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*ENDF/B-V LIB V. and the
FASTWG Benchmarks*

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ENDF/B-V, LIB-V, and the CSEW/G Benchmarks

R. B. Kidman



ENDF/B-V, LIB-V, AND THE CSEWG BENCHMARKS

by

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ABSTRACT

A 70-group library, LIB-V, generated with the NJOY processing code from ENDF/B-V, is tested on most of the Cross Section Evaluation Working Group (CSEWG) fast reactor benchmarks. Every experimental measurement reported in the benchmark specifications is compared to both diffusion theory and transport theory calculations. Several comparisons with prior benchmark calculations attempt to assess the effects of data and code improvements.

I. INTRODUCTION

Periodically, accumulated reactor physics improvements need to be tested on standard problems (benchmarks) to mark progress and establish a set of results that can be referred to in the future.

This report documents the use of 17 benchmarks¹ to test the combined effects of several improvements: ENDF/B-V data,² NJOY³ processing, and SUPERX, ONETRAN,⁴ and SUPERB computations. This report can be considered a sequel to an earlier report⁵ in which calculations were based on ENDF/B-IV data,² MINX⁶ preparation, and 1DX,⁷ ONETRAN, and PERTV⁸ computations.

ENDF/B-V is, of course, a more recent version of evaluated nuclear data than is ENDF/B-IV. NJOY is a more comprehensive, updated version of the MINX processing system. SUPERX and SUPERB are unpublished, overhauled versions of 1DX and PERTV, respectively, that incorporate the following changes.

1. Improved f-factor interpolation
2. Improved elastic downscatter iteration
3. Elastic scattering transfer matrices
4. Elastic downscatter f-factors
5. A new transport cross section computation
6. Isotope and region-dependent fission source matrices

To study or compare results of this document, Refs. 1 and 5 would be helpful.

II. PROCEDURE

The NJOY code was used to generate 70-group cross sections in the CCC-IV⁹ format for 93 of the materials in the ENDF/B-V data tapes. The LINX¹⁰ code was then used to form a composite 93-isotope CCC-IV library from the separate materials. This library is called LIB-V¹¹ and its documentation contains the details of its generation. The group structure is shown in many of the tables of Appendix B. LIB-V was processed with the weight function (log-log interpolation between points) shown in Table I. The weight function is intended to model the spectra encountered in fast-reactor benchmark testing and the 14-MeV fusion peak. The resulting group-wise function is also shown in Table I.

The computer code CINX¹² (modified to pass along elastic removal f-factors, elastic scattering matrices, and isotope chi matrices) was then used to put LIB-V into the format required by SUPERX. The elastic and inelastic transfer cross sections from CINX were arbitrarily limited to 32 downscattering terms (32 includes the in-group term). Composition- and temperature-dependent effective cross sections for each benchmark were then generated by using SUPERX.

Finally, effective cross sections, fluxes, and adjoints from SUPERX were fed into SUPERB for the calculation of diffusion theory material worths. The effective cross sections from SUPERX were also fed into ONETRAN to produce $P_{1/2}$, S_{16} transport theory fluxes and adjoints that in turn were fed into SUPERB for the calculation of transport theory material worths. The group velocities and ENDF/B-V delayed neutron data used by SUPERB are presented in Appendix A.

This description of procedures and data should enable one to reproduce any of the results reported here.

III. RESULTS

All of the computed results and comparisons with every experimental measurement are compiled in Appendix B. This compilation contains some additional transport theory results not included with the previous calculations.⁵ The 70-group central flux, edge flux, central adjoint, and edge adjoint are shown. The 70 x 70 region-dependent chi matrices have been appropriately collapsed (weighted by volume, flux, and neutron production) to 70-group vector chi's for the reactor and each region. These vector chi's allow a better understanding of the

TABLE I
LIB-V WEIGHTING FUNCTION

Definition

<u>Point</u>	<u>Energy (eV)</u>	<u>Weight</u>	<u>Point</u>	<u>Energy (eV)</u>	<u>Weight</u>
1	1.0000E-5	0.000E+0	13	1.0000E+7	6.480E-1
2	2.6126E-3	1.320E-10	14	1.2790E+7	1.360E-1
3	8.7642E-1	2.670E-8	15	1.2900E+7	1.420E-1
4	7.8893E+1	1.940E-2	16	1.3550E+7	1.509E+0
5	3.1203E+2	4.490E-1	17	1.3750E+7	2.742E+0
6	1.7956E+3	4.802E+0	18	1.3950E+7	3.782E+0
7	8.0473E+3	1.040E+1	19	1.4070E+7	4.008E+0
8	4.6309E+4	2.030E+1	20	1.4190E+7	3.839E+0
9	1.6163E+5	2.290E+1	21	1.4390E+7	2.867E+0
10	6.3928E+5	1.260E+1	22	1.4590E+7	1.637E+0
11	2.8650E+6	2.470E+0	23	1.5550E+7	2.650E-2
12	4.7237E+6	9.110E-1	24	2.0000E+7	1.450E-3

Group-Wise Results

<u>Group</u>	<u>Weight</u>	<u>Group</u>	<u>Weight</u>	<u>Group</u>	<u>Weight</u>
1	1.865E+4	25	9.118E+5	49	3.059E+3
2	3.927E+6	26	7.057E+5	50	2.531E+3
3	9.317E+5	27	5.365E+5	51	2.094E+3
4	1.514E+6	28	4.079E+5	52	1.733E+3
5	1.321E+6	29	3.101E+5	53	1.434E+3
6	1.153E+6	30	2.338E+5	54	1.187E+3
7	1.222E+6	31	1.671E+5	55	9.337E+2
8	1.566E+6	32	6.424E+4	56	6.957E+2
9	1.788E+6	33	5.403E+4	57	5.183E+2
10	1.828E+6	34	4.544E+4	58	3.862E+2
11	1.868E+6	35	3.825E+4	59	2.878E+2
12	9.489E+5	36	3.219E+4	60	3.741E+2
13	9.592E+5	37	2.708E+4	61	2.077E+2
14	9.696E+5	38	2.77E+4	62	1.153E+2
15	9.802E+5	39	1.916E+4	63	6.401E+1
16	9.909E+5	40	1.612E+4	64	3.472E+1
17	1.002E+6	41	1.357E+4	65	1.584E+1
18	9.721E+5	42	1.141E+4	66	6.970E+0
19	9.061E+5	43	9.516E+3	67	3.066E+0
20	8.440E+5	44	7.883E+3	68	1.349E+0
21	7.864E+5	45	6.524E+3	69	8.352E-1
22	1.416E+6	46	5.398E+3	70	1.407E-1
23	1.231E+6	47	4.465E+3		
24	1.069E+6	48	3.697E+3		

effect of the matrix chi improvement. As an aid to comparison of half-lethargy width group results to this report, the flux, adjoint, and chi data are also presented in a collapsed 25-group structure. As a further aid to intercomparison, centrally averaged 1-group cross sections are presented for the fission, capture, fission neutrons, and transport reactions of each material.

It is not feasible to show how every data and code change affects the reactor parameters of every critical assembly. What is more amenable to compilation is to lump many changes together and show their combined effect on a few parameters. Therefore, in an effort to separate data associated changes from physics code associated changes, all of the ENDF/B and processing code changes have been lumped together to form the "data" changes, and all of the reactor physics code changes have been lumped together to form the "code" changes.

Table II compares the present and past⁵ uncorrected diffusion theory eigenvalues and also displays the relative effects of the data and code changes. (Although transport theory results are probably more valid, diffusion theory results must be used to separate the data and code effects because intermediate results were obtained only with diffusion theory.) The eigenvalue effects of the code changes are generally smaller than the eigenvalue effects of the data changes, and the Pu-fueled assemblies generally exhibit larger data effects than do the U-fueled assemblies. VERA-11A, VERA-1B and ZEBRA-2 stand out as exceptions to these trends. Table III compares the present and past,⁵ uncorrected and corrected transport theory eigenvalues. Only 6 out of 16 of the present corrected eigenvalues are improvements over the past corrected eigenvalues. Most of the improvements are limited to the U-fueled assemblies, whereas practically every Pu-fueled assembly is worse.

Tables IV through XI compare present and past transport theory results for several central reaction rate ratios and several central reactivity worths. Also shown are the relative effects on these central parameters of the data and code changes. (The relative effects do not precisely progress from the past to the present transport theory results because the relative effects were determined using diffusion theory.) Only about 40% of the present central parameters are improvements over the past. However, there were some hot spots of improvement: the ^{239}Pu to ^{235}U central fission ratio, the ^{235}U and ^{238}U central worths, and ZPR-3-56B, ZPR-6-7 and ZPR-6-6A.

TABLE II

PAST AND PRESENT UNCORRECTED DIFFUSION THEORY EIGENVALUES

<u>Critical Assembly</u>	K_{eff} Based on ENDF/B-IV <u>MINX and LDX</u>	Changes due to ENDF/B-V and NJOY	Changes due to <u>SUPERX</u>	K_{eff} Based on ENDF/B-V <u>NJOY and SUPERX</u>
<u>Pu Fueled</u>				
JEZEBEL	0.9485	0.0130	-0.0015	0.9600
VERA-11A	0.9449	0.0094	-0.0102	0.9441
ZEBRA-3	0.9946	0.0091	-0.0078	0.9959
SNEAK-7A	0.9863	0.0115	-0.0034	0.9944
SNEAK-7B	0.9892	0.0162	-0.0053	1.0001
ZPR-3-48	0.9758	0.0104	-0.0033	0.9829
ZPR-3-56B	0.9557	0.0502	-0.0020	1.0039
ZPR-9-31			-0.0058	0.9908
ZPR-6-7	0.9708	0.0127	-0.0011	0.9824
ZPPR-2	0.9729	0.0106	-0.0018	0.9817
<u>U Fueled</u>				
GODIVA	0.9744	-0.0058	-0.0020	0.9666
ZPR-3-6F	0.9976	-0.0007	-0.0054	0.9915
VERA-1B	0.9741	-0.0162	0.0126	0.9705
ZPR-3-12	0.9976	-0.0008	-0.0005	0.9963
ZPR-3-11	1.0089	0.0026	-0.0053	1.0062
ZEBRA-2	0.9908	-0.0137	0.0185	0.9956
ZPR-6-6A	0.9834	-0.0026	0.0035	0.9843

TABLE III

PAST AND PRESENT TRANSPORT THEORY EIGENVALUES

Critical Assembly	Uncorrected K_{eff}		Correction ^a	Corrected K_{eff}		Present - Past
	Past	Present		Past	Present	
<u>Pu Fueled</u>						
JEZEBEL	0.9998	1.0111	-0.0053 ^b	0.9945	1.0058	0.0113
VERA-11A	0.9923	0.9884		0.9923	0.9884	-0.0039
ZEBRA-3	1.0080	1.0090		1.0080	1.0090	0.0010
SNEAK-7A	1.0016	1.0056		1.0016	1.0056	0.0040
SNEAK-7B	0.9968	1.0048		0.9968	1.0048	0.0080
ZPR-3-48	0.9850	0.9883	0.0183	1.0033	1.0066	0.0033
ZPR-3-56B	1.0086	1.0106	-0.0046 ^c	1.0040	1.0060	0.0020
ZPR-9-31		0.9955	0.0128		1.0083	
ZPR-6-7	0.9762	0.9841	0.0166	0.9928	1.0007	0.0079
ZPPR-2	0.9967	1.0017	0.0175	1.0142	1.0192	0.0050
<u>U Fueled</u>						
GODIVA	1.0110	1.0028	-0.0047 ^b	1.0063	0.9981	-0.0082
ZPR-3-6F	1.0178	1.0101		1.0178	1.0101	-0.0077
VERA-1B	0.9994	0.9923		0.9994	0.9923	-0.0071
ZPR-3-12	1.0090	1.0061		1.0090	1.0061	-0.0029
ZPR-3-11	1.0153	1.0121		1.0153	1.0121	-0.0032
ZEBRA-2	0.9963	0.9988		0.9963	0.9988	0.0025
ZPR-6-6A	0.9883	0.9854	0.0073	0.9956	0.9927	-0.0029

^aIf no correction factor is listed, then the specifications simply do not give one, or the specified model was already adjusted to account for heterogeneities.

^bThis is the Los Alamos result for $S_{16} \rightarrow S_{\infty}$ corrections as reported in Ref. 5.

^cThe 1D \rightarrow 2D correction from Ref. 5 was added to the heterogeneity correction of Ref. 1 because the 1-D ZPR-3-56B model is not an equivalent K-1.0 model.

TABLE IV

PAST AND PRESENT ^{239}Pu TO ^{235}U CENTRAL FISSION RATIOS (C/E)

Critical Assembly	$\sigma_f^{239}/\sigma_f^{235}$	Changes due to ENDF/B-V and NJOY	Changes due to SUPERX	$\sigma_f^{239}/\sigma_f^{235}$
	Based on ENDF/B-IV, MINX, LDX, ONETRAN			Based on ENDF/B-V, NJOY, SUPERX, ONETRAN
<u>Pu Fueled</u>				
JEZEBEL	0.9364	0.0349	0.0006	0.9724
VERA-11A	1.0836	0.0442	-0.0263	1.1035
ZEBRA-3	0.9913	0.0176	-0.0003	1.0092
SNEAK-7A	0.9606	0.0540	-0.0328	0.9835
SNEAK-7B	0.9861	0.0385	-0.0155	1.0098
ZPR-3-56B	0.9382	0.0298	-0.0114	0.9656
ZPR-9-31			-0.0184	1.0630
ZPR-6-7	0.9612	0.0307	-0.0085	0.9845
ZPPR-2	0.9771	0.0305	-0.0087	0.9999
<u>U Fueled</u>				
GODIVA	0.9728	0.0203	0.0010	0.9943
ZPR-3-6F	1.0229	0.0151	0.0002	1.0384
VERA-1B	1.0648	0.0481	-0.0323	1.0813
ZPR-3-12	0.9969	0.0330	-0.0177	1.0129
ZPR-3-11	0.9843	0.0160	0.0002	1.0007
ZEBRA-2	0.9941	0.0558	-0.0344	1.0157

TABLE V
PAST AND PRESENT ^{238}U TO ^{235}U CENTRAL FISSION RATIOS (C/E)

Critical Assembly	$\sigma_f^{238}/\sigma_f^{235}$ Based on ENDF/B-IV, MINX, LDX, ONETRAN	Changes due to ENDF/B-V and NJOY	Changes due to SUPERX	$\sigma_f^{238}/\sigma_f^{235}$ Based on ENDF/B-V, NJOY, SUPERX, ONETRAN
<u>Pu Fueled</u>				
JEZEBEL	0.9218	0.0017	-0.0063	0.9169
VERA-11A	1.1532	0.0696	-0.0372	1.1916
ZEBRA-3	1.0062	0.0261	-0.0044	1.0293
SNEAK-7A	0.9255	0.0974	-0.0523	0.9767
SNEAK-7B	0.9803	0.0692	-0.0194	1.0341
ZPR-3-48	1.0350	0.0818	-0.0520	1.0714
ZPR-3-56B	0.8672	0.1077	-0.0209	0.9972
ZPR-9-31			-0.0323	1.0576
ZPR-6-7	0.9315	0.0697	-0.0134	0.9934
ZPPR-2	1.0528	0.0703	-0.0173	1.1102
<u>U Fueled</u>				
GODIVA	1.0526	-0.0177	0.0024	1.0365
ZPR-3-6F	1.0172	0.0093	0.0033	1.0342
VERA-1B	1.2147	0.0768	-0.0613	1.2331
ZPR-3-12	1.0691	0.0511	-0.0259	1.0917
ZPR-3-11	1.0562	0.0175	-0.0003	1.0745
ZEBRA-2	1.0436	0.0800	-0.0660	1.0603
ZPR-6-6A	0.9420	0.0401	-0.0007	0.9855

TABLE VI

PAST AND PRESENT ^{238}U CAPTURE TO ^{235}U FISSION CENTRAL RATIOS (C/E)

Critical Assembly	$\sigma_f^{238}/\sigma_f^{235}$	Changes due to ENDF/B-V and NJOY	Changes due to SUPERX	$\sigma_f^{238}/\sigma_f^{235}$
	Based on ENDF/B-IV, MINX, 1DX, ONETRAN			Based on ENDF/B-V, NJOY, SUPERX, ONETRAN
<u>Pu Fueled</u>				
SNEAK-7A	0.9962	0.0066	-0.0109	0.9914
SNEAK-7B	1.0395	-0.0039	-0.0072	1.0279
ZPR-3-48	0.9768	0.0137	-0.0158	0.9733
ZPR-9-31			-0.0116	1.1001
ZPR-6-7	1.0542	0.0168	-0.0132	1.0569
<u>U Fueled</u>				
ZPR-3-6F	0.9344	-0.0087	0.0017	0.9258
VERA-1B	0.9468	-0.0505	0.0484	0.9438
ZPR-3-12	0.9697	-0.0122	0.0089	0.9657
ZPR-3-11	0.9690	-0.0006	0.0015	0.9692
ZEBRA-2	0.9697	0.0277	-0.0422	0.9548
ZPR-6-6A	1.0318	0.0138	-0.0086	1.0363

TABLE VII

PAST AND PRESENT ^{239}Pu CENTRAL WORTHS (C/E)

<u>Critical Assembly</u>	^{239}Pu Worths Based on ENDF/B-IV, MINX, 1DX, ONETRAN, PERTV	Changes due to ENDF/B-V and NJOY	Changes due to SUPERX, SUPERB	^{239}Pu Worths Based on ENDF/B-V NJOY, SUPERX, ONETRAN, SUPERB
<u>Pu Fueled</u>				
JEZEBEL	1.0353	-0.0143	-0.0015	1.0156
ZEBRA-3	1.1377	0.0354	0.0024	1.1831
SNEAK-7A	1.0360	0.0261	-0.0208	1.0525
SNEAK-7B	1.0851	0.0107	-0.0098	1.0877
ZPR-3-48	1.1437	0.0435	-0.0238	1.1806
ZPR-3-56B	1.3551	-0.1714	-0.0189	1.1410
ZPR-9-31			-0.0154	1.1607
ZPR-6-7	1.1662	0.0229	-0.0170	1.1731
ZPPR-2	1.0784	0.0268	-0.0097	1.1005
<u>U Fueled</u>				
GODIVA	1.0021	-0.0104	-0.0015	0.9990
ZPR-3-6F	1.0600	0.0244	0.0045	1.0959
VERA-1B	1.0142	0.0760	-0.0632	1.0400
ZPR-3-12	0.9725	0.0524	-0.0188	1.0161
ZPR-3-11	1.0279	0.0392	0.0136	1.0895
ZEBRA-2	1.0506	0.1501	-0.1127	1.1008
ZPR-6-6A	1.0674	0.0447	-0.0193	1.0943

TABLE VIII

PAST AND PRESENT ^{235}U CENTRAL WORTHS (C/E)

Critical Assembly	^{235}U Worths	Changes due to ENDF/B-V and NJOY	Changes due to SUPERX, SUPERB	^{235}U Worths
	Based on ENDF/B-IV, MINX, 1DX, ONETRAN, PERTV			Based on ENDF/B-V NJOY, SUPERX, ONETRAN, SUPERB
<u>Pu Fueled</u>				
JEZEBEL	1.0737	-0.0295	-0.0056	1.0212
ZEBRA-3	1.1457	0.0108	-0.0156	1.1464
SNEAK-7A	1.0389	-0.0278	-0.0030	1.0176
SNEAK-7B	1.0597	-0.0331	-0.0091	1.0185
ZPR-3-48	1.1569	-0.0071	-0.0122	1.1533
ZPR-3-56B	1.3296	-0.2222	-0.0184	1.0582
ZPR-9-31			-0.0144	1.1413
ZPR-6-7	1.1607	-0.0217	-0.0227	1.1157
ZPPR-2	1.1925	-0.0062	-0.0169	1.1739
<u>U Fueled</u>				
GODIVA	1.0079	-0.0272	-0.0022	0.9798
ZPR-3-6F	0.8701	0.0045	0.0007	0.8800
VERA-1B	0.9948	0.0491	-0.0485	1.0074
ZPR-3-12	0.9733	0.0217	-0.0162	0.9885
ZPR-3-11	1.0822	0.0219	-0.0028	1.1103
ZEBRA-2	1.0808	0.1673	-0.0962	1.0926
ZPR-6-6A	1.1222	0.0179	-0.0223	1.1191

TABLE IX
PAST AND PRESENT ^{238}U CENTRAL WORTHS (C/E)

<u>Critical Assembly</u>	^{238}U Worths Based on ENDF/B-IV, MINX, 1DX, ONETRAN, PERTV	Changes due to ENDF/B-V and NJOY	Changes due to SUPERX, SUPERB	^{238}U Worths Based on ENDF/B-V NJOY, SUPERX, ONETRAN, SUPERB
<u>Pu Fueled</u>				
JEZEBEL	0.9826	0.0104	-0.0264	0.9437
ZEBRA-3	1.0484	0.0253	-0.0021	1.0785
SNEAK-7A	1.1315	-0.1270	0.0962	1.0898
SNEAK-7B	1.0510	-0.0262	0.0213	1.0361
ZPR-3-48	1.1550	-0.0580	0.0700	1.1643
ZPR-3-56B	1.3969	-0.0817	0.0274	1.1487
ZPR-9-31			0.0261	1.0308
ZPR-6-7	1.0415	-0.0118	0.0191	1.0388
<u>U Fueled</u>				
GODIVA	0.9857	0.0047	-0.0038	1.0028
ZPR-3-6F	2.7361	0.1870	0.0519	2.9267
VERA-1B	1.3545	0.7632	-0.6123	1.5535
ZPR-3-12	0.9534	-0.0931	0.0750	0.9337
ZPR-3-11	1.0011	-0.0081	-0.0066	1.0096
ZEBRA-2	1.0451	-0.0657	0.0517	1.0332
ZPR-6-6A	1.1897	-0.0188	0.0098	1.1739

TABLE X

PAST AND PRESENT ^{10}B CENTRAL WORTHS (C/E)

<u>Critical Assembly</u>	^{10}B Worths Based on ENDF/B-IV, MINX, 1DX, ONETRAN, PERTV	Changes due to ENDF/B-V and NJOY	Changes due to SUPERX, SUPERB	^{10}B Worths Based on ENDF/B-V NJOY, SUPERX, ONETRAN, SUPERB
<u>Pu Fueled</u>				
JEZEBEL	0.9800	-0.0238	0.0311	0.9988
ZEBRA-3	0.9818	-0.0228	0.0083	0.9678
SNEAK-7A	0.9253	-0.1373	0.1255	0.9086
SNEAK-7B	0.9124	-0.0723	0.0641	0.8962
ZPR-3-48	1.0492	-0.1181	0.1299	1.0602
ZPR-3-56B	1.0227	-0.0853	0.0486	0.8967
ZPR-9-31			0.0838	1.0287
ZPR-6-7	1.1334	-0.0700	0.0639	1.1175
ZPR-2	0.9649	-0.0550	0.0595	0.9648
<u>U Fueled</u>				
GODIVA	0.8685	-0.0376	0.0053	0.8345
ZPR-3-6F	0.9973	-0.0177	-0.0054	0.9659
VERA-1B	1.0469	-0.1516	0.1353	1.0298
ZPR-3-11	0.9438	-0.0167	-0.0002	0.9308
ZEBRA-2	0.8529	-0.1438	0.1610	0.8730
ZPR-6-6A	0.9535	-0.0365	0.0335	0.9436

TABLE XI
PAST AND PRESENT ^{23}Na CENTRAL WORTHS (C/E)

<u>Critical Assembly</u>	^{23}Na Worths Based on ENDF/B-IV, MINX, 1DX, ONETRAN, PERTV	<u>Changes due to ENDF/B-V and NJOY</u>	<u>Changes due to SUPERX, SUPERB</u>	^{23}Na Worths Based on ENDF/B-V NJOY, SUPERX, ONETRAN, SUPERB
<u>Pu Fueled</u>				
ZEBRA-3	1.3487	0.0885	-0.0564	1.4147
ZPR-3-48	2.4266	1.0028	-1.0345	2.4811
ZPR-3-56B	3.5395	-0.4607	-0.3131	2.2878
ZPR-9-31			-0.2169	1.3477
ZPR-6-7	1.2483	0.1832	-0.1752	1.2525
ZPPR-2	1.2389	0.1671	-0.1566	1.2593
<u>U Fueled</u>				
ZPR-3-6F	0.2746	0.0300	0.0940	0.3627
VERA-1B	0.3612	-0.0065	-0.0186	0.3372
ZPR-3-11	2.0580	0.1373	-0.1324	2.1176
ZEBRA-2	2.5187	-1.9958	2.2097	2.6904
ZPR-6-6A	-3.8754	-0.0297	3.5976	-0.0817

The computer run times for the various code submittals of this study are shown in Table XII. The run times are longer than in the past mainly because 70-groups and fission source matrices are being used.

TABLE XII
COMPUTER RUN TIMES

Critical Assembly	SUPERX	SUPERX Adjoint (Cray s)	Diffusion	ONETRAN Flux (CDC-7600 s)	ONETRAN	Transport Theory Worths (Cray s)
	Flux and Cross Sec. (Cray s)		Theory Worths (Cray s)		Adjoint (CDC-7600 s)	
JEZEBEL	353	63	60	39	38	66
VERA-11A	191	48	61	134	145	63
ZPR-3-48	211	45	74	30	79	92
ZEBRA-3	380	68	118	121	125	140
GODIVA	178	38	37	40	37	39
VERA-1B	222	46	67	129	137	76
ZPR-3-6F	329	64	95	107	119	114
ZPR-3-11	239	45	69	119	119	83
ZPR-3-12	199	46	60	116	123	70
ZEBRA-2	408	73	84	162	169	123
ZPPR-2	880	150	441	621	629	662
ZPR-6-7	292	58	93	218	211	98
ZPR-3-56B	201	42	51	180	250	57
ZPR-6-6A	207	47	52	185	180	55
SNEAK-7A	262	55	91	113	115	129
SNEAK-7B	291	58	95	148	149	98
ZPR-9-31	283	56	97	126	126	97

IV. CONCLUSIONS

Considering all of the reactor parameters of all the critical assemblies, present transport theory results represent an improvement over past transport theory results in only about 40% of the cases. According to the data and code change effects set forth in Tables II through XI, a better improvement record could perhaps be compiled if the code changes were applied to ENDF/B-IV data.

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APPENDIX A

DELAYED NEUTRON DATA

This appendix contains the processed delayed neutron data used in this study. The basic source of data was ENDF/B-V.

Delayed neutron data for ^{234}U and ^{236}U was fabricated. The absolute delayed neutron yields are estimates, whereas the rest of the data for ^{234}U was assumed to be the same as ^{235}U data, and the rest of the data for ^{236}U was assumed to be the same as ^{238}U data.

The delayed fission spectra for ^{240}Pu and ^{241}Pu are not shown because they are the same as the ^{239}Pu delayed fission spectra. Similarly, ^{233}U spectra are not shown because they are the same as ^{235}U data.

The group velocities, which are used in the calculation of neutron generation times, are shown in Table A-VIII.

TABLE A-I

ABSOLUTE DELAYED NEUTRON YIELD PER FISSION

<u>Isotope</u>	<u>Yield</u>
Th-232	0.05270
U-233	0.00740
U-234	0.01000 ^a
U-235	0.01670
U-236	0.02600 ^a
U-238	0.04400
Pu-239	0.00645
Pu-240	0.00900
Pu-241	0.01620

^aEstimates.

TABLE A-II

FRACTIONAL DELAYED NEUTRON YIELD IN PRECURSOR GROUPS

<u>Isotope</u>	<u>Precursor Groups</u>					
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
Th-232	0.034	0.150	0.155	0.446	0.172	0.043
U-233	0.086	0.274	0.227	0.317	0.073	0.023
U-235	0.038	0.213	0.188	0.407	0.128	0.026
U-238	0.013	0.137	0.162	0.388	0.225	0.075
Pu-239	0.038	0.280	0.216	0.328	0.103	0.035
Pu-240	0.028	0.273	0.192	0.350	0.128	0.029
Pu-241	0.010	0.229	0.173	0.390	0.182	0.016

TABLE A-III

PRECURSOR GROUP DECAY CONSTANTS (s^{-1})

<u>Isotope</u>	<u>Precursor Groups</u>					
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
Th-232	1.237-2	3.340-2	1.210-1	3.210-1	1.210	3.290
U-233	1.258-2	3.342-2	1.310-1	3.030-1	1.270	3.140
U-235	1.272-2	3.174-2	1.160-1	3.110-1	1.400	3.870
U-238	1.323-2	3.212-2	1.390-1	3.590-1	1.410	4.030
Pu-239	1.290-2	3.110-2	1.340-1	3.320-1	1.260	3.210
Pu-240	1.294-2	3.131-2	1.350-1	3.330-1	1.360	4.030
Pu-241	1.280-2	2.990-2	1.240-1	3.520-1	1.610	3.470

TABLE A-IV
 TH-232 DELAYED FISSION SPECTRA

Group	Precursor Groups					
	1	2	3	4	5	6
12	2.96647-3	3.49528-3	9.11695-3	4.90357-3	4.90357-3	4.90357-3
13	1.07297-2	1.98468-2	3.55487-2	1.85718-2	1.85718-2	1.85718-2
14	1.41000-2	3.07185-2	4.03502-2	3.08544-2	3.08544-2	3.08544-2
15	2.49244-2	4.92201-2	3.83662-2	5.26850-2	5.26850-2	5.26850-2
16	3.05732-2	7.20412-2	4.49627-2	6.49077-2	6.49077-2	6.49077-2
17	2.10115-2	7.48743-2	5.48327-2	4.49064-2	4.49064-2	4.49064-2
18	1.72466-2	7.56786-2	6.38301-2	6.14672-2	6.14672-2	6.14672-2
19	1.62590-2	8.74359-2	7.04264-2	6.62745-2	6.62745-2	6.62745-2
20	2.74592-2	8.41973-2	7.04393-2	6.00133-2	6.00133-2	6.00133-2
21	4.95270-2	6.96686-2	6.94513-2	5.98586-2	5.98586-2	5.98586-2
22	7.26282-2	1.15278-1	1.12599-1	1.17091-1	1.17091-1	1.17091-1
23	1.30049-1	9.04648-2	6.99280-2	1.05149-1	1.05149-1	1.05149-1
24	1.52878-1	5.73658-2	4.69162-2	9.05830-2	9.05830-2	9.05830-2
25	1.25696-1	5.16265-2	5.28433-2	7.87168-2	7.87168-2	7.87168-2
26	1.05657-1	3.90264-2	6.04456-2	4.75203-2	4.75203-2	4.75203-2
27	7.23151-2	2.78095-2	5.95904-2	3.45061-2	3.45061-2	3.45061-2
28	4.90956-2	1.99736-2	3.91089-2	2.41587-2	2.41587-2	2.41587-2
29	3.02511-2	1.23071-2	2.40977-2	1.48858-2	1.48858-2	1.48858-2
30	1.83482-2	7.46462-3	1.46160-2	9.02870-3	9.02870-3	9.02870-3
31	1.11287-2	4.52750-3	8.86501-3	5.47616-3	5.47616-3	5.47616-3
32	3.79468-3	1.54379-3	3.02280-3	1.86726-3	1.86726-3	1.86726-3
33	2.95525-3	1.20229-3	2.35412-3	1.45420-3	1.45420-3	1.45420-3
34	2.30156-3	9.36344-4	1.83340-3	1.13254-3	1.13254-3	1.13254-3
35	1.79248-3	7.29236-4	1.42787-3	8.82035-4	8.82035-4	8.82035-4
36	1.39595-3	5.67912-4	1.11199-3	6.86908-4	6.86908-4	6.86908-4
37	1.08718-3	4.42298-4	8.66036-4	5.34974-4	5.34974-4	5.34974-4
38	8.46707-4	3.44466-4	6.74476-4	4.16642-4	4.16642-4	4.16642-4
39	6.59408-4	2.68267-4	5.25276-4	3.24477-4	3.24477-4	3.24477-4
40	5.13438-4	2.08882-4	4.08999-4	2.52650-4	2.52650-4	2.52650-4
41	4.00066-4	1.62759-4	3.18688-4	1.96862-4	1.96862-4	1.96862-4
42	3.11484-4	1.26721-4	2.48124-4	1.53273-4	1.53273-4	1.53273-4
43	2.42585-4	9.86907-5	1.93240-4	1.19370-4	1.19370-4	1.19370-4
44	1.88923-4	7.68595-5	1.50494-4	9.29640-5	9.29640-5	9.29640-5
45	1.47136-4	5.98593-5	1.17207-4	7.24017-5	7.24017-5	7.24017-5
46	1.14588-4	4.66179-5	9.12796-5	5.63859-5	5.63859-5	5.63859-5
47	8.92405-5	3.63057-5	7.10879-5	4.39129-5	4.39129-5	4.39129-5
48	6.95020-5	2.82755-5	5.53645-5	3.42001-5	3.42001-5	3.42001-5
49	5.41274-5	2.20206-5	4.31172-5	2.66347-5	2.66347-5	2.66347-5
50	4.21549-5	1.71499-5	3.35801-5	2.07433-5	2.07433-5	2.07433-5
51	3.28300-5	1.33562-5	2.61520-5	1.61548-5	1.61548-5	1.61548-5
52	2.55684-5	1.04020-5	2.03675-5	1.25816-5	1.25816-5	1.25816-5
53	1.99128-5	8.10114-6	1.58623-5	9.79860-6	9.79860-6	9.79860-6
54	1.55077-5	6.30901-6	1.23533-5	7.63095-6	7.63095-6	7.63095-6
55	1.20776-5	4.91352-6	9.62086-6	5.94307-6	5.94307-6	5.94307-6
56	9.40564-6	3.82650-6	7.49242-6	4.62827-6	4.62827-6	4.62827-6
57	7.32549-6	2.98023-6	5.83540-6	3.60468-6	3.60468-6	3.60468-6
58	5.70502-6	2.32097-6	4.54455-6	2.80729-6	2.80729-6	2.80729-6
59	4.44315-6	1.80761-6	3.53936-6	2.18636-6	2.18636-6	2.18636-6
60	6.15516-6	2.50410-6	4.90312-6	3.02879-6	3.02879-6	3.02879-6
61	3.73326-6	1.51880-6	2.97387-6	1.83704-6	1.83704-6	1.83704-6
62	2.26436-6	9.21209-7	1.80376-6	1.11423-6	1.11423-6	1.11423-6
63	1.37339-6	5.58737-7	1.09403-6	6.75810-7	6.75810-7	6.75810-7
64	8.33002-7	3.38890-7	6.63559-7	4.09899-7	4.09899-7	4.09899-7
65	5.05250-7	2.05551-7	4.02476-7	2.48620-7	2.48620-7	2.48620-7
66	3.06446-7	1.24671-7	2.44111-7	1.50794-7	1.50794-7	1.50794-7
67	1.85869-7	7.56170-8	1.48061-7	9.14612-8	9.14612-8	9.14612-8
68	1.12735-7	4.58640-8	8.98034-8	5.54740-8	5.54740-8	5.54740-8
69	1.09851-7	4.46905-8	8.75057-8	5.40546-8	5.40546-8	5.40546-8
70	6.39303-8	2.60088-8	5.09261-8	3.14584-8	3.14584-8	3.14584-8

TABLE A-V
U-235 DELAYED FISSION SPECTRA

Group	Precursor Groups					
	1	2	3	4	5	6
12	2.96647-3	3.49528-3	9.11695-3	4.90357-3	4.90357-3	4.90357-3
13	1.07297-2	1.98468-2	3.55487-2	1.85718-2	1.85718-2	1.85718-2
14	1.41000-2	3.07185-2	4.03502-2	3.08544-2	3.08544-2	3.08544-2
15	2.49244-2	4.92201-2	3.83662-2	5.26850-2	5.26850-2	5.26850-2
16	3.05732-2	7.20412-2	4.49627-2	6.49077-2	6.49077-2	6.49077-2
17	2.10115-2	7.48743-2	5.48327-2	4.49064-2	4.49064-2	4.49064-2
18	1.72466-2	7.56786-2	6.38301-2	6.14672-2	6.14672-2	6.14672-2
19	1.62590-2	8.74359-2	7.04264-2	6.62745-2	6.62745-2	6.62745-2
20	2.74592-2	8.41973-2	7.04393-2	6.00133-2	6.00133-2	6.00133-2
21	4.95270-2	6.96686-2	6.94513-2	5.98586-2	5.98586-2	5.98586-2
22	7.26282-2	1.15278-1	1.12599-1	1.17091-1	1.17091-1	1.17091-1
23	1.30049-1	9.04648-2	6.99280-2	1.05149-1	1.05149-1	1.05149-1
24	1.52878-1	5.73658-2	4.69162-2	9.05830-2	9.05830-2	9.05830-2
25	1.25696-1	5.16265-2	5.28433-2	7.87168-2	7.87168-2	7.87168-2
26	1.05657-1	3.90264-2	6.04456-2	4.75203-2	4.75203-2	4.75203-2
27	7.23151-2	2.78095-2	5.95904-2	3.45061-2	3.45061-2	3.45061-2
28	4.90956-2	1.99736-2	3.91089-2	2.41587-2	2.41587-2	2.41587-2
29	3.02511-2	1.23071-2	2.40977-2	1.48858-2	1.48858-2	1.48858-2
30	1.83482-2	7.46462-3	1.46160-2	9.02870-3	9.02870-3	9.02870-3
31	1.11287-2	4.52750-3	8.86501-3	5.47616-3	5.47616-3	5.47616-3
32	3.79468-3	1.54379-3	3.02280-3	1.86726-3	1.86726-3	1.86726-3
33	2.95525-3	1.20229-3	2.35412-3	1.45420-3	1.45420-3	1.45420-3
34	2.30156-3	9.36344-4	1.83340-3	1.13254-3	1.13254-3	1.13254-3
35	1.79248-3	7.29236-4	1.42787-3	8.82035-4	8.82035-4	8.82035-4
36	1.39595-3	5.67912-4	1.11199-3	6.86908-4	6.86908-4	6.86908-4
37	1.08718-3	4.42298-4	8.66036-4	5.34974-4	5.34974-4	5.34974-4
38	8.46707-4	3.44466-4	6.74476-4	4.16642-4	4.16642-4	4.16642-4
39	6.59408-4	2.68267-4	5.25276-4	3.24477-4	3.24477-4	3.24477-4
40	5.13438-4	2.08882-4	4.08999-4	2.52650-4	2.52650-4	2.52650-4
41	4.00066-4	1.62759-4	3.18688-4	1.96862-4	1.96862-4	1.96862-4
42	3.11484-4	1.26721-4	2.48124-4	1.53273-4	1.53273-4	1.53273-4
43	2.42585-4	9.86907-5	1.93240-4	1.19370-4	1.19370-4	1.19370-4
44	1.88923-4	7.68595-5	1.50494-4	9.29640-5	9.29640-5	9.29640-5
45	1.47136-4	5.98593-5	1.17207-4	7.24017-5	7.24017-5	7.24017-5
46	1.14588-4	4.66179-5	9.12796-5	5.63859-5	5.63859-5	5.63859-5
47	8.92405-5	3.63057-5	7.10879-5	4.39129-5	4.39129-5	4.39129-5
48	6.95020-5	2.82755-5	5.53645-5	3.42001-5	3.42001-5	3.42001-5
49	5.41274-5	2.20206-5	4.31172-5	2.66347-5	2.66347-5	2.66347-5
50	4.21549-5	1.71499-5	3.35801-5	2.07433-5	2.07433-5	2.07433-5
51	3.28300-5	1.33562-5	2.61520-5	1.61548-5	1.61548-5	1.61548-5
52	2.55684-5	1.04020-5	2.03675-5	1.25816-5	1.25816-5	1.25816-5
53	1.99128-5	8.10114-6	1.58623-5	9.79860-6	9.79860-6	9.79860-6
54	1.55077-5	6.30901-6	1.23533-5	7.63095-6	7.63095-6	7.63095-6
55	1.20776-5	4.91352-6	9.62086-6	5.94307-6	5.94307-6	5.94307-6
56	9.40564-6	3.82650-6	7.49242-6	4.62827-6	4.62827-6	4.62827-6
57	7.32549-6	2.98023-6	5.83540-6	3.60468-6	3.60468-6	3.60468-6
58	5.70502-6	2.32097-6	4.54455-6	2.80729-6	2.80729-6	2.80729-6
59	4.44315-6	1.80761-6	3.53936-6	2.18636-6	2.18636-6	2.18636-6
60	6.15516-6	2.50410-6	4.90312-6	3.02879-6	3.02879-6	3.02879-6
61	3.73326-6	1.51880-6	2.97387-6	1.83704-6	1.83704-6	1.83704-6
62	2.26436-6	9.21209-7	1.80376-6	1.11423-6	1.11423-6	1.11423-6
63	1.37339-6	5.58737-7	1.09403-6	6.75810-7	6.75810-7	6.75810-7
64	8.33002-7	3.38890-7	6.63559-7	4.09899-7	4.09899-7	4.09899-7
65	5.05250-7	2.05551-7	4.02476-7	2.48620-7	2.48620-7	2.48620-7
66	3.06446-7	1.24671-7	2.44111-7	1.50794-7	1.50794-7	1.50794-7
67	1.85869-7	7.56170-8	1.48061-7	9.14612-8	9.14612-8	9.14612-8
68	1.12735-7	4.58640-8	8.98034-8	5.54740-8	5.54740-8	5.54740-8
69	1.09851-7	4.46905-8	8.75057-8	5.40546-8	5.40546-8	5.40546-8
70	6.39303-8	2.60088-8	5.09261-8	3.14584-8	3.14584-8	3.14584-8

TABLE A-VI
U-238 DELAYED FISSION SPECTRA

Group	Precursor Groups					
	1	2	3	4	5	6
12	3.53889-3	4.50810-3	1.11238-2	5.26496-3	2.63723-3	2.63723-3
13	1.29785-2	2.42190-2	4.07187-2	2.48563-2	1.30932-2	1.30932-2
14	1.45847-2	3.38574-2	4.92234-2	3.18643-2	1.93498-2	1.93498-2
15	1.81373-2	4.25545-2	5.90065-2	3.24234-2	2.88873-2	2.88873-2
16	2.81128-2	6.65146-2	6.89505-2	3.98414-2	4.44005-2	4.44005-2
17	1.70365-2	4.83921-2	7.86272-2	2.48795-2	5.60910-2	5.60910-2
18	2.72140-2	6.00644-2	6.32665-2	6.59419-2	6.02181-2	6.02181-2
19	4.19362-2	8.82618-2	5.13620-2	7.32990-2	6.22773-2	6.22773-2
20	4.54866-2	1.03456-1	4.63762-2	6.86080-2	6.62287-2	6.62287-2
21	6.34101-2	9.81427-2	4.11047-2	5.64848-2	6.62944-2	6.62944-2
22	7.92454-2	1.38801-1	5.16535-2	1.29179-1	1.14281-1	1.14281-1
23	1.20982-1	8.67174-2	7.59127-2	1.10918-1	9.38992-2	9.38992-2
24	1.08884-1	6.87357-2	8.47529-2	9.40595-2	8.42137-2	8.42137-2
25	8.33246-2	5.13044-2	4.79224-2	8.42466-2	7.71099-2	7.71099-2
26	1.25613-1	2.97660-2	6.17564-2	5.51047-2	7.17193-2	7.17193-2
27	8.10669-2	1.88573-2	5.66477-2	3.73391-2	5.36226-2	5.36226-2
28	5.00577-2	1.39705-2	4.34723-2	2.56004-2	3.33893-2	3.33893-2
29	3.08439-2	8.60815-3	2.67862-2	1.57741-2	2.05734-2	2.05734-2
30	1.87078-2	5.22111-3	1.62467-2	9.56750-3	1.24784-2	1.24784-2
31	1.13468-2	3.16675-3	9.85409-3	5.80296-3	7.56852-3	7.56852-3
32	3.86905-3	1.07980-3	3.36005-3	1.97870-3	2.58072-3	2.58072-3
33	3.01317-3	8.40937-4	2.61677-3	1.54099-3	2.00983-3	2.00983-3
34	2.34667-3	6.54924-4	2.03795-3	1.20012-3	1.56526-3	1.56526-3
35	1.82761-3	5.10063-4	1.58718-3	9.34672-4	1.21905-3	1.21905-3
36	1.42330-3	3.97225-4	1.23606-3	7.27901-4	9.49365-4	9.49365-4
37	1.10849-3	3.09365-4	9.62660-4	5.66900-4	7.39379-4	7.39379-4
38	8.63300-4	2.40936-4	7.49728-4	4.41506-4	5.75835-4	5.75835-4
39	6.72330-4	1.87639-4	5.83881-4	3.43841-4	4.48455-4	4.48455-4
40	5.23500-4	1.46102-4	4.54631-4	2.67727-4	3.49183-4	3.49183-4
41	4.07906-4	1.13841-4	3.54244-4	2.08610-4	2.72080-4	2.72080-4
42	3.17588-4	8.86348-5	2.75808-4	1.62420-4	2.11836-4	2.11836-4
43	2.47339-4	6.90291-5	2.14800-4	1.26493-4	1.64979-4	1.64979-4
44	1.92625-4	5.37592-5	1.67284-4	9.85119-5	1.28484-4	1.28484-4
45	1.50019-4	4.18685-5	1.30283-4	7.67225-5	1.00065-4	1.00065-4
46	1.16834-4	3.26068-5	1.01464-4	5.97508-5	7.79300-5	7.79300-5
47	9.09894-5	2.53940-5	7.90192-5	4.65335-5	6.06914-5	6.06914-5
48	7.08641-5	1.97773-5	6.15415-5	3.62411-5	4.72675-5	4.72675-5
49	5.51881-5	1.54023-5	4.79278-5	2.82242-5	3.68114-5	3.68114-5
50	4.29810-5	1.19954-5	3.73266-5	2.19812-5	2.86690-5	2.86690-5
51	3.34734-5	9.34200-6	2.90698-5	1.71189-5	2.23273-5	2.23273-5
52	2.60695-5	7.27566-6	2.26399-5	1.33324-5	1.73888-5	1.73888-5
53	2.03031-5	5.66633-6	1.76321-5	1.03833-5	1.35425-5	1.35425-5
54	1.58116-5	4.41283-6	1.37315-5	8.08635-6	1.05466-5	1.05466-5
55	1.23143-5	3.43676-6	1.06943-5	6.29773-6	8.21382-6	8.21382-6
56	9.58997-6	2.67644-6	8.32835-6	4.90448-6	6.39666-6	6.39666-6
57	7.46905-6	2.08452-6	6.48645-6	3.81980-6	4.98198-6	4.98198-6
58	5.81682-6	1.62340-6	5.05159-6	2.97482-6	3.87992-6	3.87992-6
59	4.53022-6	1.26433-6	3.93424-6	2.31683-6	3.02173-6	3.02173-6
60	6.27578-6	1.75149-6	5.45017-6	3.20954-6	4.18605-6	4.18605-6
61	3.80642-6	1.06232-6	3.30567-6	1.94667-6	2.53895-6	2.53895-6
62	2.30873-6	6.4.338-7	2.00501-6	1.18073-6	1.53996-6	1.53996-6
63	1.40031-6	3.90808-7	1.21609-6	7.16141-7	9.34027-7	9.34027-7
64	8.49327-7	2.37036-7	7.37593-7	4.34360-7	5.66515-7	5.66515-7
65	5.15151-7	1.43772-7	4.47380-7	2.63457-7	3.43614-7	3.43614-7
66	3.12451-7	8.72011-8	2.71346-7	1.59793-7	2.08410-7	2.08410-7
67	1.89511-7	5.28902-8	1.64580-7	9.69194-8	1.26407-7	1.26407-7
68	1.14944-7	3.20795-8	9.98228-8	5.87845-8	7.66698-8	7.66698-8
69	1.12003-7	3.12587-8	9.72687-8	5.72805-8	7.47081-8	7.47081-8
70	6.51831-8	1.81918-8	5.66079-8	3.33358-8	4.34782-8	4.34782-8

