01	1.50E-01	1.49E-01	1.47E-01	1.45E-01	1.43E-01	1.38E-01	1.37E-01	1.31E-01	1.30E-01
-55.00	1.78E-01	1.73E-01	1.68E-01	1.70E-01	1.69E-01	1.64E-01	1.56E-01	1.52E-01	1.52E-01	1.44E-01	1.45E-01
-50.00	1.99E-01	1.94E-01	1.91E-01	1.94E-01	1.93E-01	1.88E-01	1.76E-01	1.70E-01	1.70E-01	1.60E-01	1.61E-01
-45.00	2.27E-01	2.22E-01	2.18E-01	2.21E-01	2.20E-01	2.17E-01	2.03E-01	1.92E-01	1.89E-01	1.79E-01	1.79E-01
-40.00	2.62E-01	2.56E-01	2.53E-01	2.55E-01	2.57E-01	2.55E-01	2.35E-01	2.19E-01	2.16E-01	2.01E-01	2.00E-01
-35.00	3.10E-01	3.12E-01	3.06E-01	3.06E-01	3.06E-01	3.03E-01	2.81E-01	2.53E-01	2.49E-01	2.31E-01	2.30E-01
-30.00	3.84E-01	4.01E-01	3.83E-01	3.89E-01	3.90E-01	3.73E-01	3.43E-01	3.02E-01	2.96E-01	2.67E-01	2.56E-01
-25.00	4.75E-01	4.84E-01	4.70E-01	4.48E-01	4.59E-01	4.29E-01	3.93E-01	3.40E-01	3.32E-01	2.98E-01	2.87E-01
-20.00	5.97E-01	6.08E-01	5.88E-01	5.81E-01	5.93E-01	5.17E-01	4.59E-01	3.81E-01	3.83E-01	3.40E-01	3.29E-01
-18.00	6.42E-01	6.51E-01	6.37E-01	6.33E-01	6.35E-01	5.61E-01	4.83E-01	3.97E-01	3.99E-01	3.52E-01	3.42E-01
-16.00	6.83E-01	6.90E-01	6.81E-01	6.74E-01	6.75E-01	5.86E-01	5.05E-01	4.12E-01	4.13E-01	3.63E-01	3.51E-01
-14.00	7.22E-01	7.22E-01	7.19E-01	7.29E-01	7.12E-01	6.24E-01	5.43E-01	4.39E-01	4.24E-01	3.74E-01	3.64E-01
-12.00	7.69E-01	7.65E-01	7.58E-01	7.49E-01	7.39E-01	5.86E-01	5.73E-01	4.59E-01	4.41E-01	3.87E-01	3.78E-01
-10.00	7.95E-01	7.78E-01	7.70E-01	7.74E-01	7.51E-01	6.68E-01	5.86E-01	4.72E-01	4.50E-01	3.92E-01	3.84E-01
-8.00	8.14E-01	7.90E-01	7.86E-01	7.81E-01	7.50E-01	6.76E-01	5.97E-01	4.82E-01	4.58E-01	3.96E-01	3.89E-01
-6.00	8.35E-01	8.07E-01	7.96E-01	7.95E-01	7.47E-01	6.78E-01	6.03E-01	4.89E-01	4.65E-01	3.99E-01	3.93E-01
-4.00	8.37E-01	8.14E-01	8.02E-01	8.00E-01	7.45E-01	6.81E-01	6.10E-01	4.93E-01	4.70E-01	4.02E-01	3.97E-01
-2.00	8.29E-01	8.11E-01	7.97E-01	7.95E-01	7.40E-01	6.77E-01	6.11E-01	4.96E-01	4.75E-01	4.04E-01	3.98E-01
0.00	8.24E-01	8.07E-01	7.96E-01	7.94E-01	7.34E-01	6.76E-01	6.08E-01	4.95E-01	4.76E-01	4.03E-01	3.99E-01
2.00	8.26E-01	8.05E-01	7.91E-01	7.88E-01	7.33E-01	6.75E-01	6.06E-01	4.95E-01	4.75E-01	4.02E-01	3.99E-01
4.00	8.26E-01	8.07E-01	7.90E-01	7.87E-01	7.31E-01	6.74E-01	6.02E-01	4.88E-01	4.71E-01	4.00E-01	4.00E-01
6.00	8.29E-01	8.08E-01	7.90E-01	7.88E-01	7.23E-01	6.67E-01	5.92E-01	4.82E-01	4.64E-01	3.97E-01	3.99E-01
8.00	8.26E-01	7.93E-01	7.83E-01	7.73E-01	7.15E-01	6.61E-01	5.81E-01	4.79E-01	4.57E-01	3.96E-01	3.94E-01
10.00	7.99E-01	7.65E-01	7.63E-01	7.51E-01	6.96E-01	6.49E-01	5.68E-01	4.70E-01	4.49E-01	3.90E-01	3.90E-01
12.00	7.71E-01	7.36E-01	7.26E-01	7.16E-01	6.81E-01	6.35E-01	5.49E-01	4.58E-01	4.40E-01	3.84E-01	3.83E-01
14.00	7.29E-01	6.96E-01	6.92E-01	6.82E-01	6.55E-01	5.97E-01	5.27E-01	4.44E-01	4.23E-01	3.74E-01	3.66E-01
16.00	6.85E-01	6.57E-01	6.57E-01	6.33E-01	6.18E-01	5.58E-01	5.00E-01	4.28E-01	4.04E-01	3.61E-01	3.59E-01
18.00	6.30E-01	6.11E-01	6.11E-01	5.85E-01	5.90E-01	5.15E-01	4.57E-01	4.15E-01	3.89E-01	3.50E-01	3.50E-01
20.00	5.72E-01	5.65E-01	5.48E-01	5.40E-01	5.36E-01	4.66E-01	4.16E-01	3.86E-01	3.68E-01	3.33E-01	3.35E-01
25.00	4.78E-01	4.68E-01	4.52E-01	4.50E-01	4.44E-01	3.92E-01	3.68E-01	3.41E-01	3.21E-01	2.98E-01	2.90E-01
30.00	3.99E-01	3.88E-01	3.69E-01	3.75E-01	3.60E-01	3.24E-01	3.16E-01	2.95E-01	2.81E-01	2.64E-01	2.55E-01
35.00	3.31E-01	3.20E-01	3.04E-01	3.11E-01	2.95E-01	2.72E-01	2.72E-01	2.50E-01	2.42E-01	2.30E-01	2.25E-01
40.00	2.81E-01	2.69E-01	2.52E-01	2.61E-01	2.52E-01	2.35E-01	2.39E-01	2.23E-01	2.18E-01	2.09E-01	2.01E-01
45.00	2.37E-01	2.26E-01	2.18E-01	2.17E-01	2.13E-01	2.04E-01	2.07E-01	1.96E-01	1.92E-01	1.86E-01	1.82E-01
50.00	2.04E-01	1.93E-01	1.88E-01	1.86E-01	1.86E-01	1.78E-01	1.82E-01	1.76E-01	1.71E-01	1.69E-01	1.66E-01
55.00	1.75E-01	1.67E-01	1.63E-01	1.63E-01	1.65E-01	1.58E-01	1.62E-01	1.59E-01	1.56E-01	1.54E-01	1.53E-01
60.00	1.52E-01	1.48E-01	1.48E-01	1.51E-01	1.52E-01	1.42E-01	1.47E-01	1.46E-01	1.43E-01	1.42E-01	1.42E-01
65.00	1.32E-01	1.31E-01	1.32E-01	1.43E-01	1.34E-01	1.25E-01	1.30E-01	1.32E-01	1.22E-01	1.30E-01	1.32E-01
70.00	1.15E-01	1.17E-01	1.18E-01	1.22E-01	1.19E-01	1.11E-01	1.16E-01	1.21E-01	1.19E-01	1.21E-01	1.24E-01
75.00	1.01E-01	1.02E-01	1.04E-01	1.07E-01	1.03E-01	9.70E-02	1.02E-01	1.10E-01	1.08E-01	1.10E-01	1.14E-01

TABLE A-12

MEAN NEUTRON ENERGY ($\bar{E}$ MeV) NEAR FUEL IN ROW 7 - EBR-II, RUN 75D

$\frac{R}{Z}$	5.20	13.00	17.30	19.80	25.00	28.20	30.40	33.40	34.50	38.30	39.20
-70.00	1.31E-01	1.29E-01	1.24E-01	1.22E-01	1.14E-01	1.18E-01	1.17E-01	1.20E-01	1.14E-01	1.15E-01	1.12E-01
-65.00	1.43E-01	1.42E-01	1.37E-01	1.37E-01	1.29E-01	1.36E-01	1.28E-01	1.28E-01	1.25E-01	1.16E-01	1.20E-01
-60.00	1.58E-01	1.53E-01	1.50E-01	1.49E-01	1.47E-01	1.46E-01	1.43E-01	1.37E-01	1.37E-01	1.31E-01	1.30E-01
-55.00	1.78E-01	1.73E-01	1.68E-01	1.70E-01	1.69E-01	1.64E-01	1.56E-01	1.52E-01	1.51E-01	1.44E-01	1.45E-01
-50.00	1.99E-01	1.94E-01	1.91E-01	1.93E-01	1.93E-01	1.87E-01	1.76E-01	1.70E-01	1.69E-01	1.59E-01	1.61E-01
-45.00	2.27E-01	2.22E-01	2.18E-01	2.20E-01	2.20E-01	2.17E-01	2.03E-01	1.92E-01	1.89E-01	1.78E-01	1.79E-01
-40.00	2.62E-01	2.56E-01	2.54E-01	2.55E-01	2.57E-01	2.55E-01	2.35E-01	2.19E-01	2.15E-01	2.02E-01	2.01E-01
-35.00	3.10E-01	3.12E-01	3.06E-01	3.04E-01	3.05E-01	3.03E-01	2.86E-01	2.57E-01	2.51E-01	2.33E-01	2.33E-01
-30.00	3.84E-01	4.01E-01	3.83E-01	3.79E-01	3.94E-01	3.76E-01	3.59E-01	3.14E-01	3.06E-01	2.69E-01	2.73E-01
-25.00	4.75E-01	4.84E-01	4.70E-01	4.44E-01	4.73E-01	4.52E-01	4.44E-01	3.81E-01	3.69E-01	3.14E-01	3.15E-01
-20.00	5.97E-01	6.08E-01	5.88E-01	5.76E-01	6.07E-01	5.85E-01	5.49E-01	4.89E-01	4.67E-01	3.91E-01	3.62E-01
-18.00	6.42E-01	6.51E-01	6.37E-01	6.29E-01	6.60E-01	6.34E-01	5.89E-01	5.21E-01	5.03E-01	3.91E-01	3.80E-01
-16.00	6.83E-01	6.90E-01	6.81E-01	6.75E-01	6.94E-01	6.65E-01	6.14E-01	5.41E-01	5.36E-01	4.14E-01	4.03E-01
-14.00	7.22E-01	7.22E-01	7.19E-01	7.24E-01	7.33E-01	7.06E-01	6.51E-01	5.81E-01	5.62E-01	4.31E-01	4.21E-01
-12.00	7.69E-01	7.65E-01	7.58E-01	7.43E-01	7.66E-01	7.66E-01	6.82E-01	6.10E-01	5.96E-01	4.53E-01	4.43E-01
-10.00	7.95E-01	7.78E-01	7.70E-01	7.61E-01	7.72E-01	7.52E-01	7.08E-01	6.27E-01	6.12E-01	4.64E-01	4.46E-01
-8.00	8.14E-01	7.90E-01	7.86E-01	7.70E-01	7.97E-01	7.64E-01	7.22E-01	6.32E-01	6.24E-01	4.75E-01	4.51E-01
-6.00	8.35E-01	8.07E-01	7.96E-01	7.92E-01	8.03E-01	7.72E-01	7.35E-01	6.39E-01	6.33E-01	4.83E-01	4.57E-01
-4.00	8.37E-01	8.14E-01	8.02E-01	7.96E-01	8.06E-01	7.70E-01	7.41E-01	6.41E-01	6.39E-01	4.90E-01	4.62E-01
-2.00	8.24E-01	8.11E-01	7.97E-01	7.94E-01	7.99E-01	7.63E-01	7.42E-01	6.43E-01	6.39E-01	4.94E-01	4.64E-01
0.00	8.24E-01	8.07E-01	7.96E-01	7.92E-01	7.95E-01	7.55E-01	7.39E-01	6.46E-01	6.38E-01	4.96E-01	4.74E-01
2.00	8.26E-01	8.05E-01	7.91E-01	7.87E-01	7.92E-01	7.63E-01	7.37E-01	6.43E-01	6.35E-01	4.94E-01	4.71E-01
4.00	8.26E-01	8.07E-01	7.90E-01	7.88E-01	7.89E-01	7.65E-01	7.38E-01	6.40E-01	6.32E-01	4.91E-01	4.68E-01
6.00	8.24E-01	8.08E-01	7.90E-01	7.92E-01	7.82E-01	7.60E-01	7.33E-01	6.30E-01	6.20E-01	4.86E-01	4.65E-01
8.00	8.26E-01	7.93E-01	7.83E-01	7.82E-01	7.75E-01	7.53E-01	7.23E-01	6.14E-01	6.10E-01	4.79E-01	4.59E-01
10.00	7.99E-01	7.65E-01	7.63E-01	7.49E-01	7.41E-01	7.23E-01	6.97E-01	5.98E-01	5.93E-01	4.66E-01	4.52E-01
12.00	7.71E-01	7.36E-01	7.24E-01	7.25E-01	7.24E-01	6.88E-01	6.70E-01	5.83E-01	5.74E-01	4.53E-01	4.38E-01
14.00	7.24E-01	6.96E-01	6.90E-01	6.86E-01	6.84E-01	6.45E-01	6.31E-01	5.70E-01	5.52E-01	4.37E-01	4.17E-01
16.00	6.85E-01	6.57E-01	6.54E-01	6.43E-01	6.34E-01	6.05E-01	5.89E-01	5.30E-01	5.26E-01	4.14E-01	4.02E-01
18.00	6.30E-01	6.11E-01	6.08E-01	5.93E-01	5.82E-01	5.76E-01	5.58E-01	5.10E-01	4.95E-01	3.92E-01	3.80E-01
20.00	5.72E-01	5.65E-01	5.56E-01	5.51E-01	5.46E-01	5.09E-01	5.06E-01	4.65E-01	4.49E-01	3.63E-01	3.55E-01
25.00	4.78E-01	4.68E-01	4.64E-01	4.57E-01	4.43E-01	4.23E-01	4.24E-01	3.79E-01	3.52E-01	3.17E-01	3.10E-01
30.00	3.99E-01	3.88E-01	3.79E-01	3.67E-01	3.60E-01	3.40E-01	3.41E-01	3.04E-01	2.81E-01	2.67E-01	2.68E-01
35.00	3.31E-01	3.20E-01	3.09E-01	2.96E-01	2.95E-01	2.83E-01	2.80E-01	2.52E-01	2.35E-01	2.31E-01	2.34E-01
40.00	2.81E-01	2.69E-01	2.59E-01	2.47E-01	2.52E-01	2.44E-01	2.39E-01	2.24E-01	2.07E-01	2.09E-01	2.10E-01
45.00	2.37E-01	2.26E-01	2.19E-01	2.05E-01	2.13E-01	2.14E-01	2.07E-01	1.96E-01	1.81E-01	1.87E-01	1.86E-01
50.00	2.04E-01	1.93E-01	1.88E-01	1.74E-01	1.86E-01	1.87E-01	1.82E-01	1.76E-01	1.61E-01	1.69E-01	1.69E-01
55.00	1.75E-01	1.67E-01	1.64E-01	1.52E-01	1.65E-01	1.67E-01	1.62E-01	1.60E-01	1.46E-01	1.55E-01	1.53E-01
60.00	1.52E-01	1.48E-01	1.47E-01	1.46E-01	1.52E-01	1.48E-01	1.46E-01	1.47E-01	1.41E-01	1.41E-01	1.42E-01
65.00	1.32E-01	1.31E-01	1.30E-01	1.31E-01	1.34E-01	1.30E-01	1.30E-01	1.33E-01	1.21E-01	1.30E-01	1.32E-01
70.00	1.15E-01	1.17E-01	1.17E-01	1.19E-01	1.19E-01	1.16E-01	1.16E-01	1.21E-01	1.11E-01	1.21E-01	1.24E-01
75.00	1.01E-01	1.02E-01	1.04E-01	1.05E-01	1.03E-01	1.02E-01	1.03E-01	1.10E-01	1.01E-01	1.11E-01	1.14E-01

TABLE A-13

DISPLACEMENT CROSS SECTION (BARNS) IN 18/10 SS IN NOMINAL REACTOR - EBR-II, RUN 75D

$\begin{matrix} R= \\ Z= \end{matrix}$	5.20	13.00	17.30	19.80	25.00	29.20	30.40	33.40	34.50	38.30	39.20
-70.00	1.19E+02	1.18E+02	1.13E+02	1.12E+02	1.07E+02	1.10E+02	1.11E+02	1.12E+02	1.07E+02	1.08E+02	1.07E+02
-65.00	1.26E+02	1.26E+02	1.22E+02	1.22E+02	1.17E+02	1.19E+02	1.17E+02	1.17E+02	1.15E+02	1.13E+02	1.12E+02
-60.00	1.36E+02	1.33E+02	1.30E+02	1.30E+02	1.28E+02	1.28E+02	1.26E+02	1.23E+02	1.22E+02	1.19E+02	1.19E+02
-55.00	1.47E+02	1.44E+02	1.41E+02	1.42E+02	1.41E+02	1.38E+02	1.34E+02	1.32E+02	1.31E+02	1.27E+02	1.28E+02
-50.00	1.59E+02	1.56E+02	1.53E+02	1.55E+02	1.54E+02	1.52E+02	1.46E+02	1.42E+02	1.41E+02	1.37E+02	1.38E+02
-45.00	1.74E+02	1.71E+02	1.68E+02	1.70E+02	1.70E+02	1.68E+02	1.60E+02	1.54E+02	1.53E+02	1.47E+02	1.48E+02
-40.00	1.92E+02	1.88E+02	1.87E+02	1.88E+02	1.88E+02	1.88E+02	1.76E+02	1.69E+02	1.67E+02	1.60E+02	1.59E+02
-35.00	2.16E+02	2.16E+02	2.12E+02	2.11E+02	2.13E+02	2.13E+02	2.00E+02	1.87E+02	1.85E+02	1.76E+02	1.77E+02
-30.00	2.51E+02	2.57E+02	2.48E+02	2.47E+02	2.51E+02	2.46E+02	2.31E+02	2.11E+02	2.09E+02	1.94E+02	1.90E+02
-25.00	2.96E+02	2.98E+02	2.91E+02	2.81E+02	2.86E+02	2.74E+02	2.57E+02	2.32E+02	2.29E+02	2.12E+02	2.07E+02
-20.00	3.51E+02	3.55E+02	3.45E+02	3.39E+02	3.46E+02	3.14E+02	2.89E+02	2.54E+02	2.53E+02	2.33E+02	2.27E+02
-18.00	3.72E+02	3.73E+02	3.67E+02	3.62E+02	3.64E+02	3.33E+02	3.01E+02	2.62E+02	2.61E+02	2.40E+02	2.34E+02
-16.00	3.89E+02	3.90E+02	3.86E+02	3.82E+02	3.81E+02	3.45E+02	3.11E+02	2.69E+02	2.68E+02	2.46E+02	2.39E+02
-14.00	4.05E+02	4.04E+02	4.02E+02	4.03E+02	3.97E+02	3.62E+02	3.26E+02	2.81E+02	2.74E+02	2.52E+02	2.46E+02
-12.00	4.25E+02	4.22E+02	4.18E+02	4.13E+02	4.09E+02	3.45E+02	3.40E+02	2.90E+02	2.82E+02	2.58E+02	2.52E+02
-10.00	4.36E+02	4.28E+02	4.25E+02	4.22E+02	4.15E+02	3.81E+02	3.47E+02	2.97E+02	2.87E+02	2.60E+02	2.56E+02
-8.00	4.45E+02	4.34E+02	4.32E+02	4.26E+02	4.16E+02	3.85E+02	3.52E+02	3.02E+02	2.91E+02	2.62E+02	2.58E+02
-6.00	4.53E+02	4.41E+02	4.37E+02	4.36E+02	4.15E+02	3.86E+02	3.55E+02	3.05E+02	2.95E+02	2.64E+02	2.61E+02
-4.00	4.54E+02	4.45E+02	4.40E+02	4.37E+02	4.14E+02	3.87E+02	3.57E+02	3.07E+02	2.97E+02	2.65E+02	2.63E+02
-2.00	4.51E+02	4.44E+02	4.38E+02	4.37E+02	4.13E+02	3.85E+02	3.58E+02	3.09E+02	2.99E+02	2.67E+02	2.63E+02
0.00	4.49E+02	4.42E+02	4.38E+02	4.35E+02	4.11E+02	3.85E+02	3.57E+02	3.08E+02	3.00E+02	2.66E+02	2.64E+02
2.00	4.50E+02	4.41E+02	4.35E+02	4.33E+02	4.10E+02	3.85E+02	3.56E+02	3.08E+02	3.00E+02	2.65E+02	2.64E+02
4.00	4.49E+02	4.41E+02	4.35E+02	4.33E+02	4.09E+02	3.84E+02	3.54E+02	3.05E+02	2.98E+02	2.65E+02	2.64E+02
6.00	4.51E+02	4.41E+02	4.35E+02	4.34E+02	4.06E+02	3.81E+02	3.50E+02	3.03E+02	2.95E+02	2.63E+02	2.64E+02
8.00	4.50E+02	4.34E+02	4.32E+02	4.30E+02	4.02E+02	3.79E+02	3.45E+02	3.02E+02	2.92E+02	2.63E+02	2.61E+02
10.00	4.38E+02	4.22E+02	4.24E+02	4.16E+02	3.94E+02	3.73E+02	3.39E+02	2.97E+02	2.88E+02	2.60E+02	2.59E+02
12.00	4.25E+02	4.09E+02	4.06E+02	4.06E+02	3.87E+02	3.66E+02	3.30E+02	2.91E+02	2.84E+02	2.57E+02	2.55E+02
14.00	4.07E+02	3.92E+02	3.92E+02	3.89E+02	3.76E+02	3.50E+02	3.20E+02	2.85E+02	2.76E+02	2.52E+02	2.47E+02
16.00	3.89E+02	3.75E+02	3.75E+02	3.71E+02	3.60E+02	3.34E+02	3.09E+02	2.77E+02	2.67E+02	2.46E+02	2.43E+02
18.00	3.65E+02	3.56E+02	3.55E+02	3.50E+02	3.47E+02	3.15E+02	2.91E+02	2.70E+02	2.58E+02	2.39E+02	2.37E+02
20.00	3.40E+02	3.37E+02	3.32E+02	3.30E+02	3.25E+02	2.94E+02	2.73E+02	2.56E+02	2.48E+02	2.31E+02	2.30E+02
25.00	2.96E+02	2.93E+02	2.89E+02	2.86E+02	2.83E+02	2.58E+02	2.49E+02	2.33E+02	2.24E+02	2.12E+02	2.07E+02
30.00	2.58E+02	2.55E+02	2.48E+02	2.45E+02	2.43E+02	2.26E+02	2.23E+02	2.10E+02	2.04E+02	1.94E+02	1.89E+02
35.00	2.25E+02	2.22E+02	2.16E+02	2.12E+02	2.13E+02	2.01E+02	2.01E+02	1.88E+02	1.84E+02	1.76E+02	1.72E+02
40.00	2.00E+02	1.96E+02	1.91E+02	1.86E+02	1.90E+02	1.81E+02	1.83E+02	1.72E+02	1.70E+02	1.64E+02	1.59E+02
45.00	1.78E+02	1.73E+02	1.69E+02	1.64E+02	1.70E+02	1.64E+02	1.66E+02	1.57E+02	1.56E+02	1.51E+02	1.49E+02
50.00	1.60E+02	1.54E+02	1.53E+02	1.47E+02	1.54E+02	1.49E+02	1.51E+02	1.46E+02	1.44E+02	1.42E+02	1.40E+02
55.00	1.44E+02	1.41E+02	1.39E+02	1.35E+02	1.41E+02	1.36E+02	1.39E+02	1.36E+02	1.35E+02	1.33E+02	1.33E+02
60.00	1.31E+02	1.29E+02	1.30E+02	1.30E+02	1.31E+02	1.25E+02	1.29E+02	1.27E+02	1.26E+02	1.26E+02	1.26E+02
65.00	1.20E+02	1.19E+02	1.19E+02	1.20E+02	1.19E+02	1.14E+02	1.18E+02	1.19E+02	1.13E+02	1.18E+02	1.19E+02
70.00	1.09E+02	1.09E+02	1.10E+02	1.11E+02	1.08E+02	1.04E+02	1.08E+02	1.12E+02	1.11E+02	1.13E+02	1.14E+02
75.00	9.98E+01	9.93E+01	1.01E+02	1.01E+02	9.59E+01	9.36E+01	9.81E+01	1.05E+02	1.03E+02	1.05E+02	1.07E+02

TABLE A-14
DISPLACEMENT CROSS SECTION (BARNS) IN 18/10 SS NEAR A HIGH WORTH CONTROL ROD - EBR-II, RUN 75D

R=	5.20	13.00	17.30	19.80	25.00	29.20	30.40	33.40	34.50	38.30	39.20
Z=											
-70.00	1.19E+02	1.18E+02	1.13E+02	1.13E+02	1.07E+02	1.10E+02	1.11E+02	1.12E+02	1.07E+02	1.08E+02	1.07E+02
-65.00	1.26E+02	1.26E+02	1.22E+02	1.23E+02	1.17E+02	1.19E+02	1.17E+02	1.17E+02	1.15E+02	1.13E+02	1.12E+02
-60.00	1.36E+02	1.33E+02	1.30E+02	1.30E+02	1.28E+02	1.28E+02	1.26E+02	1.23E+02	1.22E+02	1.19E+02	1.19E+02
-55.00	1.47E+02	1.44E+02	1.41E+02	1.42E+02	1.41E+02	1.38E+02	1.34E+02	1.32E+02	1.31E+02	1.27E+02	1.28E+02
-50.00	1.59E+02	1.56E+02	1.53E+02	1.56E+02	1.54E+02	1.52E+02	1.46E+02	1.42E+02	1.41E+02	1.37E+02	1.38E+02
-45.00	1.74E+02	1.71E+02	1.68E+02	1.70E+02	1.70E+02	1.68E+02	1.60E+02	1.54E+02	1.53E+02	1.47E+02	1.48E+02
-40.00	1.92E+02	1.88E+02	1.87E+02	1.88E+02	1.88E+02	1.88E+02	1.76E+02	1.69E+02	1.67E+02	1.50E+02	1.59E+02
-35.00	2.16E+02	2.16E+02	2.12E+02	2.12E+02	2.13E+02	2.13E+02	2.00E+02	1.87E+02	1.85E+02	1.76E+02	1.77E+02
-30.00	2.51E+02	2.57E+02	2.48E+02	2.52E+02	2.51E+02	2.46E+02	2.31E+02	2.11E+02	2.09E+02	1.94E+02	1.90E+02
-25.00	2.96E+02	2.98E+02	2.91E+02	2.83E+02	2.86E+02	2.74E+02	2.57E+02	2.32E+02	2.29E+02	2.12E+02	2.07E+02
-20.00	3.51E+02	3.55E+02	3.45E+02	3.41E+02	3.46E+02	3.14E+02	2.89E+02	2.54E+02	2.53E+02	2.33E+02	2.27E+02
-18.00	3.72E+02	3.73E+02	3.67E+02	3.64E+02	3.64E+02	3.33E+02	3.01E+02	2.62E+02	2.61E+02	2.40E+02	2.34E+02
-16.00	3.89E+02	3.90E+02	3.86E+02	3.84E+02	3.81E+02	3.45E+02	3.11E+02	2.69E+02	2.68E+02	2.46E+02	2.39E+02
-14.00	4.05E+02	4.04E+02	4.02E+02	4.05E+02	3.97E+02	3.62E+02	3.26E+02	2.81E+02	2.74E+02	2.52E+02	2.46E+02
-12.00	4.25E+02	4.22E+02	4.18E+02	4.15E+02	4.09E+02	3.45E+02	3.40E+02	2.90E+02	2.82E+02	2.58E+02	2.52E+02
-10.00	4.36E+02	4.28E+02	4.25E+02	4.27E+02	4.15E+02	3.81E+02	3.47E+02	2.97E+02	2.87E+02	2.60E+02	2.56E+02
-8.00	4.45E+02	4.34E+02	4.32E+02	4.30E+02	4.16E+02	3.85E+02	3.52E+02	3.02E+02	2.91E+02	2.62E+02	2.58E+02
-6.00	4.53E+02	4.41E+02	4.37E+02	4.36E+02	4.15E+02	3.86E+02	3.55E+02	3.05E+02	2.95E+02	2.54E+02	2.61E+02
-4.00	4.54E+02	4.45E+02	4.40E+02	4.39E+02	4.14E+02	3.87E+02	3.57E+02	3.07E+02	2.97E+02	2.65E+02	2.63E+02
-2.00	4.51E+02	4.44E+02	4.38E+02	4.37E+02	4.13E+02	3.85E+02	3.58E+02	3.09E+02	2.99E+02	2.67E+02	2.63E+02
0.00	4.49E+02	4.42E+02	4.38E+02	4.36E+02	4.11E+02	3.85E+02	3.57E+02	3.08E+02	3.00E+02	2.66E+02	2.64E+02
2.00	4.50E+02	4.41E+02	4.35E+02	4.33E+02	4.10E+02	3.85E+02	3.56E+02	3.08E+02	3.00E+02	2.65E+02	2.64E+02
4.00	4.49E+02	4.41E+02	4.35E+02	4.32E+02	4.09E+02	3.84E+02	3.54E+02	3.05E+02	2.98E+02	2.65E+02	2.64E+02
6.00	4.51E+02	4.41E+02	4.35E+02	4.33E+02	4.06E+02	3.81E+02	3.50E+02	3.03E+02	2.95E+02	2.63E+02	2.64E+02
8.00	4.50E+02	4.34E+02	4.32E+02	4.26E+02	4.02E+02	3.79E+02	3.45E+02	3.02E+02	2.92E+02	2.63E+02	2.61E+02
10.00	4.38E+02	4.22E+02	4.24E+02	4.17E+02	3.94E+02	3.73E+02	3.39E+02	2.97E+02	2.88E+02	2.60E+02	2.59E+02
12.00	4.25E+02	4.09E+02	4.08E+02	4.02E+02	3.87E+02	3.66E+02	3.30E+02	2.91E+02	2.84E+02	2.57E+02	2.55E+02
14.00	4.07E+02	3.92E+02	3.92E+02	3.87E+02	3.76E+02	3.50E+02	3.20E+02	2.85E+02	2.76E+02	2.52E+02	2.47E+02
16.00	3.89E+02	3.75E+02	3.76E+02	3.66E+02	3.60E+02	3.34E+02	3.09E+02	2.77E+02	2.67E+02	2.46E+02	2.43E+02
18.00	3.65E+02	3.56E+02	3.56E+02	3.46E+02	3.47E+02	3.15E+02	2.91E+02	2.70E+02	2.58E+02	2.39E+02	2.37E+02
20.00	3.40E+02	3.37E+02	3.30E+02	3.26E+02	3.25E+02	2.94E+02	2.73E+02	2.56E+02	2.48E+02	2.31E+02	2.30E+02
25.00	2.96E+02	2.93E+02	2.85E+02	2.82E+02	2.83E+02	2.58E+02	2.49E+02	2.33E+02	2.24E+02	2.12E+02	2.07E+02
30.00	2.58E+02	2.55E+02	2.47E+02	2.45E+02	2.43E+02	2.26E+02	2.23E+02	2.10E+02	2.04E+02	1.94E+02	1.89E+02
35.00	2.25E+02	2.22E+02	2.17E+02	2.13E+02	2.13E+02	2.01E+02	2.01E+02	1.88E+02	1.84E+02	1.76E+02	1.72E+02
40.00	2.00E+02	1.96E+02	1.91E+02	1.88E+02	1.90E+02	1.81E+02	1.83E+02	1.72E+02	1.70E+02	1.64E+02	1.59E+02
45.00	1.78E+02	1.73E+02	1.72E+02	1.66E+02	1.70E+02	1.64E+02	1.66E+02	1.57E+02	1.56E+02	1.51E+02	1.49E+02
50.00	1.60E+02	1.54E+02	1.55E+02	1.50E+02	1.54E+02	1.49E+02	1.51E+02	1.46E+02	1.46E+02	1.42E+02	1.40E+02
55.00	1.44E+02	1.41E+02	1.41E+02	1.38E+02	1.41E+02	1.36E+02	1.39E+02	1.36E+02	1.35E+02	1.33E+02	1.33E+02
60.00	1.31E+02	1.29E+02	1.32E+02	1.32E+02	1.31E+02	1.25E+02	1.29E+02	1.27E+02	1.26E+02	1.26E+02	1.26E+02
65.00	1.20E+02	1.19E+02	1.22E+02	1.27E+02	1.19E+02	1.14E+02	1.18E+02	1.19E+02	1.13E+02	1.18E+02	1.19E+02
70.00	1.09E+02	1.09E+02	1.11E+02	1.12E+02	1.08E+02	1.04E+02	1.08E+02	1.12E+02	1.11E+02	1.13E+02	1.14E+02
75.00	9.98E+01	9.93E+01	1.01E+02	1.01E+02	9.59E+01	9.36E+01	9.81E+01	1.05E+02	1.03E+02	1.05E+02	1.07E+02