TABLE A-VII
 PU-239 DELAYED FISSION SPECTRA

Group	Precursor Groups					
	1	2	3	4	5	6
12	1.02095-2	4.40535-3	6.47890-3	6.36942-3	6.36942-3	6.36942-3
13	3.92259-2	1.58644-2	3.28775-2	2.38316-2	2.38316-2	2.38316-2
14	4.58161-2	2.34416-2	4.48428-2	2.63640-2	2.63640-2	2.63640-2
15	4.75419-2	4.15469-2	4.15365-2	4.74585-2	4.74585-2	4.74585-2
16	4.52547-2	7.81710-2	4.11125-2	5.33250-2	5.33250-2	5.33250-2
17	5.07966-2	9.41114-2	4.11910-2	3.51080-2	3.51080-2	3.51080-2
18	5.21470-2	9.16917-2	3.62521-2	6.10179-2	6.10179-2	6.10179-2
19	5.50594-2	1.17453-1	4.53962-2	5.25071-2	5.25071-2	5.25071-2
20	5.14499-2	1.11486-1	7.37446-2	3.11624-2	3.11624-2	3.11624-2
21	4.36942-2	8.63129-2	7.61934-2	3.55980-2	3.55980-2	3.55980-2
22	6.35685-2	9.74464-2	1.11476-1	1.51199-1	1.51199-1	1.51199-1
23	6.41982-2	7.84952-2	8.98934-2	1.26926-1	1.26926-1	1.26926-1
24	7.05428-2	6.22043-2	2.79804-2	1.16029-1	1.16029-1	1.16029-1
25	8.02275-2	3.45818-2	5.36252-2	7.66123-2	7.66123-2	7.66123-2
26	8.81109-2	2.24176-2	5.97455-2	5.46925-2	5.46925-2	5.46925-2
27	7.43369-2	1.31996-2	7.02477-2	3.69856-2	3.69856-2	3.69856-2
28	4.59161-2	1.05889-2	5.74463-2	2.52588-2	2.52588-2	2.52588-2
29	2.82920-2	6.52456-3	3.53965-2	1.55636-2	1.55636-2	1.55636-2
30	1.71600-2	3.95735-3	2.14691-2	9.43983-3	9.43983-3	9.43983-3
31	1.04080-2	2.40025-3	1.30216-2	5.72553-3	5.72553-3	5.72553-3
32	3.54893-3	8.18437-4	4.44012-3	1.95229-3	1.95229-3	1.95229-3
33	2.76387-3	6.37389-4	3.45791-3	1.52042-3	1.52042-3	1.52042-3
34	2.15251-3	4.96401-4	2.69303-3	1.18411-3	1.18411-3	1.18411-3
35	1.67640-3	3.86603-4	2.09737-3	9.22200-4	9.22200-4	9.22200-4
36	1.30554-3	3.01077-4	1.63338-3	7.18188-4	7.18188-4	7.18188-4
37	1.01677-3	2.34483-4	1.27210-3	5.59335-4	5.59335-4	5.59335-4
38	7.91873-4	1.82618-4	9.90723-4	4.35615-4	4.35615-4	4.35615-4
39	6.16704-4	1.42221-4	7.71567-4	3.39253-4	3.39253-4	3.39253-4
40	4.80187-4	1.10738-4	6.00769-4	2.64154-4	2.64154-4	2.64154-4
41	3.74157-4	8.62863-5	4.68114-4	2.05827-4	2.05827-4	2.05827-4
42	2.91312-4	6.71808-5	3.64464-4	1.60253-4	1.60253-4	1.60253-4
43	2.26875-4	5.23207-5	2.83846-4	1.24805-4	1.24805-4	1.24805-4
44	1.76688-4	4.07469-5	2.21057-4	9.71973-5	9.71973-5	9.71973-5
45	1.37607-4	3.17343-5	1.72162-4	7.56987-5	7.56987-5	7.56987-5
46	1.07167-4	2.47144-5	1.34079-4	5.89535-5	5.89535-5	5.89535-5
47	8.34612-5	1.92474-5	1.04419-4	4.59126-5	4.59126-5	4.59126-5
48	6.50010-5	1.49902-5	8.13237-5	3.57575-5	3.57575-5	3.57575-5
49	5.06220-5	1.16742-5	6.33339-5	2.78475-5	2.78475-5	2.78475-5
50	3.94249-5	9.09197-6	4.93250-5	2.16879-5	2.16879-5	2.16879-5
51	3.07039-5	7.08078-6	3.84141-5	1.68904-5	1.68904-5	1.68904-5
52	2.39126-5	5.51460-6	2.99174-5	1.31545-5	1.31545-5	1.31545-5
53	1.86233-5	4.29480-6	2.32998-5	1.02448-5	1.02448-5	1.02448-5
54	1.45034-5	3.34471-6	1.81454-5	7.97844-6	7.97844-6	7.97844-6
55	1.12954-5	2.60489-6	1.41319-5	6.21369-6	6.21369-6	6.21369-6
56	8.79652-6	2.02861-6	1.10055-5	4.83903-6	4.83903-6	4.83903-6
57	6.85108-6	1.57996-6	8.57149-6	3.76883-6	3.76883-6	3.76883-6
58	5.33556-6	1.23046-6	6.67539-6	2.93513-6	2.93513-6	2.93513-6
59	4.15540-6	9.58298-7	5.19888-6	2.28592-6	2.28592-6	2.28592-6
60	5.75654-6	1.32754-6	7.20209-6	3.16671-6	3.16671-6	3.16671-6
61	3.49149-6	8.05190-7	4.36826-6	1.92069-6	1.92069-6	1.92069-6
62	2.11772-6	4.88377-7	2.64950-6	1.16497-6	1.16497-6	1.16497-6
63	1.28445-6	2.96213-7	1.60699-6	7.06585-7	7.06585-7	7.06585-7
64	7.79056-7	1.79662-7	9.74688-7	4.28564-7	4.28564-7	4.28564-7
65	4.72529-7	1.08972-7	5.91188-7	2.59942-7	2.59942-7	2.59942-7
66	2.86600-7	6.60942-8	3.58569-7	1.57661-7	1.57661-7	1.57661-7
67	1.73832-7	4.00882-8	2.17483-7	9.56261-8	9.56261-8	9.56261-8
68	1.05434-7	2.43147-8	1.31910-7	5.80001-8	5.80001-8	5.80001-8
69	1.02737-7	2.36926-8	1.28535-7	5.65161-8	5.65161-8	5.65161-8
70	5.97901-8	1.37885-8	7.48042-8	3.28909-8	3.28909-8	3.28909-8

TABLE A-VIII
GROUP-VELOCITIES (cm/s)

<u>Group</u>	<u>Velocity</u>	<u>Group</u>	<u>Velocity</u>	<u>Group</u>	<u>Velocity</u>
1	5.81061+9	24	6.31603+8	47	9.38804+7
2	5.19350+9	25	5.57769+8	48	8.81926+7
3	4.59828+9	26	4.92576+8	49	8.28492+7
4	4.11836+9	27	4.34694+8	50	7.78296+7
5	3.63445+9	28	3.83618+8	51	7.31142+7
6	3.20735+9	29	3.38542+8	52	6.86845+7
7	2.81917+9	30	2.98870+8	53	6.45229+7
8	2.48793+9	31	2.63853+8	54	6.06137+7
9	2.20072+9	32	2.39711+8	55	5.69723+7
10	1.94216+9	33	2.25187+8	56	5.35209+7
11	1.71395+9	34	2.11544+8	57	5.02783+7
12	1.56160+9	35	1.98727+8	58	4.72319+7
13	1.46700+9	36	1.86687+8	59	4.43706+7
14	1.37811+9	37	1.75376+8	60	4.05651+7
15	1.29461+9	38	1.64752+8	61	3.57986+7
16	1.21618+9	39	1.54769+8	62	3.15922+7
17	1.14250+9	40	1.45393+8	63	2.78800+7
18	1.07373+9	41	1.36584+8	64	2.46310+7
19	1.00868+9	42	1.28308+8	65	2.17645+7
20	9.47568+8	43	1.20545+8	66	1.92071+7
21	8.90156+8	44	1.13241+8	67	1.69502+7
22	8.10996+8	45	1.06380+8	68	1.49585+7
23	7.15701+8	46	9.99353+7	69	1.27178+7
				70	9.51308+6

APPENDIX B

BENCHMARK RESULTS

This appendix contains the one-dimensional diffusion theory and transport theory results for each benchmark. Tables B-I through B-XVII compare calculated results to the available experimental results.

Tables B-XVIII through B-LXXXI show the 70-group and collapsed 25-group transport theory central fluxes, central adjoints, edge fluxes, edge adjoints, and region fission fractions. The fluxes are normalized so that the central flux sum is 1.0. The adjoints are normalized so that the sum of the product of the central adjoint and the central effective fission source is 1.0. The reactor fission fraction vectors were obtained by computing the total number of $\nu\sigma_f$ neutrons born into each group and then normalizing so that the sum over all groups would be 1.0. The 25-group adjoints were obtained by a simple addition of the original fine group adjoints in each coarse group.

Table B-LXXXII through B-XCVIII contain several centrally averaged one-group cross sections. The fission and "capture" cross sections are simply flux averaged. [Actually, "capture" = capture $-(n,2n)-2*(n,3n)$. However, if the central reaction rate ratios called for an isotope's capture or (n,γ) reaction rate, then efforts were taken to make "capture" = capture.] ν is $\phi\sigma_f$ averaged, and the transport cross section is $(\phi_1-\phi_2)/\Sigma_{tr}$ averaged (where ϕ_i is the flux at mesh point i , and Σ_{tr} is the macroscopic transport cross section).

Several symbols used in the tables are defined below.

- % Uncer = per cent error on measured values
- A = Rossi Alpha
- s = seconds
- Beta = effective delayed neutron fraction
- E = exponent to the base 10 follows
- L = neutron generation time
- R/IH = reactivity/in-hour conversion factor
- \$ = dollar, another unit of reactivity
- kg = kilogram
- C/E = calculated/experimental ratio

F_{ij} = fission reaction rate for the material with atomic number ending with i and atomic mass number ending with j
 G_{ij} = (n, γ) reaction rate
 C_{ij} = capture reaction rate
 $n/cm^2/s$ = neutrons per square centimeter per second
 $\rho/n/s$ = reactivity gain per neutron insertion per second
eV = electron volts

This study uses the same benchmark models and adjustments to measured results as spelled out in Appendix B of Ref. 5.

TABLE B-1
JEZEBEL RESULTS

Parameter	Measured Value	% Uncer.	Diffusion Theory		Transport Theory			
			Calculated Value	C/E	Calculated Value	C/E		
<u>Miscellaneous Parameters</u>								
Eigenvalue	1.000E+00	0.20	9.600E-01	0.9600	1.011E+00	1.0111		
A (1/S)	-6.400E+05	1.56	-5.224E+05	0.8163	-5.204E+05	0.8131		
Beta (E-3)			1.872E+00		1.864E+00			
L (E-9 S)			3.583E+00		3.582E+00			
R/IH (E-6)			7.489E+00		7.461E+00			
<u>Central Reaction Rate Ratios</u>								
F28/F25	2.137E-01	1.08	1.925E-01	0.9010	1.959E-01	0.9169		
F23/F25	1.578E+00	1.71	1.557E+00	0.9869	1.557E+00	0.9866		
F37/F25	9.620E-01	1.66	9.402E-01	0.9774	9.515E-01	0.9891		
F49/F25	1.448E+00	2.00	1.404E+00	0.9698	1.408E+00	0.9724		
GV/F25	2.300E-03	13.04	1.818E-03	0.7902	1.782E-03	0.7750		
GMN55/F25	2.400E-03	12.50	2.895E-03	1.2064	2.838E-03	1.1826		
GCU/F25	1.000E-02	6.00	8.498E-03	0.8498	8.379E-03	0.8379		
GNB93/F25	2.300E-02	8.70	2.767E-02	1.2031	2.712E-02	1.1791		
GAU197/F25	8.300E-02	2.41	8.059E-02	0.9709	7.910E-02	0.9530		
<u>Central Reactivity Worths (\$/kg)</u>								
H-1	2.089E+02	50.00	4.111E+02	1.9680	8.789E+00	0.0421		
BE-9	1.752E+01	6.67	1.936E+01	1.1051	1.775E+01	1.0133		
B-10	-2.576E+02	2.04	-1.686E+02	0.6544	-2.573E+02	0.9988		
C	-6.135E+00	14.29	-1.270E+00	0.2070	-7.128E+00	1.1619		
N-14	-1.654E+01	4.55	-2.238E+01	1.3530	-3.905E+01	2.3609		
O-16	-6.252E+00	10.53	-2.118E+00	0.3388	-6.961E+00	1.1134		
AL-27	-5.462E+00	7.14	-1.833E+00	0.3356	-5.073E+00	0.9288		
TI	-5.604E+00	3.92	-2.040E+00	0.3640	-4.751E+00	0.8478		
V	-3.100E+00	6.67	-1.315E+00	0.4242	-3.751E+00	1.2101		
FE	-3.958E+00	4.76	-1.866E+00	0.4715	-4.447E+00	1.1235		
CO-59	-4.287E+00	4.17	-1.908E+00	0.4451	-4.440E+00	1.0358		
NI	-8.428E+00	2.13	-4.557E+00	0.5407	-8.597E+00	1.0200		
ZR	-4.039E+00	2.86	-1.350E+00	0.3343	-3.165E+00	0.7835		
MO	-4.718E+00	2.33	-2.343E+00	0.4966	-5.124E+00	1.0860		
AG	-8.929E+00	1.64	-4.864E+00	0.5448	-8.868E+00	0.9931		
TA-181	-5.730E+00	1.52	-3.251E+00	0.5674	-6.349E+00	1.1080		
W	-4.094E+00	2.10	-1.908E+00	0.4661	-4.336E+00	1.0590		
AU-197	-4.569E+00	1.75	-2.579E+00	0.5645	-5.268E+00	1.1530		
TH-232	-2.881E+00	1.57	-1.057E+00	0.3670	-3.123E+00	1.0840		
U-233	6.069E+01	1.00	4.287E+01	0.7064	6.178E+01	1.0180		
U-235	3.538E+01	1.01	2.539E+01	0.7176	3.613E+01	1.0212		
U-238	4.864E+00	1.82	3.924E+00	0.8068	4.590E+00	0.9437		
NP-237	3.619E+01	6.13	2.793E+01	0.7718	3.964E+01	1.0954		
PU-239	6.944E+01	0.98	4.862E+01	0.7001	7.052E+01	1.0156		
PU-240	4.495E+01	4.88	3.119E+01	0.6938	4.500E+01	1.0010		
AM-241	4.520E+01	8.21	3.453E+01	0.7639	4.968E+01	1.0992		
<u>Jezebel Leakage Flux Comparison</u>								
Fine Groups	Energy Boundary (eV)	Leth. Width	Measured Flux (n/cm ² /s)	% Uncer.	Diffusion Theory		Transport Theory	
					Calculated Flux (n/cm ² /s)	C/E	Calculated Flux (n/cm ² /s)	C/E
4-5	1.0000E+07	0.5	3.1	16.1	2.4795	0.7998	2.4174	0.7798
6-7	6.0653E+06	0.5	11.7	6.0	9.9945	0.8542	9.8366	0.8407
8-9	3.6788E+06	0.5	17.7	3.9	17.7660	1.0037	17.6194	0.9954
10-11	2.2313E+06	0.5	20.0	4.0	20.0000	1.0000	20.0000	1.0000
12-15	1.3533E+06	0.5	16.5	4.2	18.1752	1.1015	18.3897	1.1145
16-19	8.2085E+05	0.5	13.6	5.1	13.8272	1.0167	14.2556	1.0482
20-22	4.9787E+05	0.5	9.7	7.2	8.9477	0.9224	9.4061	0.9697
	3.0197E+05							

TABLE B-II
VERA-11A RESULTS

Parameter	Measured Value	% Uncer.	Diffusion Theory		Transport Theory	
			Calculated Value	C/E	Calculated Value	C/E
<u>Miscellaneous Parameters</u>						
Eigenvalue	1.000E+00	0.30	9.441E-01	0.9441	9.884E-01	0.9884
A (E4/S)			-4.591E+00		-4.557E+00	
Beta (E-3)			3.317E+00		3.047E+00	
L (E-8 S)			7.225E+00		6.685E+00	
R/IH (E-5)			1.059E+00		1.005E+00	
<u>Central Reaction Rate Ratios</u>						
F28/F25	7.700E-02	2.60	8.748E-02	1.1361	9.176E-02	1.1916
F49/F25	1.070E+00	1.87	1.169E+00	1.0922	1.181E+00	1.1035
F40/F25	4.750E-01	4.21	5.199E-01	1.0945	5.402E-01	1.1373
F37/F25	4.300E-01	4.65	5.072E-01	1.1795	5.281E-01	1.2281
F23/F25	1.490E+00	2.01	1.517E+00	1.0182	1.519E+00	1.0197

TABLE B-III
ZPR-3-48 RESULTS

Parameter	Measured Value	% Uncer.	Diffusion Theory		Transport Theory	
			Calculated Value	C/E	Calculated Value	C/E
<u>Miscellaneous Parameters</u>						
Eigenvalue	1.000E+00	0.10	9.829E-01	0.9829	9.883E-01	0.9883
A (E4/S)			-1.384E+00		-1.380E+00	
Beta (E-3)			3.634E+00		3.606E+00	
L (E-7 S)			2.626E+00		2.613E+00	
R/IH (E-5)			1.082E+00		1.076E+00	
<u>Central Reaction Rate Ratios</u>						
C28/F25	1.385E-01	5.34	1.348E-01	0.9733	1.348E-01	0.9733
F28/F25	3.265E-02	4.98	3.501E-02	1.0723	3.498E-02	1.0714
<u>Central Reactivity Worths (inhours/kg)</u>						
PU-239	4.503E+02	0.92	5.185E+02	1.1513	5.316E+02	1.1806
U-235	3.364E+02	1.50	3.786E+02	1.1254	3.880E+02	1.1533
U-238	-2.106E+01	2.97	-2.353E+01	1.1173	-2.452E+01	1.1643
NA-23	-6.368E+00	4.73	-1.431E+01	2.2472	-1.580E+01	2.4811
B-10	-8.054E+03	0.67	-8.336E+03	1.0350	-8.539E+03	1.0602
FE	-1.230E+01	3.29	-1.606E+01	1.3057	-1.695E+01	1.3784
CR	-1.230E+01	12.12	-2.070E+01	1.6832	-2.167E+01	1.7617
NI	-1.821E+01	0.92	-2.463E+01	1.3527	-2.569E+01	1.4108
MN-55	-2.286E+01	4.69	-2.978E+01	1.3025	-3.095E+01	1.3539
AL-27	-1.571E+01	5.09	-2.214E+01	1.4095	-2.347E+01	1.4938
TA-181	-1.640E+02	3.04	-1.658E+02	1.0109	-1.701E+02	1.0373
MO	-4.335E+01	0.94	-5.650E+01	1.3033	-5.837E+01	1.3464
C	-4.496E+00	27.27	-2.428E+01	5.4006	-2.690E+01	5.9827

TABLE B-IV
ZEBRA-3 RESULTS

Parameter	Measured Value	% Uncer.	Diffusion Theory		Transport Theory	
			Calculated Value	C/E	Calculated Value	C/E
<u>Miscellaneous Parameters</u>						
Eigenvalue	1.000E+00	0.30	9.959E-01	0.9959	1.009E+00	1.0090
A (E4/S)			-7.754E+00		-7.825E+00	
Beta (E-3)			4.505E+00		4.467E+00	
L (E-8 S)			5.809E+00		5.708E+00	
R/IH (E-5)			1.216E+00		1.208E+00	
<u>Central Reaction Rate Ratios</u>						
F28/F25	4.610E-02	1.74	4.777E-02	1.0363	4.745E-02	1.0293
F23/F25	1.542E+00	1.23	1.558E+00	1.0104	1.558E+00	1.0106
F24/F25	3.460E-01	2.60	3.888E-01	1.1236	3.882E-01	1.1220
F26/F25	9.900E-02	5.05	1.142E-01	1.1538	1.136E-01	1.1478
F49/F25	1.190E+00	1.18	1.201E+00	1.0091	1.201E+00	1.0092
F40/F25	3.730E-01	1.34	4.068E-01	1.0907	4.060E-01	1.0885
F37/F25	3.530E-01	1.13	3.953E-01	1.1198	3.945E-01	1.1175
<u>Central Reactivity Worths (inhours/kg)</u>						
U-235	7.208E+02	2.03	8.121E+02	1.1267	8.263E+02	1.1464
PU-239	1.144E+03	2.52	1.328E+03	1.1607	1.353E+03	1.1831
U-238	-3.595E+01	4.82	-3.582E+01	0.9964	-3.877E+01	1.0785
B-10	-9.018E+03	4.76	-8.472E+03	0.9395	-8.728E+03	0.9678
B	-2.127E+03	2.25	-6.968E+03	3.2758	-7.181E+03	3.3759
TR-181	1.426E+02	3.33	-1.475E+02	-1.0342	-1.534E+02	-1.0755
LI-6	-1.215E+04	4.71	-1.066E+04	0.8770	-1.101E+04	0.9062
AU-197	-1.135E+02	3.85	-1.206E+02	1.0626	-1.256E+02	1.1064
CU	-8.661E+01	4.69	-9.606E+01	1.1091	-1.004E+02	1.1590
C	-2.723E+02	5.26	-2.908E+02	1.0679	-3.146E+02	1.1554
NA-23	-1.047E+02	10.70	-1.375E+02	1.3136	-1.481E+02	1.4147
AL-27	-1.084E+02	11.76	-1.140E+02	1.0519	-1.212E+02	1.1180
PB	-1.619E+01	10.26	-1.885E+01	1.1645	-1.976E+01	1.2208
H-1	-2.731E+04	3.13	-4.045E+04	1.4814	-4.300E+04	1.5749

TABLE B-V
GODIVA RESULTS

Parameter	Measured Value	% Uncer.	Diffusion Theory		Transport Theory			
			Calculated Value	C/E	Calculated Value	C/E		
<u>Miscellaneous Parameters</u>								
Eigenvalue	1.000E+00	0.10	9.666E-01	0.9666	1.003E+00	1.0028		
A (1/S)	-1.110E+06	1.80	-1.132E+06	1.0197	-1.129E+06	1.0167		
Beta (E-3)			6.613E+00		6.555E+00			
L (E-9 S)			5.842E+00		5.808E+00			
R/IH (E-5)			2.303E+00		2.282E+00			
<u>Central Reaction Rate Ratios</u>								
F28/F25	1.647E-01	1.09	1.677E-01	1.0181	1.707E-01	1.0365		
F23/F25	1.590E+00	1.89	1.568E+00	0.9861	1.567E+00	0.9857		
F37/F25	8.370E-01	1.55	8.807E-01	1.0522	8.906E-01	1.0641		
F49/F25	1.402E+00	1.78	1.391E+00	0.9921	1.394E+00	0.9943		
GMN55/F25	2.700E-03	7.41	3.049E-03	1.1292	3.006E-03	1.1132		
GC059/F25	3.800E-02	7.89	5.923E-03	0.1559	5.870E-03	0.1545		
6CU/F25	1.170E-02	5.13	8.881E-03	0.7591	8.790E-03	0.7513		
GN893/F25	3.000E-02	10.00	3.003E-02	1.0010	2.958E-02	0.9860		
6AU197/F25	1.000E-01	2.00	8.672E-02	0.8672	8.551E-02	0.8551		
<u>Central Reactivity Worths (\$/kg)</u>								
H-1	3.692E+02	12.50	3.473E+02	0.9408	3.638E+02	0.9853		
BE-9	8.086E+00	14.89	7.539E+00	0.9323	7.960E+00	0.9844		
B-10	-5.884E+01	5.26	-3.746E+01	0.6366	-4.910E+01	0.8345		
C	2.065E+00	12.50	1.520E+00	0.7362	1.089E+00	0.5273		
AL-27	1.724E-01	66.67	2.392E-01	1.3874	-5.683E-02	-0.3296		
FE	-2.776E-02	200.00	8.531E-03	-0.3073	-2.378E-01	8.5671		
CO-59	-1.052E-01	50.00	4.522E-03	-0.0430	-2.351E-01	2.2345		
NI	-7.924E-01	6.67	-4.983E-01	0.6289	-9.074E-01	1.1451		
CU	-2.928E-01	16.67	-4.471E-02	0.1527	-3.553E-01	1.2133		
AU-197	-3.936E-01	4.00	-1.532E-01	0.3893	-4.077E-01	1.0358		
TH-232	-6.013E-02	22.22	1.731E-01	-2.8793	3.086E-03	-0.0513		
U-235	6.662E+00	0.99	5.175E+00	0.7768	6.527E+00	0.9798		
U-238	1.055E+00	1.85	9.490E-01	0.8996	1.058E+00	1.0028		
PU-239	1.254E+01	1.03	9.801E+00	0.7816	1.253E+01	0.9990		
PU-240	7.427E+00	10.43	6.113E+00	0.8231	7.777E+00	1.0472		
<u>Godiva Leakage Flux Comparison</u>								
Fine Groups	Energy Boundary (eV)	Leth. Width	Measured Flux (n/cm ² /s)	% Uncer.	Diffusion Theory		Transport Theory	
					Calculated Flux (n/cm ² /s)	C/E	Calculated Flux (n/cm ² /s)	C/E
4-5	1.0000E+07	0.5	2.0	15.0	1.9232	0.9616	1.8255	0.9127
6-7	6.0653E+06	0.5	7.8	5.1	8.0060	1.0264	7.7217	0.9900
8-9	3.6788E+06	0.5	13.6	3.7	15.5820	1.1457	15.2334	1.1201
10-11	2.2313E+06	0.5	16.8	3.6	18.9112	1.1257	18.6916	1.1126
12-15	1.3533E+06	0.5	18.0	3.3	18.0000	1.0000	18.0000	1.0000
16-19	8.2085E+05	0.5	17.5	4.0	14.7528	0.8430	15.0717	0.8612
20-22	4.9787E+05	0.5	12.0	5.8	10.2845	0.8570	10.7501	0.8958
23-24	3.0197E+05	0.5	7.2	9.7	5.7404	0.7973	6.1062	0.8481
	1.8316E+05							

TABLE B-VI
VERA-1B RESULTS

Parameter	Measured Value	% Uncer.	Diffusion Theory		Transport Theory	
			Calculated Value	C/E	Calculated Value	C/E
<u>Miscellaneous Parameters</u>						
Eigenvalue	1.000E+00	0.28	9.705E-01	0.9705	9.923E-01	0.9923
A (1/S)	-6.900E+04	2.98	-7.192E+04	1.0423	-7.311E+04	1.0595
Beta (E-3)			7.666E+00		7.537E+00	
L (E-7 S)			1.066E+00		1.031E+00	
R/IH (E-5)			2.509E+00		2.489E+00	
<u>Central Reaction Rate Ratios</u>						
F28/F25	6.650E-02	1.50	8.042E-02	1.2094	8.200E-02	1.2331
F23/F25	1.433E+00	3.78	1.508E+00	1.0527	1.510E+00	1.0537
F26/F25	1.340E-01	7.46	1.761E-01	1.3145	1.795E-01	1.3397
F49/F25	1.070E+00	2.43	1.151E+00	1.0759	1.157E+00	1.0813
F40/F25	3.990E-01	8.02	4.932E-01	1.2362	5.016E-01	1.2571
F97/F25	3.800E-01	3.16	4.797E-01	1.2623	4.883E-01	1.2850
C28/F25	1.310E-01	4.58	1.249E-01	0.9534	1.236E-01	0.9438
<u>Central Reactivity Worths (inhours/kg)</u>						
U-235	3.911E+02	1.36	3.714E+02	0.9496	3.940E+02	1.0074
U-238	1.311E+01	4.00	2.086E+01	1.5914	2.037E+01	1.5535
PU-239	6.735E+02	1.29	6.566E+02	0.9749	7.004E+02	1.0400
U-233	6.748E+02	1.32	6.716E+02	0.9953	7.132E+02	1.0569
NP-237	4.914E+01	10.71	9.025E+01	1.8367	1.007E+02	2.0492
B-10	-9.846E+03	21.10	-9.685E+03	0.9836	-1.014E+04	1.0298
AU-197	-5.491E+01	3.85	-7.333E+01	1.3355	-7.938E+01	1.4457
S. STEEL	1.579E+01	14.29	1.627E+01	1.0301	1.339E+01	0.8482
AL-27	5.396E+01	11.43	5.624E+01	1.0423	5.339E+01	0.9895
NA-23	2.352E+02	7.69	8.238E+01	0.3503	7.931E+01	0.3372
C	2.063E+C2	2.02	2.147E+02	1.0409	2.120E+02	1.0276
H-1	3.715E+04	2.22	3.726E+04	1.0029	3.807E+04	1.0248

TABLE B-VII
ZPR-3-6F RESULTS

Parameter	Measured Value	% Uncer.	Diffusion Theory		Transport Theory	
			Calculated Value	C/E	Calculated Value	C/E
<u>Miscellaneous Parameters</u>						
Eigenvalue	1.000E+00	0.15	9.915E-01	0.9915	1.010E+00	1.0101
A (1/S)	-9.850E+04	10.00	-1.012E+05	1.0277	-1.033E+05	1.0485
Beta (E-3)			7.441E+00		7.365E+00	
L (E-8 S)			7.351E+00		7.131E+00	
R/IH (E-5)			2.315E+00		2.303E+00	
<u>Central Reaction Rate Ratios</u>						
F28/F25	7.800E-02	2.56	8.012E-02	1.0271	8.067E-02	1.0342
F24/F25	4.510E-01	4.43	5.240E-01	1.1619	5.287E-01	1.1724
F23/F25	1.530E+00	1.96	1.564E+00	1.0222	1.565E+00	1.0229
F49/F25	1.220E+00	2.46	1.264E+00	1.0362	1.267E+00	1.0384
F40/F25	5.300E-01	3.77	5.590E-01	1.0547	5.639E-01	1.0639
G28/F25	1.040E-01	2.88	9.670E-02	0.9298	9.628E-02	0.9258
<u>Central Reactivity Worths (inhours/kg)</u>						
U-235	3.202E+02	2.86	2.692E+02	0.8408	2.818E+02	0.8800
U-238	2.710E+00	33.33	8.999E+00	3.3207	7.931E+00	2.9267
PU	4.514E+02	4.78	4.703E+02	1.0419	4.947E+02	1.0959
U-233	4.502E+02	9.84	4.718E+02	1.0481	4.952E+02	1.1000
TH-232	-2.224E+01	16.67	-1.657E+01	0.7452	-1.943E+01	0.8736
B-10	-3.693E+03	5.81	-3.388E+03	0.9173	-3.567E+03	0.9659
HF	-3.373E+01	35.71	-4.575E+01	1.3562	-4.985E+01	1.4778
TA-181	-4.040E+01	17.65	-4.157E+01	1.0290	-4.577E+01	1.1330
W	-1.731E+01	21.62	-1.488E+01	0.8598	-1.757E+01	1.0150
MO	1.614E+01	16.67	-1.974E+01	-1.2231	-2.294E+01	-1.4212
ZR	-4.714E-01	200.00	-7.173E+00	15.2169	-9.029E+00	19.1536
FE	-6.930E+00	33.33	-9.160E+00	1.3218	-1.158E+01	1.6704
CR	-4.584E+00	34.55	-1.144E+01	2.4947	-1.400E+01	3.0545
NI	-1.245E+01	29.41	-2.125E+01	1.7066	-2.462E+01	1.9776
MN-55	-5.088E+00	36.92	-2.843E-01	0.0559	-2.737E+00	0.5378
V	1.013E+01	33.33	3.979E+00	0.3928	1.419E+00	0.1401
NB-93	-2.684E+01	20.69	-2.719E+01	1.0132	-3.129E+01	1.1658
AL-27	3.665E+00	152.17	2.293E+00	0.6257	-1.004E+00	-0.2739
NA-23	5.985E+01	28.13	2.650E+01	0.4428	2.171E+01	0.3627
C	1.003E+02	42.86	8.295E+01	0.8270	7.487E+01	0.7464
BE-9	2.338E+02	32.65	2.622E+02	1.1215	2.509E+02	1.0731
H-1	2.389E+04	41.07	1.562E+04	0.6537	1.526E+04	0.6388

TABLE B-VIII
ZPR-3-11 RESULTS

Parameter	Measured Value	% Uncer.	Diffusion Theory		Transport Theory	
			Calculated Value	C/E	Calculated Value	C/E
<u>Miscellaneous Parameters</u>						
Eigenvalue	1.000E+00	0.25	1.006E+00	1.0062	1.012E+00	1.0121
A (1/S)	-1.040E+05	2.88	-1.107E+05	1.0643	-1.112E+05	1.0695
Beta (E-3)			7.268E+00		7.251E+00	
L (E-8 S)			6.567E+00		6.519E+00	
R/IH (E-5)			2.087E+00		2.083E+00	
<u>Central Reaction Rate Ratios</u>						
F28/F25	3.800E-02	2.63	4.099E-02	1.0786	4.083E-02	1.0745
F24/F25	3.100E-01	9.68	3.621E-01	1.1679	3.615E-01	1.1660
F23/F25	1.520E+00	1.32	1.558E+00	1.0247	1.558E+00	1.0248
F49/F25	1.190E+00	1.68	1.191E+00	1.0009	1.191E+00	1.0007
F40/F25	3.400E-01	5.88	3.772E-01	1.1095	3.765E-01	1.1075
F26/F25	1.200E-01	16.67	1.006E-01	0.8382	1.003E-01	0.8355
F97/F25	3.300E-01	6.06	3.649E-01	1.1057	3.642E-01	1.1035
G28/F25	1.120E-01	4.46	1.085E-01	0.9689	1.086E-01	0.9692
<u>Central Reactivity Worths (1/hours/kg)</u>						
U-235	2.460E+02	2.44	2.720E+02	1.1059	2.731E+02	1.1103
U-238	-1.303E+01	3.03	-1.278E+01	0.9809	-1.315E+01	1.0096
U-233	4.457E+02	1.81	4.770E+02	1.0701	4.792E+02	1.0751
PU-239	4.109E+02	2.39	4.456E+02	1.0845	4.477E+02	1.0895
B-10	-3.380E+03	2.78	-3.115E+03	0.9215	-3.146E+03	0.9308
TR-181	-5.091E+01	3.06	-4.899E+01	0.9622	-4.966E+01	0.9754
MO	-2.498E+01	3.92	-3.124E+01	1.2506	-3.172E+01	1.2699
MN-55	-1.540E+01	5.56	-2.180E+01	1.4158	-2.230E+01	1.4478
FE	-1.431E+01	5.88	-2.054E+01	1.4354	-2.090E+01	1.4607
CR	-1.537E+01	5.88	-2.278E+01	1.4823	-2.315E+01	1.5065
NI	-1.921E+01	4.17	-2.725E+01	1.4187	-2.767E+01	1.4405
NA-23	-1.431E+01	4.29	-2.908E+01	2.0321	-3.030E+01	2.1176
AL-27	-1.742E+01	10.00	-2.607E+01	1.4967	-2.686E+01	1.5418
O-16	-2.556E+01	17.24	-3.102E+01	1.2135	-3.289E+01	1.2867
C	-3.329E+01	15.29	-5.323E+01	1.5990	-5.604E+01	1.6832

TABLE B-IX
ZPR-3-12 RESULTS

Parameter	Measured Value	% Uncer.	Diffusion Theory		Transport Theory	
			Calculated Value	C/E	Calculated Value	C/E
<u>Miscellaneous Parameters</u>						
Eigenvalue	1.000E+00	0.25	9.963E-01	0.9963	1.006E+00	1.0061
A (1/S)	-6.840E+04	2.92	-7.471E+04	1.0923	-7.528E+04	1.1005
Beta (E-3)			7.466E+00		7.430E+00	
L (E-8 S)			9.993E+00		9.871E+00	
R/IH (E-5)			2.239E+00		2.231E+00	
<u>Central Reaction Rate Ratios</u>						
F28/F25	4.700E-02	4.26	5.143E-02	1.0943	5.131E-02	1.0917
F24/F25	3.050E-01	3.93	3.564E-01	1.1684	3.561E-01	1.1675
F23/F25	1.480E+00	2.03	1.521E+00	1.0274	1.521E+00	1.0275
F49/F25	1.120E+00	1.79	1.134E+00	1.0128	1.134E+00	1.0129
G28/F25	1.230E-01	4.07	1.188E-01	0.9658	1.188E-01	0.9657
<u>Central Reactivity Worths (inhours/kg)</u>						
U-235	2.852E+02	0.32	2.766E+02	0.9697	2.819E+02	0.9885
U-238	-1.202E+01	14.93	-1.028E+01	0.8550	-1.122E+01	0.9337
PU	4.358E+02	2.87	4.339E+02	0.9956	4.428E+02	1.0161
U-233	4.929E+02	2.60	4.894E+02	0.9929	4.995E+02	1.0135
TA-181	-7.315E+01	3.23	-7.209E+01	0.9855	-7.445E+01	1.0178
NB-93	-4.596E+01	10.00	-4.880E+01	1.0618	-5.090E+01	1.1075
MO	-3.115E+01	7.14	-3.473E+01	1.1149	-3.632E+01	1.1661
NI	-1.964E+01	18.52	-2.309E+01	1.1756	-2.440E+01	1.2422
FE	-1.147E+01	26.67	-1.460E+01	1.2728	-1.574E+01	1.3721
AL-27	-6.330E+00	25.00	-9.835E+00	1.5536	-1.141E+01	1.8029
C	7.117E+01	15.00	2.170E+01	0.3049	1.837E+01	0.2582

TABLE B-X
ZEBRA-2 RESULTS

Parameter	Measured Value	% Uncer.	Diffusion Theory		Transport Theory	
			Calculated Value	C/E	Calculated Value	C/E
<u>Miscellaneous Parameters</u>						
Eigenvalue	1.000E+00	0.20	9.956E-01	0.9956	9.988E-01	0.9988
A (1/S)	-2.820E+04	1.77	-3.427E+04	1.2154	-3.430E+04	1.2164
Beta (E-3)			7.388E+00		7.375E+00	
L (E-7 S)			2.155E+00		2.150E+00	
R/IH (E-5)			2.207E+00		2.204E+00	
<u>Central Reaction Rate Ratios</u>						
F28/F25	3.200E-02	1.56	3.396E-02	1.0611	3.393E-02	1.0603
F23/F25	1.453E+00	0.96	1.462E+00	1.0060	1.462E+00	1.0060
F24/F25	1.530E-01	10.46	2.369E-01	1.5480	2.367E-01	1.5470
F26/F25	9.300E-02	15.05	8.027E-02	0.8631	8.020E-02	0.8624
F49/F25	9.870E-01	1.01	1.003E+00	1.0158	1.002E+00	1.0157
F40/F25	2.370E-01	1.69	2.625E-01	1.1075	2.623E-01	1.1067
F37/F25	2.140E-01	0.93	2.450E-01	1.1447	2.448E-01	1.1439
C28/F25	1.360E-01	0.74	1.298E-01	0.9546	1.298E-01	0.9548
C97/F25	2.980E-01	5.03	3.192E-01	1.0711	3.193E-01	1.0714
C55/F25	2.600E-02	7.69	2.868E-02	1.1032	2.869E-02	1.1036
C31/F25	4.010E-01	9.98	4.267E-01	1.0641	4.268E-01	1.0644
C13/F25	1.300E-03	7.69	1.658E-03	1.2756	1.659E-03	1.2763
C50/F25	1.580E+00	4.43	1.332E+00	0.8429	1.332E+00	0.8430
<u>Central Reactivity Worths (inhours/kg)</u>						
U-235	1.397E+02	1.02	1.514E+02	1.0838	1.526E+02	1.0926
U-238	-1.069E+01	5.66	-1.085E+01	1.0150	-1.104E+01	1.0332
PU-239	1.954E+02	1.23	2.133E+02	1.0918	2.151E+02	1.1008
PU-240	4.399E+01	18.18	2.998E+01	0.6816	3.008E+01	0.6837
B-10	-4.506E+03	3.19	-3.896E+03	0.8645	-3.934E+03	0.8730
B	-8.892E+02	5.00	-7.127E+02	0.8015	-7.200E+02	0.8097
LI-6	-3.112E+03	5.13	-2.567E+03	0.8248	-2.592E+03	0.8330
LI	-2.909E+02	9.52	-1.846E+02	0.6345	-1.872E+02	0.6435
TA-181	-6.154E+01	1.72	-7.626E+01	1.2392	-7.709E+01	1.2527
HF	-5.620E+01	1.91	-6.547E+01	1.1650	-6.619E+01	1.1778
AU-197	-3.655E+01	6.67	-5.404E+01	1.4786	-5.464E+01	1.4951
CU	-1.360E+01	5.56	-2.016E+01	1.4825	-2.048E+01	1.5055
FE	-5.157E+00	16.67	-7.185E+00	1.3932	-7.361E+00	1.4273
CR	-5.539E+00	16.67	-9.198E+00	1.6606	-9.367E+00	1.6947
NI	-9.811E+00	8.33	-9.807E+00	0.9996	-1.000E+01	1.0194
MN-55	-7.427E+00	11.76	-1.472E+01	1.9824	-1.497E+01	2.0156
NA-23	2.923E+00	71.43	8.018E+00	2.7429	7.864E+00	2.6904
AL-27	-4.803E+00	37.04	-6.493E+00	1.3519	-6.715E+00	1.3980
C	1.240E+01	16.13	7.711E+00	0.6218	7.402E+00	0.5969
H-1	7.144E+03	6.67	7.454E+03	1.0433	7.497E+03	1.0495

TABLE B-XI
ZPPR-2 RESULTS

Parameter	Measured Value	% Uncer.	Diffusion Theory		Transport Theory	
			Calculated Value	C/E	Calculated Value	C/E
<u>Miscellaneous Parameters</u>						
Eigenvalue	1.000E+00	0.06	9.817E-01	0.9817	1.002E+00	1.0017
A (E4/S)			-7.352E-01		-7.349E-01	
Beta (E-3)			3.402E+00		3.362E+00	
L (E-7 S)			4.627E+00		4.575E+00	
R/IH (E-5)			1.049E+00		1.040E+00	
<u>Central Reaction Rate Ratios</u>						
F23/F25	1.446E+00	1.52	1.433E+00	0.9913	1.432E+00	0.9906
F24/F25	1.492E-01	1.54	1.751E-01	1.1734	1.730E-01	1.1593
F26/F25	4.430E-02	1.58	5.543E-02	1.2512	5.469E-02	1.2344
F28/F25	2.010E-02	1.99	2.266E-02	1.1271	2.232E-02	1.1102
F49/F25	9.372E-01	1.52	9.392E-01	1.0022	9.371E-01	0.9999
F40/F25	1.704E-01	1.53	1.964E-01	1.1524	1.942E-01	1.1396
<u>Central Reactivity Worths (inhours/kg)</u>						
PU-239	1.202E+02	0.67	1.340E+02	1.1147	1.323E+02	1.1005
PU-241	1.631E+02	12.66	1.975E+02	1.2110	1.958E+02	1.2004
U-235	9.014E+01	2.30	1.070E+02	1.1873	1.058E+02	1.1739
C	-1.141E+01	6.90	-1.388E+01	1.2165	-1.521E+01	1.3331
NA-23	-5.178E+00	4.78	-6.041E+00	1.1666	-6.520E+00	1.2593
TA-181	-5.108E+01	1.98	-4.418E+01	0.8650	-4.452E+01	0.8715
B-10	-2.269E+03	1.83	-2.178E+03	0.9598	-2.189E+03	0.9648
FE	-3.157E+00	2.59	-3.705E+00	1.1735	-3.815E+00	1.2084
CR	-3.399E+00	6.90	-5.089E+00	1.4972	-5.220E+00	1.5359
NI	-4.766E+00	3.45	-5.642E+00	1.1838	-5.807E+00	1.2185
AL-27	-6.023E+00	8.75	-7.082E+00	1.1759	-7.417E+00	1.2315
MN-55	-7.654E+00	4.35	-8.199E+00	1.0713	-8.431E+00	1.1015
W	-1.099E+01	0.46	-1.560E+01	1.4195	-1.578E+01	1.4355
MO	-1.295E+01	4.25	-1.443E+01	1.1140	-1.460E+01	1.1275
NB-93	-1.756E+01	3.74	-2.228E+01	1.2687	-2.250E+01	1.2815

TABLE B-XII
ZPR-6-7 RESULTS

Parameter	Measured Value	% Uncer.	Diffusion Theory		Transport Theory	
			Calculated Value	C/E	Calculated Value	C/E
<u>Miscellaneous Parameters</u>						
Eigenvalue	1.000E+00	0.10	9.824E-01	0.9824	9.841E-01	0.9841
A (E4/S)			-6.972E-01		-6.960E-01	
Beta (E-3)			3.450E+00		3.442E+00	
L (E-7 S)			4.949E+00		4.945E+00	
R/IH (E-5)			1.051E+00		1.049E+00	
<u>Central Reaction Rate Ratios</u>						
C28/F49	1.432E-01	2.00	1.537E-01	1.0733	1.537E-01	1.0735
F28/F49	2.406E-02	2.00	2.429E-02	1.0096	2.428E-02	1.0090
F25/F49	1.049E+00	2.00	1.066E+00	1.0156	1.066E+00	1.0157
<u>Central Reactivity Worths (inhours/kg)</u>						
PU-239	1.586E+02	1.06	1.850E+02	1.1668	1.861E+02	1.1731
U-235	1.332E+02	1.51	1.478E+02	1.1097	1.486E+02	1.1157
U-238	-1.022E+01	4.19	-1.053E+01	1.0299	-1.062E+01	1.0388
B-10	-2.735E+03	2.15	-3.037E+03	1.1105	-3.056E+03	1.1175
NA-23	-6.648E+00	5.16	-8.210E+00	1.2350	-8.326E+00	1.2525
TA-181	-4.307E+01	10.08	-6.184E+01	1.4358	-6.225E+01	1.4453
C	-1.220E+01	1.72	-1.866E+01	1.5296	-1.892E+01	1.5505
AL-27	-6.718E+00	2.50	-9.711E+00	1.4456	-9.814E+00	1.4609
FE	-4.270E+00	3.63	-5.128E+00	1.2010	-5.183E+00	1.2139
NI	-6.466E+00	2.86	-7.806E+00	1.2072	-7.880E+00	1.2187
CR	-4.538E+00	8.15	-7.049E+00	1.5532	-7.116E+00	1.5682
MO	-1.539E+01	0.68	-2.011E+01	1.3070	-2.026E+01	1.3167

TABLE B-XIII
ZPR-3-56B RESULTS

Parameter	Measured Value	% Uncer.	Diffusion Theory		Transport Theory	
			Calculated Value	C/E	Calculated Value	C/E
<u>Miscellaneous Parameters</u>						
Eigenvalue	1.000E+00	0.14	1.004E+00	1.0039	1.011E+00	1.0106
A (E4/S)			-5.037E-01		-5.093E-01	
Beta (E-3)			3.270E+00		3.263E+00	
L (E-7 S)			6.492E+00		6.407E+00	
R/IH (E-5)			1.032E+00		1.029E+00	
<u>Central Reaction Rate Ratios</u>						
F23/F25	1.478E+00	1.01	1.463E+00	0.9897	1.463E+00	0.9895
F24/F25	1.950E-01	1.03	2.260E-01	1.1589	2.253E-01	1.1553
F26/F25	6.390E-02	0.94	7.293E-02	1.1414	7.268E-02	1.1373
F28/F25	3.080E-02	0.97	3.083E-02	1.0010	3.071E-02	0.9972
F49/F25	1.028E+00	0.97	9.933E-01	0.9662	9.927E-01	0.9656
F40/F25	2.820E-01	1.06	2.492E-01	0.8837	2.485E-01	0.8811
<u>Central Reactivity Worths (inhours/kg)</u>						
U-235	2.948E+02	2.81	3.129E+02	1.0613	3.120E+02	1.0582
U-238	-1.840E+01	4.44	-2.081E+01	1.1310	-2.114E+01	1.1487
PU-239	3.709E+02	1.99	4.244E+02	1.1444	4.232E+02	1.1410
C	-2.493E+01	10.06	-4.469E+01	1.7928	-4.618E+01	1.8523
NA-23	-8.930E+00	46.98	-1.976E+01	2.2127	-2.043E+01	2.2878
CR	-1.275E+01	9.75	-1.684E+01	1.3211	-1.709E+01	1.3407
FE	-1.230E+01	3.74	-1.272E+01	1.0345	-1.295E+01	1.0531
NI	-1.681E+01	3.32	-2.037E+01	1.2119	-2.065E+01	1.2287
B-10	-7.000E+03	1.39	-6.259E+03	0.8941	-6.277E+03	0.8967
TA-181	-1.200E+02	3.71	-1.163E+02	0.9696	-1.169E+02	0.9738

TABLE B-XIV
ZPR-6-6A RESULTS

Parameter	Measured Value	% Uncer.	Diffusion Theory		Transport Theory	
			Calculated Value	C/E	Calculated Value	C/E
<u>Miscellaneous Parameters</u>						
Eigenvalue	1.000E+00	0.05	9.843E-01	0.9843	9.854E-01	0.9854
A (E4/S)			-1.389E+00		-1.389E+00	
Beta (E-3)			7.218E+00		7.213E+00	
L (E-7 S)			5.197E+00		5.194E+00	
R/IH (E-5)			2.273E+00		2.272E+00	
<u>Central Reaction Rate Ratios</u>						
F28/F25	2.446E-02	2.98	2.411E-02	0.9858	2.410E-02	0.9855
C28/F25	1.393E-01	2.94	1.443E-01	1.0362	1.444E-01	1.0363
<u>Central Reactivity Worths (inhours/kg)</u>						
PU-239	5.630E+01	3.48	6.132E+01	1.0891	6.161E+01	1.0943
U-235	4.050E+01	1.16	4.511E+01	1.1138	4.532E+01	1.1191
U-238	-3.343E+00	0.27	-3.898E+00	1.1662	-3.924E+00	1.1739
NA-23	6.535E-02	25.60	1.281E-02	0.1960	-5.340E-03	-0.0817
B-10	-1.250E+03	4.40	-1.174E+03	0.9388	-1.180E+03	0.9436
TA-181	-1.250E+01	0.08	-2.161E+01	1.7285	-2.172E+01	1.7377
C	3.865E+00	0.49	2.390E+00	0.6184	2.363E+00	0.6114

TABLE B-XV
SNEAK-7A RESULTS

Parameter	Measured Value	% Uncer.	Diffusion Theory		Transport Theory	
			Calculated Value	C/E	Calculated Value	C/E
<u>Miscellaneous Parameters</u>						
Eigenvalue A (E4/S)	1.000E+00	0.10	9.944E-01	0.9944	1.006E+00	1.0056
Beta (E-3)			-2.137E+00		-2.128E+00	
L (E-7 S)			3.650E+00		3.595E+00	
R/IH (E-5)			1.708E+00		1.690E+00	
			1.100E+00		1.089E+00	
<u>Central Reaction Rate Ratios</u>						
F28/F25	4.480E-02	3.00	4.358E-02	0.9727	4.375E-02	0.9767
F49/F25	1.016E+00	3.00	9.981E-01	0.9824	9.992E-01	0.9835
C28/F25	1.376E-01	3.00	1.365E-01	0.9923	1.364E-01	0.9914
<u>Central Reactivity Worths (\$kg)</u>						
U-235	2.528E+00	3.00	2.480E+00	0.9812	2.573E+00	1.0176
U-238	-1.385E-01	3.00	-1.393E-01	1.0061	-1.509E-01	1.0898
PU-239	3.434E+00	3.00	3.478E+00	1.0128	3.614E+00	1.0525
PU-240	8.587E-01	8.00	6.856E-01	0.7984	7.085E-01	0.8251
B-10	-6.696E+01	2.00	-5.866E+01	0.8760	-6.084E+01	0.9086
TR-181	-1.755E+00	2.00	-1.117E+00	0.6365	-1.164E+00	0.6633
EU203	-4.053E+00	2.00	-4.041E+00	0.9969	-4.193E+00	1.0346
FE	-1.137E-01	10.00	-1.008E-01	0.8863	-1.140E-01	1.0024

TABLE B-XVI
SNEAK-7B RESULTS

Parameter	Measured Value	% Uncer.	Diffusion Theory		Transport Theory	
			Calculated Value	C/E	Calculated Value	C/E
<u>Miscellaneous Parameters</u>						
Eigenvalue A (E4/S)	1.000E+00	0.10	1.000E+00	1.0001	1.005E+00	1.0048
Beta (E-3)			-2.638E+00		-2.638E+00	
L (E-7 S)			4.191E+00		4.173E+00	
R/IH (E-5)			1.589E+00		1.582E+00	
			1.204E+00		1.200E+00	
<u>Central Reaction Rate Ratios</u>						
F28/F25	3.300E-02	2.00	3.416E-02	1.0351	3.412E-02	1.0341
F49/F25	1.012E+00	2.00	1.022E+00	1.0100	1.022E+00	1.0098
C28/F25	1.312E-01	3.00	1.348E-01	1.0276	1.349E-01	1.0279
<u>Central Reactivity Worths (\$kg)</u>						
U-235	1.278E+00	2.00	1.287E+00	1.0073	1.302E+00	1.0185
U-238	-7.536E-02	2.00	-7.611E-02	1.0100	-7.808E-02	1.0361
PU-239	1.651E+00	2.00	1.776E+00	1.0755	1.796E+00	1.0877
PU-240	3.275E-01	10.00	3.012E-01	0.9197	3.029E-01	0.9250
B-10	-2.369E+01	2.00	-2.095E+01	0.8842	-2.123E+01	0.8962
TR-181	-4.946E-01	2.00	-3.675E-01	0.7430	-3.733E-01	0.7547
EU203	-1.264E+00	3.00	-1.358E+00	1.0745	-1.377E+00	1.0896
FE	-6.491E-02	5.00	-7.043E-02	1.0851	-7.242E-02	1.1157

TABLE B-XVII
ZPR-9-31 RESULTS

Parameter	Measured Value	% Uncer.	Diffusion Theory		Transport Theory	
			Calculated Value	C/E	Calculated Value	C/E
<u>Miscellaneous Parameters</u>						
Eigenvalue	1.000E+00	0.15	9.908E-01	0.9908	9.955E-01	0.9955
A (E4/S)			-1.255E+00		-1.262E+00	
Beta (E-3)			3.748E+00		3.735E+00	
L (E-7 S)			2.986E+00		2.960E+00	
R/IH (E-5)			1.094E+00		1.091E+00	
<u>Central Reaction Rate Ratios</u>						
F28/F49	3.000E-02	1.33	2.992E-02	0.9973	2.985E-02	0.9949
F25/F49	1.052E+00	1.32	9.889E-01	0.9404	9.892E-01	0.9407
C28/F49	1.274E-01	1.46	1.317E-01	1.0341	1.318E-01	1.0349
<u>Central Reactivity Worths (inhours/kg)</u>						
PU-239	2.867E+02	1.05	3.317E+02	1.1568	3.328E+02	1.1607
PU-240	4.340E+01	2.13	5.141E+01	1.1845	5.122E+01	1.1801
PU-241	3.951E+02	1.09	4.438E+02	1.1231	4.455E+02	1.1275
U-233	3.473E+02	1.36	4.159E+02	1.1975	4.175E+02	1.2020
U-235	2.139E+02	0.97	2.433E+02	1.1374	2.441E+02	1.1413
U-238	-1.445E+01	3.82	-1.466E+01	1.0147	-1.490E+01	1.0308
B-10	-4.023E+03	1.69	-4.110E+03	1.0217	-4.138E+03	1.0287
LI-6	-2.842E+03	1.86	-3.145E+03	1.1067	-3.167E+03	1.1145
C	-3.610E+01	2.57	-4.740E+01	1.3129	-4.848E+01	1.3430
NA-23	-1.552E+01	7.22	-2.045E+01	1.3175	-2.092E+01	1.3477
AL-27	-1.557E+01	1.09	-2.179E+01	1.3997	-2.215E+01	1.4227

TABLE B-XVIII

JEZEBEL 70-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Adjoint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Adjoint (rho/n/s)
1	2.0000E+07	1.9315E-01	9.2450E-06	6.7582E-06	1.9162E+00	1.8944E-06	5.3884E-01
2	1.6487E+07	2.5000E-01	1.6364E-04	1.2057E-04	1.8021E+00	3.3437E-05	5.0108E-01
3	1.2840E+07	2.5000E-01	1.4245E-03	1.0751E-03	1.5118E+00	3.0097E-04	4.2477E-01
4	1.0000E+07	2.5000E-01	6.9441E-03	5.3239E-03	1.4307E+00	1.4738E-03	3.9715E-01
5	7.7880E+06	2.5000E-01	2.1484E-02	1.6057E-02	1.2550E+00	4.3528E-03	3.4085E-01
6	6.0653E+06	2.5000E-01	4.6658E-02	3.3986E-02	1.0587E+00	9.0023E-03	2.8092E-01
7	4.7237E+06	2.5000E-01	7.7080E-02	5.6186E-02	1.0342E+00	1.4707E-02	2.7107E-01
8	3.6788E+06	2.5000E-01	1.0321E-01	7.5715E-02	1.0370E+00	1.9607E-02	2.6884E-01
9	2.8650E+06	2.5000E-01	1.1773E-01	8.9152E-02	1.0413E+00	2.2861E-02	2.6727E-01
10	2.2313E+06	2.5000E-01	1.1889E-01	9.4681E-02	1.0398E+00	2.4146E-02	2.6538E-01
11	1.7377E+06	2.5000E-01	1.0950E-01	9.4610E-02	1.0127E+00	2.4060E-02	2.5761E-01
12	1.3533E+06	1.2500E-01	4.9176E-02	4.6015E-02	9.8039E-01	1.1691E-02	2.4901E-01
13	1.1943E+06	1.2500E-01	4.4947E-02	4.4910E-02	9.4879E-01	1.1392E-02	2.4046E-01
14	1.0540E+06	1.2500E-01	4.0564E-02	4.3305E-02	9.3388E-01	1.0919E-02	2.3512E-01
15	9.3014E+05	1.2500E-01	3.6246E-02	4.1262E-02	9.2957E-01	1.0322E-02	2.3208E-01
16	8.2085E+05	1.2500E-01	3.2095E-02	3.8831E-02	9.2313E-01	9.6300E-03	2.2843E-01
17	7.2440E+05	1.2500E-01	2.8167E-02	3.6511E-02	8.9818E-01	8.9849E-03	2.2040E-01
18	6.3928E+05	1.2500E-01	2.4577E-02	3.3836E-02	8.9485E-01	8.2455E-03	2.1742E-01
19	5.6416E+05	1.2500E-01	2.1310E-02	3.1115E-02	8.9001E-01	7.4996E-03	2.1391E-01
20	4.9787E+05	1.2500E-01	1.8362E-02	2.8378E-02	8.8879E-01	6.7552E-03	2.1107E-01
21	4.3937E+05	1.2500E-01	1.5751E-02	2.5542E-02	8.8980E-01	5.9982E-03	2.0849E-01
22	3.8774E+05	2.5000E-01	2.4958E-02	4.3013E-02	8.9035E-01	9.9180E-03	2.0502E-01
23	3.0197E+05	2.5000E-01	1.7987E-02	3.3106E-02	8.9081E-01	7.4596E-03	2.0056E-01
24	2.3518E+05	2.5000E-01	1.2825E-02	2.4922E-02	8.9743E-01	5.4837E-03	1.9738E-01
25	1.8316E+05	2.5000E-01	9.0625E-03	1.8649E-02	9.2160E-01	3.9790E-03	1.9679E-01
26	1.4264E+05	2.5000E-01	6.3747E-03	1.3416E-02	9.6570E-01	2.7758E-03	2.0027E-01
27	1.1109E+05	2.5000E-01	4.4622E-03	9.6789E-03	9.7663E-01	1.9767E-03	1.9735E-01
28	8.6517E+04	2.5000E-01	3.1077E-03	6.7260E-03	9.9195E-01	1.3218E-03	1.9611E-01
29	6.7379E+04	2.5000E-01	2.1510E-03	4.5362E-03	1.0167E+00	8.7387E-04	1.9738E-01
30	5.2475E+04	2.5000E-01	1.4857E-03	3.1591E-03	1.0037E+00	5.9767E-04	1.9142E-01
31	4.0868E+04	2.5000E-01	1.0249E-03	2.1395E-03	1.0204E+00	3.9896E-04	1.9204E-01
32	3.1828E+04	1.2500E-01	3.8589E-04	7.8171E-04	1.0231E+00	1.4452E-04	1.9107E-01
33	2.8088E+04	1.2500E-01	3.2021E-04	6.3431E-04	1.0155E+00	1.1680E-04	1.8905E-01
34	2.4787E+04	1.2500E-01	2.6567E-04	5.0682E-04	1.0061E+00	9.4078E-05	1.8888E-01
35	2.1875E+04	1.2500E-01	2.2039E-04	4.1001E-04	1.0070E+00	7.6076E-05	1.8893E-01
36	1.9304E+04	1.2500E-01	1.8279E-04	3.3361E-04	1.0049E+00	6.1846E-05	1.8834E-01
37	1.7036E+04	1.2500E-01	1.5160E-04	2.7434E-04	1.0015E+00	5.0824E-05	1.8751E-01
38	1.5034E+04	1.2500E-01	1.2572E-04	2.2681E-04	9.9840E-01	4.1950E-05	1.8671E-01
39	1.3268E+04	1.2500E-01	1.0424E-04	1.8204E-04	1.0009E+00	3.3588E-05	1.8684E-01
40	1.1709E+04	1.2497E-01	8.6410E-05	1.4650E-04	1.0055E+00	2.6975E-05	1.8738E-01
41	1.0333E+04	1.2503E-01	7.1677E-05	1.1500E-04	1.0196E+00	2.1087E-05	1.8942E-01
42	9.1188E+03	1.2500E-01	5.9407E-05	8.6862E-05	1.0764E+00	1.5872E-05	1.9990E-01
43	8.0473E+03	1.2500E-01	4.9250E-05	6.7152E-05	1.0208E+00	1.2238E-05	1.8925E-01
44	7.1017E+03	1.2500E-01	4.0827E-05	5.4265E-05	9.5115E-01	9.8782E-06	1.7584E-01
45	6.2673E+03	1.2500E-01	3.3844E-05	4.1790E-05	1.0038E+00	7.5945E-06	1.8565E-01
46	5.5308E+03	1.2500E-01	2.8055E-05	3.3088E-05	9.7588E-01	6.0158E-06	1.8039E-01
47	4.8809E+03	1.2500E-01	2.3255E-05	2.7207E-05	9.9301E-01	4.9644E-06	1.8422E-01
48	4.3074E+03	1.2500E-01	1.9277E-05	2.1336E-05	9.9472E-01	3.9012E-06	1.8484E-01
49	3.8013E+03	1.2500E-01	1.5979E-05	1.6640E-05	1.1166E+00	3.0586E-06	2.0865E-01
50	3.3546E+03	1.2500E-01	1.3245E-05	1.3193E-05	1.1564E+00	2.4113E-06	2.1471E-01
51	2.9604E+03	1.2500E-01	1.0979E-05	1.1324E-05	1.1433E+00	2.0593E-06	2.1184E-01
52	2.6126E+03	1.2500E-01	9.1003E-06	8.7692E-06	1.0315E+00	1.6193E-06	1.9439E-01
53	2.3056E+03	1.2500E-01	7.5433E-06	6.8545E-06	9.0737E-01	1.2678E-06	1.7034E-01
54	2.0347E+03	1.2500E-01	6.2524E-06	5.4646E-06	1.0069E+00	1.0102E-06	1.8919E-01
55	1.7956E+03	1.2500E-01	5.1827E-06	4.3804E-06	1.0006E+00	8.1482E-07	1.8884E-01
56	1.5846E+03	1.2500E-01	4.2957E-06	3.8110E-06	1.1299E+00	7.0483E-07	2.1195E-01
57	1.3984E+03	1.2500E-01	3.5609E-06	2.6182E-06	1.4236E+00	4.8593E-07	2.6874E-01
58	1.2341E+03	1.2500E-01	2.9516E-06	2.0633E-06	1.2438E+00	3.9034E-07	2.3840E-01
59	1.0891E+03	1.2500E-01	2.4467E-06	1.5418E-06	1.3759E+00	2.9642E-07	2.6840E-01
60	9.6112E+02	2.5000E-01	3.7091E-06	2.5581E-06	1.2378E+00	4.8540E-07	2.3754E-01
61	7.4852E+02	2.5000E-01	2.5485E-06	1.7582E-06	1.0847E+00	3.3760E-07	2.1053E-01
62	5.8295E+02	2.5000E-01	1.7512E-06	8.3248E-07	1.6020E+00	1.6532E-07	3.2174E-01
63	4.5400E+02	2.5000E-01	1.2033E-06	7.6074E-07	1.4266E+00	1.4376E-07	2.7162E-01
64	3.5357E+02	2.5000E-01	8.2683E-07	4.1066E-07	1.3207E+00	7.7003E-08	2.4862E-01
65	2.7536E+02	2.5000E-01	5.6818E-07	1.7454E-07	1.5413E+00	3.2094E-08	2.8715E-01
66	2.1445E+02	2.5000E-01	3.9043E-07	1.6293E-07	1.5328E+00	3.0315E-08	2.8767E-01
67	1.6702E+02	2.5000E-01	2.6830E-07	1.0430E-07	1.5735E+00	1.9625E-08	2.9964E-01
68	1.3007E+02	2.5000E-01	1.8437E-07	5.9515E-08	1.4775E+00	1.0900E-08	2.7305E-01
69	1.0130E+02	5.0000E-01	2.1378E-07	3.9674E-08	2.0549E+00	7.2878E-09	3.8203E-01
70	6.1442E+01	1.7500E+00	1.9134E-07	4.1138E-08	1.7109E+00	8.1627E-09	3.4276E-01
	1.0677E+01		1.0000E+00	1.0000E+00		2.4748E-01	

TABLE B-XIX
JEZEBEL 25-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Ad joint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Ad joint (rho/n/s)
1	2.0000E+07	1.1931E+00	3.0026E-02	2.2583E-02	2.8981E+00	6.1629E-03	8.0644E-01
2	6.0653E+06	5.0000E-01	1.2374E-01	9.0173E-02	7.6626E-01	2.3709E-02	2.0209E-01
3	3.6788E+06	5.0000E-01	2.2095E-01	1.6487E-01	7.6091E-01	4.2468E-02	1.9628E-01
4	2.2313E+06	5.0000E-01	2.2839E-01	1.8929E-01	7.5147E-01	4.8206E-02	1.9148E-01
5	1.3533E+06	5.0000E-01	1.7093E-01	1.7549E-01	1.3885E+00	4.4325E-02	3.5026E-01
6	8.2085E+05	5.0000E-01	1.0615E-01	1.4030E-01	1.3203E+00	3.4360E-02	3.2224E-01
7	4.9787E+05	5.0000E-01	5.9072E-02	9.6933E-02	9.7714E-01	2.2671E-02	2.2867E-01
8	3.0197E+05	5.0000E-01	3.0812E-02	5.8028E-02	6.5471E-01	1.2943E-02	1.4569E-01
9	1.8316E+05	5.0000E-01	1.5437E-02	3.2066E-02	6.9097E-01	6.7547E-03	1.4537E-01
10	1.1109E+05	5.0000E-01	7.5699E-03	1.6405E-02	7.2073E-01	3.2696E-03	1.4405E-01
11	6.7379E+04	5.0000E-01	3.6368E-03	7.6954E-03	7.3972E-01	1.4715E-03	1.4235E-01
12	4.0868E+04	5.0000E-01	1.7310E-03	3.5555E-03	1.1199E+00	6.6028E-04	2.0948E-01
13	2.4787E+04	5.0000E-01	8.2045E-04	1.5248E-03	1.4716E+00	2.8282E-04	2.7593E-01
14	1.5034E+04	5.0000E-01	3.8804E-04	6.7035E-04	1.4734E+00	1.2360E-04	2.7472E-01
15	9.1188E+03	5.0000E-01	1.8333E-04	2.5007E-04	1.4836E+00	4.5582E-05	2.7482E-01
16	5.5308E+03	5.0000E-01	8.6565E-05	9.8272E-05	1.4938E+00	1.7940E-05	2.7755E-01
17	3.3546E+03	5.0000E-01	4.0867E-05	4.0141E-05	1.5518E+00	7.3577E-06	2.8970E-01
18	2.0347E+03	5.0000E-01	1.9292E-05	1.6274E-05	1.6699E+00	3.0158E-06	3.1439E-01
19	1.2341E+03	5.0000E-01	9.1074E-06	6.1633E-06	1.4123E+00	1.1722E-06	2.7252E-01
20	7.4852E+02	5.0000E-01	4.2997E-06	2.5907E-06	9.8363E-01	5.0293E-07	1.9487E-01
21	4.5400E+02	5.0000E-01	2.0301E-06	1.1748E-06	1.0059E+00	2.2076E-07	1.9047E-01
22	2.7536E+02	5.0000E-01	9.5861E-07	3.3748E-07	1.1255E+00	6.2409E-08	2.1045E-01
23	1.6702E+02	5.0000E-01	4.5267E-07	1.6382E-07	1.1170E+00	3.0526E-08	2.0967E-01
24	1.0130E+02	5.0000E-01	2.1378E-07	3.9674E-08	7.5234E-01	7.2878E-09	1.3987E-01
25	6.1442E+01 1.0677E+01	1.7500E+00	1.9134E-07 1.0000E+00	4.1138E-08 1.0000E+00	6.2639E-01	8.1627E-09 2.4748E-01	1.2549E-01

TABLE B-XX
 VERA-11A 70-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Ad joint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Ad joint (rho/n/s)
1	2.0000E+07	1.9315E-01	7.6262E-06	2.3944E-06	1.5900E+00	5.6312E-10	1.3281E-02
2	1.6487E+07	2.5000E-01	1.4248E-04	4.6525E-05	1.4832E+00	1.0132E-08	1.0827E-02
3	1.2840E+07	2.5000E-01	1.2874E-03	3.9081E-04	1.2393E+00	7.8923E-08	8.5447E-03
4	1.0000E+07	2.5000E-01	6.4536E-03	2.0312E-03	1.1633E+00	3.9722E-07	7.2610E-03
5	7.7880E+06	2.5000E-01	2.0397E-02	6.5814E-03	1.1046E+00	1.2363E-06	5.9227E-03
6	6.0653E+06	2.5000E-01	4.5027E-02	1.5013E-02	1.0014E+00	2.6461E-06	4.4842E-03
7	4.7237E+06	2.5000E-01	7.5322E-02	2.5198E-02	1.0226E+00	4.4416E-06	3.9398E-03
8	3.6788E+06	2.5000E-01	1.0182E-01	3.5008E-02	1.0359E+00	6.2584E-06	3.6363E-03
9	2.8650E+06	2.5000E-01	1.1700E-01	5.2291E-02	1.0154E+00	7.8862E-06	3.4062E-03
10	2.2313E+06	2.5000E-01	1.1883E-01	6.0509E-02	1.0004E+00	9.0432E-06	3.0510E-03
11	1.7377E+06	2.5000E-01	1.0991E-01	6.3409E-02	9.7975E-01	1.1502E-05	2.5797E-03
12	1.3533E+06	1.2500E-01	4.9497E-02	3.2123E-02	9.6126E-01	7.9623E-06	1.8391E-03
13	1.1943E+06	1.2500E-01	4.5356E-02	3.2464E-02	9.5211E-01	1.1098E-05	1.8456E-03
14	1.0540E+06	1.2500E-01	4.1011E-02	3.2500E-02	9.5373E-01	1.6424E-05	2.0307E-03
15	9.3014E+05	1.2500E-01	3.6703E-02	3.2140E-02	9.5805E-01	2.2147E-05	2.1475E-03
16	8.2085E+05	1.2500E-01	3.2576E-02	3.1805E-02	9.6451E-01	2.8202E-05	2.2062E-03
17	7.2440E+05	1.2500E-01	2.8608E-02	3.2041E-02	9.6349E-01	4.1020E-05	2.1691E-03
18	6.3928E+05	1.2500E-01	2.5041E-02	3.1413E-02	9.6927E-01	5.4483E-05	1.9652E-03
19	5.6416E+05	1.2500E-01	2.1761E-02	3.0283E-02	9.7860E-01	6.1604E-05	1.6968E-03
20	4.9787E+05	1.2500E-01	1.8787E-02	2.9628E-02	9.8626E-01	6.7896E-05	1.4662E-03
21	4.3937E+05	1.2500E-01	1.6129E-02	2.8407E-02	9.9211E-01	6.9440E-05	1.2597E-03
22	3.8774E+05	2.5000E-01	2.5586E-02	5.4533E-02	9.9766E-01	1.7284E-04	1.1133E-03
23	3.0197E+05	2.5000E-01	1.8485E-02	4.9514E-02	1.0110E+00	1.6945E-04	8.4090E-04
24	2.3518E+05	2.5000E-01	1.3232E-02	4.3749E-02	1.0283E+00	1.5042E-04	6.3335E-04
25	1.8316E+05	2.5000E-01	9.3894E-03	3.8391E-02	1.0428E+00	1.2741E-04	5.1863E-04
26	1.4264E+05	2.5000E-01	6.6254E-03	3.5565E-02	1.0539E+00	1.4103E-04	4.5076E-04
27	1.1109E+05	2.5000E-01	4.6447E-03	3.0844E-02	1.0631E+00	1.1996E-04	3.7730E-04
28	8.6517E+04	2.5000E-01	3.2321E-03	2.7666E-02	1.0693E+00	1.4551E-04	3.3999E-04
29	6.7379E+04	2.5000E-01	2.2305E-03	2.3587E-02	1.0754E+00	1.3135E-04	3.0702E-04
30	5.2475E+04	2.5000E-01	1.5360E-03	2.0833E-02	1.0785E+00	1.2302E-04	2.6392E-04
31	4.0868E+04	2.5000E-01	1.0568E-03	1.8349E-02	1.0888E+00	1.0765E-04	2.2942E-04
32	3.1828E+04	1.2500E-01	3.9720E-04	5.9740E-03	1.0985E+00	1.2601E-05	1.9997E-04
33	2.8088E+04	1.2500E-01	3.2928E-04	8.1134E-03	1.0887E+00	3.8672E-05	2.1157E-04
34	2.4787E+04	1.2500E-01	2.7294E-04	7.3155E-03	1.0785E+00	3.8280E-05	2.2249E-04
35	2.1875E+04	1.2500E-01	2.2622E-04	6.6186E-03	1.0877E+00	2.8795E-05	2.1080E-04
36	1.9304E+04	1.2500E-01	1.8748E-04	6.0852E-03	1.0930E+00	2.0169E-05	2.0017E-04
37	1.7036E+04	1.2500E-01	1.5537E-04	5.3512E-03	1.0957E+00	1.1420E-05	1.8902E-04
38	1.5034E+04	1.2500E-01	1.2875E-04	5.0127E-03	1.0993E+00	1.0439E-05	1.9676E-04
39	1.3268E+04	1.2500E-01	1.0669E-04	4.8058E-03	1.1038E+00	7.6445E-06	1.9766E-04
40	1.1709E+04	1.2497E-01	8.8387E-05	4.2442E-03	1.1121E+00	6.1896E-06	2.0569E-04
41	1.0333E+04	1.2503E-01	7.3275E-05	3.5946E-03	1.1204E+00	4.4429E-06	2.1004E-04
42	9.1188E+03	1.2500E-01	6.0699E-05	3.0872E-03	1.1314E+00	2.3460E-06	2.0720E-04
43	8.0473E+03	1.2500E-01	5.0295E-05	3.2216E-03	1.1239E+00	1.8661E-06	2.0915E-04
44	7.1017E+03	1.2500E-01	4.1673E-05	2.7213E-03	1.1165E+00	1.7646E-06	2.2462E-04
45	6.2673E+03	1.2500E-01	3.4531E-05	2.4173E-03	1.1335E+00	1.3619E-06	2.3358E-04
46	5.5308E+03	1.2500E-01	2.8612E-05	2.2187E-03	1.1401E+00	1.2254E-06	2.4565E-04
47	4.8809E+03	1.2500E-01	2.3708E-05	1.9011E-03	1.1548E+00	9.6163E-07	2.5233E-04
48	4.3074E+03	1.2500E-01	1.9645E-05	1.6618E-03	1.1701E+00	6.9349E-07	2.5027E-04
49	3.8013E+03	1.2500E-01	1.6278E-05	1.5741E-03	1.1920E+00	6.5392E-07	2.6436E-04
50	3.3546E+03	1.2500E-01	1.3489E-05	1.3069E-03	1.1985E+00	5.2652E-07	2.6694E-04
51	2.9604E+03	1.2500E-01	1.1177E-05	1.0311E-03	1.1944E+00	3.9987E-07	2.8950E-04
52	2.6126E+03	1.2500E-01	9.2624E-06	9.7534E-04	1.1939E+00	3.0522E-07	3.4734E-04
53	2.3056E+03	1.2500E-01	7.6756E-06	5.7455E-04	1.2037E+00	2.1327E-07	3.5849E-04
54	2.0347E+03	1.2500E-01	6.3604E-06	8.1073E-04	1.2396E+00	1.6510E-07	4.0347E-04
55	1.7956E+03	1.2500E-01	5.2707E-06	5.7958E-04	1.2635E+00	1.5246E-07	4.0746E-04
56	1.5846E+03	1.2500E-01	4.3676E-06	5.0721E-04	1.3204E+00	9.8867E-08	4.0973E-04
57	1.3984E+03	1.2500E-01	3.6195E-06	4.1366E-04	1.3892E+00	9.3066E-08	4.4757E-04
58	1.2341E+03	1.2500E-01	2.9996E-06	3.3055E-04	1.3270E+00	5.6543E-08	3.8662E-04
59	1.0891E+03	1.2500E-01	2.4859E-06	2.6338E-04	1.3856E+00	3.9210E-08	4.5449E-04
60	9.6112E+02	2.5000E-01	3.7679E-06	3.9301E-04	1.3504E+00	5.9811E-08	4.9275E-04
61	7.4852E+02	2.5000E-01	2.5880E-06	2.5531E-04	1.3594E+00	3.7625E-08	5.5831E-04
62	5.8295E+02	2.5000E-01	1.7777E-06	1.3830E-04	1.5002E+00	1.8971E-08	6.6455E-04
63	4.5400E+02	2.5000E-01	1.2210E-06	8.8804E-05	1.4859E+00	8.3619E-09	6.2520E-04
64	3.5357E+02	2.5000E-01	8.3882E-07	5.0791E-05	1.4612E+00	5.1665E-09	7.0798E-04
65	2.7536E+02	2.5000E-01	5.7621E-07	2.3197E-05	1.5441E+00	2.2096E-09	6.7866E-04
66	2.1445E+02	2.5000E-01	3.9577E-07	1.2242E-05	1.6317E+00	1.0493E-09	6.3829E-04
67	1.6702E+02	2.5000E-01	2.7193E-07	6.2240E-06	1.6446E+00	4.6422E-10	6.6751E-04
68	1.3007E+02	2.5000E-01	1.8679E-07	2.9651E-06	1.6808E+00	1.2893E-10	5.2864E-04
69	1.0130E+02	5.0000E-01	2.1654E-07	1.1102E-06	1.9644E+00	3.7752E-11	1.1069E-03
70	6.1442E+01	1.7500E+00	1.9375E-07	5.3218E-07	1.7911E+00	7.3770E-11	1.5029E-03
	1.0677E+01		1.0000E+00	1.0000E+00		2.0041E-03	

TABLE B-XXI

VERA-11A 70-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Zone 1	Zone 2
1	2.0000E+07	1.9315E-01	8.5324E-06	5.2879E-06
2	1.6487E+07	2.5000E-01	1.5566E-04	1.0847E-04
3	1.2840E+07	2.5000E-01	1.3797E-03	1.0492E-03
4	1.0000E+07	2.5000E-01	6.8056E-03	5.5454E-03
5	7.7880E+06	2.5000E-01	2.1224E-02	1.8265E-02
6	6.0653E+06	2.5000E-01	4.6343E-02	4.1631E-02
7	4.7237E+06	2.5000E-01	7.6845E-02	7.1393E-02
8	3.6788E+06	2.5000E-01	1.0316E-01	9.8385E-02
9	2.8650E+06	2.5000E-01	1.1786E-01	1.1478E-01
10	2.2313E+06	2.5000E-01	1.1913E-01	1.1805E-01
11	1.7377E+06	2.5000E-01	1.0975E-01	1.1030E-01
12	1.3533E+06	1.2500E-01	4.9290E-02	5.0032E-02
13	1.1943E+06	1.2500E-01	4.5047E-02	4.6154E-02
14	1.0540E+06	1.2500E-01	4.0647E-02	4.1949E-02
15	9.3014E+05	1.2500E-01	3.6312E-02	3.7711E-02
16	8.2085E+05	1.2500E-01	3.2145E-02	3.3689E-02
17	7.2440E+05	1.2500E-01	2.8202E-02	2.9656E-02
18	6.3928E+05	1.2500E-01	2.4601E-02	2.6177E-02
19	5.6416E+05	1.2500E-01	2.1325E-02	2.2887E-02
20	4.9787E+05	1.2500E-01	1.8370E-02	1.9862E-02
21	4.3937E+05	1.2500E-01	1.5753E-02	1.7099E-02
22	3.8774E+05	2.5000E-01	2.4952E-02	2.7220E-02
23	3.0197E+05	2.5000E-01	1.7976E-02	1.9800E-02
24	2.3518E+05	2.5000E-01	1.2812E-02	1.4316E-02
25	1.8316E+05	2.5000E-01	9.0533E-03	1.0257E-02
26	1.4264E+05	2.5000E-01	6.3672E-03	7.2917E-03
27	1.1109E+05	2.5000E-01	4.4584E-03	5.1254E-03
28	8.6517E+04	2.5000E-01	3.1062E-03	3.5569E-03
29	6.7379E+04	2.5000E-01	2.1505E-03	2.4369E-03
30	5.2475E+04	2.5000E-01	1.4857E-03	1.6660E-03
31	4.0868E+04	2.5000E-01	1.0250E-03	1.1387E-03
32	3.1828E+04	1.2500E-01	3.8601E-04	4.2608E-04
33	2.8088E+04	1.2500E-01	3.2037E-04	3.5227E-04
34	2.4787E+04	1.2500E-01	2.6584E-04	2.9127E-04
35	2.1875E+04	1.2500E-01	2.2056E-04	2.4084E-04
36	1.9304E+04	1.2500E-01	1.8296E-04	1.9915E-04
37	1.7036E+04	1.2500E-01	1.5176E-04	1.6469E-04
38	1.5034E+04	1.2500E-01	1.2586E-04	1.3621E-04
39	1.3268E+04	1.2500E-01	1.0438E-04	1.1266E-04
40	1.1709E+04	1.2497E-01	8.6535E-05	9.3165E-05
41	1.0333E+04	1.2503E-01	7.1789E-05	7.7108E-05
42	9.1188E+03	1.2500E-01	5.9507E-05	6.3774E-05
43	8.0473E+03	1.2500E-01	4.9337E-05	5.2765E-05
44	7.1017E+03	1.2500E-01	4.0903E-05	4.3660E-05
45	6.2673E+03	1.2500E-01	3.3911E-05	3.6130E-05
46	5.5308E+03	1.2500E-01	2.8113E-05	2.9900E-05
47	4.8809E+03	1.2500E-01	2.3305E-05	2.4746E-05
48	4.3074E+03	1.2500E-01	1.9320E-05	2.0483E-05
49	3.8013E+03	1.2500E-01	1.6016E-05	1.6955E-05
50	3.3546E+03	1.2500E-01	1.3277E-05	1.4036E-05
51	2.9604E+03	1.2500E-01	1.1006E-05	1.1620E-05
52	2.6126E+03	1.2500E-01	9.1233E-06	9.6213E-06
53	2.3056E+03	1.2500E-01	7.5628E-06	7.9666E-06
54	2.0347E+03	1.2500E-01	6.2690E-06	6.5963E-06
55	1.7956E+03	1.2500E-01	5.1967E-06	5.4618E-06
56	1.5846E+03	1.2500E-01	4.3076E-06	4.5225E-06
57	1.3984E+03	1.2500E-01	3.5709E-06	3.7447E-06
58	1.2341E+03	1.2500E-01	2.9601E-06	3.1015E-06
59	1.0891E+03	1.2500E-01	2.4538E-06	2.5690E-06
60	9.6112E+02	2.5000E-01	3.7201E-06	3.8913E-06
61	7.4852E+02	2.5000E-01	2.5563E-06	2.6699E-06
62	5.8295E+02	2.5000E-01	1.7566E-06	1.8320E-06
63	4.5400E+02	2.5000E-01	1.2071E-06	1.2569E-06
64	3.5357E+02	2.5000E-01	8.2948E-07	8.6291E-07
65	2.7536E+02	2.5000E-01	5.7002E-07	5.9217E-07
66	2.1445E+02	2.5000E-01	3.9172E-07	4.0623E-07
67	1.6702E+02	2.5000E-01	2.6919E-07	2.7899E-07
68	1.3007E+02	2.5000E-01	1.8499E-07	1.9142E-07
69	1.0130E+02	5.0000E-01	2.1450E-07	2.2181E-07
70	6.1442E+01	1.7500E+00	1.9200E-07	1.9828E-07
			1.0000E+00	1.0000E+00

TABLE B-XXII

VERA-11A 25-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Ad joint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Ad joint (rho/n/s)
1	2.0000E+07	1.1931E+00	2.8289E-02	9.0523E-03	2.4146E+00	1.7231E-06	1.6819E-02
2	6.0653E+06	5.0000E-01	1.2035E-01	4.0211E-02	7.4269E-01	7.0877E-06	3.0911E-03
3	3.6788E+06	5.0000E-01	2.1882E-01	8.7299E-02	7.5270E-01	1.4145E-05	2.5842E-03
4	2.2313E+06	5.0000E-01	2.2873E-01	1.2392E-01	7.2661E-01	2.0545E-05	2.0661E-03
5	1.3533E+06	5.0000E-01	1.7257E-01	1.2923E-01	1.4036E+00	5.7632E-05	2.8852E-03
6	8.2085E+05	5.0000E-01	1.0799E-01	1.2554E-01	1.4222E+00	1.8531E-04	2.9492E-03
7	4.9787E+05	5.0000E-01	6.0502E-02	1.1257E-01	1.0920E+00	3.1018E-04	1.4088E-03
8	3.0197E+05	5.0000E-01	3.1717E-02	9.3263E-02	7.4828E-01	3.1987E-04	5.4096E-04
9	1.8316E+05	5.0000E-01	1.6015E-02	7.3957E-02	7.6938E-01	2.6844E-04	3.5571E-04
10	1.1109E+05	5.0000E-01	7.8768E-03	5.8511E-02	7.8246E-01	2.6547E-04	2.6321E-04
11	6.7379E+04	5.0000E-01	3.7665E-03	4.4421E-02	7.9037E-01	2.5437E-04	2.0950E-04
12	4.0868E+04	5.0000E-01	1.7833E-03	3.2436E-02	1.2021E+00	1.5892E-04	2.3520E-04
13	2.4787E+04	5.0000E-01	8.4202E-04	2.5370E-02	1.5980E+00	9.8664E-05	3.0180E-04
14	1.5034E+04	5.0000E-01	3.9710E-04	1.7657E-02	1.6276E+00	2.8716E-05	2.9728E-04
15	9.1188E+03	5.0000E-01	1.8720E-04	1.1447E-02	1.6532E+00	7.3386E-06	3.2091E-04
16	5.5308E+03	5.0000E-01	8.8243E-05	7.3557E-03	1.7089E+00	3.5344E-06	3.7157E-04
17	3.3546E+03	5.0000E-01	4.1604E-05	3.8880E-03	1.7578E+00	1.3849E-06	4.6318E-04
18	2.0347E+03	5.0000E-01	1.9618E-05	2.3112E-03	1.9128E+00	5.0950E-07	6.1214E-04
19	1.2341E+03	5.0000E-01	9.2534E-06	9.8694E-04	1.4909E+00	1.5556E-07	4.8945E-04
20	7.4852E+02	5.0000E-01	4.3657E-06	3.9361E-04	1.0493E+00	5.6595E-08	4.4872E-04
21	4.5400E+02	5.0000E-01	2.0598E-06	1.3960E-04	1.0814E+00	1.3528E-08	4.8920E-04
22	2.7536E+02	5.0000E-01	9.7198E-07	3.5438E-05	1.1653E+00	3.2589E-09	4.8324E-04
23	1.6702E+02	5.0000E-01	4.5872E-07	9.1891E-06	1.2202E+00	5.9315E-10	4.3892E-04
24	1.0130E+02	5.0000E-01	2.1654E-07	1.1102E-06	7.2081E-01	3.7752E-11	4.0615E-04
25	6.1442E+01	1.7500E+00	1.9375E-07	5.3218E-07	6.5722E-01	7.3770E-11	5.5150E-04
	1.0677E+01		1.0000E+00	1.0000E+00		2.0041E-03	