TABLE A-15

DISPLACEMENT CROSS SECTION (BARNS) IN 18/10 SS NEAR FUEL IN ROW 7 - EBR-II, RUN 75D

$R =$ $Z =$	5.20	13.00	17.30	19.80	25.00	29.20	30.40	33.40	34.50	38.30	39.20
-70.00	1.19E+02	1.18E+02	1.13E+02	1.12E+02	1.07E+02	1.10E+02	1.11E+02	1.12E+02	1.06E+02	1.08E+02	1.07E+02
-65.00	1.26E+02	1.26E+02	1.22E+02	1.22E+02	1.17E+02	1.22E+02	1.17E+02	1.17E+02	1.14E+02	1.09E+02	1.12E+02
-60.00	1.36E+02	1.33E+02	1.30E+02	1.30E+02	1.28E+02	1.28E+02	1.26E+02	1.23E+02	1.21E+02	1.19E+02	1.19E+02
-55.00	1.47E+02	1.44E+02	1.41E+02	1.42E+02	1.41E+02	1.39E+02	1.34E+02	1.32E+02	1.30E+02	1.27E+02	1.28E+02
-50.00	1.59E+02	1.56E+02	1.53E+02	1.55E+02	1.54E+02	1.51E+02	1.46E+02	1.42E+02	1.41E+02	1.36E+02	1.38E+02
-45.00	1.74E+02	1.71E+02	1.68E+02	1.70E+02	1.70E+02	1.68E+02	1.60E+02	1.54E+02	1.52E+02	1.47E+02	1.49E+02
-40.00	1.92E+02	1.88E+02	1.87E+02	1.88E+02	1.88E+02	1.88E+02	1.76E+02	1.69E+02	1.67E+02	1.60E+02	1.60E+02
-35.00	2.16E+02	2.16E+02	2.12E+02	2.11E+02	2.12E+02	2.12E+02	2.02E+02	1.89E+02	1.85E+02	1.76E+02	1.78E+02
-30.00	2.51E+02	2.57E+02	2.48E+02	2.47E+02	2.53E+02	2.47E+02	2.37E+02	2.17E+02	2.13E+02	1.95E+02	1.98E+02
-25.00	2.96E+02	2.98E+02	2.91E+02	2.81E+02	2.91E+02	2.83E+02	2.79E+02	2.51E+02	2.44E+02	2.18E+02	2.19E+02
-20.00	3.51E+02	3.55E+02	3.45E+02	3.39E+02	3.51E+02	3.41E+02	3.27E+02	3.01E+02	2.90E+02	2.53E+02	2.41E+02
-18.00	3.72E+02	3.73E+02	3.67E+02	3.62E+02	3.74E+02	3.63E+02	3.45E+02	3.15E+02	3.07E+02	2.56E+02	2.50E+02
-16.00	3.89E+02	3.90E+02	3.86E+02	3.82E+02	3.89E+02	3.77E+02	3.55E+02	3.24E+02	3.21E+02	2.67E+02	2.61E+02
-14.00	4.05E+02	4.04E+02	4.02E+02	4.03E+02	4.06E+02	3.95E+02	3.71E+02	3.41E+02	3.33E+02	2.76E+02	2.70E+02
-12.00	4.25E+02	4.22E+02	4.18E+02	4.13E+02	4.21E+02	3.77E+02	3.85E+02	3.54E+02	3.48E+02	2.85E+02	2.80E+02
-10.00	4.36E+02	4.28E+02	4.25E+02	4.22E+02	4.25E+02	4.16E+02	3.97E+02	3.63E+02	3.56E+02	2.90E+02	2.83E+02
-8.00	4.45E+02	4.34E+02	4.32E+02	4.26E+02	4.36E+02	4.22E+02	4.04E+02	3.66E+02	3.62E+02	2.94E+02	2.86E+02
-6.00	4.53E+02	4.41E+02	4.37E+02	4.36E+02	4.40E+02	4.26E+02	4.10E+02	3.69E+02	3.66E+02	2.98E+02	2.88E+02
-4.00	4.54E+02	4.45E+02	4.40E+02	4.37E+02	4.41E+02	4.25E+02	4.13E+02	3.70E+02	3.68E+02	3.01E+02	2.91E+02
-2.00	4.51E+02	4.44E+02	4.38E+02	4.37E+02	4.38E+02	4.23E+02	4.13E+02	3.71E+02	3.69E+02	3.03E+02	2.92E+02
0.00	4.49E+02	4.42E+02	4.38E+02	4.35E+02	4.37E+02	4.20E+02	4.12E+02	3.72E+02	3.68E+02	3.04E+02	2.95E+02
2.00	4.50E+02	4.41E+02	4.35E+02	4.33E+02	4.35E+02	4.23E+02	4.11E+02	3.71E+02	3.67E+02	3.03E+02	2.94E+02
4.00	4.49E+02	4.41E+02	4.35E+02	4.33E+02	4.34E+02	4.23E+02	4.11E+02	3.70E+02	3.65E+02	3.02E+02	2.94E+02
6.00	4.51E+02	4.41E+02	4.35E+02	4.34E+02	4.31E+02	4.22E+02	4.09E+02	3.66E+02	3.59E+02	3.00E+02	2.92E+02
8.00	4.50E+02	4.34E+02	4.32E+02	4.30E+02	4.28E+02	4.19E+02	4.04E+02	3.59E+02	3.55E+02	2.97E+02	2.89E+02
10.00	4.38E+02	4.22E+02	4.24E+02	4.16E+02	4.13E+02	4.06E+02	3.93E+02	3.52E+02	3.47E+02	2.92E+02	2.85E+02
12.00	4.25E+02	4.09E+02	4.06E+02	4.06E+02	4.06E+02	3.90E+02	3.81E+02	3.44E+02	3.38E+02	2.86E+02	2.79E+02
14.00	4.07E+02	3.92E+02	3.92E+02	3.89E+02	3.89E+02	3.72E+02	3.64E+02	3.38E+02	3.28E+02	2.78E+02	2.69E+02
16.00	3.89E+02	3.75E+02	3.75E+02	3.71E+02	3.67E+02	3.54E+02	3.45E+02	3.20E+02	3.16E+02	2.67E+02	2.61E+02
18.00	3.65E+02	3.56E+02	3.55E+02	3.50E+02	3.44E+02	3.40E+02	3.32E+02	3.10E+02	3.02E+02	2.56E+02	2.50E+02
20.00	3.40E+02	3.37E+02	3.32E+02	3.30E+02	3.29E+02	3.11E+02	3.08E+02	2.90E+02	2.83E+02	2.43E+02	2.38E+02
25.00	2.96E+02	2.93E+02	2.89E+02	2.86E+02	2.82E+02	2.72E+02	2.72E+02	2.51E+02	2.38E+02	2.19E+02	2.16E+02
30.00	2.58E+02	2.55E+02	2.48E+02	2.45E+02	2.43E+02	2.33E+02	2.34E+02	2.14E+02	2.03E+02	1.95E+02	1.95E+02
35.00	2.25E+02	2.22E+02	2.16E+02	2.12E+02	2.13E+02	2.06E+02	2.05E+02	1.88E+02	1.80E+02	1.76E+02	1.77E+02
40.00	2.00E+02	1.96E+02	1.91E+02	1.86E+02	1.90E+02	1.86E+02	1.83E+02	1.72E+02	1.64E+02	1.54E+02	1.64E+02
45.00	1.78E+02	1.73E+02	1.69E+02	1.64E+02	1.70E+02	1.70E+02	1.66E+02	1.58E+02	1.49E+02	1.52E+02	1.51E+02
50.00	1.60E+02	1.54E+02	1.53E+02	1.47E+02	1.54E+02	1.54E+02	1.51E+02	1.46E+02	1.38E+02	1.42E+02	1.42E+02
55.00	1.44E+02	1.41E+02	1.39E+02	1.35E+02	1.41E+02	1.42E+02	1.39E+02	1.36E+02	1.29E+02	1.34E+02	1.33E+02
60.00	1.31E+02	1.29E+02	1.30E+02	1.30E+02	1.31E+02	1.30E+02	1.29E+02	1.29E+02	1.09E+02	1.26E+02	1.26E+02
65.00	1.20E+02	1.19E+02	1.19E+02	1.20E+02	1.19E+02	1.19E+02	1.18E+02	1.20E+02	1.13E+02	1.18E+02	1.19E+02
70.00	1.09E+02	1.09E+02	1.10E+02	1.11E+02	1.08E+02	1.09E+02	1.08E+02	1.11E+02	1.06E+02	1.13E+02	1.14E+02
75.00	9.98E+01	9.93E+01	1.01E+02	1.01E+02	9.59E+01	9.89E+01	9.86E+01	1.04E+02	9.88E+01	1.06E+02	1.07E+02

A P P E N D I X   B

REACTION RATES
USED TO GENERATE MATRICES

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TABLE B-1

REACTION RATES FOR THE NOMINAL REACTOR CONFIGURATION AT 5.2 CM FROM CORE CENTERLINE

Z(cm)	54FENP	58NINP	46TINP	55MNN2N	239PUNP	197AUNG	237NPNF	58FENG	27ALNA	59CONG	45SCNG	235UNF
-70.00	3.30E-14	4.80E-14	3.60E-15	1.43E-16	2.16E-09	5.85E-09	2.00E-11	8.40E-12	3.33E-16	5.70E-10	3.90E-11	1.93E-09
-65.00	6.10E-14	9.10E-14	6.80E-15	2.28E-16	2.40E-09	6.05E-09	2.85E-11	1.00E-11	5.60E-16	6.68E-10	4.50E-11	2.27E-09
-60.00	1.13E-13	1.70E-13	1.25E-14	3.60E-16	2.66E-09	6.30E-09	4.12E-11	1.19E-11	9.20E-16	7.62E-10	5.15E-11	2.63E-09
-55.00	2.12E-13	3.00E-13	2.32E-14	5.80E-16	2.92E-09	6.50E-09	5.90E-11	1.39E-11	1.54E-15	8.55E-10	5.75E-11	3.02E-09
-50.00	3.70E-13	5.20E-13	4.15E-14	9.60E-16	3.20E-09	6.70E-09	8.42E-11	1.58E-11	2.57E-15	9.40E-10	6.40E-11	3.41E-09
-45.00	6.30E-13	8.90E-13	7.10E-14	1.70E-15	3.43E-09	6.80E-09	1.21E-10	1.78E-11	4.40E-15	9.90E-10	6.90E-11	3.78E-09
-40.00	1.18E-12	1.58E-12	1.23E-13	3.00E-15	3.63E-09	6.85E-09	1.73E-10	1.94E-11	7.60E-15	1.03E-09	7.20E-11	4.05E-09
-35.00	2.20E-12	3.00E-12	2.32E-13	5.30E-15	3.77E-09	6.80E-09	2.50E-10	2.03E-11	1.35E-14	1.08E-09	7.18E-11	4.20E-09
-30.00	4.10E-12	5.60E-12	4.90E-13	9.30E-15	3.73E-09	6.25E-09	3.65E-10	2.01E-11	2.62E-14	9.70E-10	6.75E-11	4.17E-09
-25.00	7.90E-12	1.10E-11	9.70E-13	1.80E-14	3.34E-09	4.00E-09	5.55E-10	1.84E-11	5.10E-14	6.20E-10	5.80E-11	3.84E-09
-20.00	1.48E-11	2.05E-11	1.93E-12	4.00E-14	3.17E-09	2.02E-09	8.35E-10	1.55E-11	9.60E-14	2.90E-10	4.80E-11	3.40E-09
-18.00	1.92E-11	2.60E-11	2.50E-12	5.40E-14	3.18E-09	1.55E-09	9.50E-10	1.41E-11	1.25E-13	2.16E-10	4.48E-11	3.29E-09
-16.00	2.45E-11	3.35E-11	3.13E-12	6.70E-14	3.23E-09	1.17E-09	1.07E-09	1.25E-11	1.59E-13	1.65E-10	4.30E-11	3.25E-09
-14.00	3.00E-11	4.00E-11	3.75E-12	8.00E-14	3.31E-09	9.40E-10	1.13E-09	1.14E-11	1.90E-13	1.17E-10	4.20E-11	3.28E-09
-12.00	3.40E-11	4.70E-11	4.30E-12	9.20E-14	3.46E-09	7.65E-10	1.30E-09	1.08E-11	2.20E-13	8.05E-11	4.10E-11	3.31E-09
-10.00	3.90E-11	5.20E-11	4.80E-12	1.02E-13	3.65E-09	6.60E-10	1.40E-09	1.06E-11	2.50E-13	5.50E-11	4.00E-11	3.39E-09
-8.00	4.10E-11	5.60E-11	5.20E-12	1.10E-13	3.87E-09	6.05E-10	1.47E-09	1.05E-11	2.72E-13	3.90E-11	4.00E-11	3.47E-09
-6.00	4.35E-11	5.90E-11	5.45E-12	1.17E-13	4.04E-09	5.82E-10	1.52E-09	1.04E-11	2.90E-13	3.45E-11	4.02E-11	3.52E-09
-4.00	4.40E-11	6.00E-11	5.55E-12	1.18E-13	4.14E-09	5.82E-10	1.54E-09	1.05E-11	3.00E-13	3.42E-11	4.12E-11	3.57E-09
-2.00	4.45E-11	6.00E-11	5.60E-12	1.17E-13	4.18E-09	5.84E-10	1.56E-09	1.05E-11	3.03E-13	3.58E-11	4.21E-11	3.60E-09
0.00	4.40E-11	6.00E-11	5.55E-12	1.16E-13	4.19E-09	5.95E-10	1.55E-09	1.05E-11	3.00E-13	3.50E-11	4.22E-11	3.60E-09
2.00	4.35E-11	5.90E-11	5.42E-12	1.13E-13	4.14E-09	5.98E-10	1.53E-09	1.03E-11	2.94E-13	3.52E-11	4.18E-11	3.56E-09
4.00	4.19E-11	5.80E-11	5.30E-12	1.10E-13	4.08E-09	5.77E-10	1.50E-09	1.02E-11	2.86E-13	3.47E-11	4.10E-11	3.47E-09
6.00	4.00E-11	5.60E-11	5.10E-12	1.05E-13	3.99E-09	5.60E-10	1.46E-09	9.80E-12	2.81E-13	3.30E-11	3.94E-11	3.30E-09
8.00	3.85E-11	5.30E-11	4.95E-12	9.90E-14	3.85E-09	5.20E-10	1.41E-09	9.65E-12	2.66E-13	3.22E-11	3.90E-11	3.20E-09
10.00	3.60E-11	4.90E-11	4.65E-12	9.20E-14	3.69E-09	5.80E-10	1.33E-09	9.60E-12	2.49E-13	3.53E-11	3.83E-11	3.09E-09
12.00	3.30E-11	4.50E-11	4.30E-12	8.40E-14	3.44E-09	5.40E-10	1.23E-09	9.75E-12	2.25E-13	5.50E-11	3.80E-11	3.04E-09
14.00	2.93E-11	3.90E-11	3.70E-12	7.50E-14	3.23E-09	7.40E-10	1.10E-09	9.95E-12	2.00E-13	9.00E-11	3.84E-11	3.01E-09
16.00	2.50E-11	3.25E-11	3.05E-12	6.60E-14	3.09E-09	8.80E-10	9.60E-10	1.04E-11	1.69E-13	1.30E-10	3.94E-11	2.99E-09
18.00	1.94E-11	2.60E-11	2.40E-12	5.40E-14	2.98E-09	1.10E-09	8.40E-10	1.13E-11	1.37E-13	1.78E-10	4.12E-11	2.98E-09
20.00	1.52E-11	2.05E-11	1.83E-12	4.20E-14	2.92E-09	1.34E-09	7.30E-10	1.20E-11	1.06E-13	2.33E-10	4.30E-11	2.97E-09
25.00	8.50E-12	1.20E-11	1.06E-12	2.45E-14	2.81E-09	2.06E-09	5.15E-10	1.34E-11	5.90E-14	3.87E-10	4.60E-11	2.92E-09
30.00	5.20E-12	7.40E-12	6.20E-13	1.38E-14	2.77E-09	2.80E-09	3.65E-10	1.42E-11	3.50E-14	5.40E-10	4.83E-11	2.92E-09
35.00	3.10E-12	4.60E-12	3.70E-13	8.40E-15	2.71E-09	3.41E-09	2.60E-10	1.48E-11	2.10E-14	6.40E-10	4.99E-11	2.90E-09
40.00	2.15E-12	2.95E-12	2.34E-13	5.20E-15	2.69E-09	3.85E-09	1.84E-10	1.49E-11	1.34E-14	7.10E-10	4.92E-11	2.83E-09
45.00	1.34E-12	1.85E-12	1.46E-13	3.15E-15	2.61E-09	4.05E-09	1.30E-10	1.45E-11	8.30E-15	7.10E-10	4.76E-11	2.71E-09
50.00	7.80E-13	1.10E-12	8.40E-14	1.80E-15	2.48E-09	4.20E-09	9.30E-11	1.35E-11	4.90E-15	7.00E-10	4.50E-11	2.56E-09
55.00	4.20E-13	5.20E-13	4.40E-14	1.03E-15	2.33E-09	4.26E-09	6.55E-11	1.22E-11	2.70E-15	6.52E-10	4.22E-11	2.40E-09
60.00	2.27E-13	3.35E-13	2.45E-14	6.20E-16	2.16E-09	4.21E-09	4.65E-11	1.08E-11	1.50E-15	6.25E-10	3.92E-11	2.22E-09
65.00	1.30E-13	1.91E-13	1.39E-14	3.80E-16	1.99E-09	4.12E-09	3.30E-11	9.50E-12	8.80E-16	5.80E-10	3.60E-11	2.06E-09
70.00	7.60E-14	1.11E-13	8.10E-15	2.38E-16	1.84E-09	3.80E-09	2.33E-11	8.35E-12	5.20E-16	5.28E-10	3.30E-11	1.90E-09
75.00	4.40E-14	6.50E-14	4.75E-15	1.47E-16	1.68E-09	3.50E-09	1.67E-11	7.30E-12	2.96E-16	4.70E-10	3.02E-11	1.75E-09

B-3

TABLE B-2

REACTION RATES FOR THE NOMINAL REACTOR CONFIGURATION AT 13.0 CM FROM CORE CENTERLINE

Z(cm)	54FENP	58NINP	46TINP	55MNN2N	239PUNP	197AUNG	237NPNF	58FENG	27ALNA	59CONG	45SCNG	235UNF
-70.00	3.60E-14	4.70E-14	3.80E-15	1.20E-16	1.94E-09	5.70E-09	1.90E-11	7.75E-12	3.30E-16	6.10E-10	3.76E-11	1.80E-09
-65.00	6.10E-14	8.50E-14	6.50E-15	1.94E-16	2.23E-09	5.92E-09	2.65E-11	9.35E-12	5.30E-16	6.62E-10	4.23E-11	2.12E-09
-60.00	1.02E-13	1.54E-13	1.12E-14	3.15E-16	2.50E-09	6.15E-09	3.65E-11	1.12E-11	8.50E-16	7.20E-10	4.80E-11	2.47E-09
-55.00	1.82E-13	2.70E-13	2.00E-14	5.38E-16	2.81E-09	6.30E-09	5.25E-11	1.31E-11	1.40E-15	7.92E-10	5.32E-11	2.85E-09
-50.00	3.22E-13	4.75E-13	3.65E-14	9.10E-16	3.07E-09	6.50E-09	7.45E-11	1.50E-11	2.33E-15	8.50E-10	5.88E-11	3.21E-09
-45.00	5.45E-13	8.60E-13	6.80E-14	1.58E-15	3.30E-09	6.58E-09	1.07E-10	1.67E-11	3.95E-15	9.20E-10	6.37E-11	3.53E-09
-40.00	1.08E-12	1.58E-12	1.32E-13	2.80E-15	3.45E-09	6.50E-09	1.55E-10	1.82E-11	7.00E-15	1.00E-09	6.80E-11	3.80E-09
-35.00	2.05E-12	3.15E-12	2.50E-13	5.50E-15	3.49E-09	6.45E-09	2.32E-10	1.93E-11	1.35E-14	1.07E-09	7.00E-11	3.80E-09
-30.00	4.15E-12	6.10E-12	4.80E-13	1.20E-14	3.37E-09	5.80E-09	3.45E-10	1.94E-11	2.72E-14	9.60E-10	6.68E-11	3.60E-09
-25.00	8.50E-12	1.17E-11	9.20E-13	2.48E-14	3.14E-09	3.82E-09	5.10E-10	1.76E-11	6.10E-14	5.40E-10	5.72E-11	3.34E-09
-20.00	1.75E-11	2.20E-11	1.87E-12	4.50E-14	3.00E-09	1.90E-09	7.38E-10	1.38E-11	1.15E-13	2.70E-10	4.55E-11	3.16E-09
-18.00	2.15E-11	2.80E-11	2.40E-12	5.55E-14	3.02E-09	1.43E-09	8.40E-10	1.21E-11	1.38E-13	1.95E-10	4.28E-11	3.10E-09
-16.00	2.60E-11	3.42E-11	3.15E-12	6.55E-14	3.07E-09	1.10E-09	9.60E-10	1.11E-11	1.62E-13	1.43E-10	4.10E-11	3.04E-09
-14.00	3.10E-11	4.00E-11	3.70E-12	7.45E-14	3.17E-09	8.85E-10	1.06E-09	1.07E-11	1.90E-13	1.03E-10	4.00E-11	3.02E-09
-12.00	3.37E-11	4.70E-11	4.20E-12	8.40E-14	3.30E-09	7.20E-10	1.17E-09	1.05E-11	2.20E-13	7.85E-11	3.97E-11	3.02E-09
-10.00	3.60E-11	5.00E-11	4.55E-12	9.00E-14	3.44E-09	6.10E-10	1.25E-09	1.03E-11	2.38E-13	5.80E-11	3.95E-11	3.06E-09
-8.00	3.78E-11	5.35E-11	4.78E-12	9.42E-14	3.57E-09	5.70E-10	1.32E-09	1.02E-11	2.54E-13	4.30E-11	3.93E-11	3.13E-09
-6.00	3.88E-11	5.50E-11	4.95E-12	9.80E-14	3.67E-09	5.55E-10	1.37E-09	1.01E-11	2.62E-13	3.52E-11	3.92E-11	3.22E-09
-4.00	3.92E-11	5.45E-11	5.00E-12	9.98E-14	3.77E-09	5.50E-10	1.40E-09	1.01E-11	2.69E-13	3.32E-11	3.92E-11	3.29E-09
-2.00	3.96E-11	5.42E-11	5.05E-12	1.00E-13	3.81E-09	5.55E-10	1.42E-09	1.01E-11	2.70E-13	3.38E-11	3.93E-11	3.32E-09
0.00	3.94E-11	5.40E-11	5.03E-12	1.00E-13	3.81E-09	5.52E-10	1.42E-09	1.02E-11	2.68E-13	3.40E-11	3.95E-11	3.32E-09
2.00	3.88E-11	5.40E-11	5.00E-12	1.00E-13	3.79E-09	5.52E-10	1.40E-09	1.01E-11	2.62E-13	3.40E-11	3.96E-11	3.30E-09
4.00	3.80E-11	5.35E-11	4.98E-12	9.80E-14	3.72E-09	5.50E-10	1.37E-09	9.80E-12	2.57E-13	3.32E-11	3.97E-11	3.23E-09
6.00	3.63E-11	5.20E-11	4.80E-12	9.40E-14	3.61E-09	5.40E-10	1.32E-09	9.15E-12	2.52E-13	3.20E-11	3.98E-11	3.15E-09
8.00	3.50E-11	4.90E-11	4.50E-12	8.90E-14	3.49E-09	5.32E-10	1.25E-09	8.80E-12	2.37E-13	3.40E-11	3.98E-11	3.03E-09
10.00	3.25E-11	4.45E-11	4.15E-12	8.20E-14	3.34E-09	5.50E-10	1.17E-09	8.73E-12	2.20E-13	5.18E-11	3.99E-11	2.95E-09
12.00	2.25E-11	3.90E-11	3.70E-12	7.40E-14	3.20E-09	5.55E-10	1.08E-09	9.00E-12	2.00E-13	8.10E-11	3.99E-11	2.87E-09
14.00	2.55E-11	3.45E-11	3.25E-12	6.40E-14	3.09E-09	5.15E-10	9.70E-10	9.45E-12	1.75E-13	1.17E-10	3.99E-11	2.80E-09
16.00	2.12E-11	2.85E-11	2.60E-12	5.50E-14	2.98E-09	9.80E-10	8.50E-10	1.00E-11	1.40E-13	1.55E-10	4.00E-11	2.78E-09
18.00	1.73E-11	2.30E-11	2.05E-12	4.60E-14	2.93E-09	1.18E-09	7.40E-10	1.08E-11	1.10E-13	2.10E-10	4.00E-11	2.76E-09
20.00	1.35E-11	1.90E-11	1.65E-12	3.70E-14	2.87E-09	1.42E-09	6.45E-10	1.15E-11	8.60E-14	2.90E-10	4.00E-11	2.78E-09
25.00	8.10E-12	1.12E-11	9.60E-13	2.10E-14	2.87E-09	2.01E-09	4.55E-10	1.33E-11	5.05E-14	4.70E-10	4.12E-11	2.80E-09
30.00	4.90E-12	6.70E-12	5.65E-13	1.22E-14	2.81E-09	2.70E-09	3.22E-10	1.45E-11	3.00E-14	6.00E-10	4.32E-11	2.80E-09
35.00	2.37E-12	4.00E-12	3.30E-13	7.00E-15	2.72E-09	3.30E-09	2.28E-10	1.50E-11	1.82E-14	6.50E-10	4.45E-11	2.76E-09
40.00	1.80E-12	2.45E-12	2.00E-13	4.20E-15	2.58E-09	3.72E-09	1.63E-10	1.44E-11	1.10E-14	6.60E-10	4.45E-11	2.69E-09
45.00	1.03E-12	1.45E-12	1.16E-13	2.42E-15	2.45E-09	4.02E-09	1.15E-10	1.33E-11	6.55E-15	6.55E-10	4.35E-11	2.58E-09
50.00	6.00E-13	8.70E-13	6.70E-14	1.45E-15	2.30E-09	4.13E-09	8.20E-11	1.22E-11	3.95E-15	6.35E-10	4.18E-11	2.44E-09
55.00	3.55E-13	5.20E-13	3.85E-14	8.95E-16	2.16E-09	4.13E-09	5.80E-11	1.11E-11	2.35E-15	6.10E-10	3.93E-11	2.28E-09
60.00	2.10E-13	3.10E-13	2.25E-14	5.60E-16	2.03E-09	4.00E-09	4.15E-11	1.00E-11	1.40E-15	5.80E-10	3.68E-11	2.10E-09
65.00	1.35E-13	1.87E-13	1.36E-14	3.52E-16	1.89E-09	3.90E-09	2.95E-11	8.95E-12	8.50E-16	5.50E-10	3.39E-11	1.93E-09
70.00	9.30E-14	1.13E-13	8.10E-15	2.20E-16	1.76E-09	3.70E-09	2.10E-11	8.05E-12	5.10E-16	5.20E-10	3.10E-11	1.78E-09
75.00	5.20E-14	6.80E-14	4.85E-15	1.38E-16	1.62E-09	3.48E-09	1.48E-11	7.20E-12	3.15E-16	4.92E-10	2.84E-11	1.62E-09

B-4

TABLE B-3

REACTION RATES FOR THE NOMINAL REACTOR CONFIGURATION AT 17.3 CM FROM CORE CENTERLINE

Z(cm)	54FENP	58NINP	46TINP	55MNN2N	239PUNP	197AUNG	237NPNF	58FENG	27ALNA	59CONG	45SCNG	235UNF
-70.00	2.80E-14	4.40E-14	3.00F-15	1.20F-16	1.95E-09	5.55E-09	1.62E-11	7.60E-12	3.00E-16	5.35E-10	3.28E-11	1.74E-09
-65.00	5.20E-14	8.00E-14	5.70F-15	1.85E-16	2.18E-09	5.73E-09	2.36E-11	9.25E-12	5.00E-16	6.10E-10	4.00E-11	2.04E-09
-60.00	9.80E-14	1.45E-13	1.04E-14	2.92E-16	2.42E-09	5.90E-09	3.40E-11	1.10E-11	8.20E-16	6.90E-10	4.70E-11	2.38E-09
-55.00	1.40E-13	2.55E-13	1.94E-14	4.70F-16	2.67E-09	5.08E-09	4.90E-11	1.28E-11	1.37E-15	7.75E-10	5.34E-11	2.73E-09
-50.00	3.10E-13	4.60E-13	3.35E-14	7.80F-16	2.93E-09	5.20E-09	7.03E-11	1.47E-11	2.27E-15	8.55E-10	5.90E-11	3.07E-09
-45.00	5.50E-13	8.40E-13	6.10E-14	1.43E-15	3.16E-09	5.28E-09	1.01E-10	1.63E-11	3.90E-15	9.20E-10	6.38E-11	3.40E-09
-40.00	1.05E-12	1.55E-12	1.18E-13	2.70E-15	3.35E-09	5.30E-09	1.47E-10	1.77E-11	6.90E-15	9.85E-10	6.65E-11	3.64E-09
-35.00	2.20E-12	3.15E-12	2.32E-13	5.20E-15	3.48E-09	5.30E-09	2.03E-10	1.85E-11	1.36E-14	1.03E-09	6.70E-11	3.80E-09
-30.00	4.50E-12	6.60E-12	5.30E-13	1.00E-14	3.48E-09	5.80E-09	3.03E-10	1.81E-11	2.90E-14	9.15E-10	6.30E-11	3.73E-09
-25.00	9.00E-12	1.35E-11	1.17E-12	2.00E-14	3.14E-09	3.50E-09	4.70E-10	1.63E-11	6.10E-14	5.50E-10	5.34E-11	3.42E-09
-20.00	1.55E-11	2.35E-11	2.17E-12	4.00E-14	2.98E-09	1.82E-09	6.90E-10	1.35E-11	1.14E-13	2.53E-10	4.40E-11	3.03E-09
-18.00	2.10E-11	2.85E-11	2.65E-12	5.20E-14	2.99E-09	1.37E-09	7.95E-10	1.24E-11	1.39E-13	1.90E-10	4.17E-11	2.96E-09
-16.00	2.45E-11	3.40E-11	3.15E-12	6.20E-14	3.00E-09	1.05E-09	9.00E-10	1.11E-11	1.65E-13	1.40E-10	3.95E-11	2.91E-09
-14.00	2.95E-11	4.00E-11	3.65E-12	7.20E-14	3.03E-09	9.50E-10	1.00E-09	1.03E-11	1.90E-13	9.80E-11	3.90E-11	2.91E-09
-12.00	3.20E-11	4.45E-11	4.10E-12	8.00E-14	3.12E-09	7.10E-10	1.12E-09	1.01E-11	2.13E-13	6.80E-11	3.82E-11	2.96E-09
-10.00	3.45E-11	4.80E-11	4.45E-12	8.60E-14	3.28E-09	5.05E-10	1.20E-09	1.00E-11	2.30E-13	4.55E-11	3.76E-11	3.04E-09
-8.00	3.58E-11	4.95E-11	4.70E-12	9.10E-14	3.40E-09	5.58E-10	1.27E-09	1.00E-11	2.43E-13	3.50E-11	3.72E-11	3.11E-09
-6.00	3.65E-11	5.00E-11	4.80E-12	9.40E-14	3.51E-09	5.40E-10	1.32E-09	1.00E-11	2.49E-13	3.22E-11	3.74E-11	3.16E-09
-4.00	3.70E-11	5.00E-11	4.83E-12	9.50E-14	3.58E-09	5.35E-10	1.36E-09	1.01E-11	2.51E-13	3.20E-11	3.78E-11	3.18E-09
-2.00	3.70E-11	5.00E-11	4.80E-12	9.45E-14	3.60E-09	5.37E-10	1.37E-09	1.02E-11	2.51E-13	3.30E-11	3.80E-11	3.18E-09
0.00	3.70E-11	5.00E-11	4.79E-12	9.40E-14	3.60E-09	5.40E-10	1.37E-09	1.01E-11	2.50E-13	3.32E-11	3.82E-11	3.17E-09
2.00	3.60E-11	4.90E-11	4.68E-12	9.20E-14	3.59E-09	5.35E-10	1.34E-09	1.00E-11	2.44E-13	3.28E-11	3.80E-11	3.13E-09
4.00	3.50E-11	4.80E-11	4.50E-12	9.00E-14	3.57E-09	5.25E-10	1.30E-09	9.75E-12	2.39E-13	3.20E-11	3.78E-11	3.07E-09
6.00	3.40E-11	4.65E-11	4.30E-12	8.60E-14	3.52E-09	5.10E-10	1.26E-09	9.45E-12	2.30E-13	3.08E-11	3.70E-11	2.99E-09
8.00	3.25E-11	4.45E-11	4.10E-12	8.10E-14	3.46E-09	5.10E-10	1.20E-09	9.30E-12	2.22E-13	3.02E-11	3.62E-11	2.89E-09
10.00	3.05E-11	4.20E-11	3.80E-12	7.50E-14	3.35E-09	5.38E-10	1.13E-09	9.35E-12	2.07E-13	3.30E-11	3.58E-11	2.79E-09
12.00	2.70E-11	3.70E-11	3.36E-12	6.70E-14	3.20E-09	5.45E-10	1.02E-09	9.40E-12	1.84E-13	6.70E-11	3.56E-11	2.73E-09
14.00	2.35E-11	3.20E-11	2.90E-12	5.70E-14	3.06E-09	7.90E-10	9.20E-10	9.70E-12	1.58E-13	1.10E-10	3.56E-11	2.71E-09
16.00	2.00E-11	2.73E-11	2.43E-12	4.80E-14	2.97E-09	9.65E-10	7.95E-10	1.01E-11	1.32E-13	1.60E-10	3.63E-11	2.69E-09
18.00	1.50E-11	2.27E-11	1.98E-12	4.05E-14	2.88E-09	1.18E-09	6.95E-10	1.08E-11	1.08E-13	2.17E-10	3.78E-11	2.67E-09
20.00	1.29E-11	1.75E-11	1.57E-12	3.32E-14	2.80E-09	1.46E-09	6.06E-10	1.14E-11	8.70E-14	2.73E-10	3.88E-11	2.65E-09
25.00	7.50E-12	1.00E-11	8.80E-13	1.96E-14	2.68E-09	2.19E-09	4.28E-10	1.28E-11	4.75E-14	4.20E-10	4.12E-11	2.63E-09
30.00	4.40E-12	5.90E-12	5.10E-13	1.13E-14	2.60E-09	2.86E-09	3.00E-10	1.36E-11	2.75E-14	5.50E-10	4.30E-11	2.65E-09
35.00	2.60E-12	3.50E-12	3.00E-13	6.40E-15	2.57E-09	3.32E-09	2.12E-10	1.40E-11	1.60E-14	6.20E-10	4.35E-11	2.63E-09
40.00	1.64E-12	2.25E-12	1.80E-13	3.70E-15	2.52E-09	3.65E-09	1.50E-10	1.40E-11	9.80E-15	6.40E-10	4.30E-11	2.58E-09
45.00	1.04E-12	1.43E-12	1.14E-13	2.18E-15	2.40E-09	3.83E-09	1.06E-10	1.33E-11	6.20E-15	6.35E-10	4.18E-11	2.48E-09
50.00	6.40E-13	8.70E-13	6.70E-14	1.33E-15	2.26E-09	3.94E-09	7.65E-11	1.23E-11	3.80E-15	6.20E-10	3.99E-11	2.34E-09
55.00	3.60E-13	5.10E-13	3.80E-14	8.30E-16	2.10E-09	3.98E-09	5.45E-11	1.10E-11	2.30E-15	5.92E-10	3.78E-11	2.20E-09
60.00	1.90E-13	2.90E-13	2.13E-14	5.30E-16	1.93E-09	3.96E-09	3.90E-11	9.60E-12	1.35E-15	5.60E-10	3.56E-11	2.03E-09
65.00	1.15E-13	1.70E-13	1.23E-14	3.35E-16	1.79E-09	3.78E-09	2.78E-11	8.25E-12	7.90E-16	5.20E-10	3.33E-11	1.87E-09
70.00	6.70E-14	9.80E-14	7.20E-15	2.14E-16	1.63E-09	3.55E-09	2.00E-11	7.00E-12	4.55E-16	4.75E-10	3.10E-11	1.71E-09
75.00	3.95E-14	5.80E-14	4.30E-15	1.37E-16	1.50E-09	3.29E-09	1.43E-11	5.96E-12	2.54E-16	4.25E-10	2.82E-11	1.58E-09