TABLE B-XXIII

VERA-11A 25-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.1931E+00	2.9573E-02	2.4973E-02
2	6.0653E+06	5.0000E-01	1.2319E-01	1.1302E-01
3	3.6788E+06	5.0000E-01	2.2101E-01	2.1317E-01
4	2.2313E+06	5.0000E-01	2.2888E-01	2.2835E-01
5	1.3533E+06	5.0000E-01	1.7130E-01	1.7585E-01
6	8.2085E+05	5.0000E-01	1.0627E-01	1.1241E-01
7	4.9787E+05	5.0000E-01	5.9076E-02	6.4182E-02
8	3.0197E+05	5.0000E-01	3.0788E-02	3.4116E-02
9	1.8316E+05	5.0000E-01	1.5421E-02	1.7548E-02
10	1.1109E+05	5.0000E-01	7.5646E-03	8.6823E-03
11	6.7379E+04	5.0000E-01	3.6362E-03	4.1028E-03
12	4.0868E+04	5.0000E-01	1.7314E-03	1.9171E-03
13	2.4787E+04	5.0000E-01	8.2111E-04	8.9595E-04
14	1.5034E+04	5.0000E-01	3.8857E-04	4.1914E-04
15	9.1188E+03	5.0000E-01	1.8366E-04	1.9633E-04
16	5.5308E+03	5.0000E-01	8.6754E-05	9.2085E-05
17	3.3546E+03	5.0000E-01	4.0968E-05	4.3245E-05
18	2.0347E+03	5.0000E-01	1.9344E-05	2.0325E-05
19	1.2341E+03	5.0000E-01	9.1339E-06	9.5617E-06
20	7.4852E+02	5.0000E-01	4.3129E-06	4.5020E-06
21	4.5400E+02	5.0000E-01	2.0366E-06	2.1198E-06
22	2.7536E+02	5.0000E-01	9.6174E-07	9.9839E-07
23	1.6702E+02	5.0000E-01	4.5418E-07	4.7041E-07
24	1.0130E+02	5.0000E-01	2.1450E-07	2.2181E-07
25	6.1442E+01	1.7500E+00	1.9200E-07	1.9828E-07
			1.0000E+00	1.0000E+00

TABLE B-XXIV

ZPR-3-48 70-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Ad joint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Ad joint (rho/n/s)
1	2.0000E+07	1.9315E-01	7.5724E-06	1.0063E-06	1.9290E+00	1.2841E-09	4.4092E-02
2	1.6487E+07	2.5000E-01	1.4227E-04	1.9950E-05	1.7367E+00	2.2898E-08	3.6231E-02
3	1.2840E+07	2.5000E-01	1.2894E-03	1.6462E-04	1.4607E+00	1.7042E-07	2.8831E-02
4	1.0000E+07	2.5000E-01	6.4737E-03	8.6991E-04	1.3711E+00	8.4974E-07	2.4577E-02
5	7.7880E+06	2.5000E-01	2.0473E-02	2.8239E-03	1.2558E+00	2.6310E-06	2.0149E-02
6	6.0653E+06	2.5000E-01	4.5195E-02	6.5188E-03	1.1094E+00	5.5969E-06	1.5292E-02
7	4.7237E+06	2.5000E-01	7.5574E-02	1.0965E-02	1.0991E+00	9.2024E-06	1.3431E-02
8	3.6788E+06	2.5000E-01	1.0210E-01	1.5784E-02	1.0950E+00	1.2747E-05	1.2368E-02
9	2.8650E+06	2.5000E-01	1.1723E-01	2.4217E-02	1.0738E+00	1.6295E-05	1.1601E-02
10	2.2313E+06	2.5000E-01	1.1897E-01	2.9514E-02	1.0351E+00	1.8805E-05	1.0439E-02
11	1.7377E+06	2.5000E-01	1.0994E-01	3.4265E-02	9.7686E-01	2.4941E-05	8.8565E-03
12	1.3533E+06	1.2500E-01	4.9478E-02	1.8939E-02	9.1885E-01	1.8244E-05	6.2722E-03
13	1.1943E+06	1.2500E-01	4.5314E-02	2.0243E-02	9.0568E-01	2.6646E-05	6.2474E-03
14	1.0540E+06	1.2500E-01	4.0952E-02	2.1868E-02	9.0172E-01	4.1485E-05	6.8626E-03
15	9.3014E+05	1.2500E-01	3.6631E-02	2.2722E-02	9.0223E-01	5.8046E-05	7.2327E-03
16	8.2085E+05	1.2500E-01	3.2495E-02	2.2913E-02	9.0353E-01	7.6757E-05	7.5158E-03
17	7.2440E+05	1.2500E-01	2.8527E-02	2.5412E-02	9.0008E-01	1.1091E-04	7.4194E-03
18	6.3928E+05	1.2500E-01	2.4956E-02	2.7740E-02	8.9690E-01	1.4692E-04	6.7470E-03
19	5.6416E+05	1.2500E-01	2.1677E-02	2.9045E-02	8.9721E-01	1.7011E-04	5.9244E-03
20	4.9787E+05	1.2500E-01	1.8707E-02	2.8392E-02	8.9701E-01	1.9061E-04	5.1805E-03
21	4.3937E+05	1.2500E-01	1.6054E-02	2.7032E-02	8.9526E-01	1.9936E-04	4.4857E-03
22	3.8774E+05	2.5000E-01	2.5458E-02	5.9343E-02	8.8918E-01	4.8152E-04	3.9316E-03
23	3.0197E+05	2.5000E-01	1.8382E-02	5.4613E-02	8.8426E-01	4.7894E-04	2.9664E-03
24	2.3518E+05	2.5000E-01	1.3151E-02	5.0098E-02	8.8004E-01	4.3868E-04	2.2186E-03
25	1.8316E+05	2.5000E-01	9.3245E-03	4.5964E-02	8.7151E-01	3.8458E-04	1.7717E-03
26	1.4264E+05	2.5000E-01	6.5783E-03	4.8068E-02	8.6343E-01	4.0949E-04	1.4896E-03
27	1.1109E+05	2.5000E-01	4.6109E-03	4.2114E-02	8.5449E-01	3.7069E-04	1.2251E-03
28	8.6517E+04	2.5000E-01	3.2092E-03	4.2318E-02	8.4425E-01	4.3697E-04	1.0644E-03
29	6.7379E+04	2.5000E-01	2.2153E-03	3.2575E-02	8.3571E-01	4.1507E-04	9.3622E-04
30	5.2475E+04	2.5000E-01	1.5261E-03	3.4959E-02	8.2850E-01	3.8659E-04	7.8367E-04
31	4.0868E+04	2.5000E-01	1.0502E-03	3.1838E-02	8.2560E-01	3.5072E-04	6.4274E-04
32	3.1828E+04	1.2500E-01	3.9481E-04	7.7450E-03	8.2655E-01	4.8349E-05	5.3518E-04
33	2.8088E+04	1.2500E-01	3.2734E-04	1.7890E-02	8.2357E-01	1.1901E-04	5.4943E-04
34	2.4787E+04	1.2500E-01	2.7137E-04	1.4169E-02	8.2467E-01	1.1224E-04	5.5168E-04
35	2.1875E+04	1.2500E-01	2.2495E-04	1.3106E-02	8.3086E-01	8.7125E-05	4.9871E-04
36	1.9304E+04	1.2500E-01	1.8645E-04	1.1944E-02	8.3496E-01	6.4401E-05	4.4964E-04
37	1.7036E+04	1.2500E-01	1.5453E-04	9.7464E-03	8.4001E-01	3.9526E-05	4.1112E-04
38	1.5034E+04	1.2500E-01	1.2807E-04	1.0748E-02	8.4259E-01	3.4971E-05	4.1075E-04
39	1.3268E+04	1.2500E-01	1.0614E-04	9.4079E-03	8.5011E-01	2.6209E-05	4.0060E-04
40	1.1709E+04	1.2497E-01	8.7936E-05	9.2485E-03	8.5598E-01	2.1250E-05	4.0009E-04
41	1.0333E+04	1.2503E-01	7.2907E-05	8.1115E-03	8.6415E-01	1.5993E-05	3.9388E-04
42	9.1188E+03	1.2500E-01	6.0400E-05	6.1942E-03	8.7457E-01	9.6016E-06	3.8198E-04
43	8.0473E+03	1.2500E-01	5.0051E-05	6.0850E-03	8.7468E-01	7.6973E-06	3.8046E-04
44	7.1017E+03	1.2500E-01	4.1475E-05	6.2648E-03	8.7815E-01	7.2914E-06	3.6750E-04
45	6.2673E+03	1.2500E-01	3.4369E-05	5.4606E-03	8.8987E-01	5.8498E-06	4.0654E-04
46	5.5308E+03	1.2500E-01	2.8480E-05	5.3082E-03	8.9848E-01	5.2977E-06	4.2114E-04
47	4.8809E+03	1.2500E-01	2.3600E-05	4.5388E-03	9.1010E-01	4.4205E-06	4.3016E-04
48	4.3074E+03	1.2500E-01	1.9557E-05	3.8234E-03	9.1911E-01	3.3598E-06	4.2705E-04
49	3.8013E+03	1.2500E-01	1.6206E-05	3.0109E-03	9.2850E-01	3.2932E-06	4.5120E-04
50	3.3546E+03	1.2500E-01	1.3430E-05	1.5539E-03	9.3289E-01	2.7806E-06	4.6214E-04
51	2.9604E+03	1.2500E-01	1.1129E-05	6.0914E-04	9.3638E-01	1.7168E-06	5.2805E-04
52	2.6126E+03	1.2500E-01	9.2227E-06	1.9923E-03	9.3752E-01	1.2068E-06	6.4883E-04
53	2.3056E+03	1.2500E-01	7.6431E-06	3.3544E-03	9.4449E-01	1.0171E-06	6.8752E-04
54	2.0347E+03	1.2500E-01	6.3338E-06	3.5668E-03	9.6795E-01	1.0040E-06	7.6859E-04
55	1.7956E+03	1.2500E-01	5.2489E-06	3.4028E-03	9.7875E-01	1.2980E-06	7.7376E-04
56	1.5846E+03	1.2500E-01	4.3497E-06	3.1226E-03	1.0196E+00	9.9661E-07	7.6354E-04
57	1.3984E+03	1.2500E-01	3.6048E-06	2.8697E-03	1.0576E+00	1.3527E-06	8.1928E-04
58	1.2341E+03	1.2500E-01	2.9875E-06	2.2338E-03	1.0065E+00	8.4291E-07	6.7576E-04
59	1.0891E+03	1.2500E-01	2.4761E-06	2.1337E-03	1.0878E+00	7.1865E-07	8.0522E-04
60	9.6112E+02	2.5000E-01	3.7531E-06	3.4667E-03	1.0648E+00	1.5219E-06	8.4902E-04
61	7.4852E+02	2.5000E-01	2.5780E-06	2.6051E-03	1.0995E+00	9.5191E-07	9.0917E-04
62	5.8295E+02	2.5000E-01	1.7709E-06	1.7382E-03	1.2161E+00	7.2183E-07	1.0466E-03
63	4.5400E+02	2.5000E-01	1.2164E-06	1.1887E-03	1.1478E+00	3.7846E-07	9.4691E-04
64	3.5357E+02	2.5000E-01	8.3572E-07	8.4459E-04	1.1587E+00	3.2444E-07	1.0118E-03
65	2.7536E+02	2.5000E-01	5.7412E-07	4.9862E-04	1.2351E+00	1.8393E-07	9.9657E-04
66	2.1445E+02	2.5000E-01	3.9437E-07	3.0888E-04	1.2862E+00	1.1503E-07	9.3947E-04
67	1.6702E+02	2.5000E-01	2.7097E-07	1.8142E-04	1.2751E+00	6.7977E-08	9.6006E-04
68	1.3007E+02	2.5000E-01	1.8615E-07	1.0018E-04	1.3431E+00	1.9624E-08	7.0811E-04
69	1.0130E+02	5.0000E-01	2.1581E-07	6.8845E-05	1.6309E+00	1.2648E-08	1.4088E-03
70	6.1442E+01	1.7500E+00	1.9311E-07	1.9343E-05	1.5636E+00	1.1666E-08	2.7602E-03
	1.0677E+01		1.0000E+00	1.0000E+00		5.9167E-03	

TABLE B-XXV

ZPR-3-48 70-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.9315E-01	7.8695E-06	5.0126E-06
2	1.6487E+07	2.5000E-01	1.4662E-04	1.0477E-04
3	1.2840E+07	2.5000E-01	1.3198E-03	1.0270E-03
4	1.0000E+07	2.5000E-01	6.5892E-03	5.4784E-03
5	7.7880E+06	2.5000E-01	2.0742E-02	1.8155E-02
6	6.0653E+06	2.5000E-01	4.5619E-02	4.1540E-02
7	4.7237E+06	2.5000E-01	7.6061E-02	7.1384E-02
8	3.6788E+06	2.5000E-01	1.0253E-01	9.8457E-02
9	2.8650E+06	2.5000E-01	1.1751E-01	1.1488E-01
10	2.2313E+06	2.5000E-01	1.1907E-01	1.1810E-01
11	1.7377E+06	2.5000E-01	1.0990E-01	1.1029E-01
12	1.3533E+06	1.2500E-01	4.9416E-02	5.0008E-02
13	1.1943E+06	1.2500E-01	4.5218E-02	4.6139E-02
14	1.0540E+06	1.2500E-01	4.0838E-02	4.1930E-02
15	9.3014E+05	1.2500E-01	3.6509E-02	3.7680E-02
16	8.2085E+05	1.2500E-01	3.2359E-02	3.3669E-02
17	7.2440E+05	1.2500E-01	2.8399E-02	2.9634E-02
18	6.3928E+05	1.2500E-01	2.4814E-02	2.6179E-02
19	5.6416E+05	1.2500E-01	2.1535E-02	2.2896E-02
20	4.9787E+05	1.2500E-01	1.8570E-02	1.9879E-02
21	4.3937E+05	1.2500E-01	1.5932E-02	1.7109E-02
22	3.8774E+05	2.5000E-01	2.5251E-02	2.7240E-02
23	3.0197E+05	2.5000E-01	1.8215E-02	1.9823E-02
24	2.3518E+05	2.5000E-01	1.3011E-02	1.4353E-02
25	1.8316E+05	2.5000E-01	9.2127E-03	1.0287E-02
26	1.4264E+05	2.5000E-01	6.4915E-03	7.3261E-03
27	1.1109E+05	2.5000E-01	4.5485E-03	5.1491E-03
28	8.6517E+04	2.5000E-01	3.1671E-03	3.5712E-03
29	6.7379E+04	2.5000E-01	2.1889E-03	2.4432E-03
30	5.2475E+04	2.5000E-01	1.5096E-03	1.6679E-03
31	4.0868E+04	2.5000E-01	1.0399E-03	1.1387E-03
32	3.1828E+04	1.2500E-01	3.9123E-04	4.2569E-04
33	2.8088E+04	1.2500E-01	3.2450E-04	3.5177E-04
34	2.4787E+04	1.2500E-01	2.6912E-04	2.9071E-04
35	2.1875E+04	1.2500E-01	2.2317E-04	2.4027E-04
36	1.9304E+04	1.2500E-01	1.8504E-04	1.9859E-04
37	1.7036E+04	1.2500E-01	1.5341E-04	1.6417E-04
38	1.5034E+04	1.2500E-01	1.2718E-04	1.3572E-04
39	1.3268E+04	1.2500E-01	1.0543E-04	1.1221E-04
40	1.1709E+04	1.2497E-01	8.7375E-05	9.2767E-05
41	1.0333E+04	1.2503E-01	7.2461E-05	7.6754E-05
42	9.1188E+03	1.2500E-01	6.0044E-05	6.3462E-05
43	8.0473E+03	1.2500E-01	4.9768E-05	5.2492E-05
44	7.1017E+03	1.2500E-01	4.1249E-05	4.3422E-05
45	6.2673E+03	1.2500E-01	3.4188E-05	3.5924E-05
46	5.5308E+03	1.2500E-01	2.8335E-05	2.9723E-05
47	4.8809E+03	1.2500E-01	2.3484E-05	2.4594E-05
48	4.3074E+03	1.2500E-01	1.9464E-05	2.0353E-05
49	3.8013E+03	1.2500E-01	1.6132E-05	1.6844E-05
50	3.3546E+03	1.2500E-01	1.3370E-05	1.3942E-05
51	2.9604E+03	1.2500E-01	1.1081E-05	1.1540E-05
52	2.6126E+03	1.2500E-01	9.1844E-06	9.5533E-06
53	2.3056E+03	1.2500E-01	7.6122E-06	7.9091E-06
54	2.0347E+03	1.2500E-01	6.3090E-06	6.5475E-06
55	1.7956E+03	1.2500E-01	5.2290E-06	5.4203E-06
56	1.5846E+03	1.2500E-01	4.3338E-06	4.4873E-06
57	1.3984E+03	1.2500E-01	3.5921E-06	3.7144E-06
58	1.2341E+03	1.2500E-01	2.9773E-06	3.0761E-06
59	1.0891E+03	1.2500E-01	2.4677E-06	2.5477E-06
60	9.6112E+02	2.5000E-01	3.7408E-06	3.8588E-06
61	7.4852E+02	2.5000E-01	2.5700E-06	2.6469E-06
62	5.8295E+02	2.5000E-01	1.7657E-06	1.8156E-06
63	4.5400E+02	2.5000E-01	1.2131E-06	1.2451E-06
64	3.5357E+02	2.5000E-01	8.3351E-07	8.5469E-07
65	2.7536E+02	2.5000E-01	5.7271E-07	5.8626E-07
66	2.1445E+02	2.5000E-01	3.9349E-07	4.0191E-07
67	1.6702E+02	2.5000E-01	2.7039E-07	2.7600E-07
68	1.3007E+02	2.5000E-01	1.8579E-07	1.8929E-07
69	1.0130E+02	5.0000E-01	2.1540E-07	2.1932E-07
70	6.1442E+01	1.7500E+00	1.9277E-07	1.9602E-07
			1.0000E+00	1.0000E+00

TABLE B-XXVI

ZPR-3-48 25-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Adjoint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Adjoint (rho/n/s)
1	2.0000E+07	1.1931E+00	2.8386E-02	3.8794E-03	2.8602E+00	3.6753E-06	5.6766E-02
2	6.0653E+06	5.0000E-01	1.2077E-01	1.7484E-02	8.1468E-01	1.4799E-05	1.0596E-02
3	3.6788E+06	5.0000E-01	2.1934E-01	4.0001E-02	8.0007E-01	2.9042E-05	8.8421E-03
4	2.2313E+06	5.0000E-01	2.2891E-01	6.3778E-02	7.4221E-01	4.3746E-05	7.1180E-03
5	1.3533E+06	5.0000E-01	1.7237E-01	8.3772E-02	1.3385E+00	1.4442E-04	9.8181E-03
6	8.2085E+05	5.0000E-01	1.0765E-01	1.0511E-01	1.3272E+00	5.0469E-04	1.0184E-02
7	4.9787E+05	5.0000E-01	6.0219E-02	1.1477E-01	9.8917E-01	8.7148E-04	5.0162E-03
8	3.0197E+05	5.0000E-01	3.1533E-02	1.0471E-01	6.5084E-01	9.1762E-04	1.9127E-03
9	1.8316E+05	5.0000E-01	1.5903E-02	9.4032E-02	6.4001E-01	7.9408E-04	1.2030E-03
10	1.1109E+05	5.0000E-01	7.8201E-03	8.4432E-02	6.2665E-01	8.0766E-04	8.4456E-04
11	6.7379E+04	5.0000E-01	3.7414E-03	6.7534E-02	6.1392E-01	8.0166E-04	6.3446E-04
12	4.0868E+04	5.0000E-01	1.7723E-03	5.7473E-02	9.1328E-01	5.1807E-04	6.3721E-04
13	2.4787E+04	5.0000E-01	8.3730E-04	4.8965E-02	1.2286E+00	3.0329E-04	7.0501E-04
14	1.5034E+04	5.0000E-01	3.9505E-04	3.7516E-02	1.2590E+00	9.8423E-05	5.9219E-04
15	9.1188E+03	5.0000E-01	1.8629E-04	2.4005E-02	1.2975E+00	3.0439E-05	5.7787E-04
16	5.5308E+03	5.0000E-01	8.7842E-05	1.6681E-02	1.3487E+00	1.6371E-05	6.3802E-04
17	3.3546E+03	5.0000E-01	4.1424E-05	7.5096E-03	1.3838E+00	6.7213E-06	8.5824E-04
18	2.0347E+03	5.0000E-01	1.9537E-05	1.2962E-02	1.4844E+00	4.6514E-06	1.1529E-03
19	1.2341E+03	5.0000E-01	9.2166E-06	7.8341E-03	1.1654E+00	3.0834E-06	8.5952E-04
20	7.4852E+02	5.0000E-01	4.3489E-06	4.3433E-03	8.5424E-01	1.6737E-06	7.2148E-04
21	4.5400E+02	5.0000E-01	2.0521E-06	2.0333E-03	8.5083E-01	7.0290E-07	7.2257E-04
22	2.7536E+02	5.0000E-01	9.6848E-07	8.0749E-04	9.3009E-01	2.9895E-07	7.1419E-04
23	1.6702E+02	5.0000E-01	4.5712E-07	2.8159E-04	9.6585E-01	8.7602E-08	6.1538E-04
24	1.0130E+02	5.0000E-01	2.1581E-07	6.8845E-05	6.0164E-01	1.2648E-08	5.1970E-04
25	6.1442E+01	1.7500E+00	1.9311E-07	1.9343E-05	5.7679E-01	1.1666E-08	1.0182E-03
	1.0677E+01		1.0000E+00	1.0000E+00		5.9167E-03	

TABLE B-XXVII

ZPR-3-48 25-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.1931E+00	2.8806E-02	2.4770E-02
2	6.0653E+06	5.0000E-01	1.2168E-01	1.1292E-01
3	3.6788E+06	5.0000E-01	2.2003E-01	2.1333E-01
4	2.2313E+06	5.0000E-01	2.2897E-01	2.2840E-01
5	1.3533E+06	5.0000E-01	1.7198E-01	1.7576E-01
6	8.2085E+05	5.0000E-01	1.0711E-01	1.1238E-01
7	4.9787E+05	5.0000E-01	5.9753E-02	6.4228E-02
8	3.0197E+05	5.0000E-01	3.1226E-02	3.4176E-02
9	1.8316E+05	5.0000E-01	1.5704E-02	1.7613E-02
10	1.1109E+05	5.0000E-01	7.7156E-03	8.7203E-03
11	6.7379E+04	5.0000E-01	3.6985E-03	4.1111E-03
12	4.0868E+04	5.0000E-01	1.7557E-03	1.9161E-03
13	2.4787E+04	5.0000E-01	8.3074E-04	8.9374E-04
14	1.5034E+04	5.0000E-01	3.9245E-04	4.1745E-04
15	9.1188E+03	5.0000E-01	1.8525E-04	1.9530E-04
16	5.5308E+03	5.0000E-01	8.7416E-05	9.1514E-05
17	3.3546E+03	5.0000E-01	4.1248E-05	4.2944E-05
18	2.0347E+03	5.0000E-01	1.9464E-05	2.0170E-05
19	1.2341E+03	5.0000E-01	9.1858E-06	9.4825E-06
20	7.4852E+02	5.0000E-01	4.3357E-06	4.4626E-06
21	4.5400E+02	5.0000E-01	2.0466E-06	2.0997E-06
22	2.7536E+02	5.0000E-01	9.6620E-07	9.8817E-07
23	1.6702E+02	5.0000E-01	4.5618E-07	4.6529E-07
24	1.0130E+02	5.0000E-01	2.1540E-07	2.1932E-07
25	6.1442E+01	1.7500E+00	1.9277E-07	1.9602E-07
			1.0000E+00	1.0000E+00

TABLE B-XXVIII

ZEBRA-3 70-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux ($n/cm^2/s$)	Central Ad joint ($rho/n/s$)	Edge Flux ($n/cm^2/s$)	Edge Ad joint ($rho/n/s$)
1	2.0000E+07	1.9315E-01	7.1537E-06	1.2681E-06	2.8728E+00	1.3254E-09	2.7420E-02
2	1.6487E+07	2.5000E-01	1.3627E-04	2.4028E-05	2.5175E+00	2.3752E-08	2.2398E-02
3	1.2840E+07	2.5000E-01	1.2471E-03	2.1151E-04	2.1034E+00	1.8935E-07	1.77C7E-02
4	1.0000E+07	2.5000E-01	6.3099E-03	1.0909E-03	1.9093E+00	9.4988E-07	1.4992E-02
5	7.7880E+06	2.5000E-01	2.0079E-02	3.4458E-03	1.5800E+00	2.9657E-06	1.2209E-02
6	6.0653E+06	2.5000E-01	4.4549E-02	7.6098E-03	1.2433E+00	6.3678E-06	9.1889E-03
7	4.7237E+06	2.5000E-01	7.4800E-02	1.3022E-02	1.1728E+00	1.0745E-05	8.0369E-03
8	3.6788E+06	2.5000E-01	1.0139E-01	1.8454E-02	1.1382E+00	1.4951E-05	7.3508E-03
9	2.8650E+06	2.5000E-01	1.1675E-01	2.2901E-02	1.1081E+00	1.8196E-05	6.8507E-03
10	2.2313E+06	2.5000E-01	1.1876E-01	2.6162E-02	1.0703E+00	2.0546E-05	6.1363E-03
11	1.7377E+06	2.5000E-01	1.0999E-01	3.0960E-02	9.8971E-01	2.6087E-05	5.1882E-03
12	1.3533E+06	1.2500E-01	4.9577E-02	1.8566E-02	8.5257E-01	1.8115E-05	3.7073E-03
13	1.1943E+06	1.2500E-01	4.5469E-02	2.1647E-02	8.2106E-01	2.4972E-05	3.6950E-03
14	1.0540E+06	1.2500E-01	4.1139E-02	2.5920E-02	8.0786E-01	3.7012E-05	4.0449E-03
15	9.3014E+05	1.2500E-01	3.6836E-02	2.9440E-02	8.0477E-01	5.0297E-05	4.2420E-03
16	8.2085E+05	1.2500E-01	3.2723E-02	3.3328E-02	8.0395E-01	6.6382E-05	4.3930E-03
17	7.2440E+05	1.2500E-01	2.8743E-02	3.9078E-02	8.0438E-01	9.3400E-05	4.3137E-03
18	6.3928E+05	1.2500E-01	2.5189E-02	4.3052E-02	8.0786E-01	1.2185E-04	3.9096E-03
19	5.6416E+05	1.2500E-01	2.1907E-02	4.3882E-02	8.1276E-01	1.4090E-04	3.4373E-03
20	4.9787E+05	1.2500E-01	1.8926E-02	4.4918E-02	8.1566E-01	1.5715E-04	3.0045E-03
21	4.3937E+05	1.2500E-01	1.6253E-02	4.4282E-02	8.1512E-01	1.6544E-04	2.6019E-03
22	3.8774E+05	2.5000E-01	2.5793E-02	8.9627E-02	8.1186E-01	3.8695E-04	2.2702E-03
23	3.0197E+05	2.5000E-01	1.8651E-02	8.0129E-02	8.0439E-01	3.8061E-04	1.7378E-03
24	2.3518E+05	2.5000E-01	1.3370E-02	6.7959E-02	7.9410E-01	3.4877E-04	1.3356E-03
25	1.8316E+05	2.5000E-01	9.4997E-03	5.5544E-02	7.7944E-01	3.0523E-04	1.0918E-03
26	1.4264E+05	2.5000E-01	6.7113E-03	5.1837E-02	7.6352E-01	3.0811E-04	9.3554E-04
27	1.1109E+05	2.5000E-01	4.7065E-03	4.2396E-02	7.3636E-01	2.8312E-04	7.9698E-04
28	8.6517E+04	2.5000E-01	3.2736E-03	4.0612E-02	7.1618E-01	3.0565E-04	7.0713E-04
29	6.7379E+04	2.5000E-01	2.2563E-03	3.1659E-02	6.8872E-01	3.0565E-04	6.4392E-04
30	5.2475E+04	2.5000E-01	1.5519E-03	2.5021E-02	6.4899E-01	2.7655E-04	5.5667E-04
31	4.0868E+04	2.5000E-01	1.0665E-03	1.9277E-02	6.2908E-01	2.3499E-04	4.8063E-04
32	3.1828E+04	1.2500E-01	4.0058E-04	3.3486E-03	6.1442E-01	3.9956E-05	4.2249E-04
33	2.8088E+04	1.2500E-01	3.3193E-04	5.2705E-03	6.0583E-01	7.3702E-05	4.3258E-04
34	2.4787E+04	1.2500E-01	2.7503E-04	5.2998E-03	5.9799E-01	6.5635E-05	4.4283E-04
35	2.1875E+04	1.2500E-01	2.2787E-04	4.0184E-03	5.9406E-01	5.0467E-05	4.2345E-04
36	1.9304E+04	1.2500E-01	1.8878E-04	2.7660E-03	5.8352E-01	3.6406E-05	4.0632E-04
37	1.7036E+04	1.2500E-01	1.5639E-04	1.8005E-03	5.7335E-01	2.2570E-05	3.8814E-04
38	1.5034E+04	1.2500E-01	1.2956E-04	1.3302E-03	5.7224E-01	1.8976E-05	4.0149E-04
39	1.3268E+04	1.2500E-01	1.0733E-04	1.1299E-03	5.7611E-01	1.3705E-05	4.0405E-04
40	1.1709E+04	1.2497E-01	8.8889E-05	8.2485E-04	5.8482E-01	1.0526E-05	4.2054E-04
41	1.0333E+04	1.2503E-01	7.3672E-05	5.1877E-04	5.9925E-01	7.4230E-06	4.3266E-04
42	9.1188E+03	1.2500E-01	6.1013E-05	3.4571E-04	6.1372E-01	4.5229E-06	4.3489E-04
43	8.0473E+03	1.2500E-01	5.0543E-05	3.2874E-04	5.9361E-01	3.4061E-06	4.4086E-04
44	7.1017E+03	1.2500E-01	4.1870E-05	2.5967E-04	5.8677E-01	2.9578E-06	4.6661E-04
45	6.2673E+03	1.2500E-01	3.4687E-05	1.9407E-04	6.0671E-01	2.2365E-06	4.8669E-04
46	5.5308E+03	1.2500E-01	2.8736E-05	1.5086E-04	6.1551E-01	1.8160E-06	5.1025E-04
47	4.8809E+03	1.2500E-01	2.3806E-05	1.0472E-04	6.3852E-01	1.3817E-06	5.2485E-04
48	4.3074E+03	1.2500E-01	1.9723E-05	7.2615E-05	6.5694E-01	9.7276E-07	5.1447E-04
49	3.8013E+03	1.2500E-01	1.6340E-05	6.1548E-05	6.7598E-01	8.3902E-07	5.3773E-04
50	3.3546E+03	1.2500E-01	1.3538E-05	4.1960E-05	6.6928E-01	6.1520E-07	5.3211E-04
51	2.9604E+03	1.2500E-01	1.1217E-05	2.1931E-05	6.5959E-01	3.6888E-07	5.7891E-04
52	2.6126E+03	1.2500E-01	9.2940E-06	1.8728E-05	6.4404E-01	2.8537E-07	7.0373E-04
53	2.3056E+03	1.2500E-01	7.7008E-06	7.5664E-06	6.4454E-01	2.2624E-07	7.4361E-04
54	2.0347E+03	1.2500E-01	6.3806E-06	1.4013E-05	6.8015E-01	1.8913E-07	8.6559E-04
55	1.7956E+03	1.2500E-01	5.2868E-06	1.1434E-05	7.0655E-01	1.7565E-07	8.8600E-04
56	1.5846E+03	1.2500E-01	4.3805E-06	7.2782E-06	8.1958E-01	1.0736E-07	8.8238E-04
57	1.3984E+03	1.2500E-01	3.6297E-06	5.4056E-06	9.7080E-01	9.9403E-08	9.8932E-04
58	1.2341E+03	1.2500E-01	3.0078E-06	3.0142E-06	8.1400E-01	5.2220E-08	8.1088E-04
59	1.0891E+03	1.2500E-01	2.4926E-06	2.2400E-06	9.5033E-01	3.9561E-08	9.3131E-04
60	9.6112E+02	2.5000E-01	3.7775E-06	3.2503E-06	8.3013E-01	5.8576E-08	1.0171E-03
61	7.4852E+02	2.5000E-01	2.5942E-06	2.5884E-06	8.0391E-01	4.7627E-08	1.1441E-03
62	5.8295E+02	2.5000E-01	1.7817E-06	8.5729E-07	1.1114E+00	1.9694E-08	1.3830E-03
63	4.5400E+02	2.5000E-01	1.2236E-06	4.4947E-07	1.0489E+00	5.0427E-09	1.2256E-03
64	3.5357E+02	2.5000E-01	8.4052E-07	2.7371E-07	1.0385E+00	1.6538E-09	1.3569E-03
65	2.7536E+02	2.5000E-01	5.7731E-07	1.2425E-07	1.1223E+00	5.0275E-10	1.4174E-03
66	2.1445E+02	2.5000E-01	3.9648E-07	8.6242E-08	1.1565E+00	1.9984E-10	1.3278E-03
67	1.6702E+02	2.5000E-01	2.7240E-07	6.0122E-08	1.1445E+00	1.0450E-10	1.3692E-03
68	1.3007E+02	2.5000E-01	1.8709E-07	3.2775E-08	1.0259E+00	4.0503E-11	1.0219E-03
69	1.0130E+02	5.0000E-01	2.1687E-07	2.6816E-08	1.5508E+00	4.2482E-11	1.9493E-03
70	6.1442E+01	1.7500E+00	1.9402E-07	2.3378E-08	1.5536E+00	6.3259E-11	3.1071E-03
	1.0677E+01		1.0000E+00	1.0000E+00		4.4779E-03	

TABLE B-XXIX

ZEBRA-3 70-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.9315E-01	7.4575E-06	5.4281E-06
2	1.6487E+07	2.5000E-01	1.4083E-04	1.1037E-04
3	1.2840E+07	2.5000E-01	1.2800E-03	1.0607E-03
4	1.0000E+07	2.5000E-01	6.4384E-03	5.5801E-03
5	7.7880E+06	2.5000E-01	2.0389E-02	1.8321E-02
6	6.0653E+06	2.5000E-01	4.5055E-02	4.1679E-02
7	4.7237E+06	2.5000E-01	7.5399E-02	7.1398E-02
8	3.6788E+06	2.5000E-01	1.0193E-01	9.8348E-02
9	2.8650E+06	2.5000E-01	1.1710E-01	1.1473E-01
10	2.2313E+06	2.5000E-01	1.1890E-01	1.1802E-01
11	1.7377E+06	2.5000E-01	1.0993E-01	1.1030E-01
12	1.3533E+06	1.2500E-01	4.9495E-02	5.0045E-02
13	1.1943E+06	1.2500E-01	4.5347E-02	4.6162E-02
14	1.0540E+06	1.2500E-01	4.0995E-02	4.1960E-02
15	9.3014E+05	1.2500E-01	3.6679E-02	3.7727E-02
16	8.2085E+05	1.2500E-01	3.2551E-02	3.3700E-02
17	7.2440E+05	1.2500E-01	2.8581E-02	2.9668E-02
18	6.3928E+05	1.2500E-01	2.5015E-02	2.6176E-02
19	5.6416E+05	1.2500E-01	2.1736E-02	2.2882E-02
20	4.9787E+05	1.2500E-01	1.8763E-02	1.9854E-02
21	4.3937E+05	1.2500E-01	1.6105E-02	1.7093E-02
22	3.8774E+05	2.5000E-01	2.5544E-02	2.7210E-02
23	3.0197E+05	2.5000E-01	1.8451E-02	1.9788E-02
24	2.3518E+05	2.5000E-01	1.3207E-02	1.4296E-02
25	1.8316E+05	2.5000E-01	9.3692E-03	1.0241E-02
26	1.4264E+05	2.5000E-01	6.6122E-03	7.2739E-03
27	1.1109E+05	2.5000E-01	4.6349E-03	5.1131E-03
28	8.6517E+04	2.5000E-01	3.2250E-03	3.5495E-03
29	6.7379E+04	2.5000E-01	2.2251E-03	2.4335E-03
30	5.2475E+04	2.5000E-01	1.5320E-03	1.6648E-03
31	4.0868E+04	2.5000E-01	1.0538E-03	1.1386E-03
32	3.1828E+04	1.2500E-01	3.9606E-04	4.2623E-04
33	2.8088E+04	1.2500E-01	3.2831E-04	3.5248E-04
34	2.4787E+04	1.2500E-01	2.7212E-04	2.9151E-04
35	2.1875E+04	1.2500E-01	2.2554E-04	2.4110E-04
36	1.9304E+04	1.2500E-01	1.8690E-04	1.9940E-04
37	1.7036E+04	1.2500E-01	1.5489E-04	1.6494E-04
38	1.5034E+04	1.2500E-01	1.2835E-04	1.3644E-04
39	1.3268E+04	1.2500E-01	1.0635E-04	1.1286E-04
40	1.1709E+04	1.2497E-01	8.8103E-05	9.3353E-05
41	1.0333E+04	1.2503E-01	7.3037E-05	7.7276E-05
42	9.1188E+03	1.2500E-01	6.0500E-05	6.3922E-05
43	8.0473E+03	1.2500E-01	5.0129E-05	5.2895E-05
44	7.1017E+03	1.2500E-01	4.1535E-05	4.3773E-05
45	6.2673E+03	1.2500E-01	3.4416E-05	3.6228E-05
46	5.5308E+03	1.2500E-01	2.8516E-05	2.9985E-05
47	4.8809E+03	1.2500E-01	2.3628E-05	2.4819E-05
48	4.3074E+03	1.2500E-01	1.9579E-05	2.0546E-05
49	3.8013E+03	1.2500E-01	1.6223E-05	1.7008E-05
50	3.3546E+03	1.2500E-01	1.3443E-05	1.4082E-05
51	2.9604E+03	1.2500E-01	1.1139E-05	1.1659E-05
52	2.6126E+03	1.2500E-01	9.2306E-06	9.6540E-06
53	2.3056E+03	1.2500E-01	7.6491E-06	7.9943E-06
54	2.0347E+03	1.2500E-01	6.3385E-06	6.6196E-06
55	1.7956E+03	1.2500E-01	5.2526E-06	5.4812E-06
56	1.5846E+03	1.2500E-01	4.3526E-06	4.5388E-06
57	1.3984E+03	1.2500E-01	3.6071E-06	3.7580E-06
58	1.2341E+03	1.2500E-01	2.9893E-06	3.1127E-06
59	1.0891E+03	1.2500E-01	2.4774E-06	2.5784E-06
60	9.6112E+02	2.5000E-01	3.7549E-06	3.9060E-06
61	7.4852E+02	2.5000E-01	2.5791E-06	2.6802E-06
62	5.8295E+02	2.5000E-01	1.7718E-06	1.8390E-06
63	4.5400E+02	2.5000E-01	1.2169E-06	1.2615E-06
64	3.5357E+02	2.5000E-01	8.3601E-07	8.6615E-07
65	2.7536E+02	2.5000E-01	5.7432E-07	5.9432E-07
66	2.1445E+02	2.5000E-01	3.9452E-07	4.0760E-07
67	1.6702E+02	2.5000E-01	2.7107E-07	2.7994E-07
68	1.3007E+02	2.5000E-01	1.8622E-07	1.9204E-07
69	1.0130E+02	5.0000E-01	2.1588E-07	2.2254E-07
70	6.1442E+01	1.7500E+00	1.9315E-07	1.9895E-07
			1.0000E+00	1.0000E+00

TABLE B-XXX

ZEBRA-3 25-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Adjoint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Adjoint (rho/n/s)
1	2.0000E+07	1.1931E+00	2.7780E-02	4.7735E-03	4.0288E+00	4.1300E-06	3.4748E-02
2	6.0653E+06	5.0000E-01	1.1935E-01	2.0631E-02	8.8633E-01	1.7113E-05	6.3190E-03
3	3.6788E+06	5.0000E-01	2.1814E-01	4.1355E-02	8.2403E-01	3.3147E-05	5.2095E-03
4	2.2313E+06	5.0000E-01	2.2875E-01	5.7121E-02	7.5569E-01	4.6633E-05	4.1542E-03
5	1.3533E+06	5.0000E-01	1.7302E-01	9.5572E-02	1.2055E+00	1.3040E-04	5.7553E-03
6	8.2085E+05	5.0000E-01	1.0856E-01	1.5932E-01	1.1845E+00	4.2253E-04	5.8890E-03
7	4.9787E+05	5.0000E-01	6.0973E-02	1.7883E-01	8.9604E-01	7.0954E-04	2.8894E-03
8	3.0197E+05	5.0000E-01	3.2021E-02	1.4809E-01	5.8637E-01	7.2938E-04	1.1274E-03
9	1.8316E+05	5.0000E-01	1.6211E-02	1.0738E-01	5.6601E-01	6.1334E-04	7.4367E-04
10	1.1109E+05	5.0000E-01	7.9801E-03	8.3008E-02	5.3284E-01	5.9475E-04	5.5176E-04
11	6.7379E+04	5.0000E-01	3.8082E-03	5.6679E-02	4.9072E-01	5.8220E-04	4.4042E-04
12	4.0868E+04	5.0000E-01	1.7990E-03	2.7896E-02	6.7839E-01	3.4865E-04	4.8997E-04
13	2.4787E+04	5.0000E-01	8.4806E-04	1.3885E-02	8.6166E-01	1.7508E-04	6.0921E-04
14	1.5034E+04	5.0000E-01	3.9944E-04	3.8037E-03	8.5561E-01	5.0630E-05	6.0848E-04
15	9.1188E+03	5.0000E-01	1.8811E-04	1.1282E-03	8.8069E-01	1.3123E-05	6.7095E-04
16	5.5308E+03	5.0000E-01	8.8606E-05	3.8974E-04	9.4898E-01	5.0094E-06	7.6569E-04
17	3.3546E+03	5.0000E-01	4.1750E-05	9.0185E-05	9.6016E-01	1.4957E-06	9.3848E-04
18	2.0347E+03	5.0000E-01	1.9678E-05	3.8131E-05	1.1655E+00	5.7155E-07	1.3292E-03
19	1.2341E+03	5.0000E-01	9.2779E-06	8.5044E-06	9.5173E-01	1.5036E-07	1.0122E-03
20	7.4852E+02	5.0000E-01	4.3759E-06	3.4457E-06	7.0259E-01	6.7320E-08	9.2703E-04
21	4.5400E+02	5.0000E-01	2.0641E-06	7.2318E-07	7.6572E-01	6.6965E-09	9.4733E-04
22	2.7536E+02	5.0000E-01	9.7379E-07	2.1049E-07	8.3595E-01	7.0260E-10	1.0070E-03
23	1.6702E+02	5.0000E-01	4.5949E-07	9.2897E-08	7.9617E-01	1.4500E-10	8.7713E-04
24	1.0130E+02	5.0000E-01	2.1687E-07	2.6816E-08	5.6887E-01	4.2482E-11	7.1506E-04
25	6.1442E+01	1.7500E+00	1.9402E-07	2.3378E-08	5.6989E-01	6.3259E-11	1.1398E-03
	1.0677E+01		1.0000E+00	1.0000E+00		4.4779E-03	

TABLE B-XXXI

ZEBRA-3 25-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.1931E+00	2.8256E-02	2.5078E-02
2	6.0653E+06	5.0000E-01	1.2045E-01	1.1308E-01
3	3.6788E+06	5.0000E-01	2.1903E-01	2.1308E-01
4	2.2313E+06	5.0000E-01	2.2883E-01	2.2832E-01
5	1.3533E+06	5.0000E-01	1.7252E-01	1.7589E-01
6	8.2085E+05	5.0000E-01	1.0788E-01	1.1243E-01
7	4.9787E+05	5.0000E-01	6.0412E-02	6.4157E-02
8	3.0197E+05	5.0000E-01	3.1658E-02	3.4085E-02
9	1.8316E+05	5.0000E-01	1.5981E-02	1.7515E-02
10	1.1109E+05	5.0000E-01	7.8599E-03	8.6626E-03
11	6.7379E+04	5.0000E-01	3.7572E-03	4.0983E-03
12	4.0868E+04	5.0000E-01	1.7782E-03	1.9173E-03
13	2.4787E+04	5.0000E-01	8.3945E-04	8.9695E-04
14	1.5034E+04	5.0000E-01	3.9584E-04	4.1993E-04
15	9.1188E+03	5.0000E-01	1.8658E-04	1.9682E-04
16	5.5308E+03	5.0000E-01	8.7946E-05	9.2358E-05
17	3.3546E+03	5.0000E-01	4.1462E-05	4.3389E-05
18	2.0347E+03	5.0000E-01	1.9551E-05	2.0398E-05
19	1.2341E+03	5.0000E-01	9.2217E-06	9.5971E-06
20	7.4852E+02	5.0000E-01	4.3507E-06	4.5191E-06
21	4.5400E+02	5.0000E-01	2.0529E-06	2.1277E-06
22	2.7536E+02	5.0000E-01	9.6884E-07	1.0019E-06
23	1.6702E+02	5.0000E-01	4.5729E-07	4.7198E-07
24	1.0130E+02	5.0000E-01	2.1588E-07	2.2254E-07
25	6.1442E+01	1.7500E+00	1.9315E-07	1.9895E-07
			1.0000E+00	1.0000E+00

TABLE B-XXXII

GODIVA 70-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux ($n/cm^2/s$)	Central Ad joint ($\rho h_0/n/s$)	Edge Flux ($n/cm^2/s$)	Edge Ad joint ($\rho h_0/n/s$)
1	2.0000E+07	1.9315E-01	7.5113E-06	4.7366E-06	2.1307E+00	1.1430E-06	5.1922E-01
2	1.6487E+07	2.5000E-01	1.3537E-04	8.3890E-05	2.0079E+00	1.9764E-05	4.7689E-01
3	1.2840E+07	2.5000E-01	1.2037E-03	7.6020E-04	1.6723E+00	1.7975E-04	3.9866E-01
4	1.0000E+07	2.5000E-01	6.0041E-03	3.8733E-03	1.5675E+00	9.0338E-04	3.6775E-01
5	7.7880E+06	2.5000E-01	1.9026E-02	1.2082E-02	1.3105E+00	2.7551E-03	3.0004E-01
6	6.0653E+06	2.5000E-01	4.2329E-02	2.6124E-02	1.0052E+00	5.7819E-03	2.2348E-01
7	4.7237E+06	2.5000E-01	7.1598E-02	4.4723E-02	9.9821E-01	9.6933E-03	2.1734E-01
8	3.6788E+06	2.5000E-01	9.8051E-02	6.4088E-02	1.0060E+00	1.3695E-02	2.1601E-01
9	2.8650E+06	2.5000E-01	1.1421E-01	7.9928E-02	1.0126E+00	1.6834E-02	2.1426E-01
10	2.2313E+06	2.5000E-01	1.1756E-01	8.8377E-02	1.0007E+00	1.8432E-02	2.0946E-01
11	1.7377E+06	2.5000E-01	1.1014E-01	9.1587E-02	9.6885E-01	1.9028E-02	2.0165E-01
12	1.3533E+06	1.2500E-01	5.0064E-02	4.5580E-02	9.4479E-01	9.4391E-03	1.9554E-01
13	1.1943E+06	1.2500E-01	4.6150E-02	4.4698E-02	9.4008E-01	9.2105E-03	1.9322E-01
14	1.0540E+06	1.2500E-01	4.1981E-02	4.3384E-02	9.4079E-01	8.8719E-03	1.9148E-01
15	9.3014E+05	1.2500E-01	3.7822E-02	4.2222E-02	9.2904E-01	8.5524E-03	1.8696E-01
16	8.2085E+05	1.2500E-01	3.3754E-02	4.0821E-02	9.2965E-01	8.1677E-03	1.8448E-01
17	7.2440E+05	1.2500E-01	2.9755E-02	3.9088E-02	9.3408E-01	7.7134E-03	1.8277E-01
18	6.3928E+05	1.2500E-01	2.6155E-02	3.8109E-02	9.3787E-01	7.4128E-03	1.8120E-01
19	5.6416E+05	1.2500E-01	2.2835E-02	3.6137E-02	9.5271E-01	6.9114E-03	1.8089E-01
20	4.9787E+05	1.2500E-01	1.9779E-02	3.3619E-02	9.7032E-01	6.3233E-03	1.8108E-01
21	4.3937E+05	1.2500E-01	1.7054E-02	3.0942E-02	9.8674E-01	5.7199E-03	1.8148E-01
22	3.8774E+05	2.5000E-01	2.7146E-02	5.2726E-02	1.0148E+00	9.5013E-03	1.8190E-01
23	3.0197E+05	2.5000E-01	1.9708E-02	4.0820E-02	1.0475E+00	7.1203E-03	1.8214E-01
24	2.3518E+05	2.5000E-01	1.4138E-02	3.0303E-02	1.0897E+00	5.1173E-03	1.8402E-01
25	1.8316E+05	2.5000E-01	1.0104E-02	2.1991E-02	1.1356E+00	3.5687E-03	1.8486E-01
26	1.4264E+05	2.5000E-01	7.1135E-03	1.5589E-02	1.1759E+00	2.4312E-03	1.8476E-01
27	1.1109E+05	2.5000E-01	5.0005E-03	1.1008E-02	1.2066E+00	1.6585E-03	1.8413E-01
28	8.6517E+04	2.5000E-01	3.4810E-03	7.5989E-03	1.2422E+00	1.1100E-03	1.8535E-01
29	6.7379E+04	2.5000E-01	2.4034E-03	5.0071E-03	1.2734E+00	7.1434E-04	1.8668E-01
30	5.2475E+04	2.5000E-01	1.6556E-03	3.3791E-03	1.2747E+00	4.7213E-04	1.8355E-01
31	4.0868E+04	2.5000E-01	1.1391E-03	2.0980E-03	1.2966E+00	2.8946E-04	1.8463E-01
32	3.1828E+04	1.2500E-01	4.2816E-04	7.0513E-04	1.3225E+00	9.6833E-05	1.8748E-01
33	2.8088E+04	1.2500E-01	3.5494E-04	5.6507E-04	1.3251E+00	7.7235E-05	1.8685E-01
34	2.4787E+04	1.2500E-01	2.9421E-04	4.2427E-04	1.3330E+00	5.7804E-05	1.8777E-01
35	2.1875E+04	1.2500E-01	2.4385E-04	3.4081E-04	1.3322E+00	4.6430E-05	1.8729E-01
36	1.9304E+04	1.2500E-01	2.0208E-04	2.7003E-04	1.3765E+00	3.6810E-05	1.9375E-01
37	1.7036E+04	1.2500E-01	1.6746E-04	2.1795E-04	1.3589E+00	2.9720E-05	1.9083E-01
38	1.5034E+04	1.2500E-01	1.3877E-04	1.6529E-04	1.4093E+00	2.2537E-05	1.9840E-01
39	1.3268E+04	1.2500E-01	1.1498E-04	1.3103E-04	1.3778E+00	1.7873E-05	1.9364E-01
40	1.1709E+04	1.2497E-01	9.5249E-05	9.9368E-05	1.4028E+00	1.3544E-05	1.9747E-01
41	1.0333E+04	1.2503E-01	7.8959E-05	7.6688E-05	1.4208E+00	1.0469E-05	2.0049E-01
42	9.1188E+03	1.2500E-01	6.5403E-05	5.7805E-05	1.3821E+00	7.8930E-06	1.9501E-01
43	8.0473E+03	1.2500E-01	5.4189E-05	4.3791E-05	1.4187E+00	5.9760E-06	2.0054E-01
44	7.1017E+03	1.2500E-01	4.4898E-05	3.3774E-05	1.4478E+00	4.6233E-06	2.0525E-01
45	6.2673E+03	1.2500E-01	3.7200E-05	2.4951E-05	1.4626E+00	3.4303E-06	2.0826E-01
46	5.5308E+03	1.2500E-01	3.0822E-05	1.9964E-05	1.5600E+00	2.7519E-06	2.2252E-01
47	4.8809E+03	1.2500E-01	2.5537E-05	1.5613E-05	1.5466E+00	2.1576E-06	2.2121E-01
48	4.3074E+03	1.2500E-01	2.1160E-05	1.1947E-05	1.5960E+00	1.6574E-06	2.2915E-01
49	3.8013E+03	1.2500E-01	1.7532E-05	1.0223E-05	1.6140E+00	1.4224E-06	2.3187E-01
50	3.3546E+03	1.2500E-01	1.4527E-05	7.4913E-06	1.6143E+00	1.0455E-06	2.3306E-01
51	2.9604E+03	1.2500E-01	1.2037E-05	6.0601E-06	1.6533E+00	8.4702E-07	2.3869E-01
52	2.6126E+03	1.2500E-01	9.9742E-06	4.679E-06	1.6135E+00	6.5817E-07	2.3512E-01
53	2.3056E+03	1.2500E-01	8.2650E-06	3.5714E-06	1.5105E+00	5.0509E-07	2.2074E-01
54	2.0347E+03	1.2500E-01	6.8486E-06	2.6869E-06	1.5462E+00	3.8726E-07	2.3128E-01
55	1.7956E+03	1.2500E-01	5.6752E-06	2.0668E-06	1.6275E+00	2.9724E-07	2.4104E-01
56	1.5846E+03	1.2500E-01	4.7027E-06	1.8177E-06	1.5590E+00	2.6144E-07	2.3115E-01
57	1.3984E+03	1.2500E-01	3.8973E-06	1.2764E-06	1.6379E+00	1.8668E-07	2.4690E-01
58	1.2341E+03	1.2500E-01	3.2297E-06	9.3625E-07	1.6114E+00	1.3993E-07	2.4870E-01
59	1.0891E+03	1.2500E-01	2.6766E-06	8.1954E-07	1.3904E+00	1.2140E-07	2.1221E-01
60	9.6112E+02	2.5000E-01	4.0564E-06	1.1278E-06	1.4726E+00	1.6933E-07	2.2684E-01
61	7.4852E+02	2.5000E-01	2.7861E-06	6.5535E-07	1.6087E+00	1.0239E-07	2.5891E-01
62	5.8295E+02	2.5000E-01	1.9138E-06	3.7751E-07	1.7144E+00	6.1159E-08	2.8379E-01
63	4.5400E+02	2.5000E-01	1.3146E-06	2.8998E-07	1.6235E+00	4.5868E-08	2.6210E-01
64	3.5357E+02	2.5000E-01	9.0310E-07	1.8848E-07	1.5451E+00	3.0369E-08	2.5451E-01
65	2.7536E+02	2.5000E-01	6.2044E-07	1.0295E-07	1.6239E+00	1.7878E-08	2.8811E-01
66	2.1445E+02	2.5000E-01	4.2626E-07	7.4411E-08	1.5089E+00	1.2288E-08	2.5441E-01
67	1.6702E+02	2.5000E-01	2.9286E-07	5.0942E-08	1.4781E+00	8.5723E-09	2.5403E-01
68	1.3007E+02	2.5000E-01	2.0122E-07	3.4602E-08	1.4545E+00	5.7398E-09	2.4602E-01
69	1.0130E+02	5.0000E-01	2.3327E-07	3.8575E-08	1.5198E+00	6.2529E-09	2.5099E-01
70	6.1442E+01	1.7500E+00	2.0869E-07	1.7697E-08	1.6925E+00	2.7125E-09	2.6787E-01
	1.0677E+01		1.0000E+00	1.0000E+00		1.9807E-01	

TABLE B-XXXIII

GODIVA 25-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Adjoint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Adjoint (rho/n/s)
1	2.0000E+07	1.1931E+00	2.6377E-02	1.6804E-02	3.1389E+00	3.8591E-03	7.4517E-01
2	6.0653E+06	5.0000E-01	1.1393E-01	7.0846E-02	7.2372E-01	1.5475E-02	1.5924E-01
3	3.6788E+06	5.0000E-01	2.1226E-01	1.4402E-01	7.2921E-01	3.0529E-02	1.5544E-01
4	2.2313E+06	5.0000E-01	2.2770E-01	1.7996E-01	7.1151E-01	3.7460E-02	1.4851E-01
5	1.3533E+06	5.0000E-01	1.7602E-01	1.7588E-01	1.3564E+00	3.6074E-02	2.7715E-01
6	8.2085E+05	5.0000E-01	1.1250E-01	1.5415E-01	1.3562E+00	3.0205E-02	2.6347E-01
7	4.9787E+05	5.0000E-01	6.3979E-02	1.1729E-01	1.0743E+00	2.1544E-02	1.9668E-01
8	3.0197E+05	5.0000E-01	3.3846E-02	7.1123E-02	7.7207E-01	1.2238E-02	1.3228E-01
9	1.8316E+05	5.0000E-01	1.7218E-02	3.7580E-02	8.3503E-01	5.9999E-03	1.3352E-01
10	1.1109E+05	5.0000E-01	8.4814E-03	1.8607E-02	8.8466E-01	2.7685E-03	1.3347E-01
11	6.7379E+04	5.0000E-01	4.0590E-03	8.3862E-03	9.2051E-01	1.1865E-03	1.3374E-01
12	4.0868E+04	5.0000E-01	1.9222E-03	3.3682E-03	1.4249E+00	4.6353E-04	2.0192E-01
13	2.4787E+04	5.0000E-01	9.0760E-04	1.2531E-03	1.9510E+00	1.7076E-04	2.7442E-01
14	1.5034E+04	5.0000E-01	4.2795E-04	4.7237E-04	2.0268E+00	6.4423E-05	2.8539E-01
15	9.1188E+03	5.0000E-01	2.0169E-04	1.6032E-04	2.0632E+00	2.1923E-05	2.9227E-01
16	5.5308E+03	5.0000E-01	9.5051E-05	5.7746E-05	2.2819E+00	7.9894E-06	3.2684E-01
17	3.3546E+03	5.0000E-01	4.4803E-05	2.1800E-05	2.3090E+00	3.0557E-06	3.3510E-01
18	2.0347E+03	5.0000E-01	2.1124E-05	7.8477E-06	2.3014E+00	1.1326E-06	3.4332E-01
19	1.2341E+03	5.0000E-01	9.9627E-06	2.8836E-06	1.6164E+00	4.3067E-07	2.4845E-01
20	7.4852E+02	5.0000E-01	4.6999E-06	1.0329E-06	1.2005E+00	1.6354E-07	1.9605E-01
21	4.5400E+02	5.0000E-01	2.2177E-06	4.7846E-07	1.1447E+00	7.6237E-08	1.8663E-01
22	2.7536E+02	5.0000E-01	1.0467E-06	1.7736E-07	1.1317E+00	3.0166E-08	1.9598E-01
23	1.6702E+02	5.0000E-01	4.9409E-07	8.5544E-08	1.0594E+00	1.4312E-08	1.8064E-01
24	1.0130E+02	5.0000E-01	2.3327E-07	3.8575E-08	5.4903E-01	6.2529E-09	9.0670E-02
25	6.1442E+01	1.7500E+00	2.0869E-07	1.7697E-08	6.1142E-01	2.7125E-09	9.6767E-02
	1.0677E+01		1.0000E+00	1.0000E+00		1.9807E-01	

TABLE B-XXXIV
 VERA-1B 70-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Ad joint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Ad joint (rho/n/s)
1	2.0000E+07	1.9315E-01	6.5798E-06	1.7048E-06	1.4806E+00	9.1009E-10	2.4228E-02
2	1.6487E+07	2.5000E-01	1.2449E-04	3.4071E-05	1.4088E+00	1.6565E-08	1.9841E-02
3	1.2840E+07	2.5000E-01	1.1413E-03	2.8714E-04	1.1828E+00	1.2961E-07	1.5706E-02
4	1.0000E+07	2.5000E-01	5.8133E-03	1.5343E-03	1.1018E+00	6.5515E-07	1.3396E-02
5	7.7880E+06	2.5000E-01	1.8685E-02	5.2241E-03	1.0525E+00	2.0602E-06	1.0923E-02
6	6.0653E+06	2.5000E-01	4.1961E-02	1.2483E-02	9.4031E-01	4.4295E-06	8.2776E-03
7	4.7237E+06	2.5000E-01	7.1391E-02	2.1149E-02	9.6634E-01	7.3043E-06	7.3043E-03
8	3.6788E+06	2.5000E-01	9.8088E-02	2.9451E-02	9.7205E-01	1.0360E-05	6.7538E-03
9	2.8650E+06	2.5000E-01	1.1443E-01	4.8398E-02	9.5222E-01	1.3192E-05	6.3352E-03
10	2.2313E+06	2.5000E-01	1.1784E-01	5.9530E-02	9.4557E-01	1.5186E-05	5.6880E-03
11	1.7377E+06	2.5000E-01	1.1035E-01	6.4045E-02	9.4734E-01	1.9396E-05	4.8501E-03
12	1.3533E+06	1.2500E-01	5.0131E-02	3.2171E-02	9.5722E-01	1.3505E-05	3.5152E-03
13	1.1943E+06	1.2500E-01	4.6214E-02	3.2202E-02	9.6979E-01	1.8927E-05	3.4910E-03
14	1.0540E+06	1.2500E-01	4.2023E-02	3.1898E-02	9.8561E-01	2.8041E-05	3.7799E-03
15	9.3014E+05	1.2500E-01	3.7834E-02	3.1310E-02	9.9933E-01	3.7711E-05	3.9646E-03
16	8.2085E+05	1.2500E-01	3.3765E-02	3.0760E-02	1.0187E+00	4.7827E-05	4.0771E-03
17	7.2440E+05	1.2500E-01	2.9743E-02	3.0806E-02	1.0371E+00	6.9063E-05	4.5212E-03
18	6.3928E+05	1.2500E-01	2.6166E-02	3.0230E-02	1.0561E+00	9.0891E-05	3.7301E-03
19	5.6416E+05	1.2500E-01	2.2848E-02	2.9328E-02	1.0780E+00	1.0194E-04	3.2751E-03
20	4.9787E+05	1.2500E-01	1.9794E-02	2.8575E-02	1.0977E+00	1.1154E-04	2.8721E-03
21	4.3937E+05	1.2500E-01	1.7058E-02	2.7448E-02	1.1147E+00	1.1339E-04	2.4998E-03
22	3.8774E+05	2.5000E-01	2.7149E-02	5.3312E-02	1.1346E+00	2.7827E-04	2.2309E-03
23	3.0197E+05	2.5000E-01	1.9719E-02	4.8840E-02	1.1660E+00	2.6984E-04	1.7184E-03
24	2.3518E+05	2.5000E-01	1.4173E-02	4.3873E-02	1.1972E+00	2.3752E-04	1.3070E-03
25	1.8316E+05	2.5000E-01	1.0140E-02	3.9320E-02	1.2221E+00	1.9999E-04	1.0725E-03
26	1.4264E+05	2.5000E-01	7.1574E-03	3.6718E-02	1.2440E+00	2.1939E-04	9.3125E-04
27	1.1109E+05	2.5000E-01	5.0338E-03	3.2387E-02	1.2676E+00	1.8556E-04	7.7701E-04
28	8.6517E+04	2.5000E-01	3.5028E-03	2.9572E-02	1.2879E+00	2.2265E-04	6.9771E-04
29	6.7379E+04	2.5000E-01	2.4145E-03	2.5849E-02	1.3085E+00	1.9929E-04	6.2770E-04
30	5.2475E+04	2.5000E-01	1.6605E-03	2.3231E-02	1.3289E+00	1.8511E-04	5.3829E-04
31	4.0868E+04	2.5000E-01	1.1410E-03	2.0403E-02	1.3511E+00	1.6046E-04	4.6487E-04
32	3.1828E+04	1.2500E-01	4.2849E-04	7.1722E-03	1.3745E+00	1.8688E-05	4.0072E-04
33	2.8088E+04	1.2500E-01	3.5503E-04	9.9651E-03	1.3742E+00	5.7593E-05	4.2535E-04
34	2.4787E+04	1.2500E-01	2.9414E-04	7.9515E-03	1.3807E+00	5.6727E-05	4.4733E-04
35	2.1875E+04	1.2500E-01	2.4368E-04	7.6203E-03	1.3953E+00	4.2365E-05	4.1975E-04
36	1.9304E+04	1.2500E-01	2.0186E-04	6.9327E-03	1.4142E+00	2.9604E-05	3.9420E-04
37	1.7036E+04	1.2500E-01	1.6722E-04	6.1572E-03	1.4262E+00	1.6715E-05	3.6885E-04
38	1.5034E+04	1.2500E-01	1.3852E-04	6.0261E-03	1.4397E+00	1.5371E-05	3.8262E-04
39	1.3268E+04	1.2500E-01	1.1474E-04	5.3641E-03	1.4488E+00	1.1284E-05	3.8218E-04
40	1.1709E+04	1.2497E-01	9.5017E-05	5.0120E-03	1.4628E+00	9.1500E-06	3.9548E-04
41	1.0333E+04	1.2503E-01	7.8744E-05	4.4620E-03	1.4788E+00	6.6061E-06	4.0096E-04
42	9.1188E+03	1.2500E-01	6.5208E-05	3.7677E-03	1.4906E+00	3.5122E-06	3.9256E-04
43	8.0473E+03	1.2500E-01	5.4014E-05	3.6375E-03	1.5075E+00	2.8111E-06	3.9486E-04
44	7.1017E+03	1.2500E-01	4.4742E-05	3.3198E-03	1.5194E+00	2.6727E-06	4.2398E-04
45	6.2673E+03	1.2500E-01	3.7063E-05	2.9107E-03	1.5305E+00	2.0722E-06	4.3972E-04
46	5.5308E+03	1.2500E-01	3.0702E-05	2.7082E-03	1.5505E+00	1.8767E-06	4.6186E-04
47	4.8809E+03	1.2500E-01	2.5434E-05	2.3540E-03	1.5525E+00	1.4835E-06	4.7346E-04
48	4.3074E+03	1.2500E-01	2.1070E-05	2.0870E-03	1.5617E+00	1.0775E-06	4.6840E-04
49	3.8013E+03	1.2500E-01	1.7455E-05	1.8975E-03	1.5626E+00	1.0306E-06	4.9621E-04
50	3.3546E+03	1.2500E-01	1.4461E-05	1.6544E-03	1.5595E+00	8.3610E-07	5.0079E-04
51	2.9604E+03	1.2500E-01	1.1981E-05	1.4554E-03	1.5611E+00	5.4666E-07	4.8275E-04
52	2.6126E+03	1.2500E-01	9.9260E-06	1.2477E-03	1.5541E+00	5.0117E-07	6.5302E-04
53	2.3056E+03	1.2500E-01	8.2240E-06	1.0746E-03	1.5380E+00	3.6227E-07	6.7061E-04
54	2.0347E+03	1.2500E-01	6.8138E-06	8.8460E-04	1.5493E+00	2.9398E-07	7.5407E-04
55	1.7956E+03	1.2500E-01	5.6456E-06	7.5358E-04	1.5619E+00	2.7697E-07	7.6031E-04
56	1.5846E+03	1.2500E-01	4.6775E-06	6.4282E-04	1.5495E+00	1.8296E-07	7.6115E-04
57	1.3984E+03	1.2500E-01	3.8758E-06	5.2902E-04	1.5631E+00	1.7718E-07	8.3018E-04
58	1.2341E+03	1.2500E-01	3.2116E-06	4.1965E-04	1.5443E+00	1.0856E-07	7.1478E-04
59	1.0891E+03	1.2500E-01	2.6613E-06	3.5076E-04	1.5267E+00	7.5703E-08	8.3893E-04
60	9.6112E+02	2.5000E-01	4.0330E-06	5.1259E-04	1.5760E+00	1.1913E-07	9.0928E-04
61	7.4852E+02	2.5000E-01	2.7695E-06	3.1473E-04	1.6405E+00	7.1368E-08	1.0239E-03
62	5.8295E+02	2.5000E-01	1.9020E-06	1.8268E-04	1.6614E+00	3.7392E-08	1.2182E-03
63	4.5400E+02	2.5000E-01	1.3062E-06	1.1222E-04	1.6034E+00	1.7225E-08	1.1421E-03
64	3.5357E+02	2.5000E-01	8.9724E-07	6.6992E-05	1.5771E+00	1.1123E-08	1.2927E-03
65	2.7536E+02	2.5000E-01	6.1628E-07	3.4919E-05	1.5918E+00	4.8651E-09	1.2376E-03
66	2.1445E+02	2.5000E-01	4.2327E-07	1.9458E-05	1.5106E+00	2.4499E-09	1.1663E-03
67	1.6702E+02	2.5000E-01	2.9079E-07	1.1206E-05	1.5052E+00	1.1431E-09	1.2053E-03
68	1.3007E+02	2.5000E-01	1.9974E-07	6.6182E-06	1.5072E+00	3.2069E-10	9.3905E-04
69	1.0130E+02	5.0000E-01	2.3153E-07	6.2709E-06	1.5686E+00	1.7018E-10	1.7146E-03
70	6.1442E+01	1.7500E+00	2.0711E-07	4.0432E-06	1.6773E+00	1.8962E-10	2.7483E-03
	1.0677E+01		1.0000E+00	1.0000E+00		3.1480E-03	

TABLE B-XXXV

VERA-18 70-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.9315E-01	6.9955E-06	5.2492E-06
2	1.6487E+07	2.5000E-01	1.2967E-04	1.0793E-04
3	1.2840E+07	2.5000E-01	1.1712E-03	1.0457E-03
4	1.0000E+07	2.5000E-01	5.9007E-03	5.5335E-03
5	7.7880E+06	2.5000E-01	1.8824E-02	1.8241E-02
6	6.0653E+06	2.5000E-01	4.2073E-02	4.1604E-02
7	4.7237E+06	2.5000E-01	7.1395E-02	7.1376E-02
8	3.6788E+06	2.5000E-01	9.7995E-02	9.8389E-02
9	2.8650E+06	2.5000E-01	1.1432E-01	1.1480E-01
10	2.2313E+06	2.5000E-01	1.1777E-01	1.1807E-01
11	1.7377E+06	2.5000E-01	1.1036E-01	1.1031E-01
12	1.3533E+06	1.2500E-01	5.0162E-02	5.0035E-02
13	1.1943E+06	1.2500E-01	4.6232E-02	4.6156E-02
14	1.0540E+06	1.2500E-01	4.2046E-02	4.1949E-02
15	9.3014E+05	1.2500E-01	3.7872E-02	3.7710E-02
16	8.2085E+05	1.2500E-01	3.3789E-02	3.3688E-02
17	7.2440E+05	1.2500E-01	2.9771E-02	2.9655E-02
18	6.3928E+05	1.2500E-01	2.6162E-02	2.6176E-02
19	5.6416E+05	1.2500E-01	2.2836E-02	2.2887E-02
20	4.9787E+05	1.2500E-01	1.9773E-02	1.9863E-02
21	4.3937E+05	1.2500E-01	1.7046E-02	1.7099E-02
22	3.8774E+05	2.5000E-01	2.7126E-02	2.7222E-02
23	3.0197E+05	2.5000E-01	1.9692E-02	1.9803E-02
24	2.3518E+05	2.5000E-01	1.4128E-02	1.4319E-02
25	1.8316E+05	2.5000E-01	1.0103E-02	1.0260E-02
26	1.4264E+05	2.5000E-01	7.1144E-03	7.2950E-03
27	1.1109E+05	2.5000E-01	5.0043E-03	5.1281E-03
28	8.6517E+04	2.5000E-01	3.4852E-03	3.5589E-03
29	6.7379E+04	2.5000E-01	2.4071E-03	2.4382E-03
30	5.2475E+04	2.5000E-01	1.6585E-03	1.6669E-03
31	4.0868E+04	2.5000E-01	1.1415E-03	1.1394E-03
32	3.1828E+04	1.2500E-01	4.2916E-04	4.2632E-04
33	2.8088E+04	1.2500E-01	3.5583E-04	3.5247E-04
34	2.4787E+04	1.2500E-01	2.9499E-04	2.9143E-04
35	2.1875E+04	1.2500E-01	2.4453E-04	2.4098E-04
36	1.9304E+04	1.2500E-01	2.0267E-04	1.9926E-04
37	1.7036E+04	1.2500E-01	1.6798E-04	1.6479E-04
38	1.5034E+04	1.2500E-01	1.3921E-04	1.3629E-04
39	1.3268E+04	1.2500E-01	1.1536E-04	1.1272E-04
40	1.1709E+04	1.2497E-01	9.5579E-05	9.3218E-05
41	1.0333E+04	1.2503E-01	7.9241E-05	7.7152E-05
42	9.1188E+03	1.2500E-01	6.5645E-05	6.3811E-05
43	8.0473E+03	1.2500E-01	5.4395E-05	5.2796E-05
44	7.1017E+03	1.2500E-01	4.5073E-05	4.3685E-05
45	6.2673E+03	1.2500E-01	3.7349E-05	3.6151E-05
46	5.5308E+03	1.2500E-01	3.0948E-05	2.9917E-05
47	4.8809E+03	1.2500E-01	2.5644E-05	2.4761E-05
48	4.3074E+03	1.2500E-01	2.1250E-05	2.0495E-05
49	3.8013E+03	1.2500E-01	1.7608E-05	1.6965E-05
50	3.3546E+03	1.2500E-01	1.4591E-05	1.4045E-05
51	2.9604E+03	1.2500E-01	1.2091E-05	1.1627E-05
52	2.6126E+03	1.2500E-01	1.0019E-05	9.6270E-06
53	2.3056E+03	1.2500E-01	8.3030E-06	7.9713E-06
54	2.0347E+03	1.2500E-01	6.8805E-06	6.6002E-06
55	1.7956E+03	1.2500E-01	5.7020E-06	5.4651E-06
56	1.5846E+03	1.2500E-01	4.7251E-06	4.5253E-06
57	1.3984E+03	1.2500E-01	3.9161E-06	3.7470E-06
58	1.2341E+03	1.2500E-01	3.2454E-06	3.1034E-06
59	1.0891E+03	1.2500E-01	2.6897E-06	2.5705E-06
60	9.6112E+02	2.5000E-01	4.0765E-06	3.8936E-06
61	7.4852E+02	2.5000E-01	2.8001E-06	2.6716E-06
62	5.8295E+02	2.5000E-01	1.9235E-06	1.8331E-06
63	4.5400E+02	2.5000E-01	1.3214E-06	1.2577E-06
64	3.5357E+02	2.5000E-01	9.0779E-07	8.6346E-07
65	2.7536E+02	2.5000E-01	6.2369E-07	5.9255E-07
66	2.1445E+02	2.5000E-01	4.2851E-07	4.0650E-07
67	1.6702E+02	2.5000E-01	2.9442E-07	2.7917E-07
68	1.3007E+02	2.5000E-01	2.0230E-07	1.9155E-07
69	1.0130E+02	5.0000E-01	2.3452E-07	2.2196E-07
70	6.1442E+01	1.7500E+00	2.0983E-07	1.9841E-07
			1.0000E+00	1.0000E+00

TABLE B-XXXVI

VERA-1B 25-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Adjoint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Adjoint (rho/n/s)
1	2.0000E+07	1.1931E+00	2.5771E-02	7.0813E-03	2.2504E+00	2.8624E-06	3.0394E-02
2	6.0653E+06	5.0000E-01	1.1335E-01	3.3632E-02	6.8911E-01	1.1816E-05	5.6317E-03
3	3.6788E+06	5.0000E-01	2.1252E-01	7.7849E-02	6.9548E-01	2.3552E-05	4.7307E-03
4	2.2313E+06	5.0000E-01	2.2819E-01	1.2358E-01	6.8415E-01	3.4582E-05	3.8087E-03
5	1.3533E+06	5.0000E-01	1.7620E-01	1.2758E-01	1.4139E+00	9.8185E-05	5.3313E-03
6	8.2085E+05	5.0000E-01	1.1252E-01	1.2112E-01	1.5144E+00	3.0972E-04	5.4700E-03
7	4.9787E+05	5.0000E-01	6.4002E-02	1.0934E-01	1.2097E+00	5.0319E-04	2.7479E-03
8	3.0197E+05	5.0000E-01	3.3892E-02	9.2713E-02	8.5413E-01	5.0736E-04	1.0934E-03
9	1.8316E+05	5.0000E-01	1.7298E-02	7.6038E-02	8.9131E-01	4.1938E-04	7.2422E-04
10	1.1109E+05	5.0000E-01	8.5365E-03	6.1959E-02	9.2364E-01	4.0821E-04	5.3300E-04
11	6.7379E+04	5.0000E-01	4.0750E-03	4.9081E-02	9.5321E-01	3.8440E-04	4.2142E-04
12	4.0868E+04	5.0000E-01	1.9245E-03	3.7540E-02	1.4818E+00	2.3674E-04	4.6657E-04
13	2.4787E+04	5.0000E-01	9.0690E-04	2.8662E-02	2.0299E+00	1.4541E-04	5.8917E-04
14	1.5034E+04	5.0000E-01	4.2701E-04	2.0864E-02	2.1071E+00	4.2410E-05	5.6427E-04
15	9.1188E+03	5.0000E-01	2.0103E-04	1.3636E-02	2.1859E+00	1.1068E-05	5.9676E-04
16	5.5308E+03	5.0000E-01	9.4661E-05	9.0467E-03	2.2507E+00	5.4682E-06	6.8668E-04
17	3.3546E+03	5.0000E-01	4.4591E-05	5.4321E-03	2.2454E+00	2.2462E-06	8.5555E-04
18	2.0347E+03	5.0000E-01	2.1013E-05	2.8100E-03	2.2494E+00	9.3109E-07	1.1225E-03
19	1.2341E+03	5.0000E-01	9.9058E-06	1.2830E-03	1.6795E+00	3.0339E-07	8.9019E-04
20	7.4852E+02	5.0000E-01	4.6715E-06	4.9741E-04	1.1934E+00	1.0876E-07	8.1035E-04
21	4.5400E+02	5.0000E-01	2.2035E-06	1.7921E-04	1.1495E+00	2.8348E-08	8.7997E-04
22	2.7536E+02	5.0000E-01	1.0395E-06	5.4377E-05	1.1213E+00	7.3150E-09	8.6883E-04
23	1.6702E+02	5.0000E-01	4.9053E-07	1.7824E-05	1.0888E+00	1.4638E-09	7.7502E-04
24	1.0130E+02	5.0000E-01	2.3153E-07	6.2708E-06	5.6695E-01	1.7018E-10	6.1968E-04
25	6.1442E+01	1.7500E+00	2.0711E-07	4.0432E-06	6.0621E-01	1.8962E-10	9.9332E-04
	1.0677E+01		1.0000E+00	1.0000E+00		3.1480E-03	

TABLE B-XXXVII

VERA-1B 25-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.1931E+00	2.6033E-02	2.4934E-02
2	6.0653E+06	5.0000E-01	1.1347E-01	1.1298E-01
3	3.6788E+06	5.0000E-01	2.1231E-01	2.1319E-01
4	2.2313E+06	5.0000E-01	2.2813E-01	2.2838E-01
5	1.3533E+06	5.0000E-01	1.7631E-01	1.7585E-01
6	8.2085E+05	5.0000E-01	1.1256E-01	1.1241E-01
7	4.9787E+05	5.0000E-01	6.3945E-02	6.4184E-02
8	3.0197E+05	5.0000E-01	3.3820E-02	3.4122E-02
9	1.8316E+05	5.0000E-01	1.7217E-02	1.7555E-02
10	1.1109E+05	5.0000E-01	8.4895E-03	8.6870E-03
11	6.7379E+04	5.0000E-01	4.0656E-03	4.1051E-03
12	4.0868E+04	5.0000E-01	1.9265E-03	1.9181E-03
13	2.4787E+04	5.0000E-01	9.1017E-04	8.9645E-04
14	1.5034E+04	5.0000E-01	4.2940E-04	4.1938E-04
15	9.1188E+03	5.0000E-01	2.0246E-04	1.9644E-04
16	5.5308E+03	5.0000E-01	9.5449E-05	9.2139E-05
17	3.3546E+03	5.0000E-01	4.5004E-05	4.3270E-05
18	2.0347E+03	5.0000E-01	2.1224E-05	2.0338E-05
19	1.2341E+03	5.0000E-01	1.0012E-05	9.5676E-06
20	7.4852E+02	5.0000E-01	4.7236E-06	4.5047E-06
21	4.5400E+02	5.0000E-01	2.2292E-06	2.1211E-06
22	2.7536E+02	5.0000E-01	1.0522E-06	9.9905E-07
23	1.6702E+02	5.0000E-01	4.9672E-07	4.7073E-07
24	1.0130E+02	5.0000E-01	2.3452E-07	2.2196E-07
25	6.1442E+01	1.7500E+00	2.0983E-07	1.9841E-07
			1.0000E+00	1.0000E+00

TABLE B-XXXVIII

ZPR-3-6F 70-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Ad joint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Ad joint (rho/n/s)
1	2.0000E+07	1.9315E-01	6.5240E-06	1.6659E-06	2.0927E+00	1.5987E-09	4.3854E-02
2	1.6487E+07	2.5000E-01	1.2376E-04	3.1457E-05	1.8445E+00	2.7838E-08	3.5977E-02
3	1.2840E+07	2.5000E-01	1.1371E-03	2.7204E-04	1.5564E+00	2.1143E-07	2.8586E-02
4	1.0000E+07	2.5000E-01	5.8016E-03	1.4774E-03	1.4722E+00	1.0722E-06	2.4407E-02
5	7.7880E+06	2.5000E-01	1.8669E-02	4.7429E-03	1.2756E+00	3.2996E-06	1.9923E-02
6	6.0653E+06	2.5000E-01	4.1955E-02	1.0848E-02	1.0656E+00	6.9925E-06	1.5107E-02
7	4.7237E+06	2.5000E-01	7.1405E-02	1.9259E-02	1.0482E+00	1.1760E-05	1.3302E-02
8	3.6788E+06	2.5000E-01	9.8117E-02	2.9226E-02	1.0507E+00	1.6491E-05	1.2228E-02
9	2.8650E+06	2.5000E-01	1.1446E-01	4.0225E-02	1.0441E+00	2.0515E-05	1.1445E-02
10	2.2313E+06	2.5000E-01	1.1785E-01	4.7243E-02	1.0210E+00	2.3247E-05	1.0265E-02
11	1.7377E+06	2.5000E-01	1.1034E-01	5.4108E-02	9.7691E-01	3.0626E-05	8.7542E-03
12	1.3533E+06	1.2500E-01	5.0121E-02	3.0354E-02	9.2122E-01	2.2564E-05	6.3414E-03
13	1.1943E+06	1.2500E-01	4.6206E-02	3.2865E-02	9.0671E-01	3.3080E-05	6.2637E-03
14	1.0540E+06	1.2500E-01	4.2014E-02	3.6305E-02	8.9059E-01	5.2368E-05	6.7853E-03
15	9.3014E+05	1.2500E-01	3.7822E-02	3.4776E-02	8.9118E-01	7.2087E-05	7.0716E-03
16	8.2085E+05	1.2500E-01	3.3756E-02	3.7476E-02	8.9710E-01	9.5772E-05	7.3267E-03
17	7.2440E+05	1.2500E-01	2.9734E-02	4.1527E-02	8.9783E-01	1.3823E-04	7.2979E-03
18	6.3928E+05	1.2500E-01	2.6163E-02	4.3325E-02	9.1323E-01	1.8385E-04	6.7205E-03
19	5.6416E+05	1.2500E-01	2.2847E-02	4.2097E-02	9.3991E-01	2.1267E-04	5.9650E-03
20	4.9787E+05	1.2500E-01	1.9796E-02	4.0060E-02	9.6014E-01	2.3576E-04	5.2567E-03
21	4.3937E+05	1.2500E-01	1.7059E-02	3.9856E-02	9.7310E-01	2.4698E-04	4.5808E-03
22	3.8774E+05	2.5000E-01	2.7150E-02	7.9961E-02	9.7706E-01	5.8799E-04	4.0307E-03
23	3.0197E+05	2.5000E-01	1.9721E-02	7.5726E-02	1.0076E+00	5.8890E-04	3.0718E-03
24	2.3518E+05	2.5000E-01	1.4180E-02	5.5134E-02	1.0641E+00	5.3485E-04	2.2888E-03
25	1.8316E+05	2.5000E-01	1.0146E-02	3.0099E-02	1.0858E+00	4.4060E-04	1.8093E-03
26	1.4264E+05	2.5000E-01	7.1646E-03	4.6887E-02	1.0762E+00	4.8665E-04	1.5360E-03
27	1.1109E+05	2.5000E-01	5.0386E-03	1.9743E-02	1.1031E+00	3.8341E-04	1.2410E-03
28	8.6517E+04	2.5000E-01	3.5055E-03	3.8244E-02	1.0944E+00	5.1847E-04	1.0943E-03
29	6.7379E+04	2.5000E-01	2.4155E-03	2.5350E-02	1.0810E+00	4.7841E-04	9.7262E-04
30	5.2475E+04	2.5000E-01	1.6606E-03	1.4084E-02	1.1020E+00	4.0939E-04	7.9403E-04
31	4.0868E+04	2.5000E-01	1.1407E-03	5.1270E-03	1.1163E+00	3.0479E-04	6.3609E-04
32	3.1828E+04	1.2500E-01	4.2828E-04	2.4105E-03	1.0884E+00	5.4314E-05	5.5894E-04
33	2.8088E+04	1.2500E-01	3.5481E-04	8.2144E-03	1.0681E+00	1.3253E-04	5.8173E-04
34	2.4787E+04	1.2500E-01	2.9393E-04	5.2536E-03	1.0535E+00	1.2368E-04	5.9428E-04
35	2.1875E+04	1.2500E-01	2.4348E-04	2.6731E-03	1.0761E+00	9.3141E-05	5.3846E-04
36	1.9304E+04	1.2500E-01	2.0167E-04	1.4728E-03	1.1182E+00	6.5374E-05	4.8435E-04
37	1.7036E+04	1.2500E-01	1.6704E-04	8.0279E-04	1.1358E+00	3.9225E-05	4.4061E-04
38	1.5034E+04	1.2500E-01	1.3836E-04	7.0509E-04	1.1505E+00	3.2228E-05	4.4330E-04
39	1.3268E+04	1.2500E-01	1.1459E-04	5.2531E-04	1.1537E+00	2.2983E-05	4.3436E-04
40	1.1709E+04	1.2497E-01	9.4892E-05	4.1496E-04	1.1770E+00	1.7368E-05	4.3664E-04
41	1.0333E+04	1.2503E-01	7.8635E-05	2.9338E-04	1.2087E+00	1.2137E-05	4.3084E-04
42	9.1188E+03	1.2500E-01	6.5113E-05	1.7067E-04	1.2348E+00	7.0515E-06	4.1440E-04
43	8.0473E+03	1.2500E-01	5.3932E-05	1.3867E-04	1.2611E+00	5.4144E-06	4.0962E-04
44	7.1017E+03	1.2500E-01	4.4671E-05	1.3065E-04	1.2788E+00	4.8254E-06	4.3037E-04
45	6.2673E+03	1.2500E-01	3.7002E-05	8.4155E-05	1.3102E+00	3.5644E-06	4.3624E-04
46	5.5308E+03	1.2500E-01	3.0650E-05	8.4793E-05	1.3569E+00	3.0539E-06	4.5119E-04
47	4.8809E+03	1.2500E-01	2.5389E-05	5.7316E-05	1.3719E+00	2.3450E-06	4.5429E-04
48	4.3074E+03	1.2500E-01	2.1032E-05	3.8216E-05	1.3991E+00	1.6496E-06	4.3808E-04
49	3.8013E+03	1.2500E-01	1.7422E-05	2.9270E-05	1.3931E+00	1.4375E-06	4.6833E-04
50	3.3546E+03	1.2500E-01	1.4433E-05	2.0325E-05	1.3880E+00	1.0640E-06	4.6974E-04
51	2.9604E+03	1.2500E-01	1.1957E-05	1.3526E-05	1.4040E+00	6.4635E-07	5.2539E-04
52	2.6126E+03	1.2500E-01	9.9063E-06	8.8504E-06	1.3839E+00	5.0514E-07	6.5897E-04
53	2.3056E+03	1.2500E-01	8.2074E-06	7.0873E-06	1.3546E+00	3.8497E-07	6.8895E-04
54	2.0347E+03	1.2500E-01	6.7997E-06	5.1481E-06	1.3920E+00	3.1414E-07	7.8946E-04
55	1.7956E+03	1.2500E-01	5.6337E-06	3.6681E-06	1.4106E+00	2.8120E-07	7.9081E-04
56	1.5846E+03	1.2500E-01	4.6676E-06	2.8033E-06	1.3986E+00	1.7310E-07	7.5851E-04
57	1.3984E+03	1.2500E-01	3.8674E-06	2.0845E-06	1.4419E+00	1.5789E-07	8.1569E-04
58	1.2341E+03	1.2500E-01	3.2045E-06	1.2983E-06	1.3393E+00	8.6305E-08	6.5434E-04
59	1.0891E+03	1.2500E-01	2.6554E-06	1.1993E-06	1.3004E+00	6.4074E-08	7.8580E-04
60	9.6112E+02	2.5000E-01	4.0239E-06	1.5552E-06	1.3517E+00	9.4350E-08	8.4320E-04
61	7.4852E+02	2.5000E-01	2.7632E-06	9.4150E-07	1.4920E+00	7.5538E-08	8.7553E-04
62	5.8295E+02	2.5000E-01	1.8976E-06	4.5198E-07	1.5845E+00	3.4624E-08	1.0183E-03
63	4.5400E+02	2.5000E-01	1.3031E-06	2.8317E-07	1.4958E+00	1.0357E-08	8.7862E-04
64	3.5357E+02	2.5000E-01	8.9507E-07	1.8854E-07	1.4612E+00	3.9062E-09	9.5282E-04
65	2.7536E+02	2.5000E-01	6.1477E-07	1.0036E-07	1.5220E+00	1.2547E-09	9.2440E-04
66	2.1445E+02	2.5000E-01	4.2221E-07	6.6812E-08	1.3953E+00	4.5252E-10	8.8855E-04
67	1.6702E+02	2.5000E-01	2.9006E-07	4.6483E-08	1.3740E+00	1.8981E-10	9.0835E-04
68	1.3007E+02	2.5000E-01	1.9923E-07	2.9083E-08	1.3292E+00	6.0061E-11	7.0371E-04
69	1.0130E+02	5.0000E-01	2.3093E-07	3.2059E-08	1.4183E+00	4.9153E-11	1.5511E-03
70	6.1442E+01	1.7500E+00	2.0657E-07	1.8854E-08	1.6147E+00	1.0479E-10	2.5163E-03
	1.0677E+01		1.0000E+00	1.0000E+00		6.7673E-03	