TABLE B-4

REACTION RATES FOR THE NOMINAL REACTOR CONFIGURATION AT 19.8 CM FROM CORE CENTERLINE

Z(cm)	54FENP	58NINP	46TINP	55MNN2N	239PUNP	197AUNG	237NPNF	58FENG	27ALNA	59CONG	45SCNG	235UNF
-70.00	3.15E-14	4.40E-14	3.50E-15	1.00E-16	1.89E-09	5.40E-09	1.60E-11	7.50E-12	2.92E-16	5.75E-10	3.50E-11	1.74E-09
-65.00	5.45E-14	7.85E-14	6.10E-15	1.63E-16	2.16E-09	5.75E-09	2.35E-11	9.05E-12	4.75E-16	6.25E-10	3.98E-11	2.04E-09
-60.00	9.30E-14	1.40E-13	1.04E-14	2.75E-16	2.40E-09	5.95E-09	3.30E-11	1.08E-11	8.00E-16	6.80E-10	4.50E-11	2.38E-09
-55.00	1.46E-13	2.50E-13	1.82E-14	4.60E-16	2.65E-09	5.14E-09	4.85E-11	1.25E-11	1.33E-15	7.35E-10	5.00E-11	2.73E-09
-50.00	2.97E-13	4.40E-13	3.25E-14	7.70E-16	2.90E-09	5.30E-09	7.00E-11	1.43E-11	2.25E-15	8.00E-10	5.49E-11	3.07E-09
-45.00	5.40E-13	7.90E-13	6.00E-14	1.40E-15	3.14E-09	5.30E-09	1.00E-10	1.60E-11	3.83E-15	8.70E-10	5.92E-11	3.40E-09
-40.00	1.00E-12	1.40E-12	1.15E-13	2.65E-15	3.30E-09	5.20E-09	1.45E-10	1.73E-11	6.75E-15	9.40E-10	6.25E-11	3.64E-09
-35.00	2.00E-12	2.82E-12	2.15E-13	5.30E-15	3.40E-09	5.00E-09	2.07E-10	1.80E-11	1.24E-14	1.02E-09	6.45E-11	3.80E-09
-30.00	3.95E-12	5.80E-12	5.00E-13	1.10E-14	3.32E-09	5.30E-09	3.05E-10	1.80E-11	2.70E-14	9.15E-10	6.03E-11	3.73E-09
-25.00	7.90E-12	1.16E-11	1.07E-12	2.45E-14	3.10E-09	3.35E-09	4.70E-10	1.60E-11	6.05E-14	5.00E-10	5.16E-11	3.42E-09
-20.00	1.65E-11	2.40E-11	2.15E-12	4.45E-14	2.95E-09	1.80E-09	6.60E-10	1.34E-11	1.20E-13	2.48E-10	4.30E-11	3.03E-09
-18.00	2.00E-11	2.90E-11	2.65E-12	5.25E-14	2.93E-09	1.37E-09	7.70E-10	1.18E-11	1.40E-13	1.80E-10	4.13E-11	2.96E-09
-16.00	2.40E-11	3.45E-11	3.15E-12	6.20E-14	2.97E-09	1.06E-09	8.70E-10	1.08E-11	1.62E-13	1.33E-10	4.00E-11	2.91E-09
-14.00	2.80E-11	4.00E-11	3.60E-12	7.10E-14	3.00E-09	8.60E-10	9.70E-10	1.02E-11	1.87E-13	9.70E-11	3.90E-11	2.91E-09
-12.00	3.05E-11	4.40E-11	3.82E-12	7.60E-14	3.12E-09	5.65E-10	1.02E-09	1.01E-11	2.00E-13	7.10E-11	3.83E-11	2.96E-09
-10.00	3.25E-11	4.65E-11	4.02E-12	8.00E-14	3.27E-09	5.80E-10	1.16E-09	9.95E-12	2.12E-13	5.25E-11	3.78E-11	3.04E-09
-8.00	3.42E-11	4.80E-11	4.28E-12	8.25E-14	3.35E-09	5.45E-10	1.22E-09	9.80E-12	2.22E-13	3.90E-11	3.75E-11	3.11E-09
-6.00	3.53E-11	4.85E-11	4.42E-12	8.22E-14	3.43E-09	5.35E-10	1.27E-09	9.65E-12	2.28E-13	3.25E-11	3.72E-11	3.16E-09
-4.00	3.53E-11	4.90E-11	4.50E-12	8.20E-14	3.50E-09	5.35E-10	1.28E-09	9.60E-12	2.32E-13	3.17E-11	3.71E-11	3.15E-09
-2.00	3.50E-11	4.90E-11	4.51E-12	8.00E-14	3.50E-09	5.32E-10	1.28E-09	9.56E-12	2.32E-13	3.20E-11	3.70E-11	3.10E-09
0.00	3.43E-11	4.90E-11	4.50E-12	7.79E-14	3.50E-09	5.30E-10	1.28E-09	9.55E-12	2.32E-13	3.25E-11	3.70E-11	3.04E-09
2.00	3.40E-11	4.88E-11	4.50E-12	7.79E-14	3.46E-09	5.30E-10	1.24E-09	9.50E-12	2.32E-13	3.22E-11	3.68E-11	3.02E-09
4.00	3.35E-11	4.85E-11	4.47E-12	7.75E-14	3.40E-09	5.28E-10	1.20E-09	9.20E-12	2.28E-13	3.15E-11	3.65E-11	2.98E-09
6.00	3.27E-11	4.80E-11	4.30E-12	7.40E-14	3.30E-09	5.20E-10	1.16E-09	8.90E-12	2.19E-13	3.00E-11	3.60E-11	2.87E-09
8.00	3.10E-11	4.50E-11	4.05E-12	7.00E-14	3.19E-09	5.14E-10	1.10E-09	8.55E-12	2.08E-13	3.00E-11	3.54E-11	2.79E-09
10.00	2.88E-11	4.05E-11	3.72E-12	6.45E-14	3.07E-09	5.28E-10	1.03E-09	8.40E-12	2.00E-13	3.80E-11	3.51E-11	2.73E-09
12.00	2.58E-11	3.50E-11	3.30E-12	5.90E-14	3.02E-09	5.30E-10	9.80E-10	8.65E-12	1.78E-13	6.00E-11	3.49E-11	2.67E-09
14.00	2.25E-11	3.05E-11	2.80E-12	5.40E-14	2.95E-09	7.70E-10	8.70E-10	9.00E-12	1.53E-13	9.00E-11	3.50E-11	2.60E-09
16.00	1.95E-11	2.55E-11	2.35E-12	4.60E-14	2.87E-09	9.00E-10	7.60E-10	9.50E-12	1.25E-13	1.57E-10	3.53E-11	2.58E-09
18.00	1.48E-11	2.07E-11	1.90E-12	3.85E-14	2.80E-09	1.06E-09	6.60E-10	1.01E-11	1.00E-13	2.13E-10	3.60E-11	2.56E-09
20.00	1.22E-11	1.69E-11	1.50E-12	3.18E-14	2.78E-09	1.50E-09	5.85E-10	1.08E-11	8.30E-14	2.78E-10	3.80E-11	2.65E-09
25.00	7.20E-12	1.00E-11	8.15E-13	1.78E-14	2.73E-09	1.89E-09	4.12E-10	1.23E-11	4.60E-14	4.22E-10	3.97E-11	2.60E-09
30.00	4.30E-12	5.90E-12	4.95E-13	1.02E-14	2.67E-09	2.17E-09	2.95E-10	1.35E-11	2.70E-14	5.18E-10	4.12E-11	2.62E-09
35.00	2.55E-12	3.50E-12	2.85E-13	5.80E-15	2.57E-09	2.38E-09	2.07E-10	1.40E-11	1.58E-14	5.78E-10	4.19E-11	2.62E-09
40.00	1.55E-12	2.12E-12	1.72E-13	3.43E-15	2.46E-09	2.58E-09	1.48E-10	1.39E-11	9.25E-15	6.15E-10	4.19E-11	2.52E-09
45.00	9.00E-13	1.29E-12	1.00E-13	1.97E-15	2.32E-09	2.68E-09	1.04E-10	1.28E-11	5.65E-15	6.20E-10	4.11E-11	2.46E-09
50.00	5.40E-13	7.85E-13	5.90E-14	1.20E-15	2.17E-09	2.75E-09	7.50E-11	1.17E-11	3.45E-15	6.06E-10	3.95E-11	2.33E-09
55.00	3.25E-13	4.75E-13	3.50E-14	7.50E-16	2.03E-09	2.82E-09	5.30E-11	1.06E-11	2.13E-15	5.80E-10	3.73E-11	2.17E-09
60.00	1.90E-13	2.86E-13	2.08E-14	5.15E-16	1.90E-09	2.84E-09	3.77E-11	4.45E-12	1.32E-15	5.50E-10	3.50E-11	2.00E-09
65.00	1.17E-13	1.73E-13	1.22E-14	3.10E-16	1.76E-09	2.85E-09	2.68E-11	8.45E-12	7.80E-16	5.02E-10	3.20E-11	1.85E-09
70.00	7.00E-14	1.05E-13	7.40E-15	2.00E-16	1.63E-09	2.80E-09	1.90E-11	7.60E-12	4.75E-16	4.60E-10	2.92E-11	1.70E-09
75.00	4.40E-14	6.40E-14	4.40E-15	1.29E-16	1.51E-09	2.70E-09	1.34E-11	6.80E-12	2.88E-16	4.22E-10	2.66E-11	1.56E-09

B-6

TABLE B-5

REACTION RATES FOR THE NOMINAL REACTOR CONFIGURATION AT 25.0 CM FROM CORE CENTERLINE

Z(cm)	54FENP	58NINP	46TINP	55MNN2N	239PUNP	197AUNG	237NPNF	58FENG	27ALNA	59CONG	45SCNG	235UNF
-70.00	3.05E-14	4.50E-14	3.00E-15	1.15E-16	1.54E-09	4.95E-09	1.38E-11	7.00E-12	2.20E-16	4.60E-10	3.36E-11	1.53E-09
-65.00	5.10E-14	7.70E-14	5.20E-15	1.70E-16	1.85E-09	5.12E-09	2.00E-11	8.50E-12	3.88E-16	5.40E-10	3.72E-11	1.80E-09
-60.00	8.50E-14	1.26E-13	9.30E-15	2.55E-16	2.17E-09	5.30E-09	2.85E-11	1.00E-11	6.80E-16	6.30E-10	4.12E-11	2.08E-09
-55.00	1.50E-13	2.35E-13	1.65E-14	4.20E-16	2.48E-09	5.47E-09	4.20E-11	1.17E-11	1.20E-15	7.20E-10	4.52E-11	2.39E-09
-50.00	2.62E-13	4.45E-13	2.95E-14	7.45E-16	2.76E-09	5.62E-09	6.00E-11	1.34E-11	2.10E-15	8.00E-10	4.90E-11	2.68E-09
-45.00	4.75E-13	7.80E-13	5.60E-14	1.34E-15	3.00E-09	5.80E-09	8.70E-11	1.50E-11	3.72E-15	9.60E-10	5.25E-11	2.94E-09
-40.00	9.40E-13	1.45E-12	1.10E-13	2.50E-15	3.10E-09	5.90E-09	1.25E-10	1.62E-11	6.40E-15	9.90E-10	5.48E-11	3.14E-09
-35.00	1.80E-12	2.82E-12	2.50E-13	5.00E-15	3.08E-09	5.97E-09	1.82E-10	1.69E-11	1.21E-14	9.20E-10	5.53E-11	3.22E-09
-30.00	3.70E-12	5.40E-12	5.20E-13	9.60E-15	2.95E-09	4.93E-09	2.62E-10	1.65E-11	2.65E-14	8.10E-10	5.18E-11	3.10E-09
-25.00	7.70E-12	1.10E-11	1.06E-12	1.85E-14	2.86E-09	3.15E-09	3.85E-10	1.50E-11	5.80E-14	4.90E-10	4.56E-11	2.90E-09
-20.00	1.53E-11	2.20E-11	1.93E-12	3.80E-14	2.81E-09	1.75E-09	5.75E-10	1.30E-11	1.08E-13	2.48E-10	3.90E-11	2.75E-09
-18.00	1.36E-11	2.65E-11	2.40E-12	4.70E-14	2.81E-09	1.37E-09	6.70E-10	1.17E-11	1.32E-13	1.95E-10	3.85E-11	2.71E-09
-16.00	2.33E-11	3.10E-11	2.85E-12	5.45E-14	2.82E-09	1.07E-09	7.60E-10	1.05E-11	1.52E-13	1.52E-10	3.70E-11	2.68E-09
-14.00	2.70E-11	3.50E-11	3.18E-12	6.20E-14	2.83E-09	8.35E-10	8.35E-10	9.75E-12	1.75E-13	1.16E-10	3.65E-11	2.65E-09
-12.00	2.80E-11	3.90E-11	3.55E-12	6.60E-14	2.86E-09	5.90E-10	9.05E-10	9.30E-12	1.89E-13	8.40E-11	3.60E-11	2.67E-09
-10.00	2.97E-11	4.20E-11	3.80E-12	6.90E-14	2.90E-09	5.98E-10	9.60E-10	9.20E-12	1.98E-13	5.90E-11	3.55E-11	2.70E-09
-8.00	3.05E-11	4.30E-11	3.90E-12	7.15E-14	2.97E-09	5.50E-10	1.00E-09	9.30E-12	2.03E-13	4.55E-11	3.52E-11	2.72E-09
-6.00	3.09E-11	4.33E-11	3.98E-12	7.30E-14	3.05E-09	5.32E-10	1.02E-09	9.40E-12	2.09E-13	4.40E-11	3.50E-11	2.77E-09
-4.00	3.10E-11	4.30E-11	4.00E-12	7.40E-14	3.10E-09	5.32E-10	1.03E-09	9.50E-12	2.10E-13	4.43E-11	3.50E-11	2.80E-09
-2.00	3.12E-11	4.25E-11	4.00E-12	7.50E-14	3.11E-09	5.40E-10	1.04E-09	9.60E-12	2.10E-13	4.50E-11	3.49E-11	2.83E-09
0.00	3.12E-11	4.20E-11	4.00E-12	7.60E-14	3.12E-09	5.40E-10	1.03E-09	9.70E-12	2.08E-13	4.50E-11	3.48E-11	2.84E-09
2.00	3.12E-11	4.13E-11	3.98E-12	7.40E-14	3.10E-09	5.30E-10	1.02E-09	9.70E-12	2.03E-13	4.50E-11	3.43E-11	2.82E-09
4.00	3.10E-11	4.05E-11	3.95E-12	7.20E-14	3.05E-09	5.12E-10	9.90E-10	9.60E-12	2.00E-13	4.30E-11	3.40E-11	2.79E-09
6.00	3.08E-11	3.85E-11	3.80E-12	6.80E-14	3.00E-09	5.07E-10	9.55E-10	9.30E-12	1.92E-13	4.22E-11	3.38E-11	2.74E-09
8.00	2.88E-11	3.65E-11	3.50E-12	6.30E-14	2.94E-09	5.08E-10	9.10E-10	8.90E-12	1.82E-13	4.22E-11	3.36E-11	2.67E-09
10.00	2.60E-11	3.35E-11	3.20E-12	5.65E-14	2.85E-09	5.45E-10	8.60E-10	8.55E-12	1.68E-13	5.15E-11	3.33E-11	2.60E-09
12.00	2.25E-11	3.00E-11	2.77E-12	4.95E-14	2.78E-09	6.30E-10	8.00E-10	8.35E-12	1.50E-13	8.00E-11	3.31E-11	2.55E-09
14.00	1.92E-11	2.70E-11	2.40E-12	4.35E-14	2.72E-09	7.65E-10	7.30E-10	8.70E-12	1.33E-13	1.30E-10	3.31E-11	2.50E-09
16.00	1.65E-11	2.20E-11	1.97E-12	3.52E-14	2.68E-09	9.85E-10	6.45E-10	9.20E-12	1.09E-13	1.85E-10	3.33E-11	2.47E-09
18.00	1.35E-11	1.88E-11	1.57E-12	2.85E-14	2.63E-09	1.25E-09	5.70E-10	1.00E-11	8.90E-14	2.43E-10	3.36E-11	2.44E-09
20.00	1.08E-11	1.45E-11	1.28E-12	2.30E-14	2.61E-09	1.55E-09	4.95E-10	1.09E-11	7.10E-14	3.00E-10	3.40E-11	2.42E-09
25.00	6.20E-12	8.40E-12	7.20E-13	1.35E-14	2.54E-09	2.29E-09	3.50E-10	1.26E-11	4.00E-14	4.25E-10	3.65E-11	2.41E-09
30.00	3.50E-12	5.00E-12	4.15E-13	8.00E-15	2.46E-09	2.77E-09	2.44E-10	1.37E-11	2.30E-14	5.05E-10	3.89E-11	2.40E-09
35.00	2.15E-12	3.05E-12	2.40E-13	4.75E-15	2.37E-09	3.02E-09	1.76E-10	1.36E-11	1.35E-14	5.50E-10	3.98E-11	2.36E-09
40.00	1.28E-12	1.90E-12	1.40E-13	2.90E-15	2.24E-09	3.22E-09	1.27E-10	1.29E-11	8.00E-15	5.60E-10	3.90E-11	2.26E-09
45.00	7.40E-13	1.12E-12	8.00E-14	1.60E-15	2.09E-09	3.39E-09	8.95E-11	1.20E-11	4.80E-15	5.52E-10	3.75E-11	2.15E-09
50.00	4.40E-13	6.70E-13	4.60E-14	1.00E-15	1.95E-09	3.49E-09	6.40E-11	1.10E-11	2.93E-15	5.37E-10	3.55E-11	2.01E-09
55.00	2.75E-13	4.05E-13	2.65E-14	6.30E-16	1.82E-09	3.52E-09	4.55E-11	9.80E-12	1.80E-15	5.20E-10	3.32E-11	1.88E-09
60.00	1.75E-13	2.45E-13	1.50E-14	4.00E-16	1.70E-09	3.50E-09	3.25E-11	8.70E-12	1.14E-15	5.00E-10	3.07E-11	1.75E-09
65.00	1.13E-13	1.46E-13	9.00E-15	2.65E-16	1.55E-09	3.46E-09	2.30E-11	7.65E-12	7.20E-16	4.68E-10	2.83E-11	1.63E-09
70.00	7.30E-14	9.00E-14	5.40E-15	1.75E-16	1.43E-09	3.40E-09	1.64E-11	6.70E-12	4.55E-16	4.30E-10	2.60E-11	1.51E-09
75.00	4.75E-14	5.60E-14	3.25E-15	1.17E-16	1.31E-09	3.10E-09	1.16E-11	5.80E-12	3.00E-16	3.95E-10	2.38E-11	1.40E-09

TABLE B-6

REACTION RATES FOR THE NOMINAL REACTOR CONFIGURATION AT 28.2 CM FROM CORE CENTERLINE

Z(cm)	54FENP	58NINP	46TINP	55MNN2N	239PUNP	197AUNG	237NPNF	58FENG	27ALNA	59CONG	45SCNG	235UNF
-70.00	2.30E-14	3.30E-14	2.50E-15	9.20E-17	1.50E-09	4.45E-09	1.31E-11	6.10E-12	1.92E-16	4.40E-10	2.90E-11	1.44E-09
-65.00	4.00E-14	6.10E-14	4.40E-15	1.44E-16	1.71E-09	4.52E-09	1.86E-11	7.60E-12	3.35E-16	5.00E-10	3.31E-11	1.67E-09
-60.00	7.60E-14	1.13E-13	8.40E-15	2.32E-16	1.95E-09	4.65E-09	2.64E-11	9.10E-12	5.90E-16	5.60E-10	3.74E-11	1.94E-09
-55.00	1.47E-13	2.10E-13	1.60E-14	3.95E-16	2.20E-09	4.70E-09	3.75E-11	1.04E-11	1.03E-15	6.25E-10	4.14E-11	2.20E-09
-50.00	2.80E-13	3.85E-13	3.05E-14	6.90E-16	2.45E-09	4.75E-09	5.35E-11	1.19E-11	1.40E-15	6.95E-10	4.50E-11	2.43E-09
-45.00	5.00E-13	7.10E-13	5.50E-14	1.20E-15	2.68E-09	4.78E-09	7.60E-11	1.33E-11	3.18E-15	7.50E-10	4.80E-11	2.63E-09
-40.00	8.70E-13	1.24E-12	9.80E-14	2.13E-15	2.88E-09	4.79E-09	1.09E-10	1.46E-11	5.70E-15	8.00E-10	4.94E-11	2.77E-09
-35.00	1.51E-12	2.27E-12	1.84E-13	3.85E-15	3.02E-09	4.79E-09	1.59E-10	1.54E-11	1.00E-14	8.20E-10	5.05E-11	2.82E-09
-30.00	2.75E-12	4.05E-12	3.50E-13	7.10E-15	3.01E-09	4.57E-09	2.30E-10	1.52E-11	1.85E-14	7.30E-10	4.80E-11	2.80E-09
-25.00	5.20E-12	7.40E-12	6.70E-13	1.32E-14	2.80E-09	3.26E-09	3.30E-10	1.41E-11	3.55E-14	4.90E-10	4.43E-11	2.70E-09
-20.00	1.00E-11	1.43E-11	1.31E-12	2.35E-14	2.69E-09	2.03E-09	4.75E-10	1.27E-11	6.90E-14	3.20E-10	4.04E-11	2.63E-09
-18.00	1.35E-11	1.82E-11	1.73E-12	2.97E-14	2.70E-09	1.66E-09	5.55E-10	1.16E-11	8.70E-14	2.73E-10	3.88E-11	2.59E-09
-16.00	1.55E-11	2.12E-11	2.10E-12	3.55E-14	2.73E-09	1.34E-09	6.40E-10	1.04E-11	1.07E-13	2.27E-10	3.78E-11	2.56E-09
-14.00	1.80E-11	2.45E-11	2.36E-12	4.25E-14	2.79E-09	1.08E-09	7.10E-10	1.00E-11	1.26E-13	1.88E-10	3.62E-11	2.53E-09
-12.00	2.00E-11	2.74E-11	2.60E-12	4.65E-14	2.85E-09	9.00E-10	7.65E-10	9.70E-12	1.41E-13	1.53E-10	3.52E-11	2.52E-09
-10.00	2.15E-11	2.93E-11	2.77E-12	5.00E-14	2.89E-09	7.90E-10	8.05E-10	9.45E-12	1.50E-13	1.24E-10	3.45E-11	2.53E-09
-8.00	2.23E-11	3.08E-11	2.86E-12	5.25E-14	2.92E-09	7.50E-10	8.38E-10	9.35E-12	1.58E-13	1.03E-10	3.43E-11	2.57E-09
-6.00	2.24E-11	3.13E-11	2.92E-12	5.40E-14	2.93E-09	7.45E-10	8.60E-10	9.40E-12	1.61E-13	9.95E-11	3.45E-11	2.62E-09
-4.00	2.30E-11	3.15E-11	2.94E-12	5.45E-14	2.94E-09	7.55E-10	8.70E-10	9.46E-12	1.62E-13	1.02E-10	3.48E-11	2.63E-09
-2.00	2.30E-11	3.14E-11	2.93E-12	5.40E-14	2.95E-09	7.62E-10	8.70E-10	9.56E-12	1.62E-13	1.04E-10	3.50E-11	2.64E-09
0.00	2.30E-11	3.11E-11	2.90E-12	5.40E-14	2.95E-09	7.65E-10	8.70E-10	9.60E-12	1.60E-13	1.06E-10	3.50E-11	2.63E-09
2.00	2.27E-11	3.10E-11	2.88E-12	5.30E-14	2.92E-09	7.65E-10	8.60E-10	9.60E-12	1.62E-13	1.03E-10	3.49E-11	2.59E-09
4.00	2.23E-11	3.05E-11	2.80E-12	5.20E-14	2.88E-09	7.55E-10	8.40E-10	9.50E-12	1.56E-13	1.00E-10	3.45E-11	2.53E-09
6.00	2.17E-11	2.97E-11	2.70E-12	4.95E-14	2.83E-09	7.40E-10	8.10E-10	9.40E-12	1.51E-13	9.80E-11	3.40E-11	2.48E-09
8.00	2.05E-11	2.82E-11	2.60E-12	4.70E-14	2.75E-09	7.30E-10	7.80E-10	9.20E-12	1.43E-13	9.75E-11	3.33E-11	2.43E-09
10.00	1.90E-11	2.60E-11	2.40E-12	4.35E-14	2.66E-09	7.55E-10	7.35E-10	9.10E-12	1.35E-13	1.07E-10	3.30E-11	2.38E-09
12.00	1.72E-11	2.39E-11	2.18E-12	3.95E-14	2.52E-09	8.50E-10	6.70E-10	9.17E-12	1.20E-13	1.35E-10	3.31E-11	2.34E-09
14.00	1.47E-11	2.05E-11	1.93E-12	3.40E-14	2.48E-09	9.90E-10	5.90E-10	9.35E-12	1.02E-13	1.74E-10	3.31E-11	2.33E-09
16.00	1.21E-11	1.68E-11	1.45E-12	2.77E-14	2.37E-09	1.14E-09	5.20E-10	9.75E-12	8.30E-14	2.13E-10	3.34E-11	2.33E-09
18.00	9.50E-12	1.34E-11	1.13E-12	2.10E-14	2.33E-09	1.33E-09	4.55E-10	1.06E-11	6.70E-14	2.60E-10	3.45E-11	2.33E-09
20.00	7.40E-12	1.02E-11	8.80E-13	1.65E-14	2.30E-09	1.59E-09	4.00E-10	1.11E-11	5.25E-14	3.15E-10	3.60E-11	2.32E-09
25.00	4.20E-12	6.10E-12	5.00E-13	9.45E-15	2.29E-09	2.07E-09	2.84E-10	1.17E-11	3.00E-14	4.80E-10	3.80E-11	2.32E-09
30.00	2.55E-12	3.70E-12	2.90E-13	5.90E-15	2.27E-09	2.41E-09	2.02E-10	1.19E-11	1.80E-14	5.55E-10	3.90E-11	2.32E-09
35.00	1.53E-12	2.32E-12	1.72E-13	3.70E-15	2.19E-09	2.70E-09	1.45E-10	1.17E-11	1.11E-14	5.50E-10	3.80E-11	2.31E-09
40.00	9.60E-13	1.50E-12	1.03E-13	2.25E-15	2.07E-09	2.92E-09	1.03E-10	1.13E-11	6.85E-15	5.30E-10	3.60E-11	2.25E-09
45.00	6.00E-13	9.40E-13	6.30E-14	1.30E-15	1.95E-09	3.07E-09	7.40E-11	1.05E-11	4.20E-15	5.08E-10	3.40E-11	2.20E-09
50.00	3.30E-13	5.30E-13	3.55E-14	7.70E-16	1.80E-09	3.18E-09	5.25E-11	9.65E-12	2.50E-15	4.85E-10	3.20E-11	2.03E-09
55.00	1.82E-13	2.92E-13	2.00E-14	4.65E-16	1.66E-09	3.22E-09	3.73E-11	8.65E-12	1.45E-15	4.52E-10	2.98E-11	1.91E-09
60.00	1.11E-13	1.80E-13	1.18E-14	3.06E-16	1.51E-09	3.20E-09	2.68E-11	7.55E-12	8.40E-16	4.38E-10	2.78E-11	1.80E-09
65.00	6.20E-14	1.03E-13	6.70E-15	1.89E-16	1.39E-09	3.07E-09	1.90E-11	6.40E-12	4.95E-16	4.07E-10	2.58E-11	1.65E-09
70.00	3.60E-14	5.90E-14	3.80E-15	1.19E-16	1.27E-09	2.95E-09	1.36E-11	5.30E-12	2.88E-16	3.70E-10	2.38E-11	1.55E-09
75.00	2.10E-14	3.30E-14	2.20E-15	7.80E-17	1.15E-09	2.89E-09	9.70E-12	4.50E-12	1.64E-16	3.32E-10	2.22E-11	1.42E-09

TABLE B-7

REACTION RATES FOR THE NOMINAL REACTOR CONFIGURATION AT 30.4 CM FROM CORE CENTERLINE

Z(cm)	54FENP	58NINP	46TINP	55MNN2N	239PUNP	197AUNG	237NPNF	58FENG	27ALNA	59CONG	45SCNG	235UNF
-70.00	2.20E-14	2.85E-14	2.50E-15	7.40E-17	1.34E-09	3.90E-09	1.25E-11	5.70E-12	1.88E-16	4.10E-10	2.70E-11	1.36E-09
-65.00	3.68E-14	5.35E-14	4.20E-15	1.20E-16	1.57E-09	4.10E-09	1.70E-11	6.90E-12	3.00E-16	4.55E-10	3.06E-11	1.58E-09
-60.00	6.30E-14	9.90E-14	7.00E-15	1.98E-16	1.84E-09	4.35E-09	2.35E-11	8.25E-12	4.95E-16	5.00E-10	3.45E-11	1.80E-09
-55.00	1.12E-13	1.72E-13	1.23E-14	3.30E-16	2.07E-09	4.55E-09	3.25E-11	9.60E-12	8.30E-16	5.50E-10	3.86E-11	2.07E-09
-50.00	2.00E-13	3.05E-13	2.16E-14	5.60E-16	2.32E-09	4.73E-09	4.55E-11	1.09E-11	1.40E-15	6.10E-10	4.22E-11	2.31E-09
-45.00	3.55E-13	5.60E-13	3.90E-14	9.60E-16	2.53E-09	4.89E-09	6.45E-11	1.23E-11	2.42E-15	6.70E-10	4.53E-11	2.52E-09
-40.00	6.80E-13	1.00E-12	7.00E-14	1.75E-15	2.67E-09	4.98E-09	9.10E-11	1.36E-11	4.40E-15	7.40E-10	4.77E-11	2.68E-09
-35.00	1.20E-12	1.80E-12	1.33E-13	2.95E-15	2.70E-09	5.10E-09	1.34E-10	1.53E-11	8.15E-15	7.90E-10	4.82E-11	2.78E-09
-30.00	2.12E-12	3.15E-12	2.42E-13	5.00E-15	2.70E-09	4.72E-09	1.98E-10	1.61E-11	1.50E-14	7.20E-10	4.76E-11	2.80E-09
-25.00	3.80E-12	5.50E-12	4.50E-13	8.60E-15	2.70E-09	3.55E-09	2.85E-10	1.51E-11	2.78E-14	5.55E-10	4.51E-11	2.75E-09
-20.00	6.80E-12	9.80E-12	8.50E-13	1.47E-14	2.70E-09	2.37E-09	4.00E-10	1.27E-11	4.65E-14	4.00E-10	4.18E-11	2.65E-09
-18.00	8.40E-12	1.20E-11	1.09E-12	1.78E-14	2.70E-09	2.04E-09	4.60E-10	1.21E-11	6.00E-14	3.42E-10	4.02E-11	2.61E-09
-16.00	1.03E-11	1.42E-11	1.32E-12	2.10E-14	2.70E-09	1.75E-09	5.15E-10	1.13E-11	7.20E-14	2.93E-10	3.92E-11	2.59E-09
-14.00	1.26E-11	1.65E-11	1.55E-12	2.52E-14	2.70E-09	1.50E-09	5.75E-10	1.10E-11	8.30E-14	2.58E-10	3.85E-11	2.56E-09
-12.00	1.39E-11	1.83E-11	1.65E-12	2.83E-14	2.72E-09	1.28E-09	6.40E-10	1.06E-11	9.10E-14	2.05E-10	3.78E-11	2.55E-09
-10.00	1.49E-11	1.94E-11	1.76E-12	3.10E-14	2.77E-09	1.08E-09	6.90E-10	1.05E-11	9.80E-14	1.83E-10	3.72E-11	2.55E-09
-8.00	1.56E-11	2.02E-11	1.83E-12	3.32E-14	2.80E-09	1.04E-09	7.20E-10	1.03E-11	1.02E-13	1.70E-10	3.69E-11	2.58E-09
-6.00	1.59E-11	2.08E-11	1.89E-12	3.50E-14	2.82E-09	1.02E-09	7.40E-10	1.02E-11	1.06E-13	1.63E-10	3.66E-11	2.60E-09
-4.00	1.60E-11	2.12E-11	1.92E-12	3.60E-14	2.83E-09	1.02E-09	7.50E-10	1.00E-11	1.08E-13	1.58E-10	3.63E-11	2.61E-09
-2.00	1.59E-11	2.13E-11	1.94E-12	3.70E-14	2.84E-09	1.03E-09	7.55E-10	9.95E-12	1.08E-13	1.58E-10	3.63E-11	2.61E-09
0.00	1.58E-11	2.13E-11	1.94E-12	3.80E-14	2.86E-09	1.03E-09	7.50E-10	9.90E-12	1.06E-13	1.60E-10	3.61E-11	2.63E-09
2.00	1.57E-11	2.10E-11	1.91E-12	3.70E-14	2.83E-09	1.03E-09	7.35E-10	9.85E-12	1.04E-13	1.61E-10	3.58E-11	2.61E-09
4.00	1.53E-11	2.04E-11	1.87E-12	3.60E-14	2.80E-09	1.02E-09	7.20E-10	9.85E-12	1.01E-13	1.65E-10	3.52E-11	2.59E-09
6.00	1.49E-11	1.95E-11	1.80E-12	3.40E-14	2.76E-09	1.01E-09	6.90E-10	9.83E-12	9.80E-14	1.73E-10	3.50E-11	2.55E-09
8.00	1.43E-11	1.85E-11	1.72E-12	3.15E-14	2.70E-09	1.00E-09	6.55E-10	9.80E-12	9.40E-14	1.83E-10	3.50E-11	2.49E-09
10.00	1.34E-11	1.72E-11	1.59E-12	2.95E-14	2.64E-09	1.03E-09	6.20E-10	9.81E-12	8.85E-14	1.95E-10	3.50E-11	2.45E-09
12.00	1.23E-11	1.57E-11	1.43E-12	2.68E-14	2.57E-09	1.15E-09	5.55E-10	9.90E-12	8.00E-14	2.12E-10	3.50E-11	2.42E-09
14.00	1.14E-11	1.45E-11	1.27E-12	2.40E-14	2.50E-09	1.28E-09	5.00E-10	1.10E-11	7.10E-14	2.33E-10	3.51E-11	2.40E-09
16.00	9.20E-12	1.26E-11	1.00E-12	1.97E-14	2.49E-09	1.42E-09	4.55E-10	1.04E-11	5.85E-14	2.54E-10	3.56E-11	2.38E-09
18.00	7.05E-12	9.80E-12	8.10E-13	1.60E-14	2.47E-09	1.57E-09	4.05E-10	1.07E-11	4.75E-14	3.01E-10	3.68E-11	2.40E-09
20.00	5.60E-12	7.85E-12	7.00E-13	1.30E-14	2.43E-09	1.72E-09	3.60E-10	1.11E-11	3.95E-14	3.50E-10	3.80E-11	2.42E-09
25.00	3.33E-12	4.75E-12	3.95E-13	7.80E-15	2.35E-09	2.13E-09	2.58E-10	1.17E-11	2.37E-14	4.80E-10	3.80E-11	2.38E-09
30.00	1.98E-12	2.95E-12	2.37E-13	4.80E-15	2.23E-09	2.47E-09	1.85E-10	1.20E-11	1.44E-14	5.40E-10	3.78E-11	2.27E-09
35.00	1.19E-12	1.80E-12	1.40E-13	3.00E-15	2.13E-09	2.73E-09	1.33E-10	1.18E-11	8.70E-15	5.43E-10	3.57E-11	2.13E-09
40.00	7.30E-13	1.18E-12	8.40E-14	1.87E-15	1.99E-09	2.95E-09	9.45E-11	1.10E-11	5.40E-15	5.20E-10	3.42E-11	1.98E-09
45.00	4.30E-13	6.80E-13	4.90E-14	1.13E-15	1.85E-09	3.13E-09	6.85E-11	1.01E-11	3.22E-15	5.00E-10	3.33E-11	1.87E-09
50.00	2.70E-13	4.00E-13	2.98E-14	7.15E-16	1.71E-09	3.21E-09	4.90E-11	9.10E-12	1.97E-15	4.80E-10	3.18E-11	1.74E-09
55.00	1.68E-13	2.40E-13	1.80E-14	4.48E-16	1.58E-09	3.20E-09	3.50E-11	8.10E-12	1.20E-15	4.58E-10	2.97E-11	1.62E-09
60.00	1.00E-13	1.45E-13	1.10E-14	2.90E-16	1.45E-09	3.12E-09	2.52E-11	7.20E-12	7.40E-16	4.32E-10	2.70E-11	1.50E-09
65.00	6.80E-14	8.90E-14	6.60E-15	1.88E-16	1.35E-09	3.00E-09	1.82E-11	6.40E-12	4.50E-16	4.10E-10	2.48E-11	1.39E-09
70.00	4.40E-14	5.40E-14	4.05E-15	1.27E-16	1.23E-09	2.85E-09	1.30E-11	5.65E-12	2.75E-16	3.85E-10	2.27E-11	1.28E-09
75.00	2.87E-14	3.30E-14	2.55E-15	8.40E-17	1.12E-09	2.68E-09	9.30E-12	5.00E-12	1.68E-16	3.60E-10	2.05E-11	1.17E-09

TABLE B-8

REACTION RATES FOR THE NOMINAL REACTOR CONFIGURATION AT 33.4 CM FROM CORE CENTERLINE

Z(cm)	54FENP	58NINP	46TINP	55MNN2N	239PUNP	197AUNG	237NPNF	58FENG	27ALNA	59CONG	45SCNG	235UNF
-70.00	1.60E-14	2.35E-14	1.76E-15	6.40E-17	1.23E-09	3.60E-09	1.00E-11	5.15E-12	1.36E-16	3.37E-10	2.24E-11	1.09E-09
-65.00	2.35E-14	4.10E-14	3.02E-15	1.00E-16	1.40E-09	3.80E-09	1.42E-11	6.10E-12	2.30E-16	3.90E-10	2.65E-11	1.32E-09
-60.00	5.00E-14	7.40E-14	5.40E-15	1.50E-16	1.59E-09	3.96E-09	1.94E-11	7.25E-12	3.45E-16	4.48E-10	3.06E-11	1.57E-09
-55.00	9.00E-14	1.24E-13	9.60E-15	2.40E-16	1.79E-09	4.17E-09	2.81E-11	8.55E-12	6.50E-16	5.08E-10	3.48E-11	1.84E-09
-50.00	1.60E-13	2.26E-13	1.70E-14	4.10E-16	1.99E-09	4.33E-09	3.95E-11	1.00E-11	1.09E-15	5.75E-10	3.85E-11	2.09E-09
-45.00	2.80E-13	3.95E-13	2.96E-14	6.40E-16	2.19E-09	4.46E-09	5.50E-11	1.15E-11	1.83E-15	6.35E-10	4.18E-11	2.32E-09
-40.00	4.90E-13	6.70E-13	5.10E-14	1.20E-15	2.37E-09	4.55E-09	7.75E-11	1.28E-11	3.15E-15	6.75E-10	4.43E-11	2.49E-09
-35.00	8.80E-13	1.22E-12	9.40E-14	2.10E-15	2.48E-09	4.60E-09	1.07E-10	1.39E-11	5.65E-15	7.20E-10	4.51E-11	2.54E-09
-30.00	1.50E-12	2.10E-12	1.70E-13	3.65E-15	2.55E-09	4.42E-09	1.50E-10	1.44E-11	1.00E-14	7.17E-10	4.50E-11	2.63E-09
-25.00	2.55E-12	3.65E-12	3.00E-13	6.20E-15	2.58E-09	3.68E-09	2.09E-10	1.40E-11	1.70E-14	6.20E-10	4.42E-11	2.67E-09
-20.00	4.20E-12	5.90E-12	5.10E-13	9.40E-15	2.60E-09	2.74E-09	2.88E-10	1.30E-11	2.84E-14	4.95E-10	4.26E-11	2.69E-09
-18.00	5.10E-12	7.10E-12	6.20E-13	1.17E-14	2.58E-09	2.44E-09	3.29E-10	1.26E-11	3.40E-14	4.45E-10	4.21E-11	2.69E-09
-16.00	6.20E-12	8.60E-12	7.50E-13	1.34E-14	2.57E-09	2.19E-09	3.75E-10	1.22E-11	4.00E-14	3.93E-10	4.19E-11	2.69E-09
-14.00	7.20E-12	9.80E-12	8.60E-13	1.60E-14	2.57E-09	2.00E-09	4.22E-10	1.17E-11	4.40E-14	3.50E-10	4.15E-11	2.69E-09
-12.00	8.00E-12	1.04E-11	9.60E-13	1.80E-14	2.57E-09	1.82E-09	4.60E-10	1.15E-11	5.35E-14	3.13E-10	4.10E-11	2.69E-09
-10.00	8.70E-12	1.15E-11	1.03E-12	1.93E-14	2.58E-09	1.68E-09	4.90E-10	1.12E-11	5.75E-14	2.84E-10	4.02E-11	2.69E-09
-8.00	9.10E-12	1.20E-11	1.04E-12	2.15E-14	2.59E-09	1.58E-09	5.15E-10	1.10E-11	6.00E-14	2.68E-10	3.99E-11	2.68E-09
-6.00	9.30E-12	1.22E-11	1.11E-12	2.27E-14	2.60E-09	1.52E-09	5.33E-10	1.08E-11	6.25E-14	2.61E-10	3.93E-11	2.68E-09
-4.00	9.35E-12	1.23E-11	1.13E-12	2.35E-14	2.61E-09	1.48E-09	5.42E-10	1.07E-11	6.25E-14	2.60E-10	3.90E-11	2.67E-09
-2.00	9.40E-12	1.25E-11	1.14E-12	2.40E-14	2.62E-09	1.46E-09	5.45E-10	1.06E-11	6.25E-14	2.57E-10	3.86E-11	2.67E-09
0.00	9.40E-12	1.24E-11	1.13E-12	2.40E-14	2.62E-09	1.45E-09	5.42E-10	1.06E-11	6.20E-14	2.55E-10	3.85E-11	2.66E-09
2.00	9.30E-12	1.23E-11	1.12E-12	2.34E-14	2.62E-09	1.45E-09	5.38E-10	1.06E-11	6.15E-14	2.58E-10	3.80E-11	2.65E-09
4.00	9.20E-12	1.22E-11	1.11E-12	2.32E-14	2.62E-09	1.46E-09	5.20E-10	1.06E-11	6.05E-14	2.61E-10	3.80E-11	2.63E-09
6.00	9.10E-12	1.18E-11	1.07E-12	2.22E-14	2.62E-09	1.47E-09	5.03E-10	1.07E-11	5.45E-14	2.72E-10	3.77E-11	2.61E-09
8.00	8.70E-12	1.14E-11	1.00E-12	2.10E-14	2.60E-09	1.48E-09	4.85E-10	1.04E-11	5.65E-14	3.01E-10	3.72E-11	2.58E-09
10.00	8.00E-12	1.08E-11	9.40E-13	1.93E-14	2.59E-09	1.51E-09	4.60E-10	1.09E-11	5.35E-14	3.39E-10	3.70E-11	2.55E-09
12.00	7.40E-12	1.00E-11	8.60E-13	1.77E-14	2.56E-09	1.55E-09	4.30E-10	1.10E-11	4.90E-14	3.77E-10	3.68E-11	2.53E-09
14.00	6.40E-12	9.10E-12	7.63E-13	1.55E-14	2.50E-09	1.65E-09	3.97E-10	1.11E-11	4.35E-14	4.12E-10	3.66E-11	2.51E-09
16.00	6.00E-12	7.90E-12	6.70E-13	1.34E-14	2.40E-09	1.84E-09	3.60E-10	1.13E-11	3.80E-14	4.42E-10	3.68E-11	2.50E-09
18.00	5.10E-12	6.70E-12	5.70E-13	1.14E-14	2.35E-09	2.24E-09	3.25E-10	1.14E-11	3.25E-14	4.70E-10	3.72E-11	2.49E-09
20.00	4.20E-12	5.50E-12	4.80E-13	9.60E-15	2.32E-09	2.54E-09	2.88E-10	1.15E-11	2.70E-14	4.90E-10	3.78E-11	2.48E-09
25.00	2.65E-12	3.50E-12	2.94E-13	6.30E-15	2.24E-09	3.03E-09	2.10E-10	1.17E-11	1.69E-14	5.18E-10	3.78E-11	2.45E-09
30.00	1.65E-12	2.15E-12	1.76E-13	3.95E-15	2.13E-09	3.31E-09	1.53E-10	1.17E-11	1.03E-14	5.22E-10	3.70E-11	2.37E-09
35.00	1.00E-12	1.33E-12	1.02E-13	2.45E-15	1.99E-09	3.49E-09	1.10E-10	1.15E-11	6.40E-15	5.20E-10	3.62E-11	2.27E-09
40.00	6.40E-13	8.40E-13	6.40E-14	1.52E-15	1.84E-09	3.54E-09	8.05E-11	1.10E-11	4.00E-15	5.08E-10	3.45E-11	2.13E-09
45.00	4.10E-13	5.40E-13	4.10E-14	9.50E-16	1.69E-09	3.60E-09	5.90E-11	1.02E-11	2.50E-15	4.72E-10	3.25E-11	1.98E-09
50.00	2.50E-13	3.35E-13	2.52E-14	6.10E-16	1.55E-09	3.60E-09	4.30E-11	9.10E-12	1.60E-15	4.48E-10	3.03E-11	1.79E-09
55.00	1.50E-13	2.00E-13	1.50E-14	3.90E-16	1.43E-09	3.55E-09	3.12E-11	8.05E-12	1.00E-15	4.20E-10	2.78E-11	1.60E-09
60.00	8.60E-14	1.18E-13	8.70E-15	2.50E-16	1.30E-09	3.47E-09	2.28E-11	6.95E-12	6.10E-16	3.90E-10	2.55E-11	1.41E-09
65.00	4.95E-14	6.60E-14	4.90E-15	1.54E-16	1.19E-09	3.30E-09	1.65E-11	5.90E-12	3.60E-16	3.62E-10	2.32E-11	1.23E-09
70.00	2.85E-14	3.85E-14	2.85E-15	1.00E-16	1.04E-09	3.16E-09	1.20E-11	4.96E-12	2.10E-16	3.27E-10	2.12E-11	1.07E-09
75.00	1.70E-14	2.30E-14	1.68E-15	7.20E-17	9.80E-10	3.00E-09	8.70E-12	4.15E-12	1.22E-16	2.90E-10	1.93E-11	9.35E-10

TABLE B-9

REACTION RATES FOR THE NOMINAL REACTOR CONFIGURATION AT 34.5 CM FROM CORE CENTERLINE

Z(cm)	54FENP	58NINP	46TINP	55MNN2N	239PUNP	197AUNG	237NPNF	58FENG	27ALNA	59CONG	45SCNG	235UNF
-70.00	1.72E-14	2.55E-14	1.60E-15	6.61E-17	1.24E-09	4.45E-09	9.60E-12	4.90E-12	1.42E-16	3.15E-10	2.30E-11	1.10E-09
-65.00	2.32E-14	4.15E-14	2.60E-15	9.10E-17	1.40E-09	4.63E-09	1.37E-11	5.90E-12	2.25E-16	3.55E-10	2.61E-11	1.30E-09
-60.00	4.45E-14	5.73E-14	4.45E-15	1.45E-16	1.58E-09	4.80E-09	1.87E-11	7.05E-12	3.50E-16	4.20E-10	2.95E-11	1.50E-09
-55.00	7.40E-14	1.13E-13	7.40E-15	2.25E-16	1.40E-09	4.97E-09	2.67E-11	8.30E-12	5.90E-16	4.80E-10	3.30E-11	1.75E-09
-50.00	1.33E-13	1.90E-13	1.33E-14	3.60E-16	2.00E-09	5.13E-09	3.75E-11	9.65E-12	9.60E-16	5.45E-10	3.64E-11	1.99E-09
-45.00	2.32E-13	3.25E-13	2.45E-14	6.05E-16	2.19E-09	5.27E-09	5.20E-11	1.09E-11	1.62E-15	6.00E-10	3.97E-11	2.21E-09
-40.00	4.40E-13	6.00E-13	4.50E-14	1.00E-15	2.37E-09	5.35E-09	7.30E-11	1.20E-11	2.42E-15	6.40E-10	4.24E-11	2.39E-09
-35.00	7.30E-13	1.01E-12	7.40E-14	1.73E-15	2.49E-09	5.40E-09	1.03E-10	1.31E-11	5.00E-15	6.78E-10	4.40E-11	2.50E-09
-30.00	1.23E-12	1.73E-12	1.33E-13	2.95E-15	2.55E-09	5.05E-09	1.47E-10	1.37E-11	8.30E-15	6.55E-10	4.39E-11	2.54E-09
-25.00	2.07E-12	2.35E-12	2.40E-13	5.00E-15	2.58E-09	4.10E-09	2.05E-10	1.39E-11	1.40E-14	5.50E-10	4.38E-11	2.62E-09
-20.00	3.61E-12	5.15E-12	4.31E-13	8.50E-15	2.54E-09	2.90E-09	2.40E-10	1.30E-11	2.37E-14	5.10E-10	4.27E-11	2.63E-09
-18.00	4.50E-12	6.10E-12	5.25E-13	1.02E-14	2.53E-09	2.56E-09	3.15E-10	1.24E-11	2.90E-14	4.45E-10	4.25E-11	2.64E-09
-16.00	5.41E-12	7.15E-12	6.20E-13	1.13E-14	2.52E-09	2.25E-09	3.50E-10	1.21E-11	3.40E-14	4.20E-10	4.22E-11	2.64E-09
-14.00	6.20E-12	8.20E-12	7.00E-13	1.35E-14	2.51E-09	2.09E-09	3.80E-10	1.19E-11	3.87E-14	3.75E-10	4.18E-11	2.63E-09
-12.00	6.70E-12	9.40E-12	7.40E-13	1.53E-14	2.51E-09	1.85E-09	4.10E-10	1.17E-11	4.20E-14	3.42E-10	4.10E-11	2.63E-09
-10.00	7.10E-12	1.04E-11	8.40E-13	1.63E-14	2.51E-09	1.72E-09	4.35E-10	1.15E-11	4.50E-14	3.18E-10	4.01E-11	2.63E-09
-8.00	7.50E-12	1.15E-11	8.40E-13	1.80E-14	2.52E-09	1.64E-09	4.52E-10	1.13E-11	4.75E-14	3.02E-10	3.97E-11	2.62E-09
-6.00	7.70E-12	1.15E-11	8.15E-13	1.90E-14	2.52E-09	1.54E-09	4.68E-10	1.12E-11	4.95E-14	2.92E-10	3.91E-11	2.62E-09
-4.00	7.90E-12	1.04E-11	9.35E-13	1.94E-14	2.53E-09	1.53E-09	4.75E-10	1.12E-11	5.05E-14	2.85E-10	3.88E-11	2.61E-09
-2.00	8.00E-12	1.07E-11	9.45E-13	2.00E-14	2.53E-09	1.51E-09	4.80E-10	1.10E-11	5.10E-14	2.82E-10	3.85E-11	2.60E-09
0.00	8.00E-12	1.04E-11	9.50E-13	2.01E-14	2.54E-09	1.50E-09	4.80E-10	1.09E-11	5.15E-14	2.80E-10	3.80E-11	2.60E-09
2.00	7.90E-12	1.07E-11	9.20E-13	2.00E-14	2.54E-09	1.50E-09	4.75E-10	1.07E-11	5.08E-14	2.78E-10	3.78E-11	2.58E-09
4.00	7.70E-12	1.03E-11	9.00E-13	1.96E-14	2.54E-09	1.50E-09	4.70E-10	1.09E-11	5.00E-14	2.79E-10	3.76E-11	2.57E-09
6.00	7.40E-12	1.00E-11	8.70E-13	1.86E-14	2.53E-09	1.50E-09	4.57E-10	1.10E-11	4.82E-14	2.91E-10	3.73E-11	2.56E-09
8.00	7.00E-12	9.50E-12	8.30E-13	1.75E-14	2.52E-09	1.51E-09	4.40E-10	1.10E-11	4.60E-14	2.93E-10	3.71E-11	2.53E-09
10.00	6.70E-12	8.95E-12	7.40E-13	1.62E-14	2.51E-09	1.53E-09	4.20E-10	1.11E-11	4.35E-14	3.05E-10	3.70E-11	2.51E-09
12.00	6.30E-12	8.35E-12	7.20E-13	1.47E-14	2.50E-09	1.63E-09	3.95E-10	1.12E-11	4.00E-14	3.25E-10	3.70E-11	2.50E-09
14.00	5.44E-12	7.70E-12	5.50E-13	1.33E-14	2.47E-09	1.75E-09	3.54E-10	1.13E-11	3.67E-14	3.50E-10	3.70E-11	2.47E-09
16.00	5.10E-12	6.70E-12	5.70E-13	1.13E-14	2.42E-09	1.86E-09	3.22E-10	1.14E-11	3.17E-14	3.80E-10	3.73E-11	2.46E-09
18.00	4.25E-12	5.73E-12	4.85E-13	9.75E-15	2.36E-09	1.97E-09	2.88E-10	1.14E-11	2.70E-14	4.05E-10	3.78E-11	2.45E-09
20.00	3.61E-12	4.85E-12	4.10E-13	8.40E-15	2.26E-09	2.09E-09	2.60E-10	1.16E-11	2.23E-14	4.40E-10	3.80E-11	2.43E-09
25.00	2.11E-12	2.15E-12	2.45E-13	5.33E-15	2.19E-09	2.30E-09	1.88E-10	1.20E-11	1.42E-14	5.30E-10	3.83E-11	2.38E-09
30.00	1.35E-12	1.45E-12	1.50E-13	3.35E-15	2.09E-09	2.47E-09	1.40E-10	1.18E-11	9.00E-15	5.40E-10	3.75E-11	2.31E-09
35.00	8.30E-13	1.17E-12	9.20E-14	2.15E-15	1.96E-09	2.60E-09	1.01E-10	1.13E-11	5.65E-15	5.20E-10	3.60E-11	2.20E-09
40.00	5.20E-13	7.55E-13	5.65E-14	1.40E-15	1.80E-09	2.72E-09	7.50E-11	1.04E-11	3.60E-15	4.97E-10	3.40E-11	2.06E-09
45.00	3.20E-13	4.50E-13	3.45E-14	8.80E-16	1.65E-09	2.85E-09	5.45E-11	9.50E-12	2.23E-15	4.52E-10	3.21E-11	1.84E-09
50.00	1.95E-13	2.80E-13	2.10E-14	5.65E-16	1.53E-09	2.93E-09	3.95E-11	8.45E-12	1.20E-15	4.30E-10	2.98E-11	1.70E-09
55.00	1.22E-13	1.75E-13	1.29E-14	3.65E-16	1.39E-09	2.95E-09	2.92E-11	7.45E-12	8.70E-16	4.00E-10	2.74E-11	1.51E-09
60.00	7.80E-14	1.08E-13	7.80E-15	2.38E-16	1.24E-09	2.93E-09	2.15E-11	6.55E-12	5.60E-16	3.70E-10	2.50E-11	1.34E-09
65.00	5.00E-14	6.74E-14	4.75E-15	1.50E-16	1.15E-09	2.87E-09	1.57E-11	5.72E-12	3.50E-16	3.38E-10	2.78E-11	1.19E-09
70.00	3.25E-14	4.20E-14	2.98E-15	9.70E-17	1.06E-09	2.79E-09	1.16E-11	5.00E-12	2.25E-16	3.08E-10	2.06E-11	1.05E-09
75.00	2.15E-14	2.55E-14	1.85E-15	6.30E-17	9.60E-10	2.71E-09	8.40E-12	4.35E-12	1.43E-16	2.80E-10	1.86E-11	9.20E-10

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TABLE B-10

REACTION RATES FOR THE NOMINAL REACTOR CONFIGURATION AT 38.3 CM FROM CORE CENTERLINE

Z(cm)	54FENP	58NINP	46TINP	55MNN2N	239PUNP	197AUNG	237NPNF	58FENG	27ALNA	59CONG	45SCNG	235UNF
-70.00	1.23E-14	1.85E-14	1.33E-15	5.00E-17	9.50E-10	3.02E-09	8.00E-12	4.25E-12	1.00E-16	2.70E-10	1.80E-11	9.00E-10
-65.00	2.20E-14	3.15E-14	2.35E-15	8.00E-17	1.10E-09	3.18E-09	1.13E-11	5.10E-12	1.66E-16	3.12E-10	2.15E-11	1.09E-09
-60.00	3.90E-14	5.40E-14	4.10E-15	1.20E-16	1.27E-09	3.32E-09	1.58E-11	6.10E-12	2.75E-16	3.58E-10	2.55E-11	1.30E-09
-55.00	6.40E-14	9.30E-14	7.10E-15	1.68E-16	1.45E-09	3.47E-09	2.23E-11	7.35E-12	4.50E-16	4.10E-10	2.93E-11	1.53E-09
-50.00	1.10E-13	1.57E-13	1.21E-14	2.34E-16	1.65E-09	3.62E-09	3.14E-11	8.60E-12	7.50E-16	4.57E-10	3.30E-11	1.76E-09
-45.00	1.90E-13	2.70E-13	2.06E-14	3.50E-16	1.84E-09	3.76E-09	4.40E-11	9.80E-12	1.24E-15	5.18E-10	3.62E-11	2.00E-09
-40.00	3.35E-13	4.55E-13	3.50E-14	5.80E-16	2.00E-09	3.88E-09	6.10E-11	1.09E-11	2.08E-15	5.68E-10	3.90E-11	2.20E-09
-35.00	5.60E-13	7.60E-13	6.00E-14	1.08E-15	2.13E-09	4.02E-09	8.50E-11	1.19E-11	3.55E-15	5.95E-10	4.03E-11	2.33E-09
-30.00	9.60E-13	1.31E-12	1.03E-13	1.90E-15	2.27E-09	4.10E-09	1.14E-10	1.25E-11	6.00E-15	6.02E-10	4.07E-11	2.44E-09
-25.00	1.55E-12	2.10E-12	1.68E-13	3.35E-15	2.36E-09	3.96E-09	1.55E-10	1.26E-11	9.80E-15	5.83E-10	4.02E-11	2.50E-09
-20.00	2.40E-12	3.20E-12	2.54E-13	5.50E-15	2.42E-09	3.22E-09	2.08E-10	1.25E-11	1.53E-14	5.28E-10	4.00E-11	2.53E-09
-18.00	2.75E-12	3.70E-12	2.96E-13	6.55E-15	2.42E-09	2.92E-09	2.35E-10	1.23E-11	1.79E-14	4.90E-10	4.00E-11	2.54E-09
-16.00	3.20E-12	4.20E-12	3.40E-13	7.70E-15	2.42E-09	2.57E-09	2.60E-10	1.21E-11	2.05E-14	4.50E-10	4.00E-11	2.55E-09
-14.00	3.60E-12	4.70E-12	3.80E-13	8.90E-15	2.42E-09	2.32E-09	2.85E-10	1.20E-11	2.30E-14	4.25E-10	4.00E-11	2.54E-09
-12.00	3.95E-12	5.25E-12	4.20E-13	9.70E-15	2.42E-09	2.12E-09	3.03E-10	1.18E-11	2.54E-14	4.08E-10	4.00E-11	2.53E-09
-10.00	4.25E-12	5.60E-12	4.60E-13	1.03E-14	2.42E-09	1.97E-09	3.18E-10	1.17E-11	2.76E-14	3.98E-10	4.00E-11	2.52E-09
-8.00	4.50E-12	6.00E-12	4.95E-13	1.09E-14	2.42E-09	1.90E-09	3.27E-10	1.16E-11	2.94E-14	3.90E-10	3.99E-11	2.51E-09
-6.00	4.70E-12	6.20E-12	5.25E-13	1.12E-14	2.42E-09	1.85E-09	3.32E-10	1.15E-11	3.10E-14	3.85E-10	3.95E-11	2.50E-09
-4.00	4.80E-12	6.35E-12	5.55E-13	1.12E-14	2.42E-09	1.82E-09	3.34E-10	1.15E-11	3.18E-14	3.82E-10	3.90E-11	2.49E-09
-2.00	4.85E-12	6.40E-12	5.70E-13	1.12E-14	2.42E-09	1.78E-09	3.39E-10	1.15E-11	3.20E-14	3.80E-10	3.85E-11	2.48E-09
0.00	4.85E-12	6.40E-12	5.70E-13	1.12E-14	2.42E-09	1.76E-09	3.34E-10	1.14E-11	3.22E-14	3.78E-10	3.85E-11	2.47E-09
2.00	4.70E-12	6.35E-12	5.60E-13	1.12E-14	2.40E-09	1.74E-09	3.30E-10	1.14E-11	3.20E-14	3.73E-10	3.82E-11	2.44E-09
4.00	4.55E-12	6.20E-12	5.45E-13	1.12E-14	2.37E-09	1.72E-09	3.24E-10	1.13E-11	3.10E-14	3.70E-10	3.80E-11	2.42E-09
6.00	4.55E-12	6.00E-12	5.20E-13	1.10E-14	2.34E-09	1.72E-09	3.17E-10	1.13E-11	2.98E-14	3.68E-10	3.77E-11	2.40E-09
8.00	4.35E-12	5.80E-12	4.90E-13	1.08E-14	2.32E-09	1.75E-09	3.09E-10	1.14E-11	2.80E-14	3.70E-10	3.72E-11	2.38E-09
10.00	4.10E-12	5.42E-12	4.55E-13	1.00E-14	2.29E-09	1.80E-09	2.98E-10	1.14E-11	2.64E-14	3.71E-10	3.70E-11	2.37E-09
12.00	3.80E-12	5.00E-12	4.10E-13	9.40E-15	2.25E-09	1.85E-09	2.84E-10	1.14E-11	2.43E-14	3.75E-10	3.68E-11	2.37E-09
14.00	3.45E-12	4.55E-12	3.67E-13	8.40E-15	2.23E-09	1.92E-09	2.70E-10	1.14E-11	2.20E-14	3.81E-10	3.65E-11	2.36E-09
16.00	3.00E-12	4.05E-12	3.25E-13	7.40E-15	2.20E-09	2.02E-09	2.50E-10	1.14E-11	1.93E-14	3.92E-10	3.67E-11	2.35E-09
18.00	2.55E-12	3.65E-12	2.83E-13	6.55E-15	2.16E-09	2.16E-09	2.27E-10	1.13E-11	1.69E-14	4.08E-10	3.72E-11	2.35E-09
20.00	2.30E-12	3.22E-12	2.40E-13	5.80E-15	2.13E-09	2.30E-09	2.04E-10	1.13E-11	1.45E-14	4.27E-10	3.68E-11	2.33E-09
25.00	1.55E-12	2.18E-12	1.60E-13	4.00E-15	2.03E-09	2.60E-09	1.50E-10	1.12E-11	9.70E-15	4.50E-10	3.62E-11	2.28E-09
30.00	1.00E-12	1.40E-12	1.03E-13	2.65E-15	1.93E-09	2.78E-09	1.13E-10	1.10E-11	6.30E-15	4.77E-10	3.52E-11	2.19E-09
35.00	6.50E-13	9.20E-13	6.50E-14	1.64E-15	1.80E-09	2.82E-09	8.35E-11	1.05E-11	4.10E-15	4.77E-10	3.40E-11	2.07E-09
40.00	4.10E-13	6.00E-13	4.20E-14	1.07E-15	1.65E-09	2.78E-09	6.28E-11	9.65E-12	2.63E-15	4.67E-10	3.18E-11	1.91E-09
45.00	2.63E-13	3.85E-13	2.67E-14	6.80E-16	1.52E-09	2.66E-09	4.60E-11	8.60E-12	1.70E-15	4.38E-10	2.93E-11	1.78E-09
50.00	1.63E-13	2.40E-13	1.68E-14	4.40E-16	1.40E-09	2.54E-09	3.40E-11	7.55E-12	1.13E-15	4.00E-10	2.70E-11	1.55E-09
55.00	1.00E-13	1.48E-13	1.02E-14	2.90E-16	1.28E-09	2.45E-09	2.50E-11	6.60E-12	7.20E-16	3.65E-10	2.44E-11	1.37E-09
60.00	6.10E-14	8.40E-14	6.20E-15	1.90E-16	1.17E-09	2.38E-09	1.85E-11	5.70E-12	4.45E-16	3.22E-10	2.21E-11	1.20E-09
65.00	3.63E-14	5.40E-14	3.70E-15	1.24E-16	1.06E-09	2.30E-09	1.37E-11	4.87E-12	2.72E-16	2.88E-10	1.98E-11	1.06E-09
70.00	2.13E-14	3.15E-14	2.20E-15	6.40E-17	9.60E-10	2.22E-09	1.02E-11	4.18E-12	1.63E-16	2.57E-10	1.78E-11	9.30E-10
75.00	1.24E-14	1.85E-14	1.27E-15	6.00E-17	8.60E-10	2.14E-09	7.50E-12	3.60E-12	9.60E-17	2.28E-10	1.62E-11	8.10E-10