TABLE B-XXXIX

ZPR-3-6F 70-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.9315E-01	6.8307E-06	4.9705E-06
2	1.6487E+07	2.5000E-01	1.2762E-04	1.0266E-04
3	1.2840E+07	2.5000E-01	1.1594E-03	1.0243E-03
4	1.0000E+07	2.5000E-01	5.8667E-03	5.4721E-03
5	7.7880E+06	2.5000E-01	1.8772E-02	1.8151E-02
6	6.0653E+06	2.5000E-01	4.2035E-02	4.1550E-02
7	4.7237E+06	2.5000E-01	7.1402E-02	7.1416E-02
8	3.6788E+06	2.5000E-01	9.8040E-02	9.8502E-02
9	2.8650E+06	2.5000E-01	1.1437E-01	1.1492E-01
10	2.2313E+06	2.5000E-01	1.1780E-01	1.1812E-01
11	1.7377E+06	2.5000E-01	1.1035E-01	1.1028E-01
12	1.3533E+06	1.2500E-01	5.0146E-02	4.9995E-02
13	1.1943E+06	1.2500E-01	4.6222E-02	4.6126E-02
14	1.0540E+06	1.2500E-01	4.2034E-02	4.1915E-02
15	9.3014E+05	1.2500E-01	3.7853E-02	3.7663E-02
16	8.2085E+05	1.2500E-01	3.3777E-02	3.3653E-02
17	7.2440E+05	1.2500E-01	2.9757E-02	2.9619E-02
18	6.3928E+05	1.2500E-01	2.6162E-02	2.6169E-02
19	5.6416E+05	1.2500E-01	2.2839E-02	2.2889E-02
20	4.9787E+05	1.2500E-01	1.9780E-02	1.9874E-02
21	4.3937E+05	1.2500E-01	1.7050E-02	1.7104E-02
22	3.8774E+05	2.5000E-01	2.7134E-02	2.7232E-02
23	3.0197E+05	2.5000E-01	1.9702E-02	1.9819E-02
24	2.3518E+05	2.5000E-01	1.4146E-02	1.4354E-02
25	1.8316E+05	2.5000E-01	1.0117E-02	1.0289E-02
26	1.4264E+05	2.5000E-01	7.1319E-03	7.3300E-03
27	1.1109E+05	2.5000E-01	5.0162E-03	5.1519E-03
28	8.6517E+04	2.5000E-01	3.4922E-03	3.5729E-03
29	6.7379E+04	2.5000E-01	2.4099E-03	2.4437E-03
30	5.2475E+04	2.5000E-01	1.6592E-03	1.6679E-03
31	4.0868E+04	2.5000E-01	1.1411E-03	1.1384E-03
32	3.1828E+04	1.2500E-01	4.2883E-04	4.2555E-04
33	2.8088E+04	1.2500E-01	3.5545E-04	3.5162E-04
34	2.4787E+04	1.2500E-01	2.9459E-04	2.9056E-04
35	2.1875E+04	1.2500E-01	2.4414E-04	2.4013E-04
36	1.9304E+04	1.2500E-01	2.0230E-04	1.9846E-04
37	1.7036E+04	1.2500E-01	1.6763E-04	1.6405E-04
38	1.5034E+04	1.2500E-01	1.3890E-04	1.3561E-04
39	1.3268E+04	1.2500E-01	1.1508E-04	1.1212E-04
40	1.1709E+04	1.2497E-01	9.5329E-05	9.2683E-05
41	1.0333E+04	1.2503E-01	7.9021E-05	7.6681E-05
42	9.1188E+03	1.2500E-01	6.5451E-05	6.3399E-05
43	8.0473E+03	1.2500E-01	5.4227E-05	5.2437E-05
44	7.1017E+03	1.2500E-01	4.4927E-05	4.3375E-05
45	6.2673E+03	1.2500E-01	3.7223E-05	3.5884E-05
46	5.5308E+03	1.2500E-01	3.0840E-05	2.9688E-05
47	4.8809E+03	1.2500E-01	2.5551E-05	2.4565E-05
48	4.3074E+03	1.2500E-01	2.1171E-05	2.0328E-05
49	3.8013E+03	1.2500E-01	1.7541E-05	1.6823E-05
50	3.3546E+03	1.2500E-01	1.4531E-05	1.3924E-05
51	2.9604E+03	1.2500E-01	1.2043E-05	1.1525E-05
52	2.6126E+03	1.2500E-01	9.9785E-06	9.5404E-06
53	2.3056E+03	1.2500E-01	8.2685E-06	7.8981E-06
54	2.0347E+03	1.2500E-01	6.8513E-06	6.5384E-06
55	1.7956E+03	1.2500E-01	5.6774E-06	5.4127E-06
56	1.5846E+03	1.2500E-01	4.7044E-06	4.4810E-06
57	1.3984E+03	1.2500E-01	3.8985E-06	3.7093E-06
58	1.2341E+03	1.2500E-01	3.2307E-06	3.0718E-06
59	1.0891E+03	1.2500E-01	2.6774E-06	2.5440E-06
60	9.6112E+02	2.5000E-01	4.0575E-06	3.8531E-06
61	7.4852E+02	2.5000E-01	2.7863E-06	2.6431E-06
62	5.8295E+02	2.5000E-01	1.9143E-06	1.8130E-06
63	4.5400E+02	2.5000E-01	1.3143E-06	1.2433E-06
64	3.5357E+02	2.5000E-01	9.0323E-07	8.5348E-07
65	2.7536E+02	2.5000E-01	6.2055E-07	5.8547E-07
66	2.1445E+02	2.5000E-01	4.2632E-07	4.0142E-07
67	1.6702E+02	2.5000E-01	2.9293E-07	2.7566E-07
68	1.3007E+02	2.5000E-01	2.0124E-07	1.8904E-07
69	1.0130E+02	5.0000E-01	2.3328E-07	2.1302E-07
70	6.1442E+01	1.7500E+00	2.0870E-07	1.9575E-07
			1.0000E+00	1.0000E+00

TABLE B-XL

ZPR-3-6F 25-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Adjoint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Adjoint (rho/n/s)
1	2.0000E+07	1.1931E+00	2.5738E-02	6.5255E-03	3.0117E+00	4.6127E-06	5.5822E-02
2	6.0653E+06	5.0000E-01	1.1336E-01	3.0107E-02	7.7245E-01	1.8753E-05	1.0382E-02
3	3.6788E+06	5.0000E-01	2.1257E-01	6.9451E-02	7.6551E-01	3.7006E-05	8.6509E-03
4	2.2313E+06	5.0000E-01	2.2819E-01	1.0135E-01	7.3010E-01	5.3873E-05	6.9504E-03
5	1.3533E+06	5.0000E-01	1.7616E-01	1.3430E-01	1.3191E+00	1.8010E-04	9.6701E-03
6	8.2085E+05	5.0000E-01	1.1250E-01	1.6442E-01	1.3331E+00	6.3052E-04	9.9800E-03
7	4.9787E+05	5.0000E-01	6.4004E-02	1.5988E-01	1.0635E+00	1.0707E-03	5.0679E-03
8	3.0197E+05	5.0000E-01	3.3901E-02	1.3086E-01	7.5709E-01	1.1237E-03	1.9589E-03
9	1.8316E+05	5.0000E-01	1.7310E-02	7.6986E-02	7.9006E-01	9.2725E-04	1.2225E-03
10	1.1109E+05	5.0000E-01	8.5441E-03	5.7987E-02	8.0306E-01	9.0188E-04	8.5340E-04
11	6.7379E+04	5.0000E-01	4.0761E-03	3.9434E-02	7.9774E-01	8.8780E-04	6.4559E-04
12	4.0868E+04	5.0000E-01	1.9238E-03	1.5752E-02	1.1960E+00	4.9164E-04	6.4929E-04
13	2.4787E+04	5.0000E-01	9.0612E-04	1.0202E-02	1.6019E+00	3.2142E-04	7.5194E-04
14	1.5034E+04	5.0000E-01	4.2648E-04	1.9387E-03	1.7139E+00	8.4715E-05	6.3773E-04
15	9.1188E+03	5.0000E-01	2.0072E-04	5.2414E-04	1.8582E+00	2.0856E-05	6.1781E-04
16	5.5308E+03	5.0000E-01	9.4493E-05	2.0959E-04	2.0176E+00	8.4860E-06	6.6212E-04
17	3.3546E+03	5.0000E-01	4.4504E-05	4.9788E-05	2.0210E+00	2.6004E-06	8.5622E-04
18	2.0347E+03	5.0000E-01	2.0968E-05	1.3704E-05	2.0622E+00	9.2634E-07	1.1527E-03
19	1.2341E+03	5.0000E-01	9.8839E-06	4.0528E-06	1.4586E+00	2.4473E-07	8.3440E-04
20	7.4852E+02	5.0000E-01	4.6607E-06	1.3935E-06	1.1242E+00	1.1016E-07	6.9205E-04
21	4.5400E+02	5.0000E-01	2.1982E-06	4.7171E-07	1.0806E+00	1.4263E-08	6.6927E-04
22	2.7536E+02	5.0000E-01	1.0370E-06	1.6717E-07	1.0661E+00	1.7073E-09	6.6251E-04
23	1.6702E+02	5.0000E-01	4.8929E-07	7.5566E-08	9.8783E-01	2.4987E-10	5.8910E-04
24	1.0130E+02	5.0000E-01	2.3093E-07	3.2059E-08	5.1827E-01	4.9153E-11	5.6680E-04
25	6.1442E+01	1.7500E+00	2.0657E-07	1.8854E-08	5.9007E-01	1.0479E-10	9.1953E-04
	1.0677E+01		1.0000E+00	1.0000E+00		6.7673E-03	

TABLE B-XLI

ZPR-3-6F 25-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.1931E+00	2.5932E-02	2.4756E-02
2	6.0653E+06	5.0000E-01	1.1344E-01	1.1297E-01
3	3.6788E+06	5.0000E-01	2.1241E-01	2.1342E-01
4	2.2313E+06	5.0000E-01	2.2815E-01	2.2840E-01
5	1.3533E+06	5.0000E-01	1.7625E-01	1.7570E-01
6	8.2085E+05	5.0000E-01	1.1253E-01	1.1233E-01
7	4.9787E+05	5.0000E-01	6.3964E-02	6.4209E-02
8	3.0197E+05	5.0000E-01	3.3848E-02	3.4173E-02
9	1.8316E+05	5.0000E-01	1.7249E-02	1.7619E-02
10	1.1109E+05	5.0000E-01	8.5085E-03	8.7248E-03
11	6.7379E+04	5.0000E-01	4.0691E-03	4.1117E-03
12	4.0868E+04	5.0000E-01	1.9254E-03	1.9156E-03
13	2.4787E+04	5.0000E-01	9.0867E-04	8.9320E-04
14	1.5034E+04	5.0000E-01	4.2833E-04	4.1710E-04
15	9.1188E+03	5.0000E-01	2.0183E-04	1.9509E-04
16	5.5308E+03	5.0000E-01	9.5103E-05	9.1403E-05
17	3.3546E+03	5.0000E-01	4.4824E-05	4.2887E-05
18	2.0347E+03	5.0000E-01	2.1132E-05	2.0141E-05
19	1.2341E+03	5.0000E-01	9.9658E-06	9.4689E-06
20	7.4852E+02	5.0000E-01	4.7012E-06	4.4560E-06
21	4.5400E+02	5.0000E-01	2.2182E-06	2.0968E-06
22	2.7536E+02	5.0000E-01	1.0469E-06	9.8689E-07
23	1.6702E+02	5.0000E-01	4.9414E-07	4.6469E-07
24	1.0130E+02	5.0000E-01	2.3328E-07	2.1902E-07
25	6.1442E+01	1.7500E+00	2.0870E-07	1.9575E-07
			1.0000E+00	1.0000E+00

TABLE B-XLII
ZPR-3-11 70-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Ad joint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Ad joint (rho/n/s)
1	2.0000E+07	1.9315E-01	6.2756E-06	9.6826E-07	3.0416E+00	8.1919E-10	2.8170E-02
2	1.6487E+07	2.5000E-01	1.2092E-04	1.8469E-05	2.6527E+00	1.4377E-08	2.3015E-02
3	1.2840E+07	2.5000E-01	1.1213E-03	1.6433E-04	2.2056E+00	1.1037E-07	1.8211E-02
4	1.0000E+07	2.5000E-01	5.7556E-03	8.6113E-04	1.9919E+00	5.5067E-07	1.5456E-02
5	7.7880E+06	2.5000E-01	1.8594E-02	2.7735E-03	1.6343E+00	1.7021E-06	1.2607E-02
6	6.0653E+06	2.5000E-01	4.1885E-02	6.2328E-03	1.2613E+00	3.5992E-06	9.5389E-03
7	4.7237E+06	2.5000E-01	7.1382E-02	1.0838E-02	1.1895E+00	6.0455E-06	8.3671E-03
8	3.6788E+06	2.5000E-01	9.8143E-02	1.5694E-02	1.1525E+00	8.4505E-06	7.6886E-03
9	2.8650E+06	2.5000E-01	1.1450E-01	1.9892E-02	1.1162E+00	1.0374E-05	7.2019E-03
10	2.2313E+06	2.5000E-01	1.1789E-01	2.3062E-02	1.0711E+00	1.1823E-05	6.4628E-03
11	1.7377E+06	2.5000E-01	1.1036E-01	2.7747E-02	3.8425E-01	1.5563E-05	5.4892E-03
12	1.3533E+06	1.2500E-01	5.0119E-02	1.6831E-02	3.4813E-01	1.1417E-05	3.8995E-03
13	1.1943E+06	1.2500E-01	4.6208E-02	1.9896E-02	9.1875E-01	1.6807E-05	3.8851E-03
14	1.0540E+06	1.2500E-01	4.2014E-02	2.4169E-02	7.9829E-01	2.9829E-05	4.2776E-03
15	9.3014E+05	1.2500E-01	3.7814E-02	2.7767E-02	7.8593E-01	3.8177E-05	4.5224E-03
16	8.2085E+05	1.2500E-01	3.3753E-02	3.1789E-02	7.8175E-01	5.1762E-05	4.7110E-03
17	7.2440E+05	1.2500E-01	2.9728E-02	3.7862E-02	7.8998E-01	7.7244E-05	4.6542E-03
18	6.3928E+05	1.2500E-01	2.6168E-02	4.2677E-02	8.0190E-01	1.0552E-04	4.2280E-03
19	5.6416E+05	1.2500E-01	2.2855E-02	4.4118E-02	8.1514E-01	1.2436E-04	3.6981E-03
20	4.9787E+05	1.2500E-01	1.9806E-02	4.5437E-02	8.2568E-01	1.4117E-04	3.2159E-03
21	4.3937E+05	1.2500E-01	1.7065E-02	4.4599E-02	8.3308E-01	1.4920E-04	2.7665E-03
22	3.8774E+05	2.5000E-01	2.7160E-02	9.3348E-02	8.3644E-01	3.6868E-04	2.4113E-03
23	3.0197E+05	2.5000E-01	1.9731E-02	8.3754E-02	8.4061E-01	3.7159E-04	1.7985E-03
24	2.3518E+05	2.5000E-01	1.4198E-02	7.0750E-02	8.4015E-01	3.4271E-04	1.3280E-03
25	1.8316E+05	2.5000E-01	1.0161E-02	5.8716E-02	8.2995E-01	3.0108E-04	1.0510E-03
26	1.4264E+05	2.5000E-01	7.1821E-03	5.3816E-02	8.1693E-01	3.1941E-04	8.7819E-04
27	1.1109E+05	2.5000E-01	5.0509E-03	4.6072E-02	7.9763E-01	2.8992E-04	7.1907E-04
28	8.6517E+04	2.5000E-01	3.5129E-03	4.3819E-02	7.8669E-01	3.3837E-04	6.2235E-04
29	6.7379E+04	2.5000E-01	2.4186E-03	3.5335E-02	7.6530E-01	3.2674E-04	5.4903E-04
30	5.2475E+04	2.5000E-01	1.6615E-03	2.5283E-02	7.3117E-01	3.0033E-04	4.5437E-04
31	4.0868E+04	2.5000E-01	1.1405E-03	2.0507E-02	7.2047E-01	2.6412E-04	3.7119E-04
32	3.1828E+04	1.2500E-01	4.2803E-04	3.0631E-03	7.2263E-01	3.7500E-05	3.1091E-04
33	2.8088E+04	1.2500E-01	3.5450E-04	6.7252E-03	7.1833E-01	8.8465E-05	3.2213E-04
34	2.4787E+04	1.2500E-01	2.9360E-04	4.8730E-03	7.1875E-01	8.2412E-05	3.2910E-04
35	2.1875E+04	1.2500E-01	2.4315E-04	3.4551E-03	7.1816E-01	6.2918E-05	3.0215E-04
36	1.9304E+04	1.2500E-01	2.0135E-04	2.3661E-03	7.2146E-01	4.5018E-05	2.7670E-04
37	1.7036E+04	1.2500E-01	1.6674E-04	1.4123E-03	7.1784E-01	2.7197E-05	2.5568E-04
38	1.5034E+04	1.2500E-01	1.3808E-04	1.1673E-03	7.3408E-01	2.2949E-05	2.5900E-04
39	1.3268E+04	1.2500E-01	1.1434E-04	8.2610E-04	7.3774E-01	1.6515E-05	2.5979E-04
40	1.1709E+04	1.2497E-01	9.4669E-05	6.2272E-04	7.6194E-01	1.2673E-05	2.5912E-04
41	1.0333E+04	1.2503E-01	7.8437E-05	3.6106E-04	7.8888E-01	8.7701E-06	2.5739E-04
42	9.1188E+03	1.2500E-01	6.4939E-05	2.8286E-04	8.0349E-01	5.1103E-06	2.4975E-04
43	8.0473E+03	1.2500E-01	5.3781E-05	1.6652E-04	8.2240E-01	3.8598E-06	2.4870E-04
44	7.1017E+03	1.2500E-01	4.4540E-05	2.3310E-04	8.3733E-01	3.5599E-06	2.6100E-04
45	6.2673E+03	1.2500E-01	3.6889E-05	1.7949E-04	8.6753E-01	2.7606E-06	2.6598E-04
46	5.5308E+03	1.2500E-01	3.0552E-05	1.3456E-04	9.0527E-01	2.3351E-06	2.7418E-04
47	4.8809E+03	1.2500E-01	2.5305E-05	8.9324E-05	9.3153E-01	1.7967E-06	2.7730E-04
48	4.3074E+03	1.2500E-01	2.0960E-05	5.9148E-05	9.4728E-01	1.2766E-06	2.7097E-04
49	3.8013E+03	1.2500E-01	1.7362E-05	4.2725E-05	9.3494E-01	1.1127E-06	2.8710E-04
50	3.3546E+03	1.2500E-01	1.4382E-05	2.7522E-05	9.2925E-01	8.2745E-07	2.9089E-04
51	2.9604E+03	1.2500E-01	1.1913E-05	1.4843E-05	9.5824E-01	5.0001E-07	3.2691E-04
52	2.6126E+03	1.2500E-01	9.8692E-06	6.3157E-06	9.8061E-01	3.4849E-07	3.9908E-04
53	2.3056E+03	1.2500E-01	8.1760E-06	8.9396E-06	1.0009E+00	2.9541E-07	4.3037E-04
54	2.0347E+03	1.2500E-01	6.7732E-06	1.4159E-05	1.0325E+00	2.5603E-07	4.9491E-04
55	1.7956E+03	1.2500E-01	5.6114E-06	1.3396E-05	1.0409E+00	2.3634E-07	4.9986E-04
56	1.5846E+03	1.2500E-01	4.6487E-06	8.5701E-06	1.0451E+00	1.4707E-07	4.8784E-04
57	1.3984E+03	1.2500E-01	3.8515E-06	5.8194E-06	1.1253E+00	1.3479E-07	5.2567E-04
58	1.2341E+03	1.2500E-01	3.1912E-06	1.8835E-06	3.7875E-01	6.7510E-08	4.2241E-04
59	1.0891E+03	1.2500E-01	2.6442E-06	2.0506E-06	1.0075E+00	5.3156E-08	5.0636E-04
60	9.6112E+02	2.5000E-01	4.0067E-06	2.8563E-06	1.0546E+00	7.7616E-08	5.4058E-04
61	7.4852E+02	2.5000E-01	2.7511E-06	1.9772E-06	1.1992E+00	5.9301E-08	5.6535E-04
62	5.8295E+02	2.5000E-01	1.8891E-06	6.2687E-07	1.3146E+00	2.7483E-08	6.4695E-04
63	4.5400E+02	2.5000E-01	1.2972E-06	2.1177E-07	1.1577E+00	8.0600E-09	5.4591E-04
64	3.5357E+02	2.5000E-01	8.9094E-07	1.3455E-07	1.0968E+00	3.0609E-09	5.7348E-04
65	2.7536E+02	2.5000E-01	6.1188E-07	1.2200E-07	1.3014E+00	1.0306E-09	6.1486E-04
66	2.1445E+02	2.5000E-01	4.2019E-07	6.8030E-08	1.1654E+00	3.5566E-10	5.8300E-04
67	1.6702E+02	2.5000E-01	2.8866E-07	4.0876E-08	1.1945E+00	1.3371E-10	6.0368E-04
68	1.3007E+02	2.5000E-01	1.9824E-07	2.3383E-08	1.0742E+00	3.9394E-11	4.6637E-04
69	1.0130E+02	5.0000E-01	2.2978E-07	2.5259E-08	1.1984E+00	2.8477E-11	1.0165E-03
70	6.1442E+01	1.7500E+00	2.0552E-07	1.8407E-08	1.4974E+00	5.8214E-11	1.6857E-03
	1.0677E+01		1.0000E+00	1.0000E+00		4.4528E-03	

TABLE B-XLIII
ZPR-3-11 70-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.9315E-01	6.3632E-06	5.0864E-06
2	1.6487E+07	2.5000E-01	1.2203E-04	1.0581E-04
3	1.2840E+07	2.5000E-01	1.1278E-03	1.0336E-03
4	1.0000E+07	2.5000E-01	5.7745E-03	5.4998E-03
5	7.7880E+06	2.5000E-01	1.8623E-02	1.8195E-02
6	6.0653E+06	2.5000E-01	4.1908E-02	4.1584E-02
7	4.7237E+06	2.5000E-01	7.1380E-02	7.1409E-02
8	3.6788E+06	2.5000E-01	9.8120E-02	9.8455E-02
9	2.8650E+06	2.5000E-01	1.1448E-01	1.1486E-01
10	2.2313E+06	2.5000E-01	1.1788E-01	1.1808E-01
11	1.7377E+06	2.5000E-01	1.1036E-01	1.1028E-01
12	1.3533E+06	1.2500E-01	5.0127E-02	5.0007E-02
13	1.1943E+06	1.2500E-01	4.6214E-02	4.6136E-02
14	1.0540E+06	1.2500E-01	4.2020E-02	4.1929E-02
15	9.3014E+05	1.2500E-01	3.7824E-02	3.7681E-02
16	8.2085E+05	1.2500E-01	3.3760E-02	3.3669E-02
17	7.2440E+05	1.2500E-01	2.9735E-02	2.9635E-02
18	6.3928E+05	1.2500E-01	2.6167E-02	2.6175E-02
19	5.6416E+05	1.2500E-01	2.2852E-02	2.2891E-02
20	4.9787E+05	1.2500E-01	1.9801E-02	1.9873E-02
21	4.3937E+05	1.2500E-01	1.7062E-02	1.7104E-02
22	3.8774E+05	2.5000E-01	2.7154E-02	2.7231E-02
23	3.0197E+05	2.5000E-01	1.9725E-02	1.9814E-02
24	2.3518E+05	2.5000E-01	1.4188E-02	1.4342E-02
25	1.8316E+05	2.5000E-01	1.0153E-02	1.0278E-02
26	1.4264E+05	2.5000E-01	7.1722E-03	7.3174E-03
27	1.1109E+05	2.5000E-01	5.0441E-03	5.1429E-03
28	8.6517E+04	2.5000E-01	3.5089E-03	3.5672E-03
29	6.7379E+04	2.5000E-01	2.4170E-03	2.4410E-03
30	5.2475E+04	2.5000E-01	1.6611E-03	1.6669E-03
31	4.0868E+04	2.5000E-01	1.1407E-03	1.1382E-03
32	3.1828E+04	1.2500E-01	4.2821E-04	4.2558E-04
33	2.8088E+04	1.2500E-01	3.5471E-04	3.5171E-04
34	2.4787E+04	1.2500E-01	2.9381E-04	2.9068E-04
35	2.1875E+04	1.2500E-01	2.4336E-04	2.4027E-04
36	1.9304E+04	1.2500E-01	2.0155E-04	1.9860E-04
37	1.7036E+04	1.2500E-01	1.6693E-04	1.6419E-04
38	1.5034E+04	1.2500E-01	1.3825E-04	1.3575E-04
39	1.3268E+04	1.2500E-01	1.1450E-04	1.1224E-04
40	1.1709E+04	1.2497E-01	9.4807E-05	9.2795E-05
41	1.0333E+04	1.2503E-01	7.8559E-05	7.6781E-05
42	9.1188E+03	1.2500E-01	6.5046E-05	6.3488E-05
43	8.0473E+03	1.2500E-01	5.3874E-05	5.2517E-05
44	7.1017E+03	1.2500E-01	4.4620E-05	4.3444E-05
45	6.2673E+03	1.2500E-01	3.6958E-05	3.5944E-05
46	5.5308E+03	1.2500E-01	3.0612E-05	2.9740E-05
47	4.8809E+03	1.2500E-01	2.5356E-05	2.4610E-05
48	4.3074E+03	1.2500E-01	2.1004E-05	2.0367E-05
49	3.8013E+03	1.2500E-01	1.7399E-05	1.6856E-05
50	3.3546E+03	1.2500E-01	1.4413E-05	1.3952E-05
51	2.9604E+03	1.2500E-01	1.1940E-05	1.1549E-05
52	2.6126E+03	1.2500E-01	9.8919E-06	9.5608E-06
53	2.3056E+03	1.2500E-01	8.1952E-06	7.9155E-06
54	2.0347E+03	1.2500E-01	6.7894E-06	6.5529E-06
55	1.7956E+03	1.2500E-01	5.6251E-06	5.4245E-06
56	1.5846E+03	1.2500E-01	4.6604E-06	4.4907E-06
57	1.3984E+03	1.2500E-01	3.8614E-06	3.7169E-06
58	1.2341E+03	1.2500E-01	3.1995E-06	3.0782E-06
59	1.0891E+03	1.2500E-01	2.6512E-06	2.5494E-06
60	9.6112E+02	2.5000E-01	4.0174E-06	3.8618E-06
61	7.4852E+02	2.5000E-01	2.7586E-06	2.6489E-06
62	5.8295E+02	2.5000E-01	1.8944E-06	1.8168E-06
63	4.5400E+02	2.5000E-01	1.3010E-06	1.2456E-06
64	3.5357E+02	2.5000E-01	8.9358E-07	8.5506E-07
65	2.7536E+02	2.5000E-01	6.1376E-07	5.8638E-07
66	2.1445E+02	2.5000E-01	4.2154E-07	4.0183E-07
67	1.6702E+02	2.5000E-01	2.8959E-07	2.7594E-07
68	1.3007E+02	2.5000E-01	1.9891E-07	1.8918E-07
69	1.0130E+02	5.0000E-01	2.3056E-07	2.1919E-07
70	6.1442E+01	1.7500E+00	2.0623E-07	1.9591E-07
			1.0000E+00	1.0000E+00

TABLE B-XLIV

ZPR-3-11 25-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Ad joint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Ad joint (rho/n/s)
1	2.0000E+07	1.1931E+00	2.5598E-02	3.8183E-03	4.2212E+00	2.3784E-06	3.5692E-02
2	6.0653E+06	5.0000E-01	1.1327E-01	1.7071E-02	8.9754E-01	9.6447E-06	6.5576E-03
3	3.6788E+06	5.0000E-01	2.1265E-01	3.5586E-02	8.3086E-01	1.8825E-05	5.4533E-03
4	2.2313E+06	5.0000E-01	2.2825E-01	5.0809E-02	7.5271E-01	2.7386E-05	4.3771E-03
5	1.3533E+06	5.0000E-01	1.7616E-01	8.8663E-02	1.1906E+00	9.3098E-05	6.0737E-03
6	8.2085E+05	5.0000E-01	1.1250E-01	1.5645E-01	1.1678E+00	3.5889E-04	6.3325E-03
7	4.9787E+05	5.0000E-01	6.4030E-02	1.8338E-01	9.1380E-01	6.5906E-04	3.0739E-03
8	3.0197E+05	5.0000E-01	3.3930E-02	1.5450E-01	6.1553E-01	7.1430E-04	1.1450E-03
9	1.8316E+05	5.0000E-01	1.7343E-02	1.1253E-01	6.0313E-01	6.2049E-04	7.0652E-04
10	1.1109E+05	5.0000E-01	8.5637E-03	8.9891E-02	5.8022E-01	6.2829E-04	4.9126E-04
11	6.7379E+04	5.0000E-01	4.0801E-03	6.0618E-02	5.4804E-01	6.2707E-04	3.6747E-04
12	4.0868E+04	5.0000E-01	1.9231E-03	3.0295E-02	7.9156E-01	3.9009E-04	3.6777E-04
13	2.4787E+04	5.0000E-01	9.0483E-04	1.2107E-02	1.0533E+00	2.1754E-04	4.2615E-04
14	1.5034E+04	5.0000E-01	4.2553E-04	2.9772E-03	1.1070E+00	6.0907E-05	3.7776E-04
15	9.1188E+03	5.0000E-01	2.0015E-04	8.6196E-04	1.2198E+00	1.5290E-05	3.7554E-04
16	5.5308E+03	5.0000E-01	9.4179E-05	3.2576E-04	1.3620E+00	6.5211E-06	4.0634E-04
17	3.3546E+03	5.0000E-01	4.4340E-05	5.7620E-05	1.4169E+00	1.9714E-06	5.3002E-04
18	2.0347E+03	5.0000E-01	2.0885E-05	4.1945E-05	1.5542E+00	7.7424E-07	7.3548E-04
19	1.2341E+03	5.0000E-01	9.8421E-06	6.7904E-06	1.1137E+00	1.9828E-07	5.3811E-04
20	7.4852E+02	5.0000E-01	4.6402E-06	2.6040E-06	9.2063E-01	8.6785E-08	4.4397E-04
21	4.5400E+02	5.0000E-01	2.1881E-06	3.4632E-07	8.2563E-01	1.1121E-08	4.0995E-04
22	2.7536E+02	5.0000E-01	1.0321E-06	1.9003E-07	9.0340E-01	1.3862E-09	4.3868E-04
23	1.6702E+02	5.0000E-01	4.8690E-07	6.4259E-08	8.3084E-01	1.7310E-10	3.9188E-04
24	1.0130E+02	5.0000E-01	2.2978E-07	2.5259E-08	4.3889E-01	2.8477E-11	3.7227E-04
25	6.1442E+01	1.7500E+00	2.0552E-07	1.8407E-08	5.4837E-01	5.8214E-11	6.1736E-04
	1.0677E+01		1.0000E+00	1.0000E+00		4.4528E-03	

TABLE B-XLV

ZPR-3-11 25-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.1931E+00	2.5654E-02	2.4839E-02
2	6.0653E+06	5.0000E-01	1.1329E-01	1.1299E-01
3	3.6788E+06	5.0000E-01	2.1260E-01	2.1331E-01
4	2.2313E+06	5.0000E-01	2.2824E-01	2.2836E-01
5	1.3533E+06	5.0000E-01	1.7618E-01	1.7575E-01
6	8.2085E+05	5.0000E-01	1.1251E-01	1.1237E-01
7	4.9787E+05	5.0000E-01	6.4017E-02	6.4208E-02
8	3.0197E+05	5.0000E-01	3.3913E-02	3.4157E-02
9	1.8316E+05	5.0000E-01	1.7325E-02	1.7596E-02
10	1.1109E+05	5.0000E-01	8.5530E-03	8.7101E-03
11	6.7379E+04	5.0000E-01	4.0781E-03	4.1079E-03
12	4.0868E+04	5.0000E-01	1.9236E-03	1.9155E-03
13	2.4787E+04	5.0000E-01	9.0565E-04	8.9374E-04
14	1.5034E+04	5.0000E-01	4.2612E-04	4.1756E-04
15	9.1188E+03	5.0000E-01	2.0050E-04	1.9539E-04
16	5.5308E+03	5.0000E-01	9.4371E-05	9.1572E-05
17	3.3546E+03	5.0000E-01	4.4440E-05	4.2977E-05
18	2.0347E+03	5.0000E-01	2.0936E-05	2.0185E-05
19	1.2341E+03	5.0000E-01	9.8681E-06	9.4894E-06
20	7.4852E+02	5.0000E-01	4.6530E-06	4.4657E-06
21	4.5400E+02	5.0000E-01	2.1945E-06	2.1006E-06
22	2.7536E+02	5.0000E-01	1.0353E-06	9.8821E-07
23	1.6702E+02	5.0000E-01	4.8850E-07	4.6512E-07
24	1.0130E+02	5.0000E-01	2.3056E-07	2.1919E-07
25	6.1442E+01	1.7500E+00	2.0623E-07	1.9591E-07
			1.0000E+00	1.0000E+00

TABLE B-XLVI

ZPR-3-12 70-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux ($n/cm^2/s$)	Central Ad joint ($\rho/n/s$)	Edge Flux ($n/cm^2/s$)	Edge Ad joint ($\rho/n/s$)
1	2.0000E+07	1.9315E-01	6.3513E-06	1.1695E-06	2.3952E+00	1.0286E-09	3.3202E-02
2	1.6487E+07	2.5000E-01	1.2193E-04	2.3072E-05	2.1623E+00	1.8248E-08	2.7171E-02
3	1.2840E+07	2.5000E-01	1.1272E-03	2.0115E-04	1.8093E+00	1.3807E-07	2.1454E-02
4	1.0000E+07	2.5000E-01	5.7725E-03	1.0621E-03	1.6516E+00	6.8465E-07	1.8251E-02
5	7.7880E+06	2.5000E-01	1.8619E-02	3.5357E-03	1.4199E+00	2.1313E-06	1.4884E-02
6	6.0653E+06	2.5000E-01	4.1901E-02	8.1832E-03	1.1491E+00	4.5158E-06	1.1247E-02
7	4.7237E+06	2.5000E-01	7.1374E-02	1.3867E-02	1.1268E+00	7.4132E-06	9.8689E-03
8	3.6788E+06	2.5000E-01	9.8117E-02	1.9712E-02	1.1081E+00	1.0193E-05	9.0602E-03
9	2.8650E+06	2.5000E-01	1.1448E-01	2.8733E-02	1.0757E+00	1.2841E-05	8.4704E-03
10	2.2313E+06	2.5000E-01	1.1788E-01	3.3526E-02	1.0344E+00	1.4602E-05	7.5872E-03
11	1.7377E+06	2.5000E-01	1.1036E-01	3.8028E-02	9.6030E-01	1.9161E-05	6.4443E-03
12	1.3533E+06	1.2500E-01	5.0123E-02	2.1232E-02	8.7860E-01	1.4044E-05	4.6146E-03
13	1.1943E+06	1.2500E-01	4.6214E-02	2.3184E-02	8.6327E-01	2.0603E-05	4.5806E-03
14	1.0540E+06	1.2500E-01	4.2020E-02	2.5548E-02	8.5495E-01	3.2191E-05	4.9569E-03
15	9.3014E+05	1.2500E-01	3.7825E-02	2.7371E-02	8.5356E-01	4.5206E-05	5.2473E-03
16	8.2085E+05	1.2500E-01	3.3760E-02	2.9231E-02	8.5915E-01	6.0133E-05	5.4401E-03
17	7.2440E+05	1.2500E-01	2.9736E-02	3.2060E-02	8.6870E-01	8.7839E-05	5.3923E-03
18	6.3928E+05	1.2500E-01	2.6168E-02	3.3681E-02	8.8137E-01	1.1697E-04	4.9282E-03
19	5.6416E+05	1.2500E-01	2.2853E-02	3.4130E-02	8.9564E-01	1.3489E-04	4.3319E-03
20	4.9787E+05	1.2500E-01	1.9802E-02	3.4632E-02	9.0744E-01	1.5036E-04	3.7869E-03
21	4.3937E+05	1.2500E-01	1.7063E-02	3.4191E-02	9.1727E-01	1.5657E-04	3.2730E-03
22	3.8774E+05	2.5000E-01	2.7157E-02	6.9645E-02	9.2568E-01	3.7746E-04	2.8662E-03
23	3.0197E+05	2.5000E-01	1.9727E-02	6.5098E-02	9.3855E-01	3.7204E-04	2.1589E-03
24	2.3518E+05	2.5000E-01	1.4189E-02	5.8584E-02	9.4879E-01	3.3649E-04	1.6023E-03
25	1.8316E+05	2.5000E-01	1.0154E-02	5.1928E-02	9.5179E-01	2.9280E-04	1.2732E-03
26	1.4264E+05	2.5000E-01	7.1728E-03	4.9256E-02	9.5109E-01	3.0896E-04	1.0664E-03
27	1.1109E+05	2.5000E-01	5.0445E-03	4.3050E-02	9.4984E-01	2.7711E-04	8.7107E-04
28	8.6517E+04	2.5000E-01	3.5093E-03	4.0120E-02	9.4770E-01	3.2132E-04	7.5342E-04
29	6.7379E+04	2.5000E-01	2.4173E-03	3.4708E-02	9.4326E-01	3.0527E-04	6.6392E-04
30	5.2475E+04	2.5000E-01	1.6614E-03	3.0783E-02	9.4059E-01	2.8340E-04	5.5268E-04
31	4.0868E+04	2.5000E-01	1.1409E-03	2.6089E-02	9.4828E-01	2.4911E-04	4.5174E-04
32	3.1828E+04	1.2500E-01	4.2830E-04	7.4578E-03	9.6215E-01	3.4347E-05	3.7192E-04
33	2.8088E+04	1.2500E-01	3.5479E-04	1.2424E-02	9.6159E-01	8.3737E-05	3.8871E-04
34	2.4787E+04	1.2500E-01	2.9388E-04	9.3301E-03	9.6738E-01	7.9286E-05	3.9955E-04
35	2.1875E+04	1.2500E-01	2.4342E-04	8.4401E-03	9.7642E-01	6.0611E-05	3.6398E-04
36	1.9304E+04	1.2500E-01	2.0160E-04	7.3642E-03	9.9029E-01	4.3719E-05	3.2984E-04
37	1.7036E+04	1.2500E-01	1.6697E-04	6.0584E-03	9.9762E-01	2.6416E-05	3.0165E-04
38	1.5034E+04	1.2500E-01	1.3829E-04	5.8285E-03	1.0134E+00	2.2985E-05	3.0485E-04
39	1.3268E+04	1.2500E-01	1.1453E-04	4.8823E-03	1.0232E+00	1.6884E-05	2.9922E-04
40	1.1709E+04	1.2497E-01	9.4833E-05	4.3581E-03	1.0409E+00	1.3327E-05	3.0122E-04
41	1.0333E+04	1.2503E-01	7.8581E-05	3.6424E-03	1.0600E+00	9.6293E-06	2.9711E-04
42	9.1188E+03	1.2500E-01	6.5065E-05	2.8252E-03	1.0755E+00	5.5922E-06	2.8547E-04
43	8.0473E+03	1.2500E-01	5.3889E-05	2.6133E-03	1.0928E+00	4.3997E-06	2.8289E-04
44	7.1017E+03	1.2500E-01	4.4633E-05	2.3376E-03	1.1103E+00	4.0999E-06	2.9843E-04
45	6.2673E+03	1.2500E-01	3.6969E-05	1.9144E-03	1.1282E+00	3.2086E-06	3.0425E-04
46	5.5308E+03	1.2500E-01	3.0621E-05	1.7067E-03	1.1519E+00	2.7988E-06	3.1503E-04
47	4.8809E+03	1.2500E-01	2.5364E-05	1.3990E-03	1.1621E+00	2.2249E-06	3.1908E-04
48	4.3074E+03	1.2500E-01	2.1011E-05	1.1656E-03	1.1750E+00	1.6035E-06	3.1035E-04
49	3.8013E+03	1.2500E-01	1.7404E-05	1.0124E-03	1.1740E+00	1.4804E-06	3.265E-04
50	3.3546E+03	1.2500E-01	1.4418E-05	8.2386E-04	1.1728E+00	1.1590E-06	3.3567E-04
51	2.9604E+03	1.2500E-01	1.1944E-05	6.5498E-04	1.1881E+00	7.2142E-07	3.7486E-04
52	2.6126E+03	1.2500E-01	9.8951E-06	5.2151E-04	1.1980E+00	5.8788E-07	4.6588E-04
53	2.3056E+03	1.2500E-01	8.1979E-06	4.3717E-04	1.1992E+00	4.7175E-07	4.8805E-04
54	2.0347E+03	1.2500E-01	6.7917E-06	3.3536E-04	1.2274E+00	4.1024E-07	5.5900E-04
55	1.7956E+03	1.2500E-01	5.6269E-06	2.6948E-04	1.2386E+00	4.0268E-07	5.6177E-04
56	1.5846E+03	1.2500E-01	4.6619E-06	2.0781E-04	1.2324E+00	2.5569E-07	5.4340E-04
57	1.3984E+03	1.2500E-01	3.8626E-06	1.6535E-04	1.2749E+00	2.4941E-07	5.8530E-04
58	1.2341E+03	1.2500E-01	3.2005E-06	1.1170E-04	1.2240E+00	1.3456E-07	4.7152E-04
59	1.0891E+03	1.2500E-01	2.6520E-06	9.0675E-05	1.2409E+00	9.8032E-08	5.6568E-04
60	9.6112E+02	2.5000E-01	4.0186E-06	1.1652E-04	1.2855E+00	1.5122E-07	6.0518E-04
61	7.4852E+02	2.5000E-01	2.7595E-06	5.8812E-05	1.3839E+00	9.1112E-08	6.2887E-04
62	5.8295E+02	2.5000E-01	1.8950E-06	2.7686E-05	1.4413E+00	4.2801E-08	7.3474E-04
63	4.5400E+02	2.5000E-01	1.3013E-06	1.3334E-05	1.3867E+00	1.5135E-08	6.4075E-04
64	3.5357E+02	2.5000E-01	8.9383E-07	6.4833E-06	1.3809E+00	8.0068E-09	6.8688E-04
65	2.7536E+02	2.5000E-01	6.1391E-07	2.5263E-06	1.4050E+00	3.2794E-09	6.7630E-04
66	2.1445E+02	2.5000E-01	4.2162E-07	1.0193E-06	1.2966E+00	1.3744E-09	6.4980E-04
67	1.6702E+02	2.5000E-01	2.8965E-07	4.1289E-07	1.2911E+00	5.1532E-10	6.7006E-04
68	1.3007E+02	2.5000E-01	1.9895E-07	1.6192E-07	1.2469E+00	1.2013E-10	4.8930E-04
69	1.0130E+02	5.0000E-01	2.3060E-07	1.0502E-07	1.3287E+00	3.3637E-11	1.3236E-03
70	6.1442E+01	1.7500E+00	2.0627E-07	2.8213E-08	1.5668E+00	9.9124E-11	1.8587E-03
	1.0677E+01		1.0000E+00	1.0000E+00		4.4356E-03	

TABLE B-XLVII

ZPR-3-12 70-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.9315E-01	6.5120E-06	5.0269E-06
2	1.6487E+07	2.5000E-01	1.2398E-04	1.0501E-04
3	1.2840E+07	2.5000E-01	1.1391E-03	1.0287E-03
4	1.0000E+07	2.5000E-01	5.8073E-03	5.4854E-03
5	7.7880E+06	2.5000E-01	1.8673E-02	1.8172E-02
6	6.0653E+06	2.5000E-01	4.1942E-02	4.1565E-02
7	4.7237E+06	2.5000E-01	7.1369E-02	7.1408E-02
8	3.6788E+06	2.5000E-01	9.8074E-02	9.8471E-02
9	2.8650E+06	2.5000E-01	1.1443E-01	1.1487E-01
10	2.2313E+06	2.5000E-01	1.1786E-01	1.1809E-01
11	1.7377E+06	2.5000E-01	1.1037E-01	1.1028E-01
12	1.3533E+06	1.2500E-01	5.0144E-02	5.0000E-02
13	1.1943E+06	1.2500E-01	4.6224E-02	4.6131E-02
14	1.0540E+06	1.2500E-01	4.2032E-02	4.1924E-02
15	9.3014E+05	1.2500E-01	3.7843E-02	3.7674E-02
16	8.2085E+05	1.2500E-01	3.3772E-02	3.3664E-02
17	7.2440E+05	1.2500E-01	2.9749E-02	2.9630E-02
18	6.3928E+05	1.2500E-01	2.6167E-02	2.6176E-02
19	5.6416E+05	1.2500E-01	2.2848E-02	2.2894E-02
20	4.9787E+05	1.2500E-01	1.9793E-02	1.9877E-02
21	4.3937E+05	1.2500E-01	1.7058E-02	1.7108E-02
22	3.8774E+05	2.5000E-01	2.7147E-02	2.7237E-02
23	3.0197E+05	2.5000E-01	1.9716E-02	1.9820E-02
24	2.3518E+05	2.5000E-01	1.4169E-02	1.4351E-02
25	1.8316E+05	2.5000E-01	1.0137E-02	1.0286E-02
26	1.4264E+05	2.5000E-01	7.1543E-03	7.3253E-03
27	1.1109E+05	2.5000E-01	5.0319E-03	5.1483E-03
28	8.6517E+04	2.5000E-01	3.5019E-03	3.5705E-03
29	6.7379E+04	2.5000E-01	2.4143E-03	2.4425E-03
30	5.2475E+04	2.5000E-01	1.6607E-03	1.6674E-03
31	4.0868E+04	2.5000E-01	1.1413E-03	1.1382E-03
32	3.1828E+04	1.2500E-01	4.2863E-04	4.2551E-04
33	2.8088E+04	1.2500E-01	3.5517E-04	3.5161E-04
34	2.4787E+04	1.2500E-01	2.9428E-04	2.9057E-04
35	2.1875E+04	1.2500E-01	2.4381E-04	2.4015E-04
36	1.9304E+04	1.2500E-01	2.0198E-04	1.9849E-04
37	1.7036E+04	1.2500E-01	1.6732E-04	1.6408E-04
38	1.5034E+04	1.2500E-01	1.3861E-04	1.3564E-04
39	1.3268E+04	1.2500E-01	1.1482E-04	1.1215E-04
40	1.1709E+04	1.2497E-01	9.5091E-05	9.2711E-05
41	1.0333E+04	1.2503E-01	7.8809E-05	7.6707E-05
42	9.1188E+03	1.2500E-01	6.5264E-05	6.3422E-05
43	8.0473E+03	1.2500E-01	5.4063E-05	5.2459E-05
44	7.1017E+03	1.2500E-01	4.4784E-05	4.3394E-05
45	6.2673E+03	1.2500E-01	3.7099E-05	3.5900E-05
46	5.5308E+03	1.2500E-01	3.0733E-05	2.9703E-05
47	4.8809E+03	1.2500E-01	2.5459E-05	2.4577E-05
48	4.3074E+03	1.2500E-01	2.1092E-05	2.0339E-05
49	3.8013E+03	1.2500E-01	1.7474E-05	1.6832E-05
50	3.3546E+03	1.2500E-01	1.4477E-05	1.3932E-05
51	2.9604E+03	1.2500E-01	1.1994E-05	1.1532E-05
52	2.6126E+03	1.2500E-01	9.9374E-06	9.5463E-06
53	2.3056E+03	1.2500E-01	8.2336E-06	7.9031E-06
54	2.0347E+03	1.2500E-01	6.8219E-06	6.5426E-06
55	1.7956E+03	1.2500E-01	5.6525E-06	5.4162E-06
56	1.5846E+03	1.2500E-01	4.6835E-06	4.4839E-06
57	1.3984E+03	1.2500E-01	3.8809E-06	3.7116E-06
58	1.2341E+03	1.2500E-01	3.2159E-06	3.0737E-06
59	1.0891E+03	1.2500E-01	2.6649E-06	2.5457E-06
60	9.6112E+02	2.5000E-01	4.0384E-06	3.8558E-06
61	7.4852E+02	2.5000E-01	2.7734E-06	2.6449E-06
62	5.8295E+02	2.5000E-01	1.9048E-06	1.8142E-06
63	4.5400E+02	2.5000E-01	1.3083E-06	1.2441E-06
64	3.5357E+02	2.5000E-01	8.9865E-07	8.5401E-07
65	2.7536E+02	2.5000E-01	6.1731E-07	5.8580E-07
66	2.1445E+02	2.5000E-01	4.2405E-07	4.0160E-07
67	1.6702E+02	2.5000E-01	2.9133E-07	2.7578E-07
68	1.3007E+02	2.5000E-01	2.0014E-07	1.8913E-07
69	1.0130E+02	5.0000E-01	2.3200E-07	2.1912E-07
70	6.1442E+01	1.7500E+00	2.0753E-07	1.9585E-07
			1.0000E+00	1.0000E+00