TABLE B-11

REACTION RATES FOR THE NOMINAL REACTOR CONFIGURATION AT 39.2 CM FROM CORE CENTERLINE

Z(cm)	54FENP	58NINP	46TINP	55MNN2N	239PUNP	197AUNG	237NPNF	58FENG	27ALNA	59CONG	45SCNG	235UNF
-70.00	1.42E-14	1.95E-14	1.45E-15	5.20E-17	8.80E-10	3.02E-09	8.00E-12	4.00E-12	1.07E-16	2.50E-10	1.88E-11	8.70E-10
-65.00	2.25E-14	3.15E-14	2.45E-15	7.50E-17	1.05E-09	3.15E-09	1.13E-11	4.85E-12	1.68E-16	3.05E-10	2.16E-11	1.06E-09
-60.00	3.70E-14	5.10E-14	4.00E-15	1.10E-16	1.23E-09	3.25E-09	1.54E-11	5.90E-12	2.60E-16	3.50E-10	2.45E-11	1.26E-09
-55.00	6.10E-14	8.50E-14	6.60E-15	1.62E-16	1.42E-09	3.42E-09	2.25E-11	6.95E-12	4.25E-16	4.05E-10	2.80E-11	1.49E-09
-50.00	1.02E-13	1.40E-13	1.12E-14	2.40E-16	1.61E-09	3.54E-09	3.17E-11	8.15E-12	6.95E-16	4.50E-10	3.13E-11	1.72E-09
-45.00	1.72E-13	2.40E-13	1.93E-14	3.65E-16	1.80E-09	3.66E-09	4.45E-11	9.30E-12	1.15E-15	5.12E-10	3.50E-11	1.95E-09
-40.00	3.10E-13	4.20E-13	3.40E-14	5.50E-16	1.95E-09	3.75E-09	6.20E-11	1.05E-11	1.95E-15	5.60E-10	3.87E-11	2.15E-09
-35.00	4.95E-13	6.75E-13	5.50E-14	7.00E-16	2.14E-09	3.80E-09	8.80E-11	1.13E-11	3.15E-15	5.82E-10	3.93E-11	2.33E-09
-30.00	7.90E-13	1.09E-12	9.00E-14	1.55E-15	2.29E-09	3.78E-09	1.20E-10	1.21E-11	5.20E-15	5.90E-10	4.40E-11	2.44E-09
-25.00	1.23E-12	1.75E-12	1.43E-13	2.80E-15	2.39E-09	3.58E-09	1.60E-10	1.24E-11	8.50E-15	5.50E-10	4.37E-11	2.50E-09
-20.00	2.10E-12	2.90E-12	2.18E-13	5.18E-15	2.40E-09	3.22E-09	2.05E-10	1.22E-11	1.40E-14	5.20E-10	4.29E-11	2.51E-09
-18.00	2.42E-12	3.32E-12	2.68E-13	6.10E-15	2.40E-09	2.90E-09	2.30E-10	1.22E-11	1.67E-14	4.80E-10	4.25E-11	2.51E-09
-16.00	2.79E-12	3.81E-12	3.10E-13	6.90E-15	2.42E-09	2.60E-09	2.50E-10	1.21E-11	1.95E-14	4.42E-10	4.22E-11	2.51E-09
-14.00	3.13E-12	4.27E-12	3.40E-13	7.50E-15	2.44E-09	2.30E-09	2.70E-10	1.21E-11	2.20E-14	4.15E-10	4.18E-11	2.51E-09
-12.00	3.50E-12	4.70E-12	3.90E-13	8.00E-15	2.44E-09	2.15E-09	2.85E-10	1.19E-11	2.48E-14	3.90E-10	4.10E-11	2.48E-09
-10.00	3.85E-12	5.05E-12	4.15E-13	8.40E-15	2.44E-09	1.98E-09	2.98E-10	1.17E-11	2.65E-14	3.73E-10	4.02E-11	2.47E-09
-8.00	4.10E-12	5.40E-12	4.70E-13	8.80E-15	2.44E-09	1.90E-09	3.06E-10	1.17E-11	2.80E-14	3.53E-10	3.96E-11	2.46E-09
-6.00	4.30E-12	5.65E-12	4.90E-13	9.00E-15	2.44E-09	1.83E-09	3.11E-10	1.16E-11	2.90E-14	3.57E-10	3.91E-11	2.45E-09
-4.00	4.40E-12	5.80E-12	5.03E-13	9.20E-15	2.45E-09	1.80E-09	3.15E-10	1.16E-11	2.96E-14	3.53E-10	3.88E-11	2.43E-09
-2.00	4.44E-12	5.82E-12	5.15E-13	9.40E-15	2.45E-09	1.80E-09	3.16E-10	1.15E-11	2.96E-14	3.56E-10	3.85E-11	2.42E-09
0.00	4.42E-12	5.80E-12	5.17E-13	9.50E-15	2.45E-09	1.80E-09	3.15E-10	1.15E-11	2.95E-14	3.60E-10	3.82E-11	2.38E-09
2.00	4.40E-12	5.78E-12	5.00E-13	9.30E-15	2.44E-09	1.80E-09	3.12E-10	1.15E-11	2.92E-14	3.50E-10	3.79E-11	2.34E-09
4.00	4.28E-12	5.67E-12	4.85E-13	9.00E-15	2.41E-09	1.80E-09	3.10E-10	1.15E-11	2.86E-14	3.60E-10	3.75E-11	2.38E-09
6.00	4.08E-12	5.50E-12	4.60E-13	8.80E-15	2.38E-09	1.78E-09	3.09E-10	1.15E-11	2.77E-14	3.60E-10	3.72E-11	2.37E-09
8.00	3.82E-12	5.28E-12	4.35E-13	8.40E-15	2.33E-09	1.78E-09	3.00E-10	1.15E-11	2.63E-14	3.52E-10	3.71E-11	2.37E-09
10.00	3.58E-12	5.00E-12	4.00E-13	8.00E-15	2.28E-09	1.82E-09	2.88E-10	1.14E-11	2.48E-14	3.54E-10	3.70E-11	2.37E-09
12.00	3.30E-12	4.55E-12	3.60E-13	7.60E-15	2.25E-09	1.93E-09	2.75E-10	1.14E-11	2.27E-14	3.58E-10	3.70E-11	2.36E-09
14.00	3.00E-12	4.10E-12	3.34E-13	7.10E-15	2.21E-09	2.05E-09	2.57E-10	1.13E-11	2.00E-14	3.70E-10	3.70E-11	2.35E-09
16.00	2.72E-12	3.70E-12	2.85E-13	6.45E-15	2.19E-09	2.20E-09	2.38E-10	1.12E-11	1.80E-14	4.16E-10	3.73E-11	2.34E-09
18.00	2.40E-12	3.30E-12	2.48E-13	5.60E-15	2.16E-09	2.28E-09	2.18E-10	1.10E-11	1.55E-14	4.55E-10	3.78E-11	2.33E-09
20.00	2.10E-12	2.97E-12	2.10E-13	4.85E-15	2.14E-09	2.37E-09	2.00E-10	1.09E-11	1.34E-14	5.00E-10	3.82E-11	2.33E-09
25.00	1.37E-12	1.96E-12	1.47E-13	3.25E-15	2.03E-09	2.53E-09	1.48E-10	1.07E-11	8.80E-15	5.00E-10	3.83E-11	2.28E-09
30.00	9.05E-13	1.31E-12	9.70E-14	2.13E-15	1.90E-09	2.70E-09	1.10E-10	1.03E-11	5.70E-15	4.80E-10	3.75E-11	2.19E-09
35.00	6.00E-13	8.80E-13	6.20E-14	1.48E-15	1.77E-09	2.83E-09	8.20E-11	9.80E-12	3.75E-15	4.52E-10	3.60E-11	2.05E-09
40.00	4.00E-13	5.90E-13	4.00E-14	1.00E-15	1.63E-09	2.90E-09	6.10E-11	9.20E-12	2.50E-15	4.40E-10	3.40E-11	1.90E-09
45.00	2.42E-13	3.60E-13	2.40E-14	6.40E-16	1.51E-09	2.85E-09	4.50E-11	8.40E-12	1.58E-15	4.18E-10	3.00E-11	1.73E-09
50.00	1.50E-13	2.27E-13	1.52E-14	4.22E-16	1.39E-09	2.76E-09	3.35E-11	7.55E-12	1.02E-15	3.80E-10	2.75E-11	1.54E-09
55.00	9.30E-14	1.42E-13	9.50E-15	2.80E-16	1.27E-09	2.65E-09	2.46E-11	6.70E-12	6.50E-16	3.50E-10	2.40E-11	1.35E-09
60.00	5.75E-14	9.10E-14	6.00E-15	1.82E-16	1.15E-09	2.50E-09	1.93E-11	5.90E-12	4.20E-16	3.20E-10	2.15E-11	1.18E-09
65.00	3.70E-14	5.65E-14	3.75E-15	1.20E-16	1.05E-09	2.40E-09	1.37E-11	5.20E-12	2.70E-16	2.95E-10	1.94E-11	1.03E-09
70.00	2.42E-14	3.60E-14	2.35E-15	7.95E-17	9.60E-10	2.30E-09	1.02E-11	4.55E-12	1.75E-16	2.70E-10	1.75E-11	8.85E-10
75.00	1.57E-14	2.25E-14	1.50E-15	5.35E-17	8.60E-10	2.18E-09	7.50E-12	3.95E-12	1.15E-16	2.45E-10	1.58E-11	7.65E-10

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TABLE B-12

REACTION RATES FOR THE HIGH WORTH CONTROL ROD PERTURBATION AT 17.3 CM FROM CORE CENTERLINE

Z(cm)	54FENP	58NINP	46TINP	55MNN2N	239PUNP	197AUNG	237NPNF	58FENG	27ALNA	59CONG	45SCNG	235UNF
-70.00	2.80E-14	4.40E-14	3.00E-15	1.20E-16	1.95E-09	5.55E-09	1.62E-11	7.60E-12	3.00E-16	5.35E-10	3.28E-11	1.74E-09
-65.00	5.20E-14	8.00E-14	5.70E-15	1.85E-16	2.18E-09	5.73E-09	2.36E-11	8.30E-12	5.00E-16	6.10E-10	4.00E-11	2.04E-09
-60.00	9.80E-14	1.45E-13	1.04E-14	2.92E-16	2.42E-09	5.90E-09	3.40E-11	1.10E-11	8.20E-16	6.90E-10	4.70E-11	2.38E-09
-55.00	1.80E-13	2.55E-13	1.94E-14	4.70E-16	2.67E-09	6.08E-09	4.90E-11	1.28E-11	1.37E-15	7.75E-10	5.34E-11	2.73E-09
-50.00	3.10E-13	4.60E-13	3.35E-14	7.80E-16	2.93E-09	6.20E-09	7.03E-11	1.47E-11	2.27E-15	8.55E-10	5.90E-11	3.07E-09
-45.00	5.50E-13	8.40E-13	6.10E-14	1.43E-15	3.16E-09	6.28E-09	1.01E-10	1.54E-11	3.90E-15	9.20E-10	6.38E-11	3.40E-09
-40.00	1.05E-12	1.55E-12	1.28E-13	2.70E-15	3.35E-09	6.30E-09	1.47E-10	1.77E-11	6.90E-15	9.85E-10	6.65E-11	3.64E-09
-35.00	2.20E-12	3.15E-12	2.32E-13	5.20E-15	3.48E-09	6.30E-09	2.09E-10	1.85E-11	1.36E-14	1.03E-09	6.70E-11	3.80E-09
-30.00	4.50E-12	6.60E-12	5.30E-13	1.00E-14	3.48E-09	6.80E-09	3.03E-10	1.81E-11	2.90E-14	9.15E-10	6.30E-11	3.73E-09
-25.00	9.00E-12	1.35E-11	1.17E-12	2.00E-14	3.14E-09	3.50E-09	4.70E-10	1.63E-11	6.10E-14	5.50E-10	5.34E-11	3.42E-09
-20.00	1.65E-11	2.35E-11	2.17E-12	4.00E-14	2.98E-09	1.82E-09	6.90E-10	1.35E-11	1.14E-13	2.53E-10	4.40E-11	3.03E-09
-18.00	2.10E-11	2.85E-11	2.65E-12	5.20E-14	2.99E-09	1.37E-09	7.95E-10	1.24E-11	1.39E-13	1.90E-10	4.17E-11	2.96E-09
-16.00	2.45E-11	3.40E-11	3.15E-12	6.20E-14	3.00E-09	1.05E-09	9.00E-10	1.11E-11	1.65E-13	1.40E-10	3.95E-11	2.91E-09
-14.00	2.85E-11	4.00E-11	3.65E-12	7.20E-14	3.03E-09	8.50E-10	1.00E-09	1.03E-11	1.90E-13	9.80E-11	3.90E-11	2.91E-09
-12.00	3.20E-11	4.45E-11	4.10E-12	8.00E-14	3.12E-09	7.10E-10	1.12E-09	1.01E-11	2.13E-13	6.80E-11	3.82E-11	2.96E-09
-10.00	3.45E-11	4.80E-11	4.45E-12	8.60E-14	3.28E-09	6.05E-10	1.20E-09	1.00E-11	2.30E-13	4.55E-11	3.76E-11	3.04E-09
-8.00	3.58E-11	4.95E-11	4.70E-12	9.10E-14	3.40E-09	5.58E-10	1.27E-09	1.00E-11	2.24E-13	3.50E-11	3.72E-11	3.11E-09
-6.00	3.65E-11	5.00E-11	4.80E-12	9.40E-14	3.51E-09	5.40E-10	1.32E-09	1.00E-11	2.50E-13	3.22E-11	3.74E-11	3.16E-09
-4.00	3.70E-11	5.00E-11	4.83E-12	9.50E-14	3.58E-09	5.35E-10	1.36E-09	1.01E-11	2.51E-13	3.20E-11	3.78E-11	3.18E-09
-2.00	3.70E-11	5.00E-11	4.80E-12	9.45E-14	3.60E-09	5.37E-10	1.37E-09	1.02E-11	2.51E-13	3.30E-11	3.80E-11	3.18E-09
0.00	3.70E-11	5.00E-11	4.79E-12	9.40E-14	3.60E-09	5.40E-10	1.37E-09	1.01E-11	2.50E-13	3.32E-11	3.82E-11	3.17E-09
2.00	3.60E-11	4.90E-11	4.68E-12	9.20E-14	3.59E-09	5.35E-10	1.34E-09	1.00E-11	2.44E-13	3.28E-11	3.80E-11	3.13E-09
4.00	3.50E-11	4.80E-11	4.50E-12	9.00E-14	3.57E-09	5.25E-10	1.30E-09	9.75E-12	2.38E-13	3.20E-11	3.78E-11	3.07E-09
6.00	3.40E-11	4.65E-11	4.30E-12	8.60E-14	3.52E-09	5.10E-10	1.26E-09	9.45E-12	2.30E-13	3.08E-11	3.70E-11	2.99E-09
8.00	3.25E-11	4.45E-11	4.10E-12	8.10E-14	3.46E-09	5.10E-10	1.20E-09	9.30E-12	2.22E-13	3.02E-11	3.62E-11	2.88E-09
10.00	3.05E-11	4.20E-11	3.80E-12	7.50E-14	3.35E-09	5.38E-10	1.13E-09	9.35E-12	2.07E-13	3.30E-11	3.58E-11	2.79E-09
12.00	2.70E-11	3.70E-11	3.26E-12	6.70E-14	3.20E-09	5.45E-10	1.02E-09	9.40E-12	1.84E-13	6.70E-11	3.56E-11	2.73E-09
14.00	2.35E-11	3.20E-11	2.90E-12	5.70E-14	3.00E-09	7.90E-10	9.20E-10	9.71E-12	1.58E-13	1.10E-10	3.56E-11	2.71E-09
16.00	2.00E-11	2.73E-11	2.43E-12	4.80E-14	2.86E-09	9.65E-10	7.90E-10	1.01E-11	1.32E-13	1.60E-10	3.63E-11	2.69E-09
18.00	1.60E-11	2.27E-11	1.98E-12	4.05E-14	2.78E-09	1.18E-09	6.90E-10	1.08E-11	1.08E-13	2.17E-10	3.78E-11	2.67E-09
20.00	1.27E-11	1.75E-11	1.55E-12	3.37E-14	2.72E-09	1.30E-09	5.88E-10	1.12E-11	8.40E-14	2.40E-10	3.80E-11	2.62E-09
25.00	7.50E-12	1.00E-11	8.90E-13	1.95E-14	2.53E-09	1.65E-09	4.15E-10	1.17E-11	4.52E-14	3.75E-10	3.98E-11	2.58E-09
30.00	4.40E-12	5.90E-12	5.10E-13	1.13E-14	2.44E-09	1.92E-09	2.95E-10	1.20E-11	2.65E-14	4.52E-10	4.05E-11	2.52E-09
35.00	2.65E-12	3.50E-12	3.00E-13	6.40E-15	2.40E-09	2.15E-09	2.10E-10	1.20E-11	1.53E-14	4.90E-10	4.02E-11	2.42E-09
40.00	1.53E-12	2.18E-12	1.72E-13	3.65E-15	2.34E-09	2.32E-09	1.45E-10	1.19E-11	9.50E-15	5.00E-10	3.98E-11	2.30E-09
45.00	1.05E-12	1.45E-12	1.13E-13	2.18E-15	2.23E-09	2.45E-09	1.03E-10	1.12E-11	5.90E-15	5.10E-10	3.82E-11	2.19E-09
50.00	6.40E-13	8.80E-13	6.70E-14	1.33E-15	2.10E-09	2.52E-09	7.50E-11	1.02E-11	3.62E-15	5.18E-10	3.67E-11	2.08E-09
55.00	3.60E-13	5.10E-13	3.80E-14	8.30E-16	1.95E-09	2.60E-09	5.30E-11	9.60E-12	2.18E-15	5.15E-10	3.48E-11	1.95E-09
60.00	1.30E-13	2.80E-13	2.09E-14	5.30E-16	1.79E-09	2.63E-09	3.70E-11	8.80E-12	1.31E-15	5.00E-10	3.27E-11	1.85E-09
65.00	1.15E-13	1.70E-13	1.22E-14	3.35E-16	1.66E-09	2.63E-09	2.70E-11	8.00E-12	7.45E-16	4.70E-10	3.08E-11	1.74E-09
70.00	6.70E-14	1.00E-13	7.20E-15	2.13E-16	1.52E-09	2.55E-09	1.90E-11	7.05E-12	4.30E-16	4.40E-10	2.87E-11	1.63E-09
75.00	3.95E-14	5.90E-14	4.30E-15	1.35E-16	1.39E-09	2.49E-09	1.36E-11	5.97E-12	2.42E-16	3.90E-10	2.63E-11	1.53E-09

TABLE B-13

REACTION RATES FOR THE HIGH WORTH CONTROL ROD PERTURBATION AT 19.8 CM FROM CORE CENTERLINE

Z(cm)	54FENP	58NINP	46TINP	55MNN2N	239PUNP	197AUNG	237NPNF	58FENG	27ALNA	59CONG	45SCNG	235UNF
-70.00	3.15E-14	4.40E-14	3.50E-15	1.00E-16	1.88E-09	5.40E-09	1.60E-11	7.50E-12	2.92E-16	5.75E-10	3.50E-11	1.70E-09
-65.00	5.45E-14	7.85E-14	6.10E-15	1.63E-16	2.16E-09	5.75E-09	2.35E-11	9.05E-12	4.75E-16	6.25E-10	3.98E-11	1.98E-09
-60.00	9.30E-14	1.40E-13	1.04E-14	2.75E-16	2.40E-09	5.95E-09	3.30E-11	1.08E-11	8.00E-16	6.80E-10	4.50E-11	2.35E-09
-55.00	1.66E-13	2.50E-13	1.82E-14	4.60E-16	2.65E-09	6.18E-09	4.85E-11	1.25E-11	1.33E-15	7.35E-10	5.00E-11	2.70E-09
-50.00	2.97E-13	4.40E-13	3.25E-14	7.70E-16	2.90E-09	6.30E-09	7.00E-11	1.43E-11	2.25E-15	8.00E-10	5.49E-11	3.02E-09
-45.00	5.40E-13	7.90E-13	6.00E-14	1.40E-15	3.14E-09	6.30E-09	1.00E-10	1.60E-11	3.83E-15	8.70E-10	5.92E-11	3.36E-09
-40.00	1.00E-12	1.40E-12	1.15E-13	2.65E-15	3.30E-09	6.20E-09	1.45E-10	1.73E-11	6.75E-15	9.40E-10	6.25E-11	3.60E-09
-35.00	2.00E-12	2.82E-12	2.15E-13	5.30E-15	3.40E-09	6.00E-09	2.07E-10	1.80E-11	1.24E-14	1.02E-09	6.45E-11	3.68E-09
-30.00	3.95E-12	5.90E-12	5.00E-13	1.10E-14	3.32E-09	5.30E-09	3.05E-10	1.80E-11	2.70E-14	9.15E-10	6.03E-11	3.45E-09
-25.00	7.90E-12	1.16E-11	1.07E-12	2.45E-14	3.10E-09	3.35E-09	4.70E-10	1.60E-11	6.05E-14	5.00E-10	5.16E-11	3.25E-09
-20.00	1.65E-11	2.40E-11	2.15E-12	4.45E-14	2.95E-09	1.80E-09	6.60E-10	1.34E-11	1.20E-13	2.48E-10	4.30E-11	2.95E-09
-18.00	2.00E-11	2.90E-11	2.65E-12	5.25E-14	2.93E-09	1.37E-09	7.70E-10	1.18E-11	1.40E-13	1.80E-10	4.13E-11	2.88E-09
-16.00	2.40E-11	3.45E-11	3.15E-12	6.20E-14	2.97E-09	1.06E-09	8.70E-10	1.08E-11	1.62E-13	1.33E-10	4.00E-11	2.84E-09
-14.00	2.80E-11	4.00E-11	3.60E-12	7.10E-14	3.00E-09	9.60E-10	9.70E-10	1.02E-11	1.87E-13	9.70E-11	3.90E-11	2.81E-09
-12.00	3.05E-11	4.40E-11	3.82E-12	7.60E-14	3.12E-09	6.65E-10	1.02E-09	9.70E-12	2.00E-13	7.10E-11	3.83E-11	2.83E-09
-10.00	3.25E-11	4.65E-11	4.02E-12	8.00E-14	3.27E-09	5.80E-10	1.16E-09	9.50E-12	2.12E-13	5.25E-11	3.78E-11	2.87E-09
-8.00	3.42E-11	4.80E-11	4.28E-12	8.25E-14	3.35E-09	5.45E-10	1.22E-09	9.40E-12	2.22E-13	3.90E-11	3.75E-11	2.94E-09
-6.00	3.53E-11	4.85E-11	4.42E-12	8.22E-14	3.43E-09	5.35E-10	1.27E-09	9.35E-12	2.28E-13	3.40E-11	3.72E-11	2.99E-09
-4.00	3.53E-11	4.90E-11	4.50E-12	8.20E-14	3.50E-09	5.35E-10	1.28E-09	9.28E-12	2.32E-13	3.30E-11	3.71E-11	3.03E-09
-2.00	3.50E-11	4.90E-11	4.51E-12	8.14E-14	3.52E-09	5.32E-10	1.28E-09	9.25E-12	2.32E-13	3.35E-11	3.70E-11	3.07E-09
0.00	3.43E-11	4.90E-11	4.50E-12	7.79E-14	3.50E-09	5.30E-10	1.28E-09	9.15E-12	2.32E-13	3.40E-11	3.70E-11	3.04E-09
2.00	3.40E-11	4.88E-11	4.50E-12	7.79E-14	3.46E-09	5.30E-10	1.24E-09	9.05E-12	2.32E-13	3.40E-11	3.68E-11	3.02E-09
4.00	3.35E-11	4.85E-11	4.47E-12	7.75E-14	3.40E-09	5.28E-10	1.20E-09	8.95E-12	2.28E-13	3.32E-11	3.65E-11	2.94E-09
6.00	3.27E-11	4.80E-11	4.30E-12	7.40E-14	3.30E-09	5.20E-10	1.16E-09	8.80E-12	2.19E-13	3.20E-11	3.60E-11	2.89E-09
8.00	3.10E-11	4.50E-11	4.05E-12	7.00E-14	3.19E-09	5.14E-10	1.10E-09	8.55E-12	2.08E-13	3.40E-11	3.54E-11	2.79E-09
10.00	2.88E-11	4.05E-11	3.72E-12	6.45E-14	3.07E-09	5.28E-10	1.03E-09	8.40E-12	2.00E-13	4.63E-11	3.51E-11	2.73E-09
12.00	2.58E-11	3.50E-11	3.30E-12	5.90E-14	2.95E-09	6.30E-10	9.30E-10	8.65E-12	1.78E-13	6.60E-11	3.49E-11	2.67E-09
14.00	2.25E-11	3.05E-11	2.80E-12	5.40E-14	2.88E-09	7.70E-10	8.40E-10	9.00E-12	1.53E-13	9.70E-11	3.50E-11	2.60E-09
16.00	1.85E-11	2.55E-11	2.35E-12	4.60E-14	2.77E-09	9.00E-10	7.30E-10	9.50E-12	1.25E-13	1.33E-10	3.53E-11	2.58E-09
18.00	1.48E-11	2.07E-11	1.90E-12	3.85E-14	2.70E-09	1.06E-09	6.35E-10	1.01E-11	1.00E-13	1.80E-10	3.60E-11	2.56E-09
20.00	1.22E-11	1.70E-11	1.50E-12	3.20E-14	2.60E-09	1.22E-09	5.55E-10	1.08E-11	8.00E-14	2.30E-10	3.70E-11	2.56E-09
25.00	7.00E-12	9.60E-12	8.40E-13	1.74E-14	2.30E-09	1.53E-09	3.90E-10	1.15E-11	4.30E-14	3.33E-10	3.81E-11	2.49E-09
30.00	4.10E-12	5.40E-12	4.60E-13	1.02E-14	2.03E-09	1.85E-09	2.75E-10	1.16E-11	2.53E-14	3.85E-10	3.85E-11	2.40E-09
35.00	2.40E-12	3.20E-12	2.45E-13	5.80E-15	1.45E-09	2.13E-09	1.93E-10	1.13E-11	1.48E-14	4.02E-10	3.82E-11	2.28E-09
40.00	1.40E-12	2.00E-12	1.60E-13	3.35E-15	1.81E-09	2.40E-09	1.37E-10	1.08E-11	8.90E-15	4.25E-10	3.70E-11	2.15E-09
45.00	8.20E-13	1.16E-12	9.20E-14	1.96E-15	1.79E-09	2.68E-09	9.60E-11	1.04E-11	5.10E-15	4.35E-10	3.58E-11	2.04E-09
50.00	4.85E-13	7.00E-13	5.45E-14	1.22E-15	1.78E-09	2.95E-09	6.85E-11	9.75E-12	3.12E-15	4.50E-10	3.41E-11	1.93E-09
55.00	2.95E-13	4.20E-13	3.30E-14	7.55E-16	1.72E-09	3.22E-09	4.80E-11	9.00E-12	2.00E-15	4.60E-10	3.23E-11	1.81E-09
60.00	1.80E-13	2.60E-13	2.10E-14	4.75E-16	1.62E-09	3.40E-09	3.40E-11	8.15E-12	1.25E-15	4.63E-10	3.05E-11	1.71E-09
65.00	1.12E-13	1.53E-13	1.22E-14	3.08E-16	1.53E-09	3.50E-09	2.69E-11	7.30E-12	7.60E-16	4.61E-10	2.82E-11	1.59E-09
70.00	6.90E-14	9.20E-14	7.30E-15	1.97E-16	1.41E-09	3.49E-09	1.73E-11	6.50E-12	4.60E-16	4.50E-10	2.57E-11	1.49E-09
75.00	4.40E-14	5.50E-14	4.35E-15	1.27E-16	1.30E-09	3.34E-09	1.22E-11	5.80E-12	2.78E-16	4.22E-10	2.33E-11	1.38E-09

TABLE B-14

REACTION RATES FOR THE FUEL IN ROW 7 PERTURBATION AT 25.0 CM FROM CORE CENTER LINE

Z(cm)	54FENP	58NINP	46TINP	55MNN2N	239PUNP	197AUNG	237NPNF	58FENG	27ALNA	59CONG	45SCNG	235UNF
-70.00	3.05E-14	4.50E-14	3.00E-15	1.15E-16	1.54E-09	4.95E-09	1.38E-11	7.00E-12	2.20E-16	4.60E-10	3.36E-11	1.53E-09
-65.00	5.10E-14	7.70E-14	5.20E-15	1.70E-16	1.85E-09	5.12E-09	2.00E-11	8.50E-12	3.88E-16	5.40E-10	3.72E-11	1.80E-09
-60.00	8.50E-14	1.28E-13	9.30E-15	2.55E-16	2.17E-09	5.30E-09	2.85E-11	1.00E-11	6.80E-16	6.30E-10	4.12E-11	2.08E-09
-55.00	1.50E-13	2.35E-13	1.65E-14	4.20E-16	2.48E-09	5.47E-09	4.20E-11	1.17E-11	1.20E-15	7.20E-10	4.52E-11	2.39E-09
-50.00	2.62E-13	4.25E-13	2.95E-14	7.45E-16	2.76E-09	5.62E-09	6.00E-11	1.34E-11	2.10E-15	8.00E-10	4.90E-11	2.64E-09
-45.00	4.75E-13	7.80E-13	5.60E-14	1.38E-15	3.00E-09	5.80E-09	8.70E-11	1.50E-11	3.72E-15	8.60E-10	5.25E-11	2.94E-09
-40.00	9.40E-13	1.45E-12	1.10E-13	2.50E-15	3.10E-09	5.90E-09	1.25E-10	1.62E-11	6.40E-15	8.90E-10	5.48E-11	3.14E-09
-35.00	1.92E-12	2.90E-12	2.90E-13	5.10E-15	3.08E-09	5.97E-09	1.82E-10	1.69E-11	1.26E-14	9.20E-10	5.53E-11	3.22E-09
-30.00	3.80E-12	5.70E-12	6.75E-13	1.03E-14	2.98E-09	4.93E-09	2.70E-10	1.65E-11	2.80E-14	8.10E-10	5.20E-11	3.10E-09
-25.00	7.80E-12	1.20E-11	1.33E-12	2.04E-14	2.90E-09	3.15E-09	4.22E-10	1.50E-11	6.55E-14	4.90E-10	4.70E-11	2.96E-09
-20.00	1.65E-11	2.50E-11	2.20E-12	4.40E-14	2.88E-09	1.70E-09	6.10E-10	1.30E-11	1.22E-13	2.32E-10	4.13E-11	2.80E-09
-18.00	2.03E-11	3.10E-11	2.65E-12	5.23E-14	2.87E-09	1.30E-09	7.10E-10	1.17E-11	1.48E-13	1.77E-10	3.98E-11	2.77E-09
-16.00	2.42E-11	3.60E-11	3.05E-12	6.00E-14	2.88E-09	1.00E-09	8.05E-10	1.05E-11	1.68E-13	1.23E-10	3.82E-11	2.74E-09
-14.00	2.80E-11	4.00E-11	3.45E-12	6.60E-14	2.90E-09	9.00E-10	9.00E-10	9.75E-12	1.85E-13	9.00E-11	3.78E-11	2.72E-09
-12.00	3.00E-11	4.35E-11	3.70E-12	7.20E-14	2.94E-09	5.30E-10	1.00E-09	9.30E-12	2.01E-13	6.30E-11	3.70E-11	2.73E-09
-10.00	3.10E-11	4.50E-11	4.00E-12	7.60E-14	3.00E-09	5.43E-10	1.08E-09	9.20E-12	2.10E-13	4.25E-11	3.66E-11	2.76E-09
-8.00	3.18E-11	4.60E-11	4.15E-12	7.75E-14	3.08E-09	5.00E-10	1.16E-09	9.30E-12	2.18E-13	3.13E-11	3.60E-11	2.79E-09
-6.00	3.22E-11	4.65E-11	4.22E-12	7.95E-14	3.17E-09	4.86E-10	1.20E-09	9.40E-12	2.23E-13	3.00E-11	3.58E-11	2.83E-09
-4.00	3.28E-11	4.65E-11	4.26E-12	8.00E-14	3.24E-09	4.89E-10	1.23E-09	9.50E-12	2.25E-13	3.02E-11	3.58E-11	2.89E-09
-2.00	3.32E-11	4.60E-11	4.30E-12	8.10E-14	3.29E-09	4.99E-10	1.24E-09	9.60E-12	2.25E-13	3.08E-11	3.58E-11	2.90E-09
0.00	3.35E-11	4.50E-11	4.32E-12	8.15E-14	3.30E-09	5.00E-10	1.25E-09	9.70E-12	2.23E-13	3.15E-11	3.55E-11	2.90E-09
2.00	3.32E-11	4.40E-11	4.30E-12	8.10E-14	3.27E-09	4.95E-10	1.23E-09	9.70E-12	2.20E-13	3.05E-11	3.53E-11	2.89E-09
4.00	3.30E-11	4.25E-11	4.28E-12	7.85E-14	3.21E-09	4.82E-10	1.20E-09	9.60E-12	2.15E-13	2.98E-11	3.51E-11	2.85E-09
6.00	3.20E-11	4.05E-11	4.10E-12	7.40E-14	3.13E-09	4.68E-10	1.16E-09	9.30E-12	2.04E-13	2.90E-11	3.50E-11	2.79E-09
8.00	3.05E-11	3.85E-11	3.85E-12	6.85E-14	3.04E-09	4.70E-10	1.11E-09	8.90E-12	1.92E-13	2.90E-11	3.47E-11	2.73E-09
10.00	2.78E-11	3.55E-11	3.50E-12	6.15E-14	2.95E-09	5.00E-10	1.03E-09	8.55E-12	1.75E-13	4.10E-11	3.45E-11	2.65E-09
12.00	2.42E-11	3.17E-11	2.95E-12	5.45E-14	2.87E-09	5.90E-10	9.50E-10	8.35E-12	1.57E-13	7.00E-11	3.43E-11	2.60E-09
14.00	2.00E-11	2.78E-11	2.52E-12	4.70E-14	2.82E-09	7.35E-10	8.50E-10	8.70E-12	1.38E-13	1.23E-10	3.41E-11	2.55E-09
16.00	1.75E-11	2.25E-11	2.12E-12	4.05E-14	2.77E-09	9.50E-10	7.20E-10	9.20E-12	1.13E-13	1.70E-10	3.43E-11	2.51E-09
18.00	1.42E-11	1.80E-11	1.75E-12	3.40E-14	2.73E-09	1.21E-09	6.15E-10	1.00E-11	9.30E-14	2.32E-10	3.50E-11	2.49E-09
20.00	1.15E-11	1.55E-11	1.40E-12	2.85E-14	2.70E-09	1.55E-09	5.30E-10	1.09E-11	7.60E-14	3.00E-10	3.50E-11	2.47E-09
25.00	6.50E-12	8.80E-12	7.80E-13	1.58E-14	2.63E-09	2.29E-09	3.62E-10	1.26E-11	4.15E-14	4.25E-10	3.80E-11	2.43E-09
30.00	3.70E-12	5.20E-12	4.30E-13	8.90E-15	2.50E-09	2.77E-09	2.48E-10	1.37E-11	2.36E-14	5.05E-10	3.93E-11	2.40E-09
35.00	2.15E-12	3.10E-12	2.45E-13	4.90E-15	2.38E-09	3.02E-09	1.76E-10	1.36E-11	1.37E-14	5.50E-10	3.98E-11	2.36E-09
40.00	1.28E-12	1.90E-12	1.40E-13	2.90E-15	2.24E-09	3.22E-09	1.27E-10	1.29E-11	8.00E-15	5.60E-10	3.90E-11	2.26E-09
45.00	7.40E-13	1.12E-12	8.00E-14	1.60E-15	2.09E-09	3.39E-09	8.95E-11	1.20E-11	4.80E-15	5.52E-10	3.75E-11	2.15E-09
50.00	4.40E-13	6.70E-13	4.60E-14	1.00E-15	1.95E-09	3.49E-09	6.40E-11	1.10E-11	2.93E-15	5.37E-10	3.55E-11	2.01E-09
55.00	2.75E-13	4.05E-13	2.65E-14	6.30E-16	1.82E-09	3.52E-09	4.55E-11	9.80E-12	1.80E-15	5.20E-10	3.32E-11	1.84E-09
60.00	1.75E-13	2.45E-13	1.50E-14	4.00E-16	1.70E-09	3.50E-09	3.25E-11	8.70E-12	1.14E-15	5.00E-10	3.07E-11	1.75E-09
65.00	1.13E-13	1.48E-13	9.00E-15	2.65E-16	1.55E-09	3.46E-09	2.30E-11	7.65E-12	7.20E-16	4.68E-10	2.83E-11	1.63E-09
70.00	7.30E-14	9.00E-14	5.40E-15	1.75E-16	1.43E-09	3.40E-09	1.64E-11	6.70E-12	4.55E-16	4.30E-10	2.60E-11	1.51E-09
75.00	4.75E-14	5.60E-14	3.25E-15	1.17E-16	1.31E-09	3.10E-09	1.16E-11	5.80E-12	3.00E-16	3.85E-10	2.38E-11	1.40E-09

TABLE B-15

REACTION RATES FOR THE FUEL IN ROW 7 PERTURBATION AT 28.2 CM FROM CORE CENTER LINE

Z(cm)	54FENP	58NINP	46TINP	55MNN2N	239PUNP	197AUNG	237NPNF	58FENG	27ALNA	59CONG	45SCNG	235UNF
-70.00	2.30E-14	3.30E-14	2.50E-15	9.20E-17	1.50E-09	4.45E-09	1.30E-11	6.10E-12	1.92E-16	4.40E-10	2.90E-11	1.43E-09
-65.00	4.00E-14	6.10E-14	4.40E-15	1.44E-16	1.72E-09	4.52E-09	1.87E-11	7.60E-12	3.35E-16	5.00E-10	3.31E-11	1.57E-09
-60.00	7.60E-14	1.13E-13	8.40E-15	2.32E-16	1.95E-09	4.65E-09	2.65E-11	9.10E-12	5.90E-16	5.60E-10	3.74E-11	1.94E-09
-55.00	1.47E-13	2.10E-13	1.60E-14	3.95E-16	2.20E-09	4.70E-09	3.75E-11	1.04E-11	1.03E-15	6.25E-10	4.14E-11	2.19E-09
-50.00	2.80E-13	3.85E-13	3.05E-14	6.90E-16	2.44E-09	4.75E-09	5.30E-11	1.19E-11	1.40E-15	6.95E-10	4.50E-11	2.43E-09
-45.00	5.00E-13	7.10E-13	5.50E-14	1.20E-15	2.68E-09	4.78E-09	7.00E-11	1.33E-11	3.18E-15	7.50E-10	4.80E-11	2.63E-09
-40.00	8.70E-13	1.28E-12	9.80E-14	2.13E-15	2.37E-09	4.79E-09	1.08E-10	1.46E-11	5.70E-15	8.00E-10	4.98E-11	2.77E-09
-35.00	1.52E-12	2.27E-12	1.84E-13	3.85E-15	3.02E-09	4.79E-09	1.54E-10	1.54E-11	1.00E-14	8.20E-10	5.05E-11	2.82E-09
-30.00	2.75E-12	4.35E-12	3.75E-13	7.70E-15	3.01E-09	4.57E-09	2.30E-10	1.52E-11	1.95E-14	7.30E-10	4.80E-11	2.80E-09
-25.00	5.90E-12	9.50E-12	8.20E-13	1.80E-14	2.90E-09	3.25E-09	3.48E-10	1.42E-11	4.50E-14	4.90E-10	4.43E-11	2.79E-09
-20.00	1.43E-11	2.09E-11	1.80E-12	4.30E-14	2.80E-09	1.65E-09	5.35E-10	1.27E-11	1.10E-13	2.32E-10	4.04E-11	2.72E-09
-18.00	1.95E-11	2.60E-11	2.30E-12	5.00E-14	2.80E-09	1.17E-09	6.30E-10	1.15E-11	1.32E-13	1.87E-10	3.88E-11	2.68E-09
-16.00	2.33E-11	3.05E-11	2.80E-12	5.75E-14	2.80E-09	9.40E-10	7.25E-10	1.05E-11	1.50E-13	1.38E-10	3.78E-11	2.63E-09
-14.00	2.63E-11	3.43E-11	3.15E-12	6.40E-14	2.82E-09	9.00E-10	8.40E-10	9.60E-12	1.69E-13	9.50E-11	3.62E-11	2.60E-09
-12.00	2.45E-11	3.72E-11	3.50E-12	6.95E-14	2.92E-09	6.50E-10	9.00E-10	9.35E-12	1.88E-13	6.70E-11	3.52E-11	2.59E-09
-10.00	3.00E-11	3.95E-11	3.70E-12	7.30E-14	2.99E-09	5.65E-10	9.40E-10	9.30E-12	2.00E-13	4.60E-11	3.40E-11	2.60E-09
-8.00	3.10E-11	4.08E-11	3.85E-12	7.55E-14	3.06E-09	5.20E-10	9.80E-10	9.30E-12	2.10E-13	3.50E-11	3.43E-11	2.63E-09
-6.00	3.17E-11	4.15E-11	3.98E-12	7.70E-14	3.10E-09	5.05E-10	1.02E-09	9.33E-12	2.11E-13	3.20E-11	3.45E-11	2.69E-09
-4.00	3.20E-11	4.16E-11	4.02E-12	7.73E-14	3.13E-09	5.00E-10	1.03E-09	9.45E-12	2.12E-13	3.20E-11	3.48E-11	2.76E-09
-2.00	3.16E-11	4.14E-11	4.02E-12	7.74E-14	3.15E-09	5.02E-10	1.04E-09	9.53E-12	2.13E-13	3.28E-11	3.50E-11	2.79E-09
0.00	3.13E-11	4.13E-11	3.98E-12	7.75E-14	3.16E-09	5.05E-10	1.05E-09	9.60E-12	2.13E-13	3.30E-11	3.50E-11	2.80E-09
2.00	3.10E-11	4.10E-11	3.95E-12	7.70E-14	3.10E-09	5.00E-10	1.04E-09	9.58E-12	2.12E-13	3.25E-11	3.49E-11	2.77E-09
4.00	3.03E-11	4.02E-11	3.80E-12	7.30E-14	3.02E-09	4.95E-10	1.02E-09	9.50E-12	2.05E-13	3.20E-11	3.45E-11	2.70E-09
6.00	2.90E-11	3.90E-11	3.65E-12	6.90E-14	2.97E-09	4.80E-10	1.00E-09	9.40E-12	2.00E-13	3.10E-11	3.40E-11	2.67E-09
8.00	2.70E-11	3.75E-11	3.42E-12	6.45E-14	2.93E-09	4.85E-10	9.50E-10	9.20E-12	1.90E-13	3.02E-11	3.33E-11	2.58E-09
10.00	2.49E-11	3.46E-11	3.12E-12	5.85E-14	2.83E-09	5.05E-10	8.60E-10	8.90E-12	1.75E-13	3.60E-11	3.30E-11	2.49E-09
12.00	2.20E-11	3.15E-11	2.77E-12	5.12E-14	2.76E-09	5.90E-10	7.60E-10	8.70E-12	1.56E-13	9.60E-11	3.31E-11	2.45E-09
14.00	1.85E-11	2.67E-11	2.30E-12	4.30E-14	2.70E-09	7.20E-10	6.70E-10	8.55E-12	1.31E-13	1.40E-10	3.31E-11	2.43E-09
16.00	1.58E-11	2.33E-11	1.95E-12	3.75E-14	2.68E-09	9.50E-10	5.75E-10	9.15E-12	1.10E-13	1.95E-10	3.34E-11	2.42E-09
18.00	1.32E-11	1.90E-11	1.56E-12	3.12E-14	2.63E-09	1.23E-09	5.00E-10	9.80E-12	9.00E-14	2.80E-10	3.45E-11	2.40E-09
20.00	1.08E-11	1.47E-11	1.32E-12	2.65E-14	2.55E-09	1.58E-09	4.30E-10	1.10E-11	7.15E-14	3.20E-10	3.60E-11	2.40E-09
25.00	5.60E-12	7.50E-12	6.00E-13	1.32E-14	2.40E-09	2.05E-09	3.05E-10	1.17E-11	3.50E-14	4.80E-10	3.80E-11	2.27E-09
30.00	2.45E-12	3.95E-12	3.15E-13	6.80E-15	2.27E-09	2.41E-09	2.10E-10	1.19E-11	1.88E-14	5.55E-10	3.90E-11	2.17E-09
35.00	1.55E-12	2.32E-12	1.72E-13	3.75E-15	2.20E-09	2.70E-09	1.48E-10	1.17E-11	1.11E-14	5.50E-10	3.80E-11	2.07E-09
40.00	9.60E-13	1.50E-12	1.03E-13	2.25E-15	2.09E-09	2.92E-09	1.03E-10	1.12E-11	6.85E-15	5.30E-10	3.60E-11	1.96E-09
45.00	6.00E-13	9.40E-13	6.30E-14	1.30E-15	1.95E-09	3.07E-09	7.40E-11	1.05E-11	4.20E-15	5.07E-10	3.40E-11	1.84E-09
50.00	3.30E-13	5.30E-13	3.55E-14	7.70E-16	1.80E-09	3.18E-09	5.25E-11	9.65E-12	2.50E-15	4.85E-10	3.20E-11	1.72E-09
55.00	1.82E-13	2.92E-13	2.00E-14	4.65E-16	1.66E-09	3.22E-09	3.73E-11	8.65E-12	1.45E-15	4.62E-10	2.98E-11	1.60E-09
60.00	1.11E-13	1.80E-13	1.18E-14	3.06E-16	1.52E-09	3.20E-09	2.67E-11	7.55E-12	8.42E-16	4.38E-10	2.78E-11	1.50E-09
65.00	6.20E-14	1.03E-13	6.70E-15	1.89E-16	1.39E-09	3.07E-09	1.90E-11	6.40E-12	4.95E-16	4.07E-10	2.58E-11	1.39E-09
70.00	3.60E-14	5.90E-14	3.40E-15	1.19E-16	1.27E-09	2.95E-09	1.36E-11	5.30E-12	2.88E-16	3.70E-10	2.38E-11	1.29E-09
75.00	1.90E-14	3.30E-14	2.20E-15	7.80E-17	1.16E-09	2.89E-09	9.70E-12	4.50E-12	1.64E-16	3.32E-10	2.22E-11	1.19E-09

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TABLE B-16

REACTION RATES FOR THE FUEL IN ROW 7 PERTURBATION AT 30.4 CM FROM CORE CENTER LINE

Z(cm)	54FENP	58NINP	46TINP	55MNN2N	239PUNP	197AUNG	237NPNF	58FENG	27ALNA	59CONG	45SCNG	235UNF
-70.00	2.20E-14	2.85E-14	2.50E-15	7.40E-17	1.34E-09	3.90E-09	1.25E-11	5.70E-12	1.88E-16	4.10E-10	2.70E-11	1.36E-09
-65.00	3.68E-14	5.35E-14	4.20E-15	1.20E-16	1.57E-09	4.10E-09	1.70E-11	6.90E-12	3.00E-16	4.55E-10	3.06E-11	1.58E-09
-60.00	6.30E-14	9.90E-14	7.00E-15	1.98E-16	1.84E-09	4.35E-09	2.35E-11	8.25E-12	4.95E-16	5.00E-10	3.45E-11	1.80E-09
-55.00	1.12E-13	1.72E-13	1.23E-14	3.30E-16	2.07E-09	4.55E-09	3.25E-11	9.60E-12	8.30E-16	5.50E-10	3.86E-11	2.07E-09
-50.00	2.00E-13	3.05E-13	2.16E-14	5.60E-16	2.32E-09	4.73E-09	4.55E-11	1.09E-11	1.40E-15	6.10E-10	4.22E-11	2.31E-09
-45.00	3.65E-13	5.60E-13	3.90E-14	9.60E-16	2.53E-09	4.88E-09	6.45E-11	1.23E-11	2.42E-15	6.70E-10	4.53E-11	2.52E-09
-40.00	6.90E-13	1.00E-12	7.00E-14	1.75E-15	2.67E-09	4.98E-09	9.10E-11	1.36E-11	4.40E-15	7.40E-10	4.77E-11	2.68E-09
-35.00	1.28E-12	1.95E-12	1.33E-13	3.10E-15	2.70E-09	5.08E-09	1.34E-10	1.53E-11	7.85E-10	4.82E-11	2.73E-11	2.73E-09
-30.00	2.50E-12	3.40E-12	2.80E-13	6.35E-15	2.70E-09	4.70E-09	2.00E-10	1.61E-11	1.80E-14	7.20E-10	4.70E-11	2.73E-09
-25.00	5.40E-12	7.70E-12	6.00E-13	1.84E-14	2.70E-09	3.03E-09	3.22E-10	1.51E-11	4.60E-14	5.10E-10	4.39E-11	2.69E-09
-20.00	1.13E-11	1.65E-11	1.40E-12	3.85E-14	2.70E-09	1.70E-09	4.80E-10	1.27E-11	9.30E-14	2.57E-10	4.00E-11	2.63E-09
-18.00	1.48E-11	2.03E-11	1.82E-12	4.70E-14	2.71E-09	1.30E-09	5.65E-10	1.10E-11	1.14E-13	2.02E-10	3.82E-11	2.60E-09
-16.00	1.85E-11	2.45E-11	2.33E-12	5.40E-14	2.73E-09	1.06E-09	6.50E-10	9.90E-12	1.33E-13	1.53E-10	3.73E-11	2.56E-09
-14.00	2.20E-11	2.80E-11	2.78E-12	6.00E-14	2.78E-09	8.50E-10	7.40E-10	9.50E-12	1.52E-13	1.17E-10	3.65E-11	2.53E-09
-12.00	2.45E-11	3.15E-11	3.18E-12	6.32E-14	2.87E-09	7.10E-10	8.10E-10	9.35E-12	1.69E-13	8.65E-11	3.57E-11	2.52E-09
-10.00	2.70E-11	3.33E-11	3.30E-12	6.60E-14	2.93E-09	6.10E-10	8.75E-10	9.35E-12	1.82E-13	6.35E-11	3.52E-11	2.51E-09
-8.00	2.83E-11	3.47E-11	3.40E-12	6.80E-14	2.99E-09	5.70E-10	9.18E-10	9.36E-12	1.90E-13	4.70E-11	3.48E-11	2.53E-09
-6.00	2.94E-11	3.55E-11	3.42E-12	6.95E-14	3.02E-09	5.55E-10	9.40E-10	9.38E-12	1.93E-13	3.95E-11	3.46E-11	2.57E-09
-4.00	2.97E-11	3.60E-11	3.42E-12	7.00E-14	3.04E-09	5.50E-10	9.55E-10	9.40E-12	1.95E-13	3.88E-11	3.44E-11	2.60E-09
-2.00	3.00E-11	3.60E-11	3.40E-12	7.10E-14	3.05E-09	5.55E-10	9.60E-10	9.45E-12	1.96E-13	3.95E-11	3.43E-11	2.61E-09
0.00	3.03E-11	3.55E-11	3.35E-12	7.20E-14	3.07E-09	5.55E-10	9.60E-10	9.50E-12	1.95E-13	4.00E-11	3.42E-11	2.63E-09
2.00	3.00E-11	3.53E-11	3.32E-12	7.00E-14	3.06E-09	5.52E-10	9.45E-10	9.45E-12	1.94E-13	3.97E-11	3.40E-11	2.61E-09
4.00	2.98E-11	3.50E-11	3.30E-12	6.85E-14	3.03E-09	5.50E-10	9.20E-10	9.15E-12	1.92E-13	3.80E-11	3.38E-11	2.59E-09
6.00	2.83E-11	3.48E-11	3.25E-12	6.40E-14	2.95E-09	5.40E-10	8.80E-10	8.65E-12	1.85E-13	3.70E-11	3.36E-11	2.55E-09
8.00	2.65E-11	3.35E-11	3.10E-12	6.00E-14	2.83E-09	5.32E-10	8.40E-10	8.32E-12	1.76E-13	3.90E-11	3.34E-11	2.49E-09
10.00	2.40E-11	3.10E-11	2.80E-12	5.50E-14	2.70E-09	5.52E-10	7.85E-10	8.20E-12	1.60E-13	6.25E-11	3.33E-11	2.45E-09
12.00	2.07E-11	2.75E-11	2.45E-12	4.85E-14	2.58E-09	5.35E-10	7.20E-10	8.25E-12	1.43E-13	9.25E-11	3.34E-11	2.42E-09
14.00	1.70E-11	2.40E-11	2.10E-12	4.05E-14	2.52E-09	7.50E-10	6.40E-10	8.45E-12	1.25E-13	1.35E-10	3.37E-11	2.40E-09
16.00	1.45E-11	2.02E-11	1.70E-12	3.43E-14	2.50E-09	1.02E-09	5.45E-10	9.10E-12	1.02E-13	1.83E-10	3.39E-11	2.38E-09
18.00	1.20E-11	1.67E-11	1.40E-12	2.80E-14	2.47E-09	1.30E-09	4.70E-10	9.90E-12	8.30E-14	2.56E-10	3.43E-11	2.37E-09
20.00	1.00E-11	1.33E-11	1.17E-12	2.30E-14	2.43E-09	1.60E-09	4.00E-10	1.07E-11	6.75E-14	3.50E-10	3.48E-11	2.36E-09
25.00	4.95E-12	7.20E-12	5.60E-13	1.17E-14	2.35E-09	2.13E-09	2.80E-10	1.16E-11	3.60E-14	4.80E-10	3.60E-11	2.30E-09
30.00	2.25E-12	3.60E-12	2.64E-13	5.60E-15	2.23E-09	2.48E-09	1.95E-10	1.20E-11	1.75E-14	5.40E-10	3.60E-11	2.21E-09
35.00	1.20E-12	1.95E-12	1.40E-13	3.00E-15	2.13E-09	2.74E-09	1.37E-10	1.18E-11	9.00E-15	5.45E-10	3.54E-11	2.10E-09
40.00	7.20E-13	1.17E-12	8.40E-14	1.85E-15	1.99E-09	2.95E-09	9.45E-11	1.10E-11	5.40E-15	5.20E-10	3.42E-11	1.98E-09
45.00	4.30E-13	6.80E-13	4.90E-14	1.13E-15	1.85E-09	3.13E-09	6.85E-11	1.01E-11	3.22E-15	5.00E-10	3.33E-11	1.87E-09
50.00	2.70E-13	4.00E-13	2.98E-14	7.15E-16	1.71E-09	3.20E-09	4.90E-11	9.10E-12	1.97E-15	4.80E-10	3.18E-11	1.74E-09
55.00	1.68E-13	2.40E-13	1.80E-14	4.48E-16	1.58E-09	3.20E-09	3.50E-11	8.10E-12	1.20E-15	4.55E-10	2.97E-11	1.62E-09
60.00	1.00E-13	1.45E-13	1.10E-14	2.90E-16	1.45E-09	3.10E-09	2.52E-11	7.20E-12	7.40E-16	4.30E-10	2.70E-11	1.50E-09
65.00	6.80E-14	8.90E-14	6.60E-15	1.88E-16	1.35E-09	3.00E-09	1.82E-11	6.40E-12	4.50E-16	4.08E-10	2.48E-11	1.39E-09
70.00	4.40E-14	5.40E-14	4.05E-15	1.27E-16	1.23E-09	2.84E-09	1.30E-11	5.65E-12	2.75E-16	3.85E-10	2.27E-11	1.28E-09
75.00	2.87E-14	3.30E-14	2.55E-15	8.40E-17	1.12E-09	2.57E-09	9.30E-12	5.00E-12	1.68E-16	3.60E-10	2.05E-11	1.17E-09

TABLE B-17

REACTION RATES FOR THE FUEL IN ROW 7 PERTURBATION AT 33.4 CM FROM CORE CENTERLINE

Z(cm)	54FENP	58NINP	47TINP	55MNN2N	239PUNP	197AUNG	237NPNF	58FENG	27ALNA	59CONG	45SCNG	235UNF
-70.00	1.60E-14	2.35E-14	1.76E-15	6.40E-17	1.24E-09	3.60E-09	1.00E-11	5.12E-12	1.36E-16	3.37E-10	2.24E-11	1.10E-09
-65.00	2.85E-14	4.10E-14	3.02E-15	1.00E-16	1.40E-09	3.80E-09	1.41E-11	6.10E-12	2.30E-16	3.90E-10	2.65E-11	1.32E-09
-60.00	5.00E-14	7.40E-14	5.40E-15	1.50E-16	1.58E-09	3.96E-09	1.98E-11	7.25E-12	3.85E-16	4.48E-10	3.06E-11	1.57E-09
-55.00	9.00E-14	1.28E-13	9.60E-15	2.40E-16	1.80E-09	4.17E-09	2.80E-11	8.55E-12	6.50E-16	5.08E-10	3.48E-11	1.84E-09
-50.00	1.60E-13	2.26E-13	1.70E-14	4.10E-16	2.00E-09	4.33E-09	3.95E-11	1.00E-11	1.09E-15	5.75E-10	3.85E-11	2.09E-09
-45.00	2.80E-13	3.95E-13	2.96E-14	6.90E-16	2.19E-09	4.46E-09	5.50E-11	1.15E-11	1.83E-15	6.35E-10	4.18E-11	2.32E-09
-40.00	4.90E-13	6.70E-13	5.10E-14	1.20E-15	2.37E-09	4.55E-09	7.70E-11	1.28E-11	3.15E-15	6.75E-10	4.43E-11	2.49E-09
-35.00	8.90E-13	1.22E-12	9.40E-14	2.10E-15	2.49E-09	4.60E-09	1.10E-10	1.39E-11	5.65E-15	7.20E-10	4.51E-11	2.57E-09
-30.00	1.55E-12	2.25E-12	1.80E-13	4.20E-15	2.55E-09	4.42E-09	1.60E-10	1.44E-11	1.02E-14	7.20E-10	4.40E-11	2.63E-09
-25.00	3.20E-12	4.90E-12	3.85E-13	1.04E-14	2.57E-09	3.68E-09	2.40E-10	1.40E-11	2.15E-14	5.80E-10	4.20E-11	2.60E-09
-20.00	7.30E-12	1.08E-11	9.00E-13	2.35E-14	2.58E-09	2.25E-09	3.80E-10	1.25E-11	5.10E-14	3.65E-10	3.93E-11	2.48E-09
-18.00	9.30E-12	1.40E-11	1.23E-12	2.95E-14	2.58E-09	1.85E-09	4.35E-10	1.15E-11	6.90E-14	3.02E-10	3.77E-11	2.41E-09
-16.00	1.15E-11	1.68E-11	1.52E-12	3.60E-14	2.57E-09	1.50E-09	5.00E-10	1.08E-11	8.40E-14	2.54E-10	3.68E-11	2.40E-09
-14.00	1.40E-11	1.92E-11	1.80E-12	4.20E-14	2.57E-09	1.23E-09	5.80E-10	1.00E-11	9.60E-14	2.07E-10	3.58E-11	2.40E-09
-12.00	1.50E-11	2.12E-11	1.98E-12	4.65E-14	2.57E-09	1.03E-09	6.45E-10	9.67E-12	1.06E-13	1.67E-10	3.52E-11	2.40E-09
-10.00	1.56E-11	2.27E-11	2.09E-12	5.00E-14	2.58E-09	8.90E-10	7.00E-10	9.45E-12	1.13E-13	1.37E-10	3.46E-11	2.40E-09
-8.00	1.52E-11	2.39E-11	2.17E-12	5.39E-14	2.58E-09	8.10E-10	7.20E-10	9.35E-12	1.17E-13	1.10E-10	3.42E-11	2.40E-09
-6.00	1.67E-11	2.47E-11	2.23E-12	5.40E-14	2.61E-09	8.11E-10	7.35E-10	9.33E-12	1.20E-13	1.05E-10	3.40E-11	2.40E-09
-4.00	1.69E-11	2.49E-11	2.27E-12	5.40E-14	2.64E-09	8.12E-10	7.40E-10	9.45E-12	1.20E-13	1.07E-10	3.38E-11	2.39E-09
-2.00	1.70E-11	2.50E-11	2.27E-12	5.37E-14	2.66E-09	8.14E-10	7.45E-10	9.48E-12	1.19E-13	1.09E-10	3.36E-11	2.39E-09
0.00	1.72E-11	2.50E-11	2.27E-12	5.35E-14	2.68E-09	8.15E-10	7.50E-10	9.50E-12	1.19E-13	1.10E-10	3.35E-11	2.38E-09
2.00	1.69E-11	2.49E-11	2.25E-12	5.30E-14	2.68E-09	8.14E-10	7.40E-10	9.48E-12	1.18E-13	1.08E-10	3.32E-11	2.37E-09
4.00	1.67E-11	2.42E-11	2.20E-12	5.20E-14	2.68E-09	8.00E-10	7.30E-10	9.47E-12	1.16E-13	1.04E-10	3.32E-11	2.36E-09
6.00	1.63E-11	2.37E-11	2.10E-12	4.85E-14	2.65E-09	7.80E-10	7.00E-10	9.40E-12	1.13E-13	1.02E-10	3.33E-11	2.35E-09
8.00	1.58E-11	2.26E-11	2.00E-12	4.55E-14	2.62E-09	7.80E-10	6.60E-10	9.20E-12	1.09E-13	1.02E-10	3.33E-11	2.34E-09
10.00	1.52E-11	2.13E-11	1.89E-12	4.20E-14	2.60E-09	8.10E-10	6.20E-10	8.90E-12	1.03E-13	1.09E-10	3.32E-11	2.33E-09
12.00	1.42E-11	1.97E-11	1.73E-12	3.70E-14	2.50E-09	8.80E-10	5.60E-10	8.83E-12	9.40E-14	1.27E-10	3.31E-11	2.30E-09
14.00	1.36E-11	1.80E-11	1.54E-12	3.10E-14	2.47E-09	9.80E-10	5.10E-10	8.80E-12	8.30E-14	1.80E-10	3.30E-11	2.28E-09
16.00	1.10E-11	1.52E-11	1.30E-12	2.55E-14	2.40E-09	1.20E-09	4.30E-10	9.20E-12	7.30E-14	2.30E-10	3.30E-11	2.28E-09
18.00	9.30E-12	1.27E-11	1.08E-12	2.00E-14	2.36E-09	1.41E-09	3.72E-10	9.80E-12	6.25E-14	3.20E-10	3.32E-11	2.31E-09
20.00	7.28E-12	1.00E-11	8.50E-13	1.50E-14	2.32E-09	1.70E-09	3.20E-10	1.04E-11	5.40E-14	4.15E-10	3.40E-11	2.27E-09
25.00	3.60E-12	5.10E-12	4.00E-13	7.30E-15	2.24E-09	2.30E-09	2.23E-10	1.15E-11	2.50E-14	5.18E-10	3.55E-11	2.28E-09
30.00	1.80E-12	2.63E-12	1.88E-13	4.00E-15	2.13E-09	2.90E-09	1.55E-10	1.17E-11	1.20E-14	5.22E-10	3.63E-11	2.32E-09
35.00	1.00E-12	1.42E-12	1.02E-13	2.45E-15	1.99E-09	3.49E-09	1.10E-10	1.15E-11	6.40E-15	5.20E-10	3.60E-11	2.26E-09
40.00	6.40E-13	8.40E-13	6.40E-14	1.52E-15	1.84E-09	3.58E-09	8.10E-11	1.10E-11	4.00E-15	5.08E-10	3.45E-11	2.14E-09
45.00	4.10E-13	5.40E-13	4.10E-14	9.50E-16	1.69E-09	3.60E-09	5.90E-11	1.07E-11	2.50E-15	4.72E-10	3.25E-11	1.97E-09
50.00	2.50E-13	3.35E-13	2.52E-14	6.10E-16	1.55E-09	3.60E-09	4.30E-11	9.10E-12	1.60E-15	4.48E-10	3.03E-11	1.80E-09
55.00	1.50E-13	2.00E-13	1.50E-14	3.90E-16	1.42E-09	3.55E-09	3.15E-11	8.05E-12	1.00E-15	4.20E-10	2.78E-11	1.60E-09
60.00	8.40E-14	1.18E-13	8.70E-15	2.50E-16	1.40E-09	3.47E-09	2.28E-11	6.95E-12	6.10E-16	3.90E-10	2.55E-11	1.40E-09
65.00	4.95E-14	6.60E-14	4.90E-15	1.58E-16	1.19E-09	3.30E-09	1.66E-11	5.90E-12	3.60E-16	3.62E-10	2.32E-11	1.23E-09
70.00	2.85E-14	4.90E-14	2.85E-15	1.00E-16	1.07E-09	3.16E-09	1.20E-11	4.96E-12	2.10E-16	3.27E-10	2.12E-11	1.07E-09
75.00	1.70E-14	2.30E-14	1.68E-15	7.20E-17	8.90E-10	3.00E-09	8.70E-12	4.15E-12	1.22E-16	2.90E-10	1.93E-11	9.35E-10