TABLE B-XLVIII

ZPR-3-12 25-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Adjoint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Adjoint (rho/n/s)
1	2.0000E+07	1.1931E+00	2.5647E-02	4.8232E-03	3.4547E+00	2.9733E-06	4.2094E-02
2	6.0653E+06	5.0000E-01	1.1327E-01	2.2050E-02	8.3305E-01	1.1929E-05	7.7291E-03
3	3.6788E+06	5.0000E-01	2.1260E-01	4.8445E-02	7.9935E-01	2.3034E-05	6.41E8E-03
4	2.2313E+06	5.0000E-01	2.2824E-01	7.1554E-02	7.3011E-01	3.3763E-05	5.1359E-03
5	1.3533E+06	5.0000E-01	1.7619E-01	9.7336E-02	1.2629E+00	1.1204E-04	7.1154E-03
6	8.2085E+05	5.0000E-01	1.1252E-01	1.2910E-01	1.2829E+00	3.9983E-04	7.3545E-03
7	4.9787E+05	5.0000E-01	6.4022E-02	1.3847E-01	1.0067E+00	6.8438E-04	3.6332E-03
8	3.0197E+05	5.0000E-01	3.3916E-02	1.2368E-01	6.9082E-01	7.0853E-04	1.3767E-03
9	1.8316E+05	5.0000E-01	1.7326E-02	1.0118E-01	6.9651E-01	6.0175E-04	8.5634E-04
10	1.1109E+05	5.0000E-01	8.5538E-03	8.3171E-02	6.9456E-01	5.9844E-04	5.9461E-04
11	6.7379E+04	5.0000E-01	4.0787E-03	6.5491E-02	6.8955E-01	5.8868E-04	4.4531E-04
12	4.0868E+04	5.0000E-01	1.9240E-03	4.5971E-02	1.0512E+00	3.6720E-04	4.4376E-04
13	2.4787E+04	5.0000E-01	9.0587E-04	3.1193E-02	1.4391E+00	2.1003E-04	5.1062E-04
14	1.5034E+04	5.0000E-01	4.2623E-04	1.8711E-02	1.5145E+00	6.2826E-05	4.4011E-04
15	9.1188E+03	5.0000E-01	2.0056E-04	9.6905E-03	1.6130E+00	1.7300E-05	4.2864E-04
16	5.5308E+03	5.0000E-01	9.4400E-05	5.2838E-03	1.7068E+00	8.1076E-06	4.6746E-04
17	3.3546E+03	5.0000E-01	4.4455E-05	2.4375E-03	1.7416E+00	2.9400E-06	6.0924E-04
18	2.0347E+03	5.0000E-01	2.0943E-05	9.7799E-04	1.8204E+00	1.3180E-06	8.2337E-04
19	1.2341E+03	5.0000E-01	9.8711E-06	3.1889E-04	1.3727E+00	3.8381E-07	6.0116E-04
20	7.4852E+02	5.0000E-01	4.6544E-06	8.6498E-05	1.0341E+00	1.3391E-07	4.9912E-04
21	4.5400E+02	5.0000E-01	2.1951E-06	1.9818E-05	1.0130E+00	2.3142E-08	4.8595E-04
22	2.7536E+02	5.0000E-01	1.0355E-06	3.5456E-06	9.8888E-01	4.6538E-09	4.8539E-04
23	1.6702E+02	5.0000E-01	4.8860E-07	5.7481E-07	9.2899E-01	6.3545E-10	4.2436E-04
24	1.0130E+02	5.0000E-01	2.3060E-07	1.0502E-07	4.8635E-01	3.3637E-11	4.8447E-04
25	6.1442E+01	1.7500E+00	2.0627E-07	2.8213E-08	5.7350E-01	9.9124E-11	6.8034E-04
	1.0677E+01		1.0000E+00	1.0000E+00		4.4356E-03	

TABLE B-XLIX

ZPR-3-12 25-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.1931E+00	2.5750E-02	2.4796E-02
2	6.0653E+06	5.0000E-01	1.1331E-01	1.1297E-01
3	3.6788E+06	5.0000E-01	2.1251E-01	2.1334E-01
4	2.2313E+06	5.0000E-01	2.2823E-01	2.2837E-01
5	1.3533E+06	5.0000E-01	1.7624E-01	1.7573E-01
6	8.2085E+05	5.0000E-01	1.1254E-01	1.1236E-01
7	4.9787E+05	5.0000E-01	6.3997E-02	6.4221E-02
8	3.0197E+05	5.0000E-01	3.3885E-02	3.4172E-02
9	1.8316E+05	5.0000E-01	1.7292E-02	1.7611E-02
10	1.1109E+05	5.0000E-01	8.5338E-03	8.7187E-03
11	6.7379E+04	5.0000E-01	4.0749E-03	4.1099E-03
12	4.0868E+04	5.0000E-01	1.9251E-03	1.9153E-03
13	2.4787E+04	5.0000E-01	9.0740E-04	8.9329E-04
14	1.5034E+04	5.0000E-01	4.2733E-04	4.1721E-04
15	9.1188E+03	5.0000E-01	2.0121E-04	1.9518E-04
16	5.5308E+03	5.0000E-01	9.4758E-05	9.1451E-05
17	3.3546E+03	5.0000E-01	4.4642E-05	4.2913E-05
18	2.0347E+03	5.0000E-01	2.1039E-05	2.0154E-05
19	1.2341E+03	5.0000E-01	9.9191E-06	9.4752E-06
20	7.4852E+02	5.0000E-01	4.6782E-06	4.4590E-06
21	4.5400E+02	5.0000E-01	2.2069E-06	2.0981E-06
22	2.7536E+02	5.0000E-01	1.0414E-06	9.8740E-07
23	1.6702E+02	5.0000E-01	4.9147E-07	4.6491E-07
24	1.0130E+02	5.0000E-01	2.3200E-07	2.1912E-07
25	6.1442E+01	1.7500E+00	2.0753E-07	1.9585E-07
			1.0000E+00	1.0000E+00

TABLE B-L

ZEBRA-2 70-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux ($n/cm^2/s$)	Central Ad joint ($\rho h/n/s$)	Edge Flux ($n/cm^2/s$)	Edge Ad joint ($\rho h/n/s$)
1	2.0000E+07	1.9315E-01	6.2046E-06	8.8369E-07	2.3650E+00	1.0006E-09	2.7614E-02
2	1.6487E+07	2.5000E-01	1.2062E-04	1.8071E-05	2.1484E+00	1.8305E-08	2.2581E-02
3	1.2840E+07	2.5000E-01	1.1208E-03	1.5600E-04	1.8030E+00	1.4510E-07	1.7846E-02
4	1.0000E+07	2.5000E-01	5.7537E-03	8.2893E-04	1.6352E+00	7.2869E-07	1.5116E-02
5	7.7880E+06	2.5000E-01	1.8583E-02	2.8307E-03	1.4403E+00	2.3093E-06	1.2329E-02
6	6.0653E+06	2.5000E-01	4.1856E-02	6.7120E-03	1.1881E+00	5.0041E-06	9.2676E-03
7	4.7237E+06	2.5000E-01	7.1334E-02	1.1123E-02	1.1582E+00	8.3106E-06	8.1027E-03
8	3.6788E+06	2.5000E-01	9.8098E-02	1.5354E-02	1.1255E+00	1.1447E-05	7.4099E-03
9	2.8650E+06	2.5000E-01	1.1449E-01	2.3674E-02	1.0865E+00	1.4232E-05	6.9006E-03
10	2.2313E+06	2.5000E-01	1.1791E-01	2.8143E-02	1.0348E+00	1.6108E-05	6.1846E-03
11	1.7377E+06	2.5000E-01	1.1040E-01	3.1784E-02	9.5249E-01	2.0462E-05	5.2330E-03
12	1.3533E+06	1.2500E-01	5.0144E-02	1.7470E-02	8.7306E-01	1.4192E-05	3.7557E-03
13	1.1943E+06	1.2500E-01	4.6228E-02	1.8920E-02	8.6167E-01	1.9535E-05	3.7294E-03
14	1.0540E+06	1.2500E-01	4.2033E-02	2.0675E-02	8.5723E-01	2.8745E-05	4.0495E-03
15	9.3014E+05	1.2500E-01	3.7837E-02	2.2204E-02	8.5740E-01	3.8753E-05	4.2220E-03
16	8.2085E+05	1.2500E-01	3.3770E-02	2.3730E-02	8.6122E-01	5.0770E-05	4.3589E-03
17	7.2440E+05	1.2500E-01	2.9743E-02	2.5649E-02	8.6743E-01	7.0566E-05	4.2913E-03
18	6.3928E+05	1.2500E-01	2.6174E-02	2.6939E-02	8.7406E-01	9.0812E-05	3.9133E-03
19	5.6416E+05	1.2500E-01	2.2857E-02	2.7532E-02	8.7998E-01	1.0393E-04	3.4671E-03
20	4.9787E+05	1.2500E-01	1.9805E-02	2.7981E-02	8.8464E-01	1.1494E-04	3.0555E-03
21	4.3937E+05	1.2500E-01	1.7065E-02	2.7973E-02	8.8785E-01	1.2024E-04	2.6687E-03
22	3.8774E+05	2.5000E-01	2.7160E-02	5.7081E-02	8.9031E-01	2.7789E-04	2.3463E-03
23	3.0197E+05	2.5000E-01	1.9730E-02	5.5066E-02	8.9320E-01	2.7126E-04	1.8239E-03
24	2.3518E+05	2.5000E-01	1.4190E-02	5.1610E-02	8.9468E-01	2.4754E-04	1.4194E-03
25	1.8316E+05	2.5000E-01	1.0155E-02	4.7943E-02	8.9344E-01	2.1639E-04	1.1690E-03
26	1.4264E+05	2.5000E-01	7.1733E-03	4.6115E-02	8.9084E-01	2.1855E-04	1.0061E-03
27	1.1109E+05	2.5000E-01	5.0454E-03	4.2645E-02	8.8830E-01	2.0150E-04	8.5981E-04
28	8.6517E+04	2.5000E-01	3.5101E-03	4.0869E-02	8.8660E-01	2.2277E-04	7.6449E-04
29	6.7379E+04	2.5000E-01	2.4181E-03	3.7844E-02	8.8469E-01	2.1905E-04	6.9526E-04
30	5.2475E+04	2.5000E-01	1.6620E-03	3.5352E-02	8.8541E-01	2.0110E-04	6.0351E-04
31	4.0868E+04	2.5000E-01	1.1415E-03	3.2227E-02	8.9330E-01	1.7419E-04	5.2309E-04
32	3.1828E+04	1.2500E-01	4.2852E-04	1.1670E-02	9.0482E-01	2.9190E-05	4.6054E-04
33	2.8088E+04	1.2500E-01	3.5499E-04	1.5902E-02	9.0785E-01	5.6112E-05	4.7139E-04
34	2.4787E+04	1.2500E-01	2.9405E-04	1.3187E-02	9.1463E-01	5.0553E-05	4.8169E-04
35	2.1875E+04	1.2500E-01	2.4357E-04	1.2668E-02	9.2209E-01	3.9244E-05	4.5906E-04
36	1.9304E+04	1.2500E-01	2.0173E-04	1.1715E-02	9.3186E-01	2.8917E-05	4.3890E-04
37	1.7036E+04	1.2500E-01	1.6709E-04	1.0497E-02	9.3873E-01	1.8125E-05	4.1877E-04
38	1.5034E+04	1.2500E-01	1.3839E-04	1.0434E-02	9.5096E-01	1.5893E-05	4.3194E-04
39	1.3268E+04	1.2500E-01	1.1461E-04	9.4442E-03	9.6045E-01	1.1840E-05	4.3412E-04
40	1.1709E+04	1.2497E-01	9.4906E-05	8.9789E-03	9.7387E-01	9.4723E-06	4.5022E-04
41	1.0333E+04	1.2503E-01	7.8643E-05	8.1642E-03	9.8791E-01	7.0124E-06	4.6135E-04
42	9.1188E+03	1.2500E-01	6.5117E-05	7.1537E-03	1.0003E+00	4.4188E-06	4.6230E-04
43	8.0473E+03	1.2500E-01	5.3934E-05	6.9067E-03	1.0129E+00	3.4824E-06	4.6756E-04
44	7.1017E+03	1.2500E-01	4.4671E-05	6.5416E-03	1.0266E+00	3.1778E-06	4.9334E-04
45	6.2673E+03	1.2500E-01	3.7001E-05	5.9094E-03	1.0400E+00	2.4970E-06	5.1314E-04
46	5.5308E+03	1.2500E-01	3.0648E-05	5.6030E-03	1.0564E+00	2.1512E-06	5.3676E-04
47	4.8809E+03	1.2500E-01	2.5387E-05	5.0747E-03	1.0666E+00	1.7562E-06	5.5141E-04
48	4.3074E+03	1.2500E-01	2.1030E-05	4.6620E-03	1.0773E+00	1.2932E-06	5.4160E-04
49	3.8013E+03	1.2500E-01	1.7420E-05	4.3779E-03	1.0808E+00	1.2306E-06	5.6739E-04
50	3.3546E+03	1.2500E-01	1.4431E-05	3.9594E-03	1.0848E+00	9.9725E-07	5.6383E-04
51	2.9604E+03	1.2500E-01	1.1955E-05	3.5126E-03	1.1003E+00	6.2650E-07	6.1367E-04
52	2.6126E+03	1.2500E-01	9.9046E-06	3.1399E-03	1.1142E+00	5.4522E-07	7.3877E-04
53	2.3056E+03	1.2500E-01	8.2059E-06	2.9618E-03	1.1234E+00	4.8733E-07	7.7606E-04
54	2.0347E+03	1.2500E-01	6.7984E-06	2.6250E-03	1.1459E+00	4.9125E-07	8.9514E-04
55	1.7956E+03	1.2500E-01	5.6326E-06	2.4065E-03	1.1568E+00	6.1159E-07	9.1322E-04
56	1.5846E+03	1.2500E-01	4.6666E-06	2.1290E-03	1.1589E+00	4.2104E-07	9.0852E-04
57	1.3984E+03	1.2500E-01	3.8666E-06	1.9653E-03	1.1938E+00	5.0946E-07	1.0131E-03
58	1.2341E+03	1.2500E-01	3.2038E-06	1.5874E-03	1.1640E+00	2.7802E-07	8.4031E-04
59	1.0891E+03	1.2500E-01	2.6548E-06	1.5055E-03	1.1917E+00	2.2042E-07	9.6082E-04
60	9.6112E+02	2.5000E-01	4.0229E-06	2.4669E-03	1.2223E+00	4.3471E-07	1.0452E-03
61	7.4852E+02	2.5000E-01	2.7624E-06	1.8229E-03	1.2862E+00	2.4259E-07	1.1687E-03
62	5.8295E+02	2.5000E-01	1.8971E-06	1.3205E-03	1.3225E+00	1.6317E-07	1.4006E-03
63	4.5400E+02	2.5000E-01	1.3028E-06	9.5938E-04	1.2909E+00	7.4883E-08	1.2730E-03
64	3.5357E+02	2.5000E-01	8.9484E-07	7.3298E-04	1.2921E+00	6.3014E-08	1.3771E-03
65	2.7536E+02	2.5000E-01	6.1462E-07	4.8189E-04	1.3026E+00	3.3138E-08	1.4277E-03
66	2.1445E+02	2.5000E-01	4.2213E-07	3.3359E-04	1.2397E+00	2.2782E-08	1.3513E-03
67	1.6702E+02	2.5000E-01	2.9000E-07	2.3296E-04	1.2513E+00	1.3822E-08	1.3967E-03
68	1.3007E+02	2.5000E-01	1.9920E-07	1.5616E-04	1.2413E+00	3.6859E-09	1.0605E-03
69	1.0130E+02	5.0000E-01	2.3090E-07	1.7021E-04	1.3547E+00	2.6941E-09	2.0564E-03
70	6.1442E+01	1.7500E+00	2.0653E-07	1.8920E-04	1.5350E+00	7.1502E-09	3.1620E-03
	1.0677E+01		1.0000E+00	1.0000E+00		3.2736E-03	

TABLE B-LI
ZEBRA-2 70-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.9315E-01	6.2953E-06	5.3886E-06
2	1.6487E+07	2.5000E-01	1.2182E-04	1.0982E-04
3	1.2840E+07	2.5000E-01	1.1278E-03	1.0572E-03
4	1.0000E+07	2.5000E-01	5.7743E-03	5.5686E-03
5	7.7880E+06	2.5000E-01	1.8615E-02	1.8300E-02
6	6.0653E+06	2.5000E-01	4.1878E-02	4.1656E-02
7	4.7237E+06	2.5000E-01	7.1328E-02	7.1385E-02
8	3.6788E+06	2.5000E-01	9.8070E-02	9.8352E-02
9	2.8650E+06	2.5000E-01	1.1446E-01	1.1475E-01
10	2.2313E+06	2.5000E-01	1.1789E-01	1.1803E-01
11	1.7377E+06	2.5000E-01	1.1041E-01	1.1031E-01
12	1.3533E+06	1.2500E-01	5.0155E-02	5.0045E-02
13	1.1943E+06	1.2500E-01	4.6236E-02	4.6162E-02
14	1.0540E+06	1.2500E-01	4.2041E-02	4.1959E-02
15	9.3014E+05	1.2500E-01	3.7849E-02	3.7726E-02
16	8.2085E+05	1.2500E-01	3.3778E-02	3.3699E-02
17	7.2440E+05	1.2500E-01	2.9752E-02	2.9667E-02
18	6.3928E+05	1.2500E-01	2.6173E-02	2.6177E-02
19	5.6416E+05	1.2500E-01	2.2854E-02	2.2884E-02
20	4.9787E+05	1.2500E-01	1.9799E-02	1.9856E-02
21	4.3937E+05	1.2500E-01	1.7062E-02	1.7095E-02
22	3.8774E+05	2.5000E-01	2.7154E-02	2.7214E-02
23	3.0197E+05	2.5000E-01	1.9723E-02	1.9793E-02
24	2.3518E+05	2.5000E-01	1.4178E-02	1.4302E-02
25	1.8316E+05	2.5000E-01	1.0145E-02	1.0245E-02
26	1.4264E+05	2.5000E-01	7.1617E-03	7.2782E-03
27	1.1109E+05	2.5000E-01	5.0375E-03	5.1163E-03
28	8.6517E+04	2.5000E-01	3.5055E-03	3.5517E-03
29	6.7379E+04	2.5000E-01	2.4162E-03	2.4348E-03
30	5.2475E+04	2.5000E-01	1.6617E-03	1.6656E-03
31	4.0868E+04	2.5000E-01	1.1417E-03	1.1391E-03
32	3.1828E+04	1.2500E-01	4.2876E-04	4.2640E-04
33	2.8088E+04	1.2500E-01	3.5525E-04	3.5261E-04
34	2.4787E+04	1.2500E-01	2.9433E-04	2.9161E-04
35	2.1875E+04	1.2500E-01	2.4384E-04	2.4118E-04
36	1.9304E+04	1.2500E-01	2.0199E-04	1.9947E-04
37	1.7036E+04	1.2500E-01	1.6732E-04	1.6499E-04
38	1.5034E+04	1.2500E-01	1.3860E-04	1.3647E-04
39	1.3268E+04	1.2500E-01	1.1481E-04	1.1289E-04
40	1.1709E+04	1.2497E-01	9.5076E-05	9.3376E-05
41	1.0333E+04	1.2503E-01	7.8793E-05	7.7293E-05
42	9.1138E+03	1.2500E-01	6.5249E-05	6.3936E-05
43	8.0473E+03	1.2500E-01	5.4048E-05	5.2906E-05
44	7.1017E+03	1.2500E-01	4.4770E-05	4.3782E-05
45	6.2673E+03	1.2500E-01	3.7087E-05	3.6235E-05
46	5.5308E+03	1.2500E-01	3.0722E-05	2.9990E-05
47	4.8809E+03	1.2500E-01	2.5449E-05	2.4823E-05
48	4.3074E+03	1.2500E-01	2.1083E-05	2.0549E-05
49	3.8013E+03	1.2500E-01	1.7466E-05	1.7011E-05
50	3.3546E+03	1.2500E-01	1.4470E-05	1.4084E-05
51	2.9604E+03	1.2500E-01	1.1988E-05	1.1661E-05
52	2.6126E+03	1.2500E-01	9.9323E-06	9.6553E-06
53	2.3056E+03	1.2500E-01	8.2293E-06	7.9952E-06
54	2.0347E+03	1.2500E-01	6.8182E-06	6.6204E-06
55	1.7956E+03	1.2500E-01	5.6493E-06	5.4820E-06
56	1.5846E+03	1.2500E-01	4.6807E-06	4.5395E-06
57	1.3984E+03	1.2500E-01	3.8786E-06	3.7588E-06
58	1.2341E+03	1.2500E-01	3.2139E-06	3.1133E-06
59	1.0891E+03	1.2500E-01	2.6632E-06	2.5789E-06
60	9.6112E+02	2.5000E-01	4.0358E-06	3.9067E-06
61	7.4852E+02	2.5000E-01	2.7715E-06	2.6807E-06
62	5.8295E+02	2.5000E-01	1.9035E-06	1.8394E-06
63	4.5400E+02	2.5000E-01	1.3073E-06	1.2620E-06
64	3.5357E+02	2.5000E-01	8.9799E-07	8.6646E-07
65	2.7536E+02	2.5000E-01	6.1685E-07	5.9460E-07
66	2.1445E+02	2.5000E-01	4.2371E-07	4.0787E-07
67	1.6702E+02	2.5000E-01	2.9110E-07	2.8013E-07
68	1.3007E+02	2.5000E-01	1.9998E-07	1.9221E-07
69	1.0130E+02	5.0000E-01	2.3180E-07	2.2273E-07
70	6.1442E+01	1.7500E+00	2.0736E-07	1.9912E-07
			1.0000E+00	1.0000E+00

TABLE B-LII

ZEBRA-2 25-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Ad joint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Ad joint (rho/n/s)
1	2.0000E+07	1.1931E+00	2.5585E-02	3.8346E-03	3.4447E+00	3.2023E-06	3.5022E-02
2	6.0653E+06	5.0000E-01	1.1319E-01	1.7835E-02	8.6060E-01	1.3315E-05	6.3711E-03
3	3.6788E+06	5.0000E-01	2.1258E-01	3.9028E-02	8.1133E-01	2.5680E-05	5.2468E-03
4	2.2313E+06	5.0000E-01	2.2830E-01	5.9928E-02	7.2891E-01	3.6570E-05	4.1877E-03
5	1.3533E+06	5.0000E-01	1.7624E-01	7.9270E-02	1.2652E+00	1.0122E-04	5.7792E-03
6	8.2085E+05	5.0000E-01	1.1254E-01	1.0385E-01	1.2774E+00	3.1608E-04	5.8797E-03
7	4.9787E+05	5.0000E-01	6.4030E-02	1.1303E-01	9.7666E-01	5.1307E-04	2.9601E-03
8	3.0197E+05	5.0000E-01	3.3920E-02	1.0668E-01	6.5575E-01	5.1880E-04	1.1895E-03
9	1.8316E+05	5.0000E-01	1.7328E-02	9.4058E-02	6.5443E-01	4.3494E-04	7.9779E-04
10	1.1109E+05	5.0000E-01	8.5555E-03	8.3513E-02	6.5099E-01	4.2377E-04	5.9576E-04
11	6.7379E+04	5.0000E-01	4.0801E-03	7.3196E-02	6.4923E-01	4.2015E-04	4.7636E-04
12	4.0868E+04	5.0000E-01	1.9250E-03	5.9799E-02	9.9249E-01	2.5949E-04	5.3367E-04
13	2.4787E+04	5.0000E-01	9.0645E-04	4.8067E-02	1.3598E+00	1.3684E-04	6.5962E-04
14	1.5034E+04	5.0000E-01	4.2655E-04	3.7022E-02	1.4206E+00	4.4218E-05	6.5200E-04
15	9.1188E+03	5.0000E-01	2.0072E-04	2.6511E-02	1.4963E+00	1.3576E-05	7.1021E-04
16	5.5308E+03	5.0000E-01	9.4486E-05	1.9718E-02	1.5702E+00	6.4312E-06	8.0587E-04
17	3.3546E+03	5.0000E-01	4.4497E-05	1.3574E-02	1.6221E+00	2.6563E-06	9.8749E-04
18	2.0347E+03	5.0000E-01	2.0964E-05	9.1258E-03	1.7075E+00	2.0333E-06	1.3681E-03
19	1.2341E+03	5.0000E-01	9.8815E-06	5.5598E-03	1.3123E+00	9.3315E-07	1.0440E-03
20	7.4852E+02	5.0000E-01	4.6595E-06	3.1434E-03	9.5683E-01	4.0576E-07	9.4236E-04
21	4.5400E+02	5.0000E-01	2.1976E-06	1.6924E-03	9.4740E-01	1.3790E-07	9.7199E-04
22	2.7536E+02	5.0000E-01	1.0367E-06	8.1548E-04	9.3247E-01	5.5920E-08	1.0193E-03
23	1.6702E+02	5.0000E-01	4.8920E-07	3.8912E-04	9.1425E-01	1.7508E-08	9.0128E-04
24	1.0130E+02	5.0000E-01	2.3090E-07	1.7021E-04	4.9688E-01	2.6941E-09	7.5423E-04
25	6.1442E+01	1.7500E+00	2.0653E-07	1.8920E-04	5.6299E-01	7.1502E-09	1.1598E-03
	1.0677E+01		1.0000E+00	1.0000E+00		3.2736E-03	

TABLE B-LIII

ZEBRA-2 25-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.1931E+00	2.5645E-02	2.5041E-02
2	6.0653E+06	5.0000E-01	1.1321E-01	1.1304E-01
3	3.6788E+06	5.0000E-01	2.1253E-01	2.1310E-01
4	2.2313E+06	5.0000E-01	2.2830E-01	2.2834E-01
5	1.3533E+06	5.0000E-01	1.7628E-01	1.7589E-01
6	8.2085E+05	5.0000E-01	1.1256E-01	1.1243E-01
7	4.9787E+05	5.0000E-01	6.4015E-02	6.4165E-02
8	3.0197E+05	5.0000E-01	3.3900E-02	3.4094E-02
9	1.8316E+05	5.0000E-01	1.7307E-02	1.7523E-02
10	1.1109E+05	5.0000E-01	8.5429E-03	8.6680E-03
11	6.7379E+04	5.0000E-01	4.0779E-03	4.1004E-03
12	4.0868E+04	5.0000E-01	1.9257E-03	1.9181E-03
13	2.4787E+04	5.0000E-01	9.0747E-04	8.9724E-04
14	1.5034E+04	5.0000E-01	4.2728E-04	4.2004E-04
15	9.1188E+03	5.0000E-01	2.0115E-04	1.9686E-04
16	5.5308E+03	5.0000E-01	9.4720E-05	9.2373E-05
17	3.3546E+03	5.0000E-01	4.4620E-05	4.3395E-05
18	2.0347E+03	5.0000E-01	2.1027E-05	2.0401E-05
19	1.2341E+03	5.0000E-01	9.9129E-06	9.5989E-06
20	7.4852E+02	5.0000E-01	4.6750E-06	4.5201E-06
21	4.5400E+02	5.0000E-01	2.2053E-06	2.1284E-06
22	2.7536E+02	5.0000E-01	1.0406E-06	1.0025E-06
23	1.6702E+02	5.0000E-01	4.9107E-07	4.7233E-07
24	1.0130E+02	5.0000E-01	2.3180E-07	2.2273E-07
25	6.1442E+01	1.7500E+00	2.0736E-07	1.9912E-07
			1.0000E+00	1.0000E+00

TABLE B-LIV
ZPPR-2 70-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Adjoint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Adjoint (rho/n/s)
1	2.0000E+07	1.9315E-01	8.1752E-06	6.6913E-07	1.8842E+00	7.8988E-10	2.0236E-02
2	1.6487E+07	2.5000E-01	1.4870E-04	1.2718E-05	1.6356E+00	1.2922E-08	1.5804E-02
3	1.2640E+07	2.5000E-01	1.3249E-03	9.9154E-05	1.3893E+00	6.8962E-08	1.2164E-02
4	1.0000E+07	2.5000E-01	6.5835E-03	5.6798E-04	1.3459E+00	4.3998E-07	1.1496E-02
5	7.7880E+06	2.5000E-01	2.0683E-02	1.8135E-03	1.2257E+00	1.2870E-06	1.0403E-02
6	6.0653E+06	2.5000E-01	4.5461E-02	4.1913E-03	1.1121E+00	2.6277E-06	9.1986E-03
7	4.7237E+06	2.5000E-01	7.5811E-02	7.0120E-03	1.0923E+00	3.6802E-06	8.7028E-03
8	3.6788E+06	2.5000E-01	1.0225E-01	1.1324E-02	1.1050E+00	6.4718E-06	9.1415E-03
9	2.8650E+06	2.5000E-01	1.1728E-01	1.8240E-02	1.0936E+00	1.9806E-05	9.4878E-03
10	2.2313E+06	2.5000E-01	1.1895E-01	1.9466E-02	1.0497E+00	2.3578E-05	8.3273E-03
11	1.7377E+06	2.5000E-01	1.0989E-01	2.3902E-02	9.8880E-01	3.4757E-05	7.7911E-03
12	1.3533E+06	1.2500E-01	4.9444E-02	1.3506E-02	9.3161E-01	2.4034E-05	6.6708E-03
13	1.1943E+06	1.2500E-01	4.5266E-02	1.3843E-02	9.1813E-01	3.2548E-05	6.8016E-03
14	1.0540E+06	1.2500E-01	4.0898E-02	1.1707E-02	9.1340E-01	2.7143E-05	7.0305E-03
15	9.3014E+05	1.2500E-01	3.6578E-02	1.6783E-02	9.0860E-01	3.8332E-05	7.8361E-03
16	8.2085E+05	1.2500E-01	3.2434E-02	2.0551E-02	9.0340E-01	3.7324E-05	7.0827E-03
17	7.2440E+05	1.2500E-01	2.8473E-02	2.3269E-02	8.9571E-01	9.3720E-05	7.9319E-03
18	6.3928E+05	1.2500E-01	2.4890E-02	2.7578E-02	8.8751E-01	1.5246E-04	7.5588E-03
19	5.6416E+05	1.2500E-01	2.1609E-02	3.0639E-02	8.8027E-01	1.1315E-04	5.5001E-03
20	4.9787E+05	1.2500E-01	1.8640E-02	2.1119E-02	8.7040E-01	1.1092E-04	4.8533E-03
21	4.3937E+05	1.2500E-01	1.5995E-02	1.6928E-02	8.6225E-01	6.1249E-05	4.3404E-03
22	3.8774E+05	2.5000E-01	2.5363E-02	5.1326E-02	8.5224E-01	2.8838E-04	5.4866E-03
23	3.0197E+05	2.5000E-01	1.8304E-02	5.4360E-02	8.3496E-01	3.0212E-04	4.9047E-03
24	2.3518E+05	2.5000E-01	1.3081E-02	5.1860E-02	8.1918E-01	2.2506E-04	4.0047E-03
25	1.8316E+05	2.5000E-01	9.2660E-03	4.8856E-02	8.0322E-01	2.6299E-04	3.8634E-03
26	1.4264E+05	2.5000E-01	6.5311E-03	5.6817E-02	7.8884E-01	4.5367E-04	4.0260E-03
27	1.1109E+05	2.5000E-01	4.5773E-03	4.9118E-02	7.7213E-01	1.6007E-04	2.4210E-03
28	8.6517E+04	2.5000E-01	3.1875E-03	5.3279E-02	7.5713E-01	3.6673E-04	2.8922E-03
29	6.7379E+04	2.5000E-01	2.2028E-03	3.6471E-02	7.4203E-01	2.4464E-04	2.0106E-03
30	5.2475E+04	2.5000E-01	1.5191E-03	4.2406E-02	7.3149E-01	1.8309E-04	1.6270E-03
31	4.0868E+04	2.5000E-01	1.0464E-03	4.0923E-02	7.2389E-01	1.7995E-04	1.5788E-03
32	3.1828E+04	1.2500E-01	3.9364E-04	7.4710E-03	7.2130E-01	9.5450E-06	2.3322E-03
33	2.8088E+04	1.2500E-01	3.2649E-04	2.2174E-02	7.1980E-01	2.9948E-04	2.6120E-03
34	2.4787E+04	1.2500E-01	2.7076E-04	1.9975E-02	7.2121E-01	5.5102E-04	2.8729E-03
35	2.1875E+04	1.2500E-01	2.2452E-04	1.7947E-02	7.2473E-01	2.6800E-04	2.5237E-03
36	1.9304E+04	1.2500E-01	1.8615E-04	1.5741E-02	7.2606E-01	1.7984E-04	2.3183E-03
37	1.7036E+04	1.2500E-01	1.5434E-04	1.1909E-02	7.2830E-01	1.1591E-04	2.0858E-03
38	1.5034E+04	1.2500E-01	1.2795E-04	1.3427E-02	7.3045E-01	1.1545E-04	2.0392E-03
39	1.3268E+04	1.2500E-01	1.0606E-04	1.1763E-02	7.3630E-01	9.8401E-05	1.8959E-03
40	1.1709E+04	1.2497E-01	8.7895E-05	1.1680E-02	7.4092E-01	8.5687E-05	1.7484E-03
41	1.0333E+04	1.2503E-01	7.2890E-05	9.9256E-03	7.4735E-01	6.1673E-05	1.5540E-03
42	9.1188E+03	1.2500E-01	6.0399E-05	7.0088E-03	7.5413E-01	3.1594E-05	1.4027E-03
43	8.0473E+03	1.2500E-01	5.0061E-05	6.3323E-03	7.5462E-01	1.5829E-05	1.4363E-03
44	7.1017E+03	1.2500E-01	4.1491E-05	6.9785E-03	7.5926E-01	3.0806E-05	1.5480E-03
45	6.2673E+03	1.2500E-01	3.4389E-05	6.1630E-03	7.6835E-01	3.8436E-05	1.6399E-03
46	5.5308E+03	1.2500E-01	2.8501E-05	5.9763E-03	7.7580E-01	6.3521E-05	1.7287E-03
47	4.8809E+03	1.2500E-01	2.3621E-05	4.9639E-03	7.8430E-01	6.9358E-05	1.7167E-03
48	4.3074E+03	1.2500E-01	1.9577E-05	3.9174E-03	7.9059E-01	5.3577E-05	1.6715E-03
49	3.8013E+03	1.2500E-01	1.6225E-05	2.8149E-03	7.9641E-01	6.0947E-05	1.7161E-03
50	3.3546E+03	1.2500E-01	1.3448E-05	1.2737E-03	7.9973E-01	5.9433E-05	1.6964E-03
51	2.9604E+03	1.2500E-01	1.1145E-05	4.2043E-04	8.0257E-01	4.9112E-05	1.6365E-03
52	2.6126E+03	1.2500E-01	9.2373E-06	1.4896E-03	8.0387E-01	3.0855E-05	1.5763E-03
53	2.3056E+03	1.2500E-01	7.6560E-06	3.1735E-03	8.0938E-01	3.4676E-05	1.6199E-03
54	2.0347E+03	1.2500E-01	6.3452E-06	4.2457E-03	8.2418E-01	3.8738E-05	1.6604E-03
55	1.7956E+03	1.2500E-01	5.2590E-06	4.5531E-03	8.3299E-01	3.9685E-05	1.6571E-03
56	1.5846E+03	1.2500E-01	4.3585E-06	4.4083E-03	8.6693E-01	3.8469E-05	1.6599E-03
57	1.3984E+03	1.2500E-01	3.6125E-06	4.2115E-03	8.8771E-01	3.9791E-05	1.6437E-03
58	1.2341E+03	1.2500E-01	2.9942E-06	3.0514E-03	8.5388E-01	2.7393E-05	1.6198E-03
59	1.0891E+03	1.2500E-01	2.4817E-06	3.1094E-03	9.3123E-01	3.1700E-05	1.8162E-03
60	9.6112E+02	2.5000E-01	3.7620E-06	5.1139E-03	9.1208E-01	6.6537E-05	1.8292E-03
61	7.4852E+02	2.5000E-01	2.5845E-06	3.8270E-03	9.4658E-01	6.3886E-05	1.8079E-03
62	5.8295E+02	2.5000E-01	1.7756E-06	2.5726E-03	1.0424E+00	6.5093E-05	1.7873E-03
63	4.5400E+02	2.5000E-01	1.2199E-06	1.5728E-03	9.7490E-01	4.6224E-05	1.7478E-03
64	3.5357E+02	2.5000E-01	8.3817E-07	1.1536E-03	9.9250E-01	4.5406E-05	1.7391E-03
65	2.7536E+02	2.5000E-01	5.7588E-07	7.2496E-04	1.0873E+00	4.9792E-05	1.9783E-03
66	2.1445E+02	2.5000E-01	3.9566E-07	4.4886E-04	1.1240E+00	4.8928E-05	2.0012E-03
67	1.6702E+02	2.5000E-01	2.7187E-07	2.5691E-04	1.0987E+00	4.6826E-05	1.9962E-03
68	1.3007E+02	2.5000E-01	1.8680E-07	1.3776E-04	1.1769E+00	4.5859E-05	1.9863E-03
69	1.0130E+02	5.0000E-01	2.1658E-07	9.2211E-05	1.4569E+00	3.5135E-05	1.9666E-03
70	6.1442E+01	1.7500E+00	1.9383E-07	2.6103E-05	1.4151E+00	4.1658E-04	1.9497E-03
	1.0677E+01		1.0000E+00	1.0000E+00		6.9195E-03	

TABLE B-LV
ZPPR-2 70-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core 1	Core 2	Blkt 1	Blkt 2	Reflector
1	2.0000E+07	1.9315E-01	8.1578E-06	8.3553E-06	4.9866E-06	5.3920E-06	0.0000E+00
2	1.6487E+07	2.5000E-01	1.4861E-04	1.5105E-04	1.0444E-04	1.0981E-04	0.0000E+00
3	1.2840E+07	2.5000E-01	1.3249E-03	1.3402E-03	1.0248E-03	1.0561E-03	0.0000E+00
4	1.0000E+07	2.5000E-01	6.5856E-03	6.6386E-03	5.4704E-03	5.5598E-03	0.0000E+00
5	7.7880E+06	2.5000E-01	2.0691E-02	2.0805E-02	1.8138E-02	1.8268E-02	0.0000E+00
6	6.0653E+06	2.5000E-01	4.5481E-02	4.5646E-02	4.1520E-02	4.1594E-02	0.0000E+00
7	4.7237E+06	2.5000E-01	7.5839E-02	7.6013E-02	7.1380E-02	7.1316E-02	0.0000E+00
8	3.6788E+06	2.5000E-01	1.0228E-01	1.0241E-01	9.8491E-02	9.8322E-02	0.0000E+00
9	2.8650E+06	2.5000E-01	1.1731E-01	1.1738E-01	1.1494E-01	1.1478E-01	0.0000E+00
10	2.2313E+06	2.5000E-01	1.1896E-01	1.1897E-01	1.1817E-01	1.1810E-01	0.0000E+00
11	1.7377E+06	2.5000E-01	1.0989E-01	1.0986E-01	1.1033E-01	1.1039E-01	0.0000E+00
12	1.3533E+06	1.2500E-01	4.9442E-02	4.9416E-02	5.0016E-02	5.0080E-02	0.0000E+00
13	1.1943E+06	1.2500E-01	4.5261E-02	4.5225E-02	4.6137E-02	4.6185E-02	0.0000E+00
14	1.0540E+06	1.2500E-01	4.0892E-02	4.0851E-02	4.1922E-02	4.1975E-02	0.0000E+00
15	9.3014E+05	1.2500E-01	3.6570E-02	3.6528E-02	3.7672E-02	3.7744E-02	0.0000E+00
16	8.2085E+05	1.2500E-01	3.2425E-02	3.2379E-02	3.3655E-02	3.3707E-02	0.0000E+00
17	7.2440E+05	1.2500E-01	2.8465E-02	2.8422E-02	2.9620E-02	2.9673E-02	0.0000E+00
18	6.3928E+05	1.2500E-01	2.4881E-02	2.4834E-02	2.6160E-02	2.6170E-02	0.0000E+00
19	5.6416E+05	1.2500E-01	2.1600E-02	2.1553E-02	2.2879E-02	2.2875E-02	0.0000E+00
20	4.9787E+05	1.2500E-01	1.8631E-02	1.8586E-02	1.9862E-02	1.9843E-02	0.0000E+00
21	4.3937E+05	1.2500E-01	1.5987E-02	1.5947E-02	1.7096E-02	1.7087E-02	0.0000E+00
22	3.8774E+05	2.5000E-01	2.5349E-02	2.5281E-02	2.7220E-02	2.7202E-02	0.0000E+00
23	3.0197E+05	2.5000E-01	1.8293E-02	1.8238E-02	1.9810E-02	1.9784E-02	0.0000E+00
24	2.3518E+05	2.5000E-01	1.3072E-02	1.3026E-02	1.4342E-02	1.4288E-02	0.0000E+00
25	1.8316E+05	2.5000E-01	9.2586E-03	9.2212E-03	1.0281E-02	1.0281E-02	0.0000E+00
26	1.4264E+05	2.5000E-01	6.5255E-03	6.4962E-03	7.3211E-03	7.2680E-03	0.0000E+00
27	1.1109E+05	2.5000E-01	4.5733E-03	4.5520E-03	5.1471E-03	5.1111E-03	0.0000E+00
28	8.6517E+04	2.5000E-01	3.1848E-03	3.1705E-03	3.5711E-03	3.5501E-03	0.0000E+00
29	6.7379E+04	2.5000E-01	2.2010E-03	2.1921E-03	2.4443E-03	2.4360E-03	0.0000E+00
30	5.2475E+04	2.5000E-01	1.5179E-03	1.5125E-03	1.6695E-03	1.6679E-03	0.0000E+00
31	4.0868E+04	2.5000E-01	1.0456E-03	1.0423E-03	1.1402E-03	1.1416E-03	0.0000E+00
32	3.1828E+04	1.2500E-01	3.9336E-04	3.9220E-04	4.2640E-04	4.2756E-04	0.0000E+00
33	2.8088E+04	1.2500E-01	3.2627E-04	3.2535E-04	3.5242E-04	3.5370E-04	0.0000E+00
34	2.4787E+04	1.2500E-01	2.7059E-04	2.6987E-04	2.9130E-04	2.9260E-04	0.0000E+00
35	2.1875E+04	1.2500E-01	2.2438E-04	2.2381E-04	2.4080E-04	2.4207E-04	0.0000E+00
36	1.9304E+04	1.2500E-01	1.8604E-04	1.8559E-04	1.9906E-04	2.0026E-04	0.0000E+00
37	1.7036E+04	1.2500E-01	1.5424E-04	1.5389E-04	1.6458E-04	1.6569E-04	0.0000E+00
38	1.5034E+04	1.2500E-01	1.2787E-04	1.2759E-04	1.3608E-04	1.3709E-04	0.0000E+00
39	1.3268E+04	1.2500E-01	1.0600E-04	1.0578E-04	1.1253E-04	1.1343E-04	0.0000E+00
40	1.1709E+04	1.2497E-01	8.7844E-05	8.7671E-05	9.3037E-05	9.3841E-05	0.0000E+00
41	1.0333E+04	1.2503E-01	7.2849E-05	7.2712E-05	7.6987E-05	7.6985E-05	0.0000E+00
42	9.1188E+03	1.2500E-01	6.0365E-05	6.0257E-05	6.3662E-05	6.4282E-05	0.0000E+00
43	8.0473E+03	1.2500E-01	5.0034E-05	4.9948E-05	5.2664E-05	5.3202E-05	0.0000E+00
44	7.1017E+03	1.2500E-01	4.1469E-05	4.1401E-05	4.3568E-05	4.4035E-05	0.0000E+00
45	6.2673E+03	1.2500E-01	3.4370E-05	3.4317E-05	3.6048E-05	3.6450E-05	0.0000E+00
46	5.5308E+03	1.2500E-01	2.8486E-05	2.8443E-05	2.9828E-05	3.0173E-05	0.0000E+00
47	4.8809E+03	1.2500E-01	2.3609E-05	2.3575E-05	2.4684E-05	2.4979E-05	0.0000E+00
48	4.3074E+03	1.2500E-01	1.9568E-05	1.9541E-05	2.0429E-05	2.0680E-05	0.0000E+00
49	3.8013E+03	1.2500E-01	1.6217E-05	1.6196E-05	1.6908E-05	1.7122E-05	0.0000E+00
50	3.3546E+03	1.2500E-01	1.3441E-05	1.3424E-05	1.3996E-05	1.4178E-05	0.0000E+00
51	2.9604E+03	1.2500E-01	1.1140E-05	1.1126E-05	1.1586E-05	1.1740E-05	0.0000E+00
52	2.6126E+03	1.2500E-01	9.2329E-06	9.2221E-06	9.5915E-06	9.7219E-06	0.0000E+00
53	2.3056E+03	1.2500E-01	7.6524E-06	7.6437E-06	7.9411E-06	8.0512E-06	0.0000E+00
54	2.0347E+03	1.2500E-01	6.3422E-06	6.3353E-06	6.5746E-06	6.6672E-06	0.0000E+00
55	1.7956E+03	1.2500E-01	5.2566E-06	5.2511E-06	5.4432E-06	5.5207E-06	0.0000E+00
56	1.5846E+03	1.2500E-01	4.3566E-06	4.3522E-06	4.5067E-06	4.5716E-06	0.0000E+00
57	1.3984E+03	1.2500E-01	3.6109E-06	3.6075E-06	3.7311E-06	3.7849E-06	0.0000E+00
58	1.2341E+03	1.2500E-01	2.9929E-06	2.9901E-06	3.0900E-06	3.1352E-06	0.0000E+00
59	1.0891E+03	1.2500E-01	2.4807E-06	2.4784E-06	2.5593E-06	2.5972E-06	0.0000E+00
60	9.6112E+02	2.5000E-01	3.7604E-06	3.7571E-06	3.8764E-06	3.9352E-06	0.0000E+00
61	7.4852E+02	2.5000E-01	2.5834E-06	2.5813E-06	2.6594E-06	2.7003E-06	0.0000E+00
62	5.8295E+02	2.5000E-01	1.7749E-06	1.7736E-06	1.8245E-06	1.8527E-06	0.0000E+00
63	4.5400E+02	2.5000E-01	1.2194E-06	1.2185E-06	1.2514E-06	1.2747E-06	0.0000E+00
64	3.5357E+02	2.5000E-01	8.3784E-07	8.3728E-07	8.5911E-07	8.7249E-07	0.0000E+00
65	2.7536E+02	2.5000E-01	5.7566E-07	5.7531E-07	5.8945E-07	5.9853E-07	0.0000E+00
66	2.1445E+02	2.5000E-01	3.9551E-07	3.9529E-07	4.0425E-07	4.1029E-07	0.0000E+00
67	1.6702E+02	2.5000E-01	2.7178E-07	2.7163E-07	2.7762E-07	2.8181E-07	0.0000E+00
68	1.3007E+02	2.5000E-01	1.8674E-07	1.8665E-07	1.9050E-07	1.9343E-07	0.0000E+00
69	1.0130E+02	5.0000E-01	2.1650E-07	2.1641E-07	2.2073E-07	2.2415E-07	0.0000E+00
70	6.1442E+01	1.7500E+00	1.9376E-07	1.9369E-07	1.9730E-07	2.0041E-07	0.0000E+00
			1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00