TABLE B-18

REACTION RATES FOR THE FUEL IN ROW 7 PERTURBATION AT 34.5 CM FROM CORE CENTERLINE

Z(cm)	54FENP	58NINP	46TINP	55MNN2N	239PUNP	197AUNG	237NPNF	58FENG	27ALNA	59CONG	45SCNG	235UNF
-70.00	1.72E-14	2.55E-14	1.60E-15	6.60E-17	1.09E-09	4.48E-09	9.60E-12	4.90E-12	1.42E-16	3.15E-10	2.30E-11	1.10E-09
-65.00	2.82E-14	4.15E-14	2.60E-15	9.80E-17	1.29E-09	4.63E-09	1.37E-11	5.90E-12	2.25E-16	3.65E-10	2.61E-11	1.30E-09
-60.00	4.65E-14	6.70E-14	4.45E-15	1.45E-16	1.50E-09	4.80E-09	1.87E-11	7.05E-12	3.50E-16	4.20E-10	2.95E-11	1.50E-09
-55.00	7.80E-14	1.13E-13	7.40E-15	2.25E-16	1.72E-09	4.94E-09	2.67E-11	8.30E-12	5.90E-16	4.80E-10	3.30E-11	1.75E-09
-50.00	1.33E-13	1.90E-13	1.38E-14	3.60E-16	1.93E-09	5.12E-09	3.75E-11	9.65E-12	9.60E-16	5.45E-10	3.64E-11	1.99E-09
-45.00	2.32E-13	3.25E-13	2.45E-14	6.05E-16	2.13E-09	5.28E-09	5.20E-11	1.09E-11	1.62E-15	6.00E-10	3.97E-11	2.21E-09
-40.00	4.35E-13	6.00E-13	4.50E-14	1.00E-15	2.27E-09	5.35E-09	7.30E-11	1.20E-11	2.80E-15	6.40E-10	4.24E-11	2.39E-09
-35.00	8.10E-13	1.15E-12	9.30E-14	1.97E-15	2.39E-09	5.38E-09	1.03E-10	1.31E-11	5.20E-15	6.78E-10	4.40E-11	2.50E-09
-30.00	1.56E-12	2.20E-12	1.80E-13	4.05E-15	2.47E-09	5.02E-09	1.48E-10	1.37E-11	1.00E-14	6.60E-10	4.39E-11	2.52E-09
-25.00	3.00E-12	4.40E-12	3.95E-13	8.80E-15	2.51E-09	3.96E-09	2.23E-10	1.39E-11	2.40E-14	5.60E-10	4.21E-11	2.52E-09
-20.00	6.00E-12	9.20E-12	7.80E-13	1.88E-14	2.53E-09	2.50E-09	3.40E-10	1.30E-11	4.45E-14	3.90E-10	3.91E-11	2.50E-09
-18.00	7.40E-12	1.18E-11	9.90E-13	2.22E-14	2.53E-09	2.09E-09	4.00E-10	1.19E-11	6.15E-14	3.40E-10	3.80E-11	2.50E-09
-16.00	9.40E-12	1.42E-11	1.23E-12	2.70E-14	2.52E-09	1.75E-09	4.60E-10	1.08E-11	7.60E-14	2.90E-10	3.67E-11	2.50E-09
-14.00	1.18E-11	1.67E-11	1.50E-12	3.20E-14	2.52E-09	1.45E-09	5.10E-10	1.04E-11	9.30E-14	2.48E-10	3.55E-11	2.50E-09
-12.00	1.30E-11	1.85E-11	1.53E-12	3.70E-14	2.53E-09	1.20E-09	5.63E-10	9.75E-12	1.02E-13	2.12E-10	3.47E-11	2.49E-09
-10.00	1.40E-11	1.98E-11	1.72E-12	4.00E-14	2.53E-09	1.03E-09	6.00E-10	9.50E-12	1.12E-13	1.83E-10	3.40E-11	2.47E-09
-8.00	1.48E-11	2.07E-11	1.80E-12	4.23E-14	2.54E-09	9.55E-10	6.25E-10	9.35E-12	1.17E-13	1.62E-10	3.35E-11	2.46E-09
-6.00	1.52E-11	2.15E-11	1.83E-12	4.35E-14	2.55E-09	9.20E-10	6.42E-10	9.34E-12	1.20E-13	1.53E-10	3.33E-11	2.45E-09
-4.00	1.54E-11	2.18E-11	1.87E-12	4.40E-14	2.58E-09	9.22E-10	6.55E-10	9.38E-12	1.21E-13	1.54E-10	3.32E-11	2.43E-09
-2.00	1.55E-11	2.17E-11	1.89E-12	4.40E-14	2.60E-09	9.40E-10	6.60E-10	9.40E-12	1.21E-13	1.55E-10	3.31E-11	2.42E-09
0.00	1.55E-11	2.15E-11	1.90E-12	4.34E-14	2.60E-09	9.50E-10	6.60E-10	9.50E-12	1.20E-13	1.55E-10	3.30E-11	2.41E-09
2.00	1.55E-11	2.12E-11	1.90E-12	4.30E-14	2.58E-09	9.40E-10	6.52E-10	9.45E-12	1.20E-13	1.54E-10	3.30E-11	2.39E-09
4.00	1.53E-11	2.10E-11	1.90E-12	4.15E-14	2.50E-09	9.20E-10	6.37E-10	9.40E-12	1.17E-13	1.52E-10	3.30E-11	2.38E-09
6.00	1.50E-11	2.03E-11	1.88E-12	3.90E-14	2.45E-09	8.88E-10	6.15E-10	9.30E-12	1.12E-13	1.50E-10	3.31E-11	2.37E-09
8.00	1.46E-11	1.98E-11	1.86E-12	3.55E-14	2.39E-09	8.82E-10	5.90E-10	9.25E-12	1.05E-13	1.48E-10	3.31E-11	2.37E-09
10.00	1.38E-11	1.87E-11	1.80E-12	3.20E-14	2.33E-09	9.15E-10	5.52E-10	9.20E-12	9.70E-14	1.52E-10	3.31E-11	2.37E-09
12.00	1.28E-11	1.70E-11	1.63E-12	2.80E-14	2.29E-09	1.04E-09	5.05E-10	9.15E-12	8.90E-14	1.67E-10	3.30E-11	2.37E-09
14.00	1.17E-11	1.55E-11	1.47E-12	2.42E-14	2.25E-09	1.20E-09	4.60E-10	9.10E-12	7.80E-14	2.20E-10	3.30E-11	2.37E-09
16.00	9.60E-12	1.30E-11	1.18E-12	2.02E-14	2.27E-09	1.40E-09	4.00E-10	9.20E-12	6.55E-14	2.95E-10	3.32E-11	2.35E-09
18.00	7.80E-12	1.06E-11	9.20E-13	1.70E-14	2.26E-09	1.58E-09	3.45E-10	9.70E-12	5.45E-14	3.63E-10	3.36E-11	2.33E-09
20.00	6.15E-12	8.60E-12	7.40E-13	1.35E-14	2.26E-09	1.75E-09	3.00E-10	1.05E-11	4.55E-14	4.20E-10	3.40E-11	2.32E-09
25.00	2.95E-12	3.85E-12	3.85E-13	6.90E-15	2.19E-09	2.17E-09	2.00E-10	1.16E-11	2.43E-14	5.30E-10	3.55E-11	2.30E-09
30.00	1.53E-12	2.00E-12	1.75E-13	3.60E-15	2.09E-09	2.42E-09	1.40E-10	1.17E-11	1.24E-14	5.40E-10	3.88E-11	2.26E-09
35.00	8.70E-13	1.15E-12	9.70E-14	2.10E-15	1.36E-09	2.60E-09	1.01E-10	1.13E-11	6.20E-15	5.20E-10	3.98E-11	2.18E-09
40.00	5.20E-13	7.60E-13	5.80E-14	1.33E-15	1.80E-09	2.70E-09	7.50E-11	1.04E-11	3.60E-15	4.95E-10	3.90E-11	2.06E-09
45.00	3.20E-13	4.50E-13	3.45E-14	8.80E-16	1.66E-09	2.85E-09	5.45E-11	9.50E-12	2.23E-15	4.62E-10	3.75E-11	1.88E-09
50.00	1.95E-13	2.80E-13	2.10E-14	5.65E-16	1.53E-09	2.92E-09	3.95E-11	8.45E-12	1.40E-15	4.30E-10	3.55E-11	1.70E-09
55.00	1.22E-13	1.75E-13	1.28E-14	3.65E-16	1.39E-09	2.95E-09	2.92E-11	7.45E-12	8.70E-16	4.00E-10	3.52E-11	1.51E-09
60.00	7.80E-14	1.08E-13	7.80E-15	2.34E-16	1.26E-09	2.92E-09	1.65E-11	6.55E-12	5.60E-16	3.70E-10	3.07E-11	1.34E-09
65.00	5.00E-14	6.70E-14	4.75E-15	1.50E-16	1.15E-09	2.87E-09	1.57E-11	5.72E-12	3.50E-16	3.38E-10	2.83E-11	1.19E-09
70.00	3.25E-14	4.20E-14	3.00E-15	9.70E-17	1.06E-09	2.80E-09	1.16E-11	5.00E-12	2.25E-16	3.09E-10	2.60E-11	1.05E-09
75.00	2.15E-14	2.55E-14	1.85E-15	6.30E-17	9.60E-10	2.70E-09	8.40E-12	4.35E-12	1.43E-16	2.80E-10	2.38E-11	9.20E-10

TABLE B-19

REACTION RATES FOR THE FUEL IN ROW 7 PERTURBATION AT 38.3 CM FROM CORE CENTERLINE

Z (cm)	54FENP	58NINP	46TINP	55MNN2N	239PUNP	197AUNG	237NPNF	58FENG	27ALNA	59CONG	45SCNG	235UNF
+70.00	1.23E-14	1.85E-14	1.33E-15	5.00E-17	9.50E-10	3.02E-09	8.00E-12	4.25E-12	1.00E-16	2.70E-10	1.80E-11	9.00E-10
-65.00	2.20E-14	3.15E-14	2.35E-15	8.00E-17	1.10E-09	3.18E-09	1.03E-11	5.10E-12	1.66E-16	3.12E-10	2.16E-11	1.08E-09
-60.00	3.90E-14	5.40E-14	4.10E-15	1.20E-16	1.27E-09	3.32E-09	1.58E-11	6.10E-12	2.75E-16	3.58E-10	2.55E-11	1.30E-09
-55.00	6.40E-14	9.30E-14	7.10E-15	1.68E-16	1.45E-09	3.46E-09	2.23E-11	7.35E-12	4.50E-16	4.10E-10	2.93E-11	1.52E-09
-50.00	1.10E-13	1.57E-13	1.21E-14	2.48E-16	1.65E-09	3.62E-09	3.12E-11	8.60E-12	7.50E-16	4.67E-10	3.30E-11	1.76E-09
-45.00	1.90E-13	2.70E-13	2.06E-14	3.75E-16	1.84E-09	3.76E-09	4.40E-11	9.80E-12	1.23E-15	5.18E-10	3.63E-11	2.00E-09
-40.00	3.35E-13	4.55E-13	3.50E-14	6.20E-16	2.00E-09	3.88E-09	6.15E-11	1.09E-11	2.08E-15	5.68E-10	3.90E-11	2.20E-09
-35.00	5.60E-13	7.60E-13	5.10E-14	1.08E-15	2.13E-09	4.02E-09	8.50E-11	1.19E-11	3.55E-15	5.95E-10	4.03E-11	2.32E-09
-30.00	9.60E-13	1.40E-12	1.17E-13	2.10E-15	2.26E-09	4.10E-09	1.15E-10	1.25E-11	6.20E-15	6.02E-10	4.05E-11	2.38E-09
-25.00	1.66E-12	2.75E-12	2.27E-13	4.60E-15	2.35E-09	3.98E-09	1.60E-10	1.26E-11	1.14E-14	6.15E-10	4.01E-11	2.42E-09
-20.00	3.10E-12	4.85E-12	2.34E-13	8.85E-15	2.40E-09	3.15E-09	2.22E-10	1.25E-11	2.34E-14	4.90E-10	3.95E-11	2.45E-09
-18.00	3.75E-12	6.00E-12	4.60E-13	1.00E-14	2.43E-09	2.79E-09	2.52E-10	1.23E-11	2.85E-14	4.50E-10	3.93E-11	2.45E-09
-16.00	4.50E-12	7.00E-12	5.20E-13	1.16E-14	2.43E-09	2.44E-09	2.90E-10	1.22E-11	3.40E-14	4.20E-10	3.90E-11	2.46E-09
-14.00	5.10E-12	7.95E-12	5.90E-13	1.30E-14	2.43E-09	2.15E-09	3.25E-10	1.17E-11	3.90E-14	3.80E-10	3.88E-11	2.46E-09
-12.00	5.70E-12	8.80E-12	6.55E-13	1.48E-14	2.35E-09	2.00E-09	3.50E-10	1.15E-11	4.40E-14	3.55E-10	3.88E-11	2.45E-09
-10.00	6.20E-12	9.50E-12	7.20E-13	1.63E-14	2.31E-09	1.86E-09	3.70E-10	1.12E-11	4.75E-14	3.28E-10	3.87E-11	2.43E-09
-8.00	6.55E-12	9.95E-12	7.80E-13	1.74E-14	2.26E-09	1.82E-09	3.90E-10	1.10E-11	5.00E-14	3.15E-10	3.85E-11	2.41E-09
-6.00	6.80E-12	1.02E-11	8.30E-13	1.82E-14	2.23E-09	1.70E-09	4.05E-10	1.08E-11	5.08E-14	3.07E-10	3.82E-11	2.40E-09
-4.00	6.90E-12	1.04E-11	8.70E-13	1.89E-14	2.22E-09	1.65E-09	4.15E-10	1.07E-11	5.12E-14	3.02E-10	3.77E-11	2.39E-09
-2.00	7.00E-12	1.05E-11	8.80E-13	1.92E-14	2.21E-09	1.60E-09	4.20E-10	1.06E-11	5.17E-14	3.01E-10	3.72E-11	2.39E-09
0.00	7.07E-12	1.05E-11	8.85E-13	1.93E-14	2.20E-09	1.57E-09	4.20E-10	1.05E-11	5.20E-14	3.00E-10	3.68E-11	2.38E-09
2.00	7.00E-12	1.04E-11	8.80E-13	1.91E-14	2.20E-09	1.57E-09	4.15E-10	1.05E-11	5.17E-14	3.01E-10	3.65E-11	2.37E-09
4.00	6.92E-12	1.02E-11	8.60E-13	1.86E-14	2.21E-09	1.59E-09	4.10E-10	1.06E-11	5.07E-14	3.02E-10	3.66E-11	2.36E-09
6.00	6.80E-12	1.00E-11	8.20E-13	1.80E-14	2.21E-09	1.60E-09	4.00E-10	1.07E-11	4.90E-14	3.05E-10	3.65E-11	2.35E-09
8.00	6.35E-12	9.50E-12	7.75E-13	1.70E-14	2.24E-09	1.62E-09	3.95E-10	1.07E-11	4.70E-14	3.10E-10	3.63E-11	2.34E-09
10.00	6.00E-12	9.00E-12	7.15E-13	1.59E-14	2.25E-09	1.65E-09	3.70E-10	1.06E-11	4.40E-14	3.18E-10	3.62E-11	2.33E-09
12.00	5.60E-12	8.30E-12	6.50E-13	1.45E-14	2.24E-09	1.71E-09	3.40E-10	1.06E-11	4.00E-14	3.30E-10	3.60E-11	2.32E-09
14.00	5.10E-12	7.55E-12	5.85E-13	1.29E-14	2.23E-09	1.79E-09	3.15E-10	1.05E-11	3.43E-14	3.50E-10	3.60E-11	2.31E-09
16.00	4.50E-12	6.50E-12	5.15E-13	1.12E-14	2.22E-09	1.90E-09	2.77E-10	1.05E-11	3.05E-14	3.85E-10	3.60E-11	2.31E-09
18.00	3.85E-12	5.60E-12	4.50E-13	9.40E-15	2.21E-09	2.03E-09	2.43E-10	1.04E-11	2.55E-14	4.30E-10	3.60E-11	2.30E-09
20.00	3.10E-12	4.75E-12	3.85E-13	7.90E-15	2.15E-09	2.18E-09	2.13E-10	1.04E-11	2.18E-14	4.90E-10	3.60E-11	2.28E-09
25.00	1.83E-12	2.65E-12	2.05E-13	4.50E-15	2.03E-09	2.60E-09	1.55E-10	1.03E-11	1.16E-14	5.20E-10	3.55E-11	2.24E-09
30.00	1.00E-12	1.55E-12	1.10E-13	2.65E-15	1.93E-09	2.78E-09	1.13E-10	1.02E-11	6.60E-15	5.00E-10	3.50E-11	2.18E-09
35.00	6.50E-13	9.30E-13	6.50E-14	1.68E-15	1.80E-09	2.82E-09	8.40E-11	1.01E-11	4.10E-15	4.85E-10	3.40E-11	2.07E-09
40.00	4.10E-13	6.00E-13	4.20E-14	1.07E-15	1.66E-09	2.78E-09	6.25E-11	9.50E-12	2.63E-15	4.67E-10	3.18E-11	1.91E-09
45.00	2.63E-13	3.85E-13	2.67E-14	6.80E-16	1.52E-09	2.66E-09	4.60E-11	8.60E-12	1.70E-15	4.38E-10	2.93E-11	1.73E-09
50.00	1.63E-13	2.40E-13	1.68E-14	4.40E-16	1.39E-09	2.54E-09	3.42E-11	7.55E-12	1.13E-15	4.00E-10	2.70E-11	1.55E-09
55.00	1.00E-13	1.48E-13	1.02E-14	2.90E-16	1.28E-09	2.45E-09	2.52E-11	6.60E-12	7.20E-16	3.55E-10	2.40E-11	1.37E-09
60.00	6.10E-14	8.90E-14	6.20E-15	1.90E-16	1.16E-09	2.38E-09	1.86E-11	5.70E-12	4.45E-16	3.22E-10	2.21E-11	1.20E-09
65.00	3.63E-14	5.40E-14	3.70E-15	1.24E-16	1.06E-09	2.30E-09	1.37E-11	4.87E-12	2.72E-16	2.88E-10	1.98E-11	1.06E-09
70.00	2.13E-14	3.15E-14	2.20E-15	8.40E-17	9.60E-10	2.22E-09	1.02E-11	4.18E-12	1.63E-16	2.57E-10	1.78E-11	9.25E-10
75.00	1.24E-14	1.85E-14	1.27E-15	6.00E-17	8.70E-10	2.14E-09	7.50E-12	3.50E-12	9.60E-17	2.28E-10	1.62E-11	8.10E-10

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TABLE B-20

REACTION RATES FOR THE FUEL IN ROW 7 PERTURBATION AT 39.2 CM FROM CORE CENTERLINE

Z(cm)	54FENP	58NINP	46TINP	55MNN2N	239 PUNP	197AUNG	237NPNF	58FENG	27ALNA	59CONG	45SCNG	235UNF
-70.00	1.42E-14	1.95E-14	1.45E-15	5.20E-17	8.80E-10	3.02E-09	8.00E-12	4.00E-12	1.07E-16	2.60E-10	1.88E-11	8.70E-10
-65.00	2.25E-14	3.15E-14	2.45E-15	7.50E-17	1.05E-09	3.15E-09	1.13E-11	4.85E-12	1.68E-16	3.05E-10	2.16E-11	1.06E-09
-60.00	3.70E-14	5.10E-14	4.00E-15	1.10E-16	1.23E-09	3.27E-09	1.58E-11	5.90E-12	2.60E-16	3.50E-10	2.45E-11	1.26E-09
-55.00	6.10E-14	8.50E-14	6.60E-15	1.62E-16	1.42E-09	3.42E-09	2.25E-11	6.95E-12	4.25E-16	4.05E-10	2.80E-11	1.49E-09
-50.00	1.02E-13	1.40E-13	1.12E-14	2.40E-16	1.61E-09	3.55E-09	3.17E-11	8.15E-12	6.95E-16	4.60E-10	3.13E-11	1.72E-09
-45.00	1.72E-13	2.40E-13	1.93E-14	3.65E-16	1.80E-09	3.66E-09	4.45E-11	1.12E-11	1.15E-15	5.12E-10	3.47E-11	1.95E-09
-40.00	3.10E-13	4.20E-13	3.40E-14	5.55E-16	1.95E-09	3.75E-09	6.20E-11	1.10E-11	1.95E-15	5.60E-10	3.78E-11	2.15E-09
-35.00	5.60E-13	7.50E-13	6.20E-14	9.80E-16	2.14E-09	3.80E-09	8.80E-11	1.10E-11	3.50E-15	5.83E-10	3.87E-11	2.33E-09
-30.00	9.60E-13	1.37E-12	1.12E-13	1.80E-15	2.29E-09	3.78E-09	1.20E-10	1.09E-11	6.30E-15	5.90E-10	3.93E-11	2.40E-09
-25.00	1.65E-12	2.45E-12	2.00E-13	3.55E-15	2.39E-09	3.59E-09	1.60E-10	1.09E-11	1.15E-14	5.60E-10	3.95E-11	2.40E-09
-20.00	2.75E-12	4.10E-12	3.30E-13	6.60E-15	2.40E-09	3.30E-09	2.05E-10	1.09E-11	2.00E-14	4.90E-10	3.90E-11	2.40E-09
-18.00	3.25E-12	4.80E-12	3.80E-13	7.90E-15	2.40E-09	2.87E-09	2.36E-10	1.09E-11	2.40E-14	4.50E-10	3.90E-11	2.39E-09
-16.00	3.32E-12	5.60E-12	4.30E-13	9.20E-15	2.42E-09	2.57E-09	2.64E-10	1.09E-11	2.85E-14	4.20E-10	3.90E-11	2.38E-09
-14.00	4.50E-12	6.40E-12	4.90E-13	1.04E-14	2.44E-09	2.30E-09	2.95E-10	1.08E-11	3.20E-14	4.00E-10	3.90E-11	2.38E-09
-12.00	5.15E-12	7.00E-12	5.55E-13	1.32E-14	2.44E-09	2.08E-09	3.23E-10	1.09E-11	3.58E-14	3.75E-10	3.83E-11	2.37E-09
-10.00	5.55E-12	7.50E-12	6.20E-13	1.43E-14	2.44E-09	1.86E-09	3.45E-10	1.21E-11	3.80E-14	3.48E-10	3.78E-11	2.37E-09
-8.00	5.80E-12	7.90E-12	6.60E-13	1.54E-14	2.44E-09	1.75E-09	3.60E-10	1.20E-11	4.00E-14	3.30E-10	3.74E-11	2.36E-09
-6.00	6.00E-12	8.10E-12	6.90E-13	1.63E-14	2.44E-09	1.72E-09	3.72E-10	1.19E-11	4.13E-14	3.23E-10	3.71E-11	2.35E-09
-4.00	6.00E-12	8.20E-12	6.95E-13	1.67E-14	2.45E-09	1.68E-09	3.80E-10	1.16E-11	4.23E-14	3.18E-10	3.70E-11	2.34E-09
-2.00	6.00E-12	8.30E-12	7.03E-13	1.68E-14	2.45E-09	1.64E-09	3.85E-10	1.14E-11	4.30E-14	3.13E-10	3.68E-11	2.33E-09
0.00	6.00E-12	8.50E-12	7.10E-13	1.70E-14	2.45E-09	1.65E-09	3.86E-10	9.30E-12	4.31E-14	3.10E-10	3.68E-11	2.33E-09
2.00	6.00E-12	8.60E-12	7.05E-13	1.68E-14	2.44E-09	1.65E-09	3.84E-10	1.05E-11	4.31E-14	3.09E-10	3.65E-11	2.32E-09
4.00	5.95E-12	8.55E-12	6.95E-13	1.64E-14	2.41E-09	1.64E-09	3.80E-10	1.13E-11	4.20E-14	3.08E-10	3.63E-11	2.31E-09
6.00	5.95E-12	8.50E-12	6.80E-13	1.57E-14	2.38E-09	1.64E-09	3.70E-10	1.21E-11	4.05E-14	3.05E-10	3.60E-11	2.30E-09
8.00	5.75E-12	8.20E-12	6.60E-13	1.47E-14	2.33E-09	1.65E-09	3.55E-10	1.24E-11	3.85E-14	3.02E-10	3.60E-11	2.30E-09
10.00	5.45E-12	7.70E-12	6.20E-13	1.35E-14	2.28E-09	1.68E-09	3.40E-10	1.08E-11	3.52E-14	3.05E-10	3.60E-11	2.29E-09
12.00	5.12E-12	6.80E-12	5.80E-13	1.22E-14	2.25E-09	1.78E-09	3.18E-10	1.08E-11	3.20E-14	3.25E-10	3.60E-11	2.28E-09
14.00	4.55E-12	6.00E-12	5.30E-13	1.04E-14	2.21E-09	1.90E-09	2.90E-10	1.08E-11	2.85E-14	3.70E-10	3.60E-11	2.27E-09
16.00	3.95E-12	5.35E-12	4.50E-13	9.60E-15	2.19E-09	2.03E-09	2.60E-10	1.06E-11	2.46E-14	4.15E-10	3.60E-11	2.25E-09
18.00	3.33E-12	4.55E-12	3.80E-13	8.30E-15	2.16E-09	2.18E-09	2.25E-10	1.03E-11	2.13E-14	4.55E-10	3.60E-11	2.23E-09
20.00	2.75E-12	3.95E-12	3.10E-13	7.00E-15	2.14E-09	2.30E-09	2.00E-10	1.02E-11	1.83E-14	4.95E-10	3.60E-11	2.22E-09
25.00	1.67E-12	2.40E-12	1.80E-13	4.20E-15	2.03E-09	2.51E-09	1.48E-10	1.01E-11	1.17E-14	5.00E-10	3.57E-11	2.18E-09
30.00	1.03E-12	1.50E-12	1.10E-13	2.58E-15	1.90E-09	2.70E-09	1.10E-10	1.00E-11	7.10E-15	4.80E-10	3.46E-11	2.12E-09
35.00	6.40E-13	9.30E-13	6.60E-14	1.60E-15	1.77E-09	2.83E-09	8.20E-11	9.70E-12	4.20E-15	4.60E-10	3.28E-11	2.02E-09
40.00	4.00E-13	5.90E-13	4.00E-14	1.00E-15	1.63E-09	2.90E-09	6.10E-11	9.20E-12	2.50E-15	4.40E-10	3.00E-11	1.90E-09
45.00	2.42E-13	3.60E-13	2.40E-14	6.40E-16	1.51E-09	2.84E-09	4.50E-11	8.40E-12	1.58E-15	4.08E-10	2.81E-11	1.73E-09
50.00	1.50E-13	2.27E-13	1.52E-14	4.22E-16	1.39E-09	2.76E-09	3.35E-11	7.55E-12	1.02E-15	3.80E-10	2.58E-11	1.54E-09
55.00	9.30E-14	1.42E-13	9.50E-15	2.80E-16	1.27E-09	2.65E-09	2.46E-11	6.70E-12	6.50E-16	3.50E-10	2.38E-11	1.35E-09
60.00	5.75E-14	9.10E-14	6.00E-15	1.82E-16	1.15E-09	2.50E-09	1.83E-11	5.90E-12	4.20E-16	3.20E-10	2.15E-11	1.18E-09
65.00	3.70E-14	5.65E-14	3.75E-15	1.20E-16	1.05E-09	2.40E-09	1.37E-11	5.20E-12	2.70E-16	2.95E-10	1.94E-11	1.03E-09
70.00	2.42E-14	3.60E-14	2.35E-15	7.95E-17	9.60E-10	2.28E-09	1.02E-11	4.55E-12	1.75E-16	2.70E-10	1.75E-11	8.85E-10
75.00	1.57E-14	2.25E-14	1.50E-15	5.35E-17	8.60E-10	2.18E-09	7.50E-12	3.95E-12	1.15E-16	2.45E-10	1.58E-11	7.65E-10

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ADDITIONAL REACTION RATES

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TABLE C-1

 $^{63}\text{Cu}(n, \alpha)^{60}\text{Co}$ REACTION RATES FOR THE NOMINAL REACTOR CONFIGURATION

Z^R	5.2		13.0		17.3		25.0		28.2		33.4		38.3	
-70.	1.75	-16	1.85	-16	1.50	-16	1.57	-16	1.23	-16	9.30	-17	6.90	-17
-65.	3.25	-16	3.10	-16	2.80	-16	2.68	-16	2.23	-16	1.63	-16	1.17	-16
-60.	6.00	-16	5.40	-16	5.15	-16	4.50	-16	4.20	-16	2.80	-16	1.95	-16
-55.	1.10	-15	9.50	-16	9.30	-16	8.10	-16	8.00	-16	4.85	-16	3.35	-16
-50.	1.92	-15	1.72	-15	1.67	-15	1.43	-15	1.49	-15	8.40	-16	5.65	-16
-45.	3.35	-15	3.13	-15	3.00	-15	2.62	-15	2.67	-15	1.43	-15	9.60	-16
-40.	5.80	-15	5.80	-15	5.75	-15	5.40	-15	4.65	-15	2.45	-15	1.64	-15
-35.	1.16	-14	1.25	-14	1.16	-14	1.10	-14	8.40	-15	4.50	-15	2.80	-15
-30.	2.30	-14	2.57	-14	2.60	-14	2.45	-14	1.54	-14	8.00	-15	4.80	-15
-25.	4.55	-14	5.10	-14	5.40	-14	5.00	-14	3.00	-14	1.38	-14	7.80	-15
-20.	8.60	-14	9.50	-14	9.90	-14	9.00	-14	5.70	-14	2.30	-14	1.20	-14
-18.	1.11	-13	1.20	-13	1.22	-13	1.08	-13	7.30	-14	2.80	-14	1.39	-14
-16.	1.42	-13	1.42	-13	1.42	-13	1.27	-13	8.90	-14	3.40	-14	1.58	-14
-14.	1.70	-13	1.65	-13	1.68	-13	1.45	-13	1.07	-13	3.87	-14	1.78	-14
-12.	1.97	-13	1.80	-13	1.86	-13	1.58	-13	1.18	-13	4.23	-14	1.97	-14
-10.	2.23	-13	1.94	-13	2.00	-13	1.68	-13	1.26	-13	4.55	-14	2.14	-14
-08.	2.40	-13	2.05	-13	2.10	-13	1.73	-13	1.30	-13	4.70	-14	2.30	-14
-06.	2.53	-13	2.14	-13	2.16	-13	1.79	-13	1.33	-13	4.80	-14	2.40	-14
-04.	2.60	-13	2.22	-13	2.18	-13	1.81	-13	1.34	-13	4.83	-14	2.47	-14
-02.	2.61	-13	2.27	-13	2.18	-13	1.80	-13	1.35	-13	4.85	-14	2.50	-14
00.	2.60	-13	2.30	-13	2.14	-13	1.78	-13	1.34	-13	4.85	-14	2.50	-14
02.	2.57	-13	2.28	-13	2.10	-13	1.74	-13	1.33	-13	4.80	-14	2.46	-14
04.	2.48	-13	2.23	-13	2.04	-13	1.70	-13	1.30	-13	4.73	-14	2.38	-14
06.	2.37	-13	2.17	-13	1.98	-13	1.60	-13	1.26	-13	4.60	-14	2.27	-14
08.	2.25	-13	2.06	-13	1.90	-13	1.52	-13	1.19	-13	4.40	-14	2.14	-14
10.	2.13	-13	1.93	-13	1.76	-13	1.40	-13	1.12	-13	4.18	-14	2.00	-14
12.	1.93	-13	1.73	-13	1.57	-13	1.25	-13	9.90	-14	3.88	-14	1.85	-14
14.	1.70	-13	1.47	-13	1.37	-13	1.12	-13	8.40	-14	3.50	-14	1.69	-14
16.	1.42	-13	1.23	-13	1.13	-13	8.90	-14	6.70	-14	3.00	-14	1.50	-14
18.	1.14	-13	1.00	-13	9.30	-14	7.30	-14	5.30	-14	2.52	-14	1.32	-14
20.	8.70	-14	7.80	-14	7.30	-14	5.80	-14	4.10	-14	2.05	-14	1.15	-14
25.	4.70	-14	4.45	-14	3.90	-14	3.23	-14	2.27	-14	1.27	-14	7.70	-15
30.	2.70	-14	2.55	-14	2.20	-14	1.87	-14	1.30	-14	7.80	-15	5.00	-15
35.	1.61	-14	1.45	-14	1.27	-14	1.05	-14	7.60	-15	4.90	-15	3.20	-15
40.	1.00	-14	8.40	-15	7.50	-15	6.00	-15	4.80	-15	2.97	-15	2.00	-15
45.	6.20	-15	4.85	-15	4.70	-15	3.47	-15	2.95	-15	1.90	-15	1.27	-15
50.	3.60	-15	2.83	-15	2.80	-15	2.06	-15	1.62	-15	1.23	-15	8.00	-16
55.	1.98	-15	1.67	-15	1.63	-15	1.23	-15	9.00	-16	7.40	-16	5.00	-16
60.	1.04	-15	9.90	-16	9.30	-16	7.40	-16	5.40	-16	4.25	-16	3.05	-16
65.	6.05	-16	6.10	-16	5.40	-16	4.40	-16	3.05	-16	2.40	-16	1.83	-16
70.	3.53	-16	3.80	-16	3.15	-16	2.70	-16	1.75	-16	1.40	-16	1.10	-16
75.	2.10	-16	2.35	-16	1.83	-16	1.65	-16	1.00	-16	8.00	-17	6.40	-17

TABLE C-2
 $^{63}\text{Cu}(n, \alpha)^{60}\text{Co}$ REACTION RATES FOR THE HIGH WORTH CONTROL ROD PERTURBATION

$\frac{z}{R}$	19.8	
-70.	1.55	-16
-65.	2.65	-16
-60.	4.70	-16
-55.	8.40	-16
-50.	1.57	-15
-45.	2.95	-15
-40.	5.70	-15
-35.	1.20	-14
-30.	2.57	-14
-25.	5.62	-14
-20.	1.05	-13
-18.	1.30	-13
-16.	1.48	-13
-14.	1.63	-13
-12.	1.73	-13
-10.	1.83	-13
-08.	1.92	-13
-06.	1.98	-13
-04.	2.02	-13
-02.	2.05	-13
00.	2.08	-13
02.	2.07	-13
04.	2.02	-13
06.	1.97	-13
08.	1.85	-13
10.	1.70	-13
12.	1.52	-13
14.	1.26	-13
16.	1.03	-13
18.	8.40	-14
20.	6.80	-14
25.	3.70	-14
30.	2.10	-14
35.	1.18	-14
40.	6.80	-15
45.	3.95	-15
50.	2.35	-15
55.	1.40	-15
60.	8.40	-16
65.	3.08	-16
70.	2.08	-16
75.	1.87	-16

TABLE C-3
 $^{63}\text{Cu}(n,\alpha)^{60}\text{Co}$ REACTION RATES FOR THE FUEL IN ROW 7 PERTURBATION

$z \backslash R$	25.0		28.2		30.4		33.4		34.5		38.4		39.2	
-70.	1.57	-16	1.23	-16	1.30	-16	9.30	-17	9.60	-17	6.40	-17	7.00	-17
-65.	2.68	-16	2.23	-16	2.17	-16	1.63	-16	1.55	-16	1.10	-16	1.10	-16
-60.	4.50	-16	4.20	-16	3.70	-16	2.80	-16	2.55	-16	1.92	-16	1.80	-16
-55.	8.10	-16	8.00	-16	6.30	-16	4.85	-16	4.25	-16	3.30	-16	3.05	-16
-50.	1.43	-15	1.49	-15	1.10	-15	8.40	-16	7.30	-16	5.70	-16	5.15	-16
-45.	2.62	-15	2.67	-15	1.95	-15	1.43	-15	1.27	-15	9.60	-16	8.90	-16
-40.	5.40	-15	4.65	-15	3.50	-15	2.45	-15	2.20	-15	1.64	-15	1.53	-15
-35.	1.18	-14	8.50	-15	7.10	-15	4.45	-15	4.20	-15	2.80	-15	2.75	-15
-30.	2.82	-14	1.65	-14	1.75	-14	8.80	-15	9.00	-15	5.10	-15	5.10	-15
-25.	5.90	-14	3.70	-14	4.00	-14	1.93	-14	2.05	-14	1.00	-14	9.50	-15
-20.	1.07	-13	9.25	-14	7.50	-14	4.55	-14	4.00	-14	2.00	-14	1.65	-14
-18.	1.27	-13	1.20	-13	9.30	-14	6.00	-14	4.95	-14	2.40	-14	1.92	-14
-16.	1.48	-13	1.40	-13	1.11	-13	7.40	-14	6.00	-14	2.72	-14	2.19	-14
-14.	1.65	-13	1.55	-13	1.30	-13	8.70	-14	7.00	-14	3.07	-14	2.40	-14
-12.	1.72	-13	1.65	-13	1.37	-13	9.40	-14	7.80	-14	3.40	-14	2.70	-14
-10.	1.82	-13	1.73	-13	1.42	-13	9.95	-14	8.35	-14	3.67	-14	2.92	-14
-8.	1.89	-13	1.79	-13	1.47	-13	1.02	-13	8.60	-14	3.86	-14	3.07	-14
-6.	1.92	-13	1.82	-13	1.49	-13	1.04	-13	8.80	-14	4.00	-14	3.15	-14
-4.	1.93	-13	1.80	-13	1.50	-13	1.04	-13	8.90	-14	4.06	-14	3.22	-14
-2.	1.92	-13	1.78	-13	1.50	-13	1.03	-13	8.90	-14	4.08	-14	3.25	-14
0.	1.90	-13	1.76	-13	1.50	-13	1.03	-13	8.90	-14	4.10	-14	3.22	-14
2.	1.88	-13	1.73	-13	1.49	-13	1.02	-13	8.85	-14	4.05	-14	3.17	-14
4.	1.81	-13	1.68	-13	1.47	-13	1.02	-13	8.77	-14	3.93	-14	3.12	-14
6.	1.72	-13	1.60	-13	1.46	-13	1.01	-13	8.60	-14	3.78	-14	3.00	-14
8.	1.60	-13	1.52	-13	1.40	-13	9.80	-14	8.30	-14	3.60	-14	2.83	-14
10.	1.47	-13	1.40	-13	1.33	-13	9.35	-14	8.00	-14	3.35	-14	2.67	-14
12.	1.33	-13	1.28	-13	1.20	-13	8.80	-14	7.60	-14	3.05	-14	2.45	-14
14.	1.20	-13	1.12	-13	1.07	-13	8.10	-14	7.00	-14	2.75	-14	2.20	-14
16.	9.60	-14	9.60	-14	8.80	-14	6.70	-14	5.90	-14	2.40	-14	1.92	-14
18.	7.80	-14	7.80	-14	7.25	-14	5.25	-14	4.90	-14	2.10	-14	1.68	-14
20.	6.40	-14	6.02	-14	5.60	-14	4.18	-14	3.95	-14	1.83	-14	1.45	-14
25.	3.40	-14	2.80	-14	2.85	-14	1.97	-14	1.80	-14	1.09	-14	9.20	-15
30.	1.90	-14	1.40	-14	1.30	-14	1.00	-14	8.80	-15	6.00	-15	5.55	-15
35.	1.05	-14	7.60	-15	7.10	-15	5.25	-15	4.60	-15	3.35	-15	3.25	-15
40.	6.00	-15	4.80	-15	3.95	-15	2.97	-15	2.70	-15	2.00	-15	1.90	-15
45.	3.47	-15	2.95	-15	2.33	-15	1.90	-15	1.63	-15	1.37	-15	1.18	-15
50.	2.06	-15	1.62	-15	1.40	-15	1.23	-15	1.00	-15	8.00	-16	7.30	-16
55.	1.23	-15	9.00	-16	8.40	-16	7.40	-16	6.35	-16	5.00	-16	4.50	-16
60.	7.40	-16	5.40	-16	5.00	-16	4.25	-16	3.90	-16	3.05	-16	2.90	-16
65.	4.40	-16	3.05	-16	3.05	-16	2.40	-16	2.45	-16	1.83	-16	1.80	-16
70.	2.70	-16	1.75	-16	1.90	-16	1.40	-16	1.55	-16	1.10	-16	1.15	-16
75.	1.65	-16	1.00	-16	1.17	-16	8.00	-16	9.60	-17	6.40	-17	7.40	-17

TABLE C-4

 $^{63}\text{Cu}(n,\gamma)^{64}\text{Cu}$ REACTION RATES FOR THE NOMINAL REACTOR CONFIGURATION

$\frac{z}{R}$	5.2		13.0		17.3		25.0		28.3		33.4		38.3	
-70.	4.60	-11	4.45	-11	4.35	-11	4.00	-11	3.85	-11	3.10	-11	2.50	-11
-65.	5.75	-11	5.50	-11	5.35	-11	4.95	-11	4.65	-11	3.77	-11	3.05	-11
-60.	7.00	-11	6.75	-11	6.55	-11	6.10	-11	5.57	-11	4.55	-11	3.68	-11
-55.	8.30	-11	8.00	-11	7.80	-11	7.35	-11	6.60	-11	5.52	-11	4.43	-11
-50.	9.65	-11	9.25	-11	9.05	-11	8.75	-11	7.65	-11	6.45	-11	5.25	-11
-45.	1.07	-10	1.04	-10	1.02	-10	1.01	-10	8.65	-11	7.38	-11	6.10	-11
-40.	1.17	-10	1.14	-10	1.12	-10	1.15	-10	9.45	-11	8.20	-11	6.98	-11
-35.	1.22	-10	1.15	-10	1.17	-10	1.18	-10	1.00	-10	8.85	-11	7.65	-11
-30.	1.16	-10	1.10	-10	1.16	-10	1.10	-10	9.85	-11	9.00	-11	8.15	-11
-25.	1.02	-10	9.90	-11	1.01	-10	9.60	-11	9.15	-11	8.80	-11	8.48	-11
-20.	8.30	-11	8.30	-11	8.40	-11	8.10	-11	8.10	-11	8.60	-11	8.60	-11
-18.	7.80	-11	7.65	-11	7.70	-11	7.40	-11	7.70	-11	8.50	-11	8.60	-11
-16.	7.15	-11	7.00	-11	7.00	-11	6.80	-11	7.17	-11	8.35	-11	8.52	-11
-14.	6.70	-11	6.40	-11	6.42	-11	6.35	-11	6.65	-11	8.25	-11	8.40	-11
-12.	6.20	-11	5.95	-11	5.92	-11	6.00	-11	6.20	-11	8.10	-11	8.30	-11
-10.	6.00	-11	5.65	-11	5.55	-11	5.70	-11	5.98	-11	7.90	-11	8.20	-11
-8.	5.90	-11	5.55	-11	5.55	-11	5.52	-11	5.90	-11	7.80	-11	8.13	-11
-6.	5.90	-11	5.58	-11	5.45	-11	5.50	-11	5.90	-11	7.75	-11	8.10	-11
-4.	5.95	-11	5.60	-11	5.48	-11	5.50	-11	5.95	-11	7.70	-11	8.07	-11
-2.	6.00	-11	5.68	-11	5.52	-11	5.48	-11	5.99	-11	7.65	-11	8.07	-11
0.	6.10	-11	5.70	-11	5.60	-11	5.45	-11	6.00	-11	7.65	-11	8.07	-11
2.	6.05	-11	5.70	-11	5.60	-11	5.43	-11	6.00	-11	7.70	-11	8.03	-11
4.	5.92	-11	5.65	-11	5.55	-11	5.40	-11	5.92	-11	7.70	-11	7.98	-11
6.	5.80	-11	5.55	-11	5.47	-11	5.39	-11	5.80	-11	7.70	-11	7.95	-11
8.	5.75	-11	5.50	-11	5.42	-11	5.37	-11	5.75	-11	7.70	-11	7.93	-11
10.	5.72	-11	5.42	-11	5.45	-11	5.39	-11	5.72	-11	7.70	-11	7.90	-11
12.	5.95	-11	5.55	-11	5.62	-11	5.50	-11	5.95	-11	7.70	-11	7.90	-11
14.	6.30	-11	6.10	-11	6.00	-11	5.85	-11	6.30	-11	7.70	-11	7.95	-11
16.	6.85	-11	6.70	-11	6.65	-11	6.50	-11	6.62	-11	7.70	-11	7.98	-11
18.	7.30	-11	7.30	-11	7.35	-11	7.10	-11	7.20	-11	7.80	-11	8.00	-11
20.	8.00	-11	7.90	-11	8.00	-11	7.70	-11	7.67	-11	8.20	-11	7.95	-11
25.	8.90	-11	9.15	-11	8.90	-11	8.60	-11	8.15	-11	8.30	-11	7.75	-11
30.	9.75	-11	9.90	-11	9.40	-11	9.00	-11	8.35	-11	8.25	-11	7.45	-11
35.	1.02	-10	9.95	-11	9.42	-11	9.10	-11	8.10	-11	7.80	-11	6.98	-11
40.	1.00	-10	9.50	-11	9.25	-11	8.65	-11	7.62	-11	7.18	-11	6.30	-11
45.	9.40	-11	8.80	-11	8.60	-11	7.95	-11	6.92	-11	6.45	-11	5.58	-11
50.	8.50	-11	7.90	-11	7.75	-11	7.12	-11	6.20	-11	5.70	-11	4.82	-11
55.	7.50	-11	6.95	-11	6.85	-11	6.20	-11	5.40	-11	4.95	-11	4.10	-11
60.	6.40	-11	6.05	-11	5.90	-11	5.40	-11	4.60	-11	4.22	-11	3.45	-11
65.	5.35	-11	5.10	-11	4.95	-11	4.50	-11	3.88	-11	3.58	-11	2.92	-11
70.	4.40	-11	4.30	-11	4.10	-11	3.80	-11	3.25	-11	3.00	-11	2.47	-11
75.	3.62	-11	3.60	-11	3.38	-11	3.15	-11	2.72	-11	2.52	-11	2.07	-11

TABLE C-5
 $^{63}\text{Cu}(n,\gamma)^{64}\text{Cu}$ REACTION RATES FOR THE HIGH WORTH CONTROL ROD PERTURBATION

$\frac{\lambda}{Z} R$	19.8
-70.	4.20 -11
-65.	5.25 -11
-60.	6.45 -11
-55.	7.75 -11
-50.	9.00 -11
-45.	1.00 -10
-40.	1.10 -10
-35.	1.12 -10
-30.	1.08 -10
-25.	9.55 -11
-20.	8.25 -11
-18.	7.50 -11
-16.	6.80 -11
-14.	6.45 -11
-12.	5.95 -11
-10.	5.40 -11
-8.	5.28 -11
-6.	5.22 -11
-4.	5.20 -11
-2.	5.50 -11
0.	5.50 -11
2.	5.50 -11
4.	5.48 -11
6.	5.40 -11
8.	5.30 -11
10.	5.33 -11
12.	5.55 -11
14.	6.10 -11
16.	6.60 -11
18.	7.00 -11
20.	7.40 -11
25.	7.90 -11
30.	7.95 -11
35.	7.70 -11
40.	7.30 -11
45.	6.85 -11
50.	6.40 -11
55.	5.80 -11
60.	5.10 -11
65.	4.38 -11
70.	3.68 -11
75.	3.10 -11

TABLE C-6

 $^{63}\text{Cu}(n,\gamma)^{64}\text{Cu}$ REACTION RATES FOR THE FUEL IN ROW 7 PERTURBATION

$\frac{Z}{R}$	25.0		28.2		30.4		33.4		34.5		38.3		39.2	
-70.	4.00	-11	3.85	-11	3.40	-11	3.10	-11	3.00	-11	2.50	-11	2.35	-11
-65.	4.95	-11	4.65	-11	4.20	-11	3.77	-11	3.62	-11	3.05	-11	2.90	-11
-60.	6.10	-11	5.57	-11	5.10	-11	4.55	-11	4.40	-11	3.68	-11	3.50	-11
-55.	7.35	-11	6.60	-11	6.15	-11	5.52	-11	5.25	-11	4.43	-11	4.28	-11
-50.	8.75	-11	7.65	-11	7.12	-11	6.45	-11	6.17	-11	5.25	-11	5.10	-11
-45.	1.01	-10	8.65	-11	8.05	-11	7.38	-11	7.05	-11	6.10	-11	6.00	-11
-40.	1.15	-10	9.45	-11	8.80	-11	8.20	-11	7.90	-11	6.98	-11	6.80	-11
-35.	1.18	-10	1.00	-10	9.40	-11	8.85	-11	8.60	-11	7.65	-11	7.60	-11
-30.	1.10	-10	9.85	-11	9.55	-11	9.00	-11	8.95	-11	8.15	-11	8.40	-11
-25.	9.60	-11	9.15	-11	9.00	-11	8.80	-11	8.70	-11	8.48	-11	8.80	-11
-20.	8.10	-11	8.10	-11	8.05	-11	8.06	-11	8.10	-11	8.40	-11	8.60	-11
-18.	7.40	-11	7.55	-11	7.40	-11	7.50	-11	7.65	-11	8.10	-11	8.40	-11
-16.	6.80	-11	6.88	-11	6.75	-11	6.90	-11	7.15	-11	8.03	-11	8.15	-11
-14.	6.35	-11	6.25	-11	6.20	-11	6.45	-11	6.70	-11	7.82	-11	8.00	-11
-12.	5.90	-11	5.70	-11	5.70	-11	6.00	-11	6.30	-11	7.70	-11	7.85	-11
-10.	5.65	-11	5.30	-11	5.40	-11	5.85	-11	6.05	-11	7.50	-11	7.72	-11
-08.	5.42	-11	5.22	-11	5.28	-11	5.80	-11	6.00	-11	7.40	-11	7.63	-11
-06.	5.38	-11	5.24	-11	5.22	-11	5.80	-11	6.00	-11	7.30	-11	7.55	-11
-04.	5.38	-11	5.25	-11	5.20	-11	5.81	-11	6.01	-11	7.30	-11	7.50	-11
-02.	5.38	-11	5.27	-11	5.21	-11	5.82	-11	6.08	-11	7.30	-11	7.47	-11
00.	5.40	-11	5.28	-11	5.25	-11	5.83	-11	6.10	-11	7.28	-11	7.45	-11
02.	5.37	-11	5.28	-11	5.26	-11	5.83	-11	6.08	-11	7.28	-11	7.44	-11
04.	5.30	-11	5.23	-11	5.20	-11	5.80	-11	6.02	-11	7.28	-11	7.43	-11
06.	5.30	-11	5.15	-11	5.13	-11	5.70	-11	6.00	-11	7.29	-11	7.40	-11
08.	5.30	-11	5.12	-11	5.05	-11	5.60	-11	6.00	-11	7.30	-11	7.38	-11
10.	5.32	-11	5.14	-11	5.08	-11	5.65	-11	6.01	-11	7.32	-11	7.35	-11
12.	5.40	-11	5.30	-11	5.28	-11	5.75	-11	6.10	-11	7.35	-11	7.42	-11
14.	5.85	-11	5.75	-11	5.70	-11	6.05	-11	6.30	-11	7.43	-11	7.55	-11
16.	6.50	-11	6.50	-11	6.30	-11	6.50	-11	6.70	-11	7.65	-11	7.90	-11
18.	7.10	-11	7.10	-11	6.95	-11	7.05	-11	7.15	-11	7.85	-11	8.10	-11
20.	7.70	-11	7.70	-11	7.60	-11	7.62	-11	7.60	-11	7.95	-11	8.25	-11
25.	8.60	-11	8.15	-11	8.20	-11	8.30	-11	8.08	-11	7.75	-11	8.00	-11
30.	9.00	-11	8.35	-11	8.30	-11	8.25	-11	8.00	-11	7.45	-11	7.50	-11
35.	9.10	-11	8.10	-11	8.05	-11	7.80	-11	7.62	-11	6.98	-11	6.85	-11
40.	8.65	-11	7.62	-11	7.70	-11	7.18	-11	6.95	-11	6.30	-11	6.10	-11
45.	7.95	-11	6.92	-11	7.00	-11	6.45	-11	6.28	-11	5.58	-11	5.35	-11
50.	7.12	-11	6.20	-11	6.20	-11	5.70	-11	5.50	-11	4.82	-11	4.60	-11
55.	6.20	-11	5.40	-11	5.40	-11	4.95	-11	4.72	-11	4.10	-11	3.92	-11
60.	5.40	-11	4.60	-11	4.60	-11	4.22	-11	4.00	-11	3.45	-11	3.30	-11
65.	4.50	-11	3.88	-11	3.90	-11	3.58	-11	3.37	-11	2.92	-11	2.80	-11
70.	3.80	-11	3.25	-11	3.30	-11	3.00	-11	2.82	-11	2.47	-11	2.38	-11
75.	3.15	-11	2.72	-11	2.75	-11	2.52	-11	2.37	-11	2.07	-11	2.00	-11

TABLE C-7

 $^{181}\text{Ta}(n,\gamma)^{182}\text{Ta}$ REACTION RATES FOR THE NOMINAL REACTOR CONFIGURATION

Z^R	5.2		13.0		17.3		25.0		28.2		33.4		38.3	
-70.	4.08	-09	4.00	-09	3.88	-09	3.47	-09	2.95	-09	2.32	-09	1.81	-09
-65.	4.42	-09	4.28	-09	4.10	-09	3.78	-09	3.22	-09	2.56	-09	2.12	-09
-60.	4.78	-09	4.50	-09	4.38	-09	4.02	-09	3.46	-09	2.83	-09	2.42	-09
-55.	5.10	-09	4.75	-09	4.64	-09	4.28	-09	3.72	-09	3.09	-09	2.725	-09
-50.	5.40	-09	5.00	-09	4.90	-09	4.48	-09	3.93	-09	3.33	-09	3.02	-09
-45.	5.65	-09	5.23	-09	5.12	-09	4.68	-09	4.12	-09	3.52	-09	3.27	-09
-40.	5.80	-09	5.48	-09	5.30	-09	4.90	-09	4.30	-09	3.70	-09	3.45	-09
-35.	5.70	-09	5.78	-09	5.35	-09	4.95	-09	4.28	-09	3.75	-09	3.49	-09
-30.	4.60	-09	5.50	-09	4.45	-09	4.40	-09	3.50	-09	3.53	-09	3.35	-09
-25.	3.18	-09	3.50	-09	3.20	-09	3.28	-09	2.67	-09	3.16	-09	3.12	-09
-20.	1.90	-09	1.89	-09	1.84	-09	1.81	-09	1.90	-09	2.65	-09	2.83	-09
-18.	1.53	-09	1.45	-09	1.43	-09	1.42	-09	1.63	-09	2.48	-09	2.70	-09
-16.	1.17	-09	1.15	-09	1.12	-09	1.11	-09	1.40	-09	2.31	-09	2.57	-09
-14.	9.10	-10	8.80	-10	8.60	-10	8.70	-10	1.20	-09	2.12	-09	2.43	-09
-12.	7.40	-10	7.30	-10	7.00	-10	6.70	-10	1.03	-09	1.95	-09	2.30	-09
-10.	6.50	-10	6.40	-10	6.20	-10	6.23	-10	9.30	-10	1.80	-09	2.20	-09
-8.	6.05	-10	5.85	-10	5.75	-10	5.75	-10	8.90	-10	1.675	-09	2.11	-09
-6.	6.00	-10	5.75	-10	5.58	-10	5.70	-10	8.80	-10	1.61	-09	2.04	-09
-4.	6.10	-10	5.80	-10	5.58	-10	5.73	-10	8.90	-10	1.57	-09	1.99	-09
-2.	6.22	-10	5.85	-10	5.65	-10	5.82	-10	9.00	-10	1.57	-09	1.96	-09
0.	6.30	-10	5.90	-10	5.70	-10	5.90	-10	9.00	-10	1.58	-09	1.95	-09
2.	6.25	-10	5.82	-10	5.70	-10	5.85	-10	8.90	-10	1.58	-09	1.94	-09
4.	6.10	-10	5.72	-10	5.65	-10	5.70	-10	8.60	-10	1.58	-09	1.92	-09
6.	5.90	-10	5.55	-10	5.52	-10	5.63	-10	8.40	-10	1.59	-09	1.92	-09
8.	5.78	-10	5.50	-10	5.40	-10	5.70	-10	8.55	-10	1.60	-09	1.94	-09
10.	5.80	-10	5.80	-10	5.55	-10	6.00	-10	9.25	-10	1.63	-09	1.98	-09
12.	6.32	-10	7.00	-10	5.50	-10	6.95	-10	1.04	-09	1.70	-09	2.06	-09
14.	7.35	-10	8.10	-10	8.00	-10	8.20	-10	1.17	-09	1.80	-09	2.10	-09
16.	8.85	-10	9.70	-10	9.65	-10	9.90	-10	1.32	-09	1.89	-09	2.17	-09
18.	1.05	-09	1.15	-09	1.14	-09	1.18	-09	1.51	-09	1.98	-09	2.25	-09
20.	1.23	-09	1.38	-09	1.36	-09	1.42	-09	1.69	-09	2.12	-09	2.36	-09
25.	1.90	-09	2.10	-09	2.07	-09	2.20	-09	2.11	-09	2.36	-09	2.52	-09
30.	2.75	-09	3.18	-09	3.03	-09	3.20	-09	2.42	-09	2.51	-09	2.59	-09
35.	3.92	-09	4.00	-09	3.85	-09	3.68	-09	2.60	-09	2.60	-09	2.59	-09
40.	4.32	-09	4.00	-09	3.86	-09	3.74	-09	2.62	-09	2.61	-09	2.53	-09
45.	4.28	-09	3.92	-09	3.82	-09	3.58	-09	2.64	-09	2.60	-09	2.43	-09
50.	4.18	-09	3.80	-09	3.72	-09	3.50	-09	2.63	-09	2.56	-09	2.30	-09
55.	4.02	-09	3.70	-09	3.58	-09	3.37	-09	2.61	-09	2.48	-09	2.17	-09
60.	3.88	-09	3.60	-09	3.44	-09	3.20	-09	2.59	-09	2.40	-09	2.04	-09
65.	3.75	-09	3.45	-09	3.29	-09	3.02	-09	2.51	-09	2.31	-09	1.90	-09
70.	3.57	-09	3.33	-09	3.125	-09	2.84	-09	2.40	-09	2.20	-09	1.77	-09
75.	3.35	-09	3.20	-09	2.98	-09	2.65	-09	2.26	-09	2.07	-09	1.65	-09

TABLE C-8
 $^{181}\text{Ta}(n,\gamma)^{182}\text{Ta}$ REACTION RATES FOR THE HIGH WORTH CONTROL ROD PERTURBATION

Z/R	19.8
-70.	3.80 -09
-65.	4.10 -09
-60.	4.38 -09
-55.	4.64 -09
-50.	4.90 -09
-45.	5.12 -09
-40.	5.30 -09
-35.	5.35 -09
-30.	4.45 -09
-25.	3.20 -09
-20.	1.84 -09
-18.	1.43 -09
-16.	1.12 -09
-14.	8.60 -10
-12.	7.00 -10
-10.	6.15 -10
-8.	5.75 -10
-6.	5.65 -10
-4.	5.80 -10
-2.	5.85 -10
0.	6.05 -10
2.	6.00 -10
4.	5.92 -10
6.	5.78 -10
8.	5.73 -10
10.	6.00 -10
12.	6.70 -10
14.	7.70 -10
16.	8.95 -10
18.	1.03 -09
20.	1.20 -09
25.	1.58 -09
30.	1.97 -09
35.	2.30 -09
40.	2.55 -09
45.	2.70 -09
50.	2.73 -09
55.	2.74 -09
60.	2.75 -09
65.	2.72 -09
70.	2.68 -09
75.	2.63 -09

TABLE C-9

 $^{181}\text{Ta}(n,\gamma)^{182}\text{Ta}$ REACTION RATES FOR THE FUEL IN ROW 7 PERTURBATION

$\frac{Z}{R}$	25.0	28.2	30.4	33.4	34.5	38.2	39.2
-70.	3.47 -09	2.95 -09	2.83 -09	2.32 -09	2.30 -09	1.81 -09	2.00 -09
-65.	3.78 -09	3.22 -09	3.00 -09	2.56 -09	2.50 -09	2.12 -09	2.20 -09
-60.	4.02 -09	3.46 -09	3.15 -09	2.83 -09	2.72 -09	2.42 -09	2.40 -09
-55.	4.28 -09	3.72 -09	3.33 -09	3.09 -09	2.93 -09	2.72 -09	2.63 -09
-50.	4.48 -09	3.93 -09	3.50 -09	3.33 -09	3.18 -09	3.02 -09	2.87 -09
-45.	4.68 -09	4.12 -09	3.70 -09	3.52 -09	3.41 -09	3.27 -09	3.11 -09
-40.	4.90 -09	4.30 -09	3.90 -09	3.70 -09	3.62 -09	3.45 -09	3.38 -09
-35.	4.95 -09	4.28 -09	4.15 -09	3.72 -09	3.78 -09	3.50 -09	3.51 -09
-30.	4.40 -09	3.50 -09	4.08 -09	3.53 -09	3.50 -09	3.30 -09	3.40 -09
-25.	3.28 -09	2.67 -09	3.12 -09	2.97 -09	2.94 -09	2.95 -09	3.15 -09
-20.	1.88 -09	1.75 -09	1.80 -09	2.12 -09	2.22 -09	2.50 -09	2.80 -09
-18.	1.39 -09	1.38 -09	1.43 -09	1.84 -09	1.98 -09	2.38 -09	2.63 -09
-16.	1.05 -09	1.10 -09	1.13 -09	1.57 -09	1.75 -09	2.25 -09	2.48 -09
-14.	8.25 -10	8.45 -10	9.10 -10	1.35 -09	1.48 -09	2.15 -09	2.30 -09
-12.	6.40 -10	6.75 -10	7.30 -10	1.18 -09	1.24 -09	2.04 -09	2.17 -09
-10.	5.60 -10	5.75 -10	6.00 -10	1.01 -09	1.11 -09	1.90 -09	2.00 -09
-8.	5.32 -10	5.30 -10	5.62 -10	9.20 -10	1.06 -09	1.76 -09	1.92 -09
-6.	5.22 -10	5.20 -10	5.52 -10	8.90 -10	1.06 -09	1.68 -09	1.89 -09
-4.	5.22 -10	5.22 -10	5.60 -10	8.93 -10	1.07 -09	1.67 -09	1.86 -09
-2.	5.28 -10	5.26 -10	5.60 -10	9.00 -10	1.08 -09	1.66 -09	1.85 -09
0.	5.35 -10	5.28 -10	5.60 -10	9.00 -10	1.09 -09	1.66 -09	1.84 -09
2.	5.30 -10	5.25 -10	5.60 -10	8.90 -10	1.09 -09	1.66 -09	1.83 -09
4.	5.20 -10	5.20 -10	5.48 -10	8.65 -10	1.06 -09	1.66 -09	1.84 -09
6.	5.16 -10	5.12 -10	5.35 -10	8.40 -10	1.05 -09	1.67 -09	1.84 -09
8.	5.22 -10	5.25 -10	5.30 -10	8.50 -10	1.05 -09	1.68 -09	1.86 -09
10.	5.55 -10	6.05 -10	5.70 -10	8.95 -10	1.08 -09	1.69 -09	1.90 -09
12.	6.40 -10	7.25 -10	6.80 -10	9.80 -10	1.18 -09	1.72 -09	1.95 -09
14.	7.70 -10	8.60 -10	8.15 -10	1.10 -09	1.30 -09	1.87 -09	2.00 -09
16.	9.40 -10	1.01 -09	9.65 -10	1.26 -09	1.46 -09	1.94 -09	2.10 -09
18.	1.15 -09	1.21 -09	1.13 -09	1.46 -09	1.62 -09	2.03 -09	2.18 -09
20.	1.42 -09	1.45 -09	1.47 -09	1.67 -09	1.80 -09	2.17 -09	2.32 -09
25.	2.20 -09	2.05 -09	2.09 -09	2.20 -09	2.29 -09	2.40 -09	2.35 -09
30.	3.20 -09	2.42 -09	3.20 -09	2.50 -09	2.58 -09	2.57 -09	2.40 -09
35.	3.68 -09	2.60 -09	4.00 -09	2.60 -09	2.62 -09	2.59 -09	2.38 -09
40.	3.74 -09	2.62 -09	4.00 -09	2.61 -09	2.55 -09	2.53 -09	2.30 -09
45.	3.58 -09	2.64 -09	3.91 -09	2.60 -09	2.50 -09	2.43 -09	2.28 -09
50.	3.50 -09	2.63 -09	3.80 -09	2.56 -09	2.43 -09	2.30 -09	2.23 -09
55.	3.37 -09	2.61 -09	3.70 -09	2.48 -09	2.38 -09	2.17 -09	2.20 -09
60.	3.20 -09	2.59 -09	3.60 -09	2.40 -09	2.32 -09	2.04 -09	2.15 -09
65.	3.02 -09	2.51 -09	3.46 -09	2.31 -09	2.24 -09	1.90 -09	2.10 -09
70.	2.84 -09	2.40 -09	3.32 -09	2.20 -09	2.17 -09	1.77 -09	2.03 -09
75.	2.65 -09	2.26 -09	3.19 -09	2.07 -09	2.07 -09	1.65 -09	1.95 -09