TABLE B-LVI
ZPPR-2 25-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Adjoint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Adjoint (rho/n/s)
1	2.0000E+07	1.1931E+00	2.8748E-02	2.4940E-03	2.7656E+00	1.8097E-06	2.5924E-02
2	6.0653E+06	5.0000E-01	1.2127E-01	1.1203E-02	8.1497E-01	6.3080E-06	6.6181E-03
3	3.6788E+06	5.0000E-01	2.1953E-01	2.9564E-02	8.1282E-01	2.6278E-05	6.8872E-03
4	2.2313E+06	5.0000E-01	2.2884E-01	4.3368E-02	7.5364E-01	5.8335E-05	5.9589E-03
5	1.3533E+06	5.0000E-01	1.7219E-01	5.5840E-02	1.3574E+00	1.2206E-04	1.0477E-02
6	8.2085E+05	5.0000E-01	1.0741E-01	1.0204E-01	1.3187E+00	3.9665E-04	1.0379E-02
7	4.9787E+05	5.0000E-01	5.9998E-02	8.9373E-02	9.5563E-01	4.6055E-04	5.4273E-03
8	3.0197E+05	5.0000E-01	3.1385E-02	1.0622E-01	6.1154E-01	5.2718E-04	3.2938E-03
9	1.8316E+05	5.0000E-01	1.5797E-02	1.0567E-01	5.8858E-01	7.1666E-04	2.9167E-03
10	1.1109E+05	5.0000E-01	7.7648E-03	1.0240E-01	5.6537E-01	5.2680E-04	1.9643E-03
11	6.7379E+04	5.0000E-01	3.7219E-03	7.8877E-02	5.4476E-01	4.2773E-04	1.3448E-03
12	4.0868E+04	5.0000E-01	1.7665E-03	7.0568E-02	8.0039E-01	4.8898E-04	2.4115E-03
13	2.4787E+04	5.0000E-01	8.3578E-04	6.5572E-02	1.0722E+00	1.1148E-03	3.6233E-03
14	1.5034E+04	5.0000E-01	3.9479E-04	4.6796E-02	1.0925E+00	3.6121E-04	2.6757E-03
15	9.1188E+03	5.0000E-01	1.8634E-04	2.6483E-02	1.1225E+00	1.1667E-04	2.2281E-03
16	5.5308E+03	5.0000E-01	8.7925E-05	1.7673E-02	1.1635E+00	2.4740E-04	2.5262E-03
17	3.3546E+03	5.0000E-01	4.1486E-05	6.3572E-03	1.1888E+00	1.7408E-04	2.4138E-03
18	2.0347E+03	5.0000E-01	1.9575E-05	1.7419E-02	1.2613E+00	1.5668E-04	2.4479E-03
19	1.2341E+03	5.0000E-01	9.2379E-06	1.1275E-02	9.9715E-01	1.2563E-04	1.9465E-03
20	7.4852E+02	5.0000E-01	4.3601E-06	6.3996E-03	7.3531E-01	1.2898E-04	1.3292E-03
21	4.5400E+02	5.0000E-01	2.0580E-06	2.7264E-03	7.2735E-01	9.1630E-05	1.2891E-03
22	2.7536E+02	5.0000E-01	9.7154E-07	1.1738E-03	8.1753E-01	9.8720E-05	1.4712E-03
23	1.6702E+02	5.0000E-01	4.5868E-07	3.9468E-04	8.4125E-01	9.2685E-05	1.4723E-03
24	1.0130E+02	5.0000E-01	2.1658E-07	9.2211E-05	5.3860E-01	3.5135E-05	7.2705E-04
25	6.1442E+01	1.7500E+00	1.9383E-07	2.6103E-05	5.2317E-01	4.1658E-04	7.2081E-04
	1.0677E+01		1.0000E+00	1.0000E+00		6.9195E-03	

TABLE B-LVII
ZPPR-2 25-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core 1	Core 2	Blkt 1	Blkt 2	Reflector
1	2.0000E+07	1.1931E+00	2.8759E-02	2.8944E-02	2.4743E-02	2.5000E-02	0.0000E+00
2	6.0653E+06	5.0000E-01	1.2132E-01	1.2166E-01	1.1290E-01	1.1291E-01	0.0000E+00
3	3.6788E+06	5.0000E-01	2.1959E-01	2.1980E-01	2.1343E-01	2.1310E-01	0.0000E+00
4	2.2313E+06	5.0000E-01	2.2885E-01	2.2883E-01	2.2850E-01	2.2849E-01	0.0000E+00
5	1.3533E+06	5.0000E-01	1.7217E-01	1.7202E-01	1.7575E-01	1.7598E-01	0.0000E+00
6	8.2085E+05	5.0000E-01	1.0737E-01	1.0719E-01	1.1231E-01	1.1242E-01	0.0000E+00
7	4.9787E+05	5.0000E-01	5.9967E-02	5.9814E-02	6.4178E-02	6.4133E-02	0.0000E+00
8	3.0197E+05	5.0000E-01	3.1365E-02	3.1264E-02	3.4152E-02	3.4072E-02	0.0000E+00
9	1.8316E+05	5.0000E-01	1.5784E-02	1.5717E-02	1.7602E-02	1.7505E-02	0.0000E+00
10	1.1109E+05	5.0000E-01	7.7581E-03	7.7226E-03	8.7182E-03	8.6612E-03	0.0000E+00
11	6.7379E+04	5.0000E-01	3.7190E-03	3.7046E-03	4.1138E-03	4.1038E-03	0.0000E+00
12	4.0868E+04	5.0000E-01	1.7652E-03	1.7598E-03	1.9190E-03	1.9228E-03	0.0000E+00
13	2.4787E+04	5.0000E-01	8.3524E-04	8.3316E-04	8.9574E-04	9.0062E-04	0.0000E+00
14	1.5034E+04	5.0000E-01	3.9456E-04	3.9375E-04	4.1863E-04	4.2206E-04	0.0000E+00
15	9.1188E+03	5.0000E-01	1.8624E-04	1.8592E-04	1.9594E-04	1.9797E-04	0.0000E+00
16	5.5308E+03	5.0000E-01	8.7880E-05	8.7755E-05	9.1849E-05	9.2954E-05	0.0000E+00
17	3.3546E+03	5.0000E-01	4.1466E-05	4.1416E-05	4.3114E-05	4.3690E-05	0.0000E+00
18	2.0347E+03	5.0000E-01	1.9566E-05	1.9546E-05	2.0256E-05	2.0544E-05	0.0000E+00
19	1.2341E+03	5.0000E-01	9.2339E-06	9.2256E-06	9.5257E-06	9.6676E-06	0.0000E+00
20	7.4852E+02	5.0000E-01	4.3583E-06	4.3549E-06	4.4838E-06	4.5530E-06	0.0000E+00
21	4.5400E+02	5.0000E-01	2.0572E-06	2.0558E-06	2.1105E-06	2.1431E-06	0.0000E+00
22	2.7536E+02	5.0000E-01	9.7118E-07	9.7061E-07	9.9370E-07	1.0088E-06	0.0000E+00
23	1.6702E+02	5.0000E-01	4.5851E-07	4.5828E-07	4.6812E-07	4.7523E-07	0.0000E+00
24	1.0130E+02	5.0000E-01	2.1650E-07	2.1641E-07	2.2073E-07	2.2415E-07	0.0000E+00
25	6.1442E+01	1.7500E+00	1.9376E-07	1.9369E-07	1.9730E-07	2.0041E-07	0.0000E+00
			1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00

TABLE B-LVIII
ZPR-6-7 70-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Ad joint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Ad joint (rho/n/s)
1	2.0000E+07	1.9315E-01	7.9350E-06	6.7601E-07	1.8791E+00	3.9540E-10	2.0212E-02
2	1.6487E+07	2.5000E-01	1.4589E-04	1.2908E-05	1.6328E+00	6.8035E-09	1.6384E-02
3	1.2840E+07	2.5000E-01	1.3080E-03	1.0099E-04	1.3882E+00	4.9235E-08	1.2877E-02
4	1.0000E+07	2.5000E-01	6.5271E-03	5.7959E-04	1.3453E+00	2.5169E-07	1.0867E-02
5	7.7880E+06	2.5000E-01	2.0565E-02	1.8539E-03	1.2242E+00	7.7333E-07	8.8758E-03
6	6.0653E+06	2.5000E-01	4.5296E-02	4.2915E-03	1.1092E+00	1.6345E-06	6.6856E-03
7	4.7237E+06	2.5000E-01	7.5644E-02	7.1751E-03	1.0905E+00	5.3681E-06	5.8075E-03
8	3.6788E+06	2.5000E-01	1.0213E-01	1.1586E-02	1.1035E+00	3.7983E-06	5.3007E-03
9	2.8650E+06	2.5000E-01	1.1722E-01	1.8645E-02	1.0913E+00	4.8346E-06	4.9268E-03
10	2.2313E+06	2.5000E-01	1.1894E-01	1.9819E-02	1.0488E+00	5.3681E-06	4.3798E-03
11	1.7377E+06	2.5000E-01	1.0992E-01	2.4290E-02	9.8815E-01	7.0420E-06	3.6440E-03
12	1.3533E+06	1.2500E-01	4.9469E-02	1.3685E-02	9.3140E-01	5.1177E-06	2.5219E-03
13	1.1943E+06	1.2500E-01	4.5301E-02	1.3980E-02	9.1804E-01	7.4377E-06	2.5524E-03
14	1.0540E+06	1.2500E-01	4.0937E-02	1.1792E-02	9.1353E-01	1.1124E-05	2.8637E-03
15	9.3014E+05	1.2500E-01	3.6618E-02	1.6956E-02	9.0795E-01	1.5694E-05	3.0399E-03
16	8.2085E+05	1.2500E-01	3.2478E-02	2.0776E-02	9.0341E-01	2.1367E-05	3.1319E-03
17	7.2440E+05	1.2500E-01	2.8514E-02	2.3731E-02	8.9628E-01	3.1714E-05	3.0374E-03
18	6.3928E+05	1.2500E-01	2.4936E-02	2.7754E-02	8.8867E-01	4.3352E-05	2.6938E-03
19	5.6416E+05	1.2500E-01	2.1655E-02	3.0789E-02	8.8297E-01	5.1865E-05	2.2969E-03
20	4.9787E+05	1.2500E-01	1.8684E-02	2.1120E-02	8.7506E-01	5.9007E-05	1.9504E-03
21	4.3937E+05	1.2500E-01	1.6035E-02	1.6899E-02	8.6743E-01	6.1818E-05	1.6400E-03
22	3.8774E+05	2.5000E-01	2.5428E-02	5.1245E-02	8.5747E-01	1.5004E-04	1.4018E-03
23	3.0197E+05	2.5000E-01	1.8358E-02	5.4343E-02	8.4127E-01	1.4971E-04	1.0064E-03
24	2.3518E+05	2.5000E-01	1.3126E-02	5.2132E-02	8.2680E-01	1.3717E-04	7.1947E-04
25	1.8316E+05	2.5000E-01	9.3031E-03	4.8856E-02	8.1149E-01	1.1922E-04	5.5761E-04
26	1.4264E+05	2.5000E-01	6.5602E-03	5.6481E-02	7.9782E-01	1.2790E-04	4.6105E-04
27	1.1109E+05	2.5000E-01	4.5983E-03	4.8825E-02	7.8212E-01	1.1648E-04	3.7228E-04
28	8.6517E+04	2.5000E-01	3.2015E-03	5.2806E-02	7.6761E-01	1.3983E-04	3.2048E-04
29	6.7379E+04	2.5000E-01	2.2113E-03	3.6255E-02	7.5328E-01	1.3721E-04	2.8054E-04
30	5.2475E+04	2.5000E-01	1.5242E-03	4.2047E-02	7.4312E-01	1.2888E-04	2.3244E-04
31	4.0868E+04	2.5000E-01	1.0495E-03	4.0569E-02	7.3597E-01	1.2210E-04	1.8902E-04
32	3.1828E+04	1.2500E-01	3.9468E-04	7.4996E-03	7.3375E-01	1.6615E-05	1.5183E-04
33	2.8088E+04	1.2500E-01	3.2730E-04	2.1993E-02	7.3215E-01	4.0422E-05	1.5783E-04
34	2.4787E+04	1.2500E-01	2.7139E-04	1.9746E-02	7.3377E-01	3.9285E-05	1.6038E-04
35	2.1875E+04	1.2500E-01	2.2501E-04	1.7772E-02	7.3793E-01	1.2790E-05	1.4541E-04
36	1.9304E+04	1.2500E-01	1.8653E-04	1.5611E-02	7.3979E-01	2.3688E-05	1.3236E-04
37	1.7036E+04	1.2500E-01	1.5462E-04	1.1877E-02	7.4251E-01	1.4445E-05	1.2095E-04
38	1.5034E+04	1.2500E-01	1.2817E-04	1.3340E-02	7.4483E-01	1.3025E-05	1.2261E-04
39	1.3268E+04	1.2500E-01	1.0623E-04	1.1690E-02	7.5104E-01	9.8049E-06	1.2036E-04
40	1.1709E+04	1.2497E-01	8.8028E-05	1.1586E-02	7.5596E-01	8.0515E-06	1.2201E-04
41	1.0333E+04	1.2503E-01	7.2993E-05	9.8681E-03	7.6279E-01	6.0109E-06	1.2152E-04
42	9.1188E+03	1.2500E-01	6.0478E-05	6.9986E-03	7.6996E-01	3.6204E-06	1.1803E-04
43	8.0473E+03	1.2500E-01	5.0122E-05	6.3284E-03	7.7054E-01	2.7934E-06	1.1809E-04
44	7.1017E+03	1.2500E-01	4.1538E-05	6.9671E-03	7.7526E-01	2.6708E-06	1.2538E-04
45	6.2673E+03	1.2500E-01	3.4425E-05	6.1630E-03	7.8464E-01	2.1035E-06	1.2955E-04
46	5.5308E+03	1.2500E-01	2.8529E-05	5.9602E-03	7.9230E-01	1.8939E-06	1.3557E-04
47	4.8809E+03	1.2500E-01	2.3642E-05	4.9487E-03	8.0107E-01	1.5605E-06	1.3932E-04
48	4.3074E+03	1.2500E-01	1.9594E-05	3.8984E-03	8.0756E-01	1.1645E-06	1.3730E-04
49	3.8013E+03	1.2500E-01	1.6238E-05	2.7897E-03	8.1355E-01	1.1492E-06	1.4774E-04
50	3.3546E+03	1.2500E-01	1.3457E-05	1.2594E-03	8.1695E-01	9.4436E-07	1.5010E-04
51	2.9604E+03	1.2500E-01	1.1152E-05	4.1488E-04	8.1985E-01	5.7364E-07	1.6775E-04
52	2.6126E+03	1.2500E-01	9.2428E-06	1.4797E-03	8.2114E-01	3.6146E-07	2.0831E-04
53	2.3056E+03	1.2500E-01	7.6602E-06	3.1714E-03	8.2673E-01	3.1096E-07	2.2134E-04
54	2.0347E+03	1.2500E-01	6.3483E-06	4.2254E-03	8.4187E-01	3.1845E-07	2.5432E-04
55	1.7956E+03	1.2500E-01	5.2613E-06	4.5383E-03	8.5101E-01	4.0733E-07	2.5949E-04
56	1.5846E+03	1.2500E-01	4.3602E-06	4.3972E-03	8.8548E-01	3.0423E-07	2.5646E-04
57	1.3984E+03	1.2500E-01	3.6137E-06	4.2018E-03	9.0708E-01	4.4107E-07	2.7919E-04
58	1.2341E+03	1.2500E-01	2.9950E-06	3.0568E-03	8.7173E-01	2.5585E-07	2.3149E-04
59	1.0891E+03	1.2500E-01	2.4824E-06	3.1097E-03	9.5055E-01	2.4018E-07	2.7026E-04
60	9.6112E+02	2.5000E-01	3.7628E-06	5.1149E-03	9.3129E-01	5.4715E-07	2.9529E-04
61	7.4852E+02	2.5000E-01	2.5849E-06	3.8346E-03	9.6712E-01	3.6602E-07	3.1886E-04
62	5.8295E+02	2.5000E-01	1.7758E-06	2.5868E-03	1.0655E+00	2.9228E-07	3.6801E-04
63	4.5400E+02	2.5000E-01	1.2199E-06	1.5911E-03	9.9501E-01	1.3819E-07	3.2348E-04
64	3.5357E+02	2.5000E-01	8.3813E-07	1.1687E-03	1.0133E+00	1.1286E-07	3.3909E-04
65	2.7536E+02	2.5000E-01	5.7581E-07	7.3455E-04	1.1092E+00	6.8041E-08	3.6152E-04
66	2.1445E+02	2.5000E-01	3.9556E-07	4.5615E-04	1.1469E+00	4.6711E-08	3.5156E-04
67	1.6702E+02	2.5000E-01	2.7180E-07	2.6208E-04	1.1220E+00	2.7545E-08	3.5620E-04
68	1.3007E+02	2.5000E-01	1.8673E-07	1.4110E-04	1.2021E+00	7.6496E-09	2.5726E-04
69	1.0130E+02	5.0000E-01	2.1649E-07	9.4642E-05	1.4870E+00	5.1904E-09	5.3271E-04
70	6.1442E+01	1.7500E+00	1.9374E-07	2.7306E-05	1.4460E+00	4.5778E-09	1.0405E-03
	1.0677E+01		1.0000E+00	1.0000E+00		1.8889E-03	

TABLE B-LIX

ZPR-6-7 70-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.9315E-01	8.1035E-06	5.0486E-06
2	1.6487E+07	2.5000E-01	1.4826E-04	1.0527E-04
3	1.2840E+07	2.5000E-01	1.3243E-03	1.0298E-03
4	1.0000E+07	2.5000E-01	6.5878E-03	5.4863E-03
5	7.7880E+06	2.5000E-01	2.0706E-02	1.8166E-02
6	6.0653E+06	2.5000E-01	4.5515E-02	4.1545E-02
7	4.7237E+06	2.5000E-01	7.5893E-02	7.1380E-02
8	3.6788E+06	2.5000E-01	1.0234E-01	9.8454E-02
9	2.8650E+06	2.5000E-01	1.1736E-01	1.1488E-01
10	2.2313E+06	2.5000E-01	1.1899E-01	1.1812E-01
11	1.7377E+06	2.5000E-01	1.0990E-01	1.1031E-01
12	1.3533E+06	1.2500E-01	4.9437E-02	5.0017E-02
13	1.1943E+06	1.2500E-01	4.5252E-02	4.6142E-02
14	1.0540E+06	1.2500E-01	4.0879E-02	4.1932E-02
15	9.3014E+05	1.2500E-01	3.6556E-02	3.7684E-02
16	8.2085E+05	1.2500E-01	3.2409E-02	3.3668E-02
17	7.2440E+05	1.2500E-01	2.8449E-02	2.9634E-02
18	6.3928E+05	1.2500E-01	2.4864E-02	2.6172E-02
19	5.6416E+05	1.2500E-01	2.1583E-02	2.2889E-02
20	4.9787E+05	1.2500E-01	1.8615E-02	1.9870E-02
21	4.3937E+05	1.2500E-01	1.5973E-02	1.7103E-02
22	3.8774E+05	2.5000E-01	2.5323E-02	2.7230E-02
23	3.0197E+05	2.5000E-01	1.8272E-02	1.9815E-02
24	2.3518E+05	2.5000E-01	1.3055E-02	1.4342E-02
25	1.8316E+05	2.5000E-01	9.2461E-03	1.0280E-02
26	1.4264E+05	2.5000E-01	6.5160E-03	7.3184E-03
27	1.1109E+05	2.5000E-01	4.5664E-03	5.1443E-03
28	8.6517E+04	2.5000E-01	3.1800E-03	3.5687E-03
29	6.7379E+04	2.5000E-01	2.1979E-03	2.4425E-03
30	5.2475E+04	2.5000E-01	1.5158E-03	1.6682E-03
31	4.0868E+04	2.5000E-01	1.0442E-03	1.1392E-03
32	3.1828E+04	1.2500E-01	3.9285E-04	4.2602E-04
33	2.8088E+04	1.2500E-01	3.2585E-04	3.5209E-04
34	2.4787E+04	1.2500E-01	2.7024E-04	2.9102E-04
35	2.1875E+04	1.2500E-01	2.2410E-04	2.4056E-04
36	1.9304E+04	1.2500E-01	1.8581E-04	1.9886E-04
37	1.7036E+04	1.2500E-01	1.5405E-04	1.6441E-04
38	1.5034E+04	1.2500E-01	1.2772E-04	1.3594E-04
39	1.3268E+04	1.2500E-01	1.0587E-04	1.1240E-04
40	1.1709E+04	1.2497E-01	8.7741E-05	9.2933E-05
41	1.0333E+04	1.2503E-01	7.2765E-05	7.6899E-05
42	9.1188E+03	1.2500E-01	6.0296E-05	6.3588E-05
43	8.0473E+03	1.2500E-01	4.9977E-05	5.2601E-05
44	7.1017E+03	1.2500E-01	4.1422E-05	4.3516E-05
45	6.2673E+03	1.2500E-01	3.4332E-05	3.6005E-05
46	5.5308E+03	1.2500E-01	2.8455E-05	2.9792E-05
47	4.8809E+03	1.2500E-01	2.3583E-05	2.4653E-05
48	4.3074E+03	1.2500E-01	1.9546E-05	2.0403E-05
49	3.8013E+03	1.2500E-01	1.6200E-05	1.6886E-05
50	3.3546E+03	1.2500E-01	1.3427E-05	1.3978E-05
51	2.9604E+03	1.2500E-01	1.1128E-05	1.1570E-05
52	2.6126E+03	1.2500E-01	9.2232E-06	9.5788E-06
53	2.3056E+03	1.2500E-01	7.6444E-06	7.9306E-06
54	2.0347E+03	1.2500E-01	6.3357E-06	6.5656E-06
55	1.7956E+03	1.2500E-01	5.2511E-06	5.4352E-06
56	1.5846E+03	1.2500E-01	4.3521E-06	4.4998E-06
57	1.3984E+03	1.2500E-01	3.6073E-06	3.7246E-06
58	1.2341E+03	1.2500E-01	2.9898E-06	3.0846E-06
59	1.0891E+03	1.2500E-01	2.4782E-06	2.5548E-06
60	9.6112E+02	2.5000E-01	3.7566E-06	3.8700E-06
61	7.4852E+02	2.5000E-01	2.5808E-06	2.6547E-06
62	5.8295E+02	2.5000E-01	1.7731E-06	1.8209E-06
63	4.5400E+02	2.5000E-01	1.2182E-06	1.2485E-06
64	3.5357E+02	2.5000E-01	8.3702E-07	8.5711E-07
65	2.7536E+02	2.5000E-01	5.7510E-07	5.8786E-07
66	2.1445E+02	2.5000E-01	3.9513E-07	4.0291E-07
67	1.6702E+02	2.5000E-01	2.7151E-07	2.7670E-07
68	1.3007E+02	2.5000E-01	1.8656E-07	1.8976E-07
69	1.0130E+02	5.0000E-01	2.1630E-07	2.1987E-07
70	6.1442E+01	1.7500E+00	1.9358E-07	1.9652E-07
			1.0000E+00	1.0000E+00

TABLE B-LX

ZPR-6-7 25-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Adjoint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Adjoint (rho/n/s)
1	2.0000E+07	1.1931E+00	2.8554E-02	2.5480E-03	2.7613E+00	1.0815E-06	2.5588E-02
2	6.0653E+06	5.0000E-01	1.2094E-01	1.1467E-02	8.1318E-01	4.3337E-06	4.6184E-03
3	3.6788E+06	5.0000E-01	2.1935E-01	3.0231E-02	8.1136E-01	8.6329E-06	3.7809E-03
4	2.2313E+06	5.0000E-01	2.2886E-01	4.4110E-02	7.5303E-01	1.2410E-05	2.9662E-03
5	1.3533E+06	5.0000E-01	1.7233E-01	5.6413E-02	1.3571E+00	3.9373E-05	4.0583E-03
6	8.2085E+05	5.0000E-01	1.0758E-01	1.0275E-01	1.3202E+00	1.4830E-04	4.1256E-03
7	4.9787E+05	5.0000E-01	6.0148E-02	8.9264E-02	9.6115E-01	2.7086E-04	1.8455E-03
8	3.0197E+05	5.0000E-01	3.1484E-02	1.0647E-01	6.1665E-01	2.8688E-04	6.3803E-04
9	1.8316E+05	5.0000E-01	1.5863E-02	1.0534E-01	5.9493E-01	2.4713E-04	3.7657E-04
10	1.1109E+05	5.0000E-01	7.7997E-03	1.0163E-01	5.7290E-01	2.5631E-04	2.5610E-04
11	6.7379E+04	5.0000E-01	3.7356E-03	7.8302E-02	5.5319E-01	2.6609E-04	1.8964E-04
12	4.0868E+04	5.0000E-01	1.7714E-03	7.0062E-02	8.1398E-01	1.7913E-04	1.8435E-04
13	2.4787E+04	5.0000E-01	8.3755E-04	6.5007E-02	1.0920E+00	1.0872E-04	2.0669E-04
14	1.5034E+04	5.0000E-01	3.9542E-04	4.6484E-02	1.1144E+00	3.6920E-05	1.7984E-04
15	9.1188E+03	5.0000E-01	1.8656E-04	2.6457E-02	1.1461E+00	1.1188E-05	1.8153E-04
16	5.5308E+03	5.0000E-01	8.8002E-05	1.7597E-02	1.1883E+00	5.7681E-06	2.0699E-04
17	3.3546E+03	5.0000E-01	4.1513E-05	6.3254E-03	1.2143E+00	2.1904E-06	2.7633E-04
18	2.0347E+03	5.0000E-01	1.9584E-05	1.7363E-02	1.2885E+00	1.4711E-06	3.8796E-04
19	1.2341E+03	5.0000E-01	9.2403E-06	1.1281E-02	1.0179E+00	1.0736E-06	2.9465E-04
20	7.4852E+02	5.0000E-01	4.3607E-06	6.4214E-03	7.5143E-01	6.5830E-07	2.5392E-04
21	4.5400E+02	5.0000E-01	2.0580E-06	2.7597E-03	7.4242E-01	2.5105E-07	2.4494E-04
22	2.7536E+02	5.0000E-01	9.7136E-07	1.1907E-03	8.3403E-01	1.1475E-07	2.6361E-04
23	1.6702E+02	5.0000E-01	4.5853E-07	4.0318E-04	8.5917E-01	3.5194E-08	2.2678E-04
24	1.0130E+02	5.0000E-01	2.1649E-07	9.4642E-05	5.4970E-01	5.1904E-09	1.9693E-04
25	6.1442E+01	1.7500E+00	1.9374E-07	2.7306E-05	5.3456E-01	4.5778E-09	3.8463E-04
	1.0677E+01		1.0000E+00	1.0000E+00		1.8889E-03	

TABLE B-LXI

ZPR-6-7 25-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.1931E+00	2.8774E-02	2.4792E-02
2	6.0653E+06	5.0000E-01	1.2141E-01	1.1293E-01
3	3.6788E+06	5.0000E-01	2.1970E-01	2.1334E-01
4	2.2313E+06	5.0000E-01	2.2889E-01	2.2843E-01
5	1.3533E+06	5.0000E-01	1.7212E-01	1.7578E-01
6	8.2085E+05	5.0000E-01	1.0730E-01	1.1236E-01
7	4.9787E+05	5.0000E-01	5.9911E-02	6.4203E-02
8	3.0197E+05	5.0000E-01	3.1328E-02	3.4157E-02
9	1.8316E+05	5.0000E-01	1.5762E-02	1.7598E-02
10	1.1109E+05	5.0000E-01	7.7464E-03	8.7130E-03
11	6.7379E+04	5.0000E-01	3.7137E-03	4.1107E-03
12	4.0868E+04	5.0000E-01	1.7629E-03	1.9174E-03
13	2.4787E+04	5.0000E-01	8.3420E-04	8.9485E-04
14	1.5034E+04	5.0000E-01	3.9409E-04	4.1817E-04
15	9.1188E+03	5.0000E-01	1.8603E-04	1.9571E-04
16	5.5308E+03	5.0000E-01	8.7785E-05	9.1734E-05
17	3.3546E+03	5.0000E-01	4.1422E-05	4.3057E-05
18	2.0347E+03	5.0000E-01	1.9546E-05	2.0225E-05
19	1.2341E+03	5.0000E-01	9.2246E-06	9.5094E-06
20	7.4852E+02	5.0000E-01	4.3540E-06	4.4755E-06
21	4.5400E+02	5.0000E-01	2.0552E-06	2.1056E-06
22	2.7536E+02	5.0000E-01	9.7023E-07	9.9077E-07
23	1.6702E+02	5.0000E-01	4.5807E-07	4.6646E-07
24	1.0130E+02	5.0000E-01	2.1630E-07	2.1987E-07
25	6.1442E+01	1.7500E+00	1.9358E-07	1.9652E-07
			1.0000E+00	1.0000E+00

TABLE B-LXII

ZPR-3-56B 70-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Adjoint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Adjoint (rho/n/s)
1	2.0000E+07	1.9315E-01	7.9707E-06	8.2741E-07	1.8300E+00	1.3654E-09	2.3978E-02
2	1.6487E+07	2.5000E-01	1.4767E-04	1.5958E-05	1.6040E+00	2.7063E-08	1.9857E-02
3	1.2840E+07	2.5000E-01	1.3255E-03	1.2689E-04	1.3662E+00	1.5215E-07	1.5850E-02
4	1.0000E+07	2.5000E-01	6.6068E-03	7.2390E-04	1.3219E+00	9.7097E-07	1.5953E-02
5	7.7880E+06	2.5000E-01	2.0776E-02	2.3207E-03	1.2010E+00	2.4753E-06	1.6570E-02
6	6.0653E+06	2.5000E-01	4.5663E-02	5.3614E-03	1.0867E+00	4.3904E-06	1.7535E-02
7	4.7237E+06	2.5000E-01	7.6102E-02	8.9501E-03	1.0748E+00	6.5902E-06	1.8486E-02
8	3.6788E+06	2.5000E-01	1.0256E-01	1.4292E-02	1.0874E+00	1.2028E-05	1.8931E-02
9	2.8650E+06	2.5000E-01	1.1753E-01	2.2640E-02	1.0740E+00	3.3070E-05	2.0346E-02
10	2.2313E+06	2.5000E-01	1.1907E-01	2.3874E-02	1.0428E+00	6.5726E-05	2.0685E-02
11	1.7377E+06	2.5000E-01	1.0990E-01	2.8803E-02	9.9065E-01	1.0997E-04	1.9730E-02
12	1.3533E+06	1.2500E-01	4.9415E-02	1.6139E-02	9.4193E-01	8.1688E-05	2.0060E-02
13	1.1943E+06	1.2500E-01	4.5213E-02	1.6456E-02	9.2861E-01	1.4679E-04	2.1066E-02
14	1.0540E+06	1.2500E-01	4.0830E-02	1.3937E-02	9.2494E-01	1.9015E-04	2.0657E-02
15	9.3014E+05	1.2500E-01	3.6501E-02	1.9882E-02	9.1566E-01	1.9566E-04	1.9796E-02
16	8.2085E+05	1.2500E-01	3.2347E-02	2.4277E-02	9.1338E-01	2.3810E-04	1.9384E-02
17	7.2440E+05	1.2500E-01	2.8389E-02	2.7134E-02	9.0745E-01	2.3549E-04	1.8354E-02
18	6.3928E+05	1.2500E-01	2.4801E-02	3.1247E-02	9.0174E-01	3.2889E-04	1.8465E-02
19	5.6416E+05	1.2500E-01	2.1521E-02	3.3589E-02	9.0168E-01	4.1106E-04	1.7447E-02
20	4.9787E+05	1.2500E-01	1.8556E-02	2.3063E-02	9.0090E-01	3.6322E-04	1.5731E-02
21	4.3937E+05	1.2500E-01	1.5919E-02	1.8665E-02	8.9487E-01	4.1721E-04	1.5593E-02
22	3.8774E+05	2.5000E-01	2.5229E-02	5.5610E-02	8.8400E-01	8.2758E-04	1.3978E-02
23	3.0197E+05	2.5000E-01	1.8197E-02	5.8106E-02	8.7104E-01	6.6000E-04	1.2593E-02
24	2.3518E+05	2.5000E-01	1.2994E-02	5.4799E-02	8.6091E-01	6.3947E-04	1.1679E-02
25	1.8316E+05	2.5000E-01	9.1992E-03	5.0634E-02	8.4740E-01	7.3125E-04	1.2090E-02
26	1.4264E+05	2.5000E-01	6.4805E-03	5.6471E-02	8.3551E-01	9.9044E-04	1.0901E-02
27	1.1109E+05	2.5000E-01	4.5406E-03	4.8172E-02	8.2190E-01	8.5571E-04	8.7834E-03
28	8.6517E+04	2.5000E-01	3.1620E-03	5.0602E-02	8.0721E-01	5.6304E-04	7.1646E-03
29	6.7379E+04	2.5000E-01	2.1859E-03	3.4848E-02	7.9350E-01	7.0752E-04	7.9215E-03
30	5.2475E+04	2.5000E-01	1.5080E-03	3.8945E-02	7.8239E-01	7.0411E-04	5.2900E-03
31	4.0868E+04	2.5000E-01	1.0390E-03	3.6441E-02	7.7425E-01	5.3757E-04	3.7820E-03
32	3.1828E+04	1.2500E-01	3.9096E-04	6.8464E-03	7.6993E-01	8.0992E-04	3.0029E-03
33	2.8088E+04	1.2500E-01	3.2431E-04	1.9631E-02	7.6672E-01	1.7575E-04	3.1079E-03
34	2.4787E+04	1.2500E-01	2.6899E-04	1.7089E-02	7.6375E-01	1.4463E-04	2.8294E-03
35	2.1875E+04	1.2500E-01	2.2308E-04	1.5229E-02	7.7291E-01	1.0259E-04	2.5735E-03
36	1.9304E+04	1.2500E-01	1.8497E-04	1.3297E-02	7.7569E-01	6.6114E-05	2.4564E-03
37	1.7036E+04	1.2500E-01	1.5337E-04	1.0315E-02	7.7936E-01	2.3091E-05	2.4745E-03
38	1.5034E+04	1.2500E-01	1.2716E-04	1.1160E-02	7.8119E-01	3.9152E-05	2.5670E-03
39	1.3268E+04	1.2500E-01	1.0542E-04	9.6719E-03	7.8776E-01	2.8373E-05	2.7128E-03
40	1.1709E+04	1.2497E-01	8.7369E-05	9.2848E-03	7.9282E-01	7.1580E-05	2.8816E-03
41	1.0333E+04	1.2503E-01	7.2461E-05	7.8223E-03	8.0021E-01	1.4601E-04	3.0211E-03
42	9.1188E+03	1.2500E-01	6.0047E-05	5.5712E-03	8.0792E-01	1.3687E-04	2.7646E-03
43	8.0473E+03	1.2500E-01	4.9773E-05	5.0254E-03	8.0668E-01	1.1718E-04	2.5013E-03
44	7.1017E+03	1.2500E-01	4.1255E-05	5.5153E-03	8.0982E-01	1.0556E-04	2.3340E-03
45	6.2673E+03	1.2500E-01	3.4195E-05	4.8761E-03	8.1982E-01	8.0668E-05	2.1467E-03
46	5.5308E+03	1.2500E-01	2.8342E-05	4.6682E-03	8.2716E-01	5.7804E-05	2.0342E-03
47	4.8809E+03	1.2500E-01	2.3491E-05	3.8593E-03	8.3676E-01	4.2087E-05	2.0106E-03
48	4.3074E+03	1.2500E-01	1.9471E-05	3.0305E-03	8.4364E-01	4.2299E-05	2.0396E-03
49	3.8013E+03	1.2500E-01	1.6138E-05	2.1894E-03	8.5016E-01	4.2990E-05	2.0583E-03
50	3.3546E+03	1.2500E-01	1.3375E-05	1.0056E-03	8.5242E-01	2.5263E-05	2.0481E-03
51	2.9604E+03	1.2500E-01	1.1086E-05	3.4055E-04	8.5444E-01	9.9254E-06	2.0754E-03
52	2.6126E+03	1.2500E-01	9.1885E-06	1.1688E-03	8.5533E-01	6.543E-05	2.1198E-03
53	2.3056E+03	1.2500E-01	7.6159E-06	2.3925E-03	8.6062E-01	4.9535E-05	2.1751E-03
54	2.0347E+03	1.2500E-01	6.3122E-06	3.0297E-03	8.7842E-01	6.5550E-05	2.2280E-03
55	1.7956E+03	1.2500E-01	5.2318E-06	3.1196E-03	8.8885E-01	7.4557E-05	2.2097E-03
56	1.5846E+03	1.2500E-01	4.3362E-06	2.9262E-03	9.2725E-01	7.7499E-05	2.1850E-03
57	1.3984E+03	1.2500E-01	3.5942E-06	2.7042E-03	9.5356E-01	8.0719E-05	2.1387E-03
58	1.2341E+03	1.2500E-01	2.9790E-06	1.9203E-03	9.0892E-01	6.8215E-05	2.0866E-03
59	1.0891E+03	1.2500E-01	2.4693E-06	1.8921E-03	9.9030E-01	7.3924E-05	2.1226E-03
60	9.6112E+02	2.5000E-01	3.7432E-06	2.9405E-03	9.6357E-01	1.4916E-04	2.0907E-03
61	7.4852E+02	2.5000E-01	2.5717E-06	2.0910E-03	9.9819E-01	1.4372E-04	2.0032E-03
62	5.8295E+02	2.5000E-01	1.7669E-06	1.3053E-03	1.1134E+00	1.4434E-04	1.9198E-03
63	4.5400E+02	2.5000E-01	1.2140E-06	7.6764E-04	1.0275E+00	1.1564E-04	1.8286E-03
64	3.5357E+02	2.5000E-01	8.3414E-07	5.3083E-04	1.0415E+00	1.1673E-04	1.7687E-03
65	2.7536E+02	2.5000E-01	5.7315E-07	3.0257E-04	1.1412E+00	1.1978E-04	1.8870E-03
66	2.1445E+02	2.5000E-01	3.9380E-07	1.7572E-04	1.1818E+00	1.1692E-04	1.8501E-03
67	1.6702E+02	2.5000E-01	2.7060E-07	9.3940E-05	1.1521E+00	1.1248E-04	1.8125E-03
68	1.3007E+02	2.5000E-01	1.8594E-07	4.8945E-05	1.2309E+00	1.1512E-04	1.7799E-03
69	1.0130E+02	5.0000E-01	2.1558E-07	2.6033E-05	1.5195E+00	9.0399E-05	1.7519E-03
70	6.1442E+01	1.7500E+00	1.9294E-07	1.1835E-05	1.4633E+00	2.2339E-03	1.7365E-03
	1.0677E+01		1.0000E+00	1.0000E+00		1.5575E-02	

TABLE B-LXIII
ZPR-3-5GB 70-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.9315E-01	7.9707E-06	0.0000E+00
2	1.6487E+07	2.5000E-01	1.4767E-04	0.0000E+00
3	1.2840E+07	2.5000E-01	1.3255E-03	0.0000E+00
4	1.0000E+07	2.5000E-01	6.6068E-03	0.0000E+00
5	7.7880E+06	2.5000E-01	2.0776E-02	0.0000E+00
6	6.0653E+06	2.5000E-01	4.5663E-02	0.0000E+00
7	4.7237E+06	2.5000E-01	7.6102E-02	0.0000E+00
8	3.6788E+06	2.5000E-01	1.0256E-01	0.0000E+00
9	2.8650E+06	2.5000E-01	1.1753E-01	0.0000E+00
10	2.2313E+06	2.5000E-01	1.1907E-01	0.0000E+00
11	1.7377E+06	2.5000E-01	1.0990E-01	0.0000E+00
12	1.3533E+06	1.2500E-01	4.9415E-02	0.0000E+00
13	1.1943E+06	1.2500E-01	4.5213E-02	0.0000E+00
14	1.0540E+06	1.2500E-01	4.0830E-02	0.0000E+00
15	9.3014E+05	1.2500E-01	3.6501E-02	0.0000E+00
16	8.2085E+05	1.2500E-01	3.2347E-02	0.0000E+00
17	7.2440E+05	1.2500E-01	2.8389E-02	0.0000E+00
18	6.3928E+05	1.2500E-01	2.4801E-02	0.0000E+00
19	5.6416E+05	1.2500E-01	2.1521E-02	0.0000E+00
20	4.9787E+05	1.2500E-01	1.8556E-02	0.0000E+00
21	4.3937E+05	1.2500E-01	1.5919E-02	0.0000E+00
22	3.8774E+05	2.5000E-01	2.5229E-02	0.0000E+00
23	3.0197E+05	2.5000E-01	1.8197E-02	0.0000E+00
24	2.3518E+05	2.5000E-01	1.2994E-02	0.0000E+00
25	1.8316E+05	2.5000E-01	9.1992E-03	0.0000E+00
26	1.4264E+05	2.5000E-01	6.4E05E-03	0.0000E+00
27	1.1109E+05	2.5000E-01	4.5406E-03	0.0000E+00
28	8.6517E+04	2.5000E-01	3.1E20E-03	0.0000E+00
29	6.7379E+04	2.5000E-01	2.1E59E-03	0.0000E+00
30	5.2475E+04	2.5000E-01	1.5E80E-03	0.0000E+00
31	4.0868E+04	2.5000E-01	1.0E90E-03	0.0000E+00
32	3.1828E+04	1.2500E-01	3.9E96E-04	0.0000E+00
33	2.8088E+04	1.2500E-01	3.2431E-04	0.0000E+00
34	2.4787E+04	1.2500E-01	2.6E99E-04	0.0000E+00
35	2.1875E+04	1.2500E-01	2.2E08E-04	0.0000E+00
36	1.9304E+04	1.2500E-01	1.8497E-04	0.0000E+00
37	1.7036E+04	1.2500E-01	1.5337E-04	0.0000E+00
38	1.5034E+04	1.2500E-01	1.2716E-04	0.0000E+00
39	1.3268E+04	1.2500E-01	1.0E42E-04	0.0000E+00
40	1.1709E+04	1.2497E-01	8.7E69E-05	0.0000E+00
41	1.0333E+04	1.2503E-01	7.2461E-05	0.0000E+00
42	9.1188E+03	1.2500E-01	6.0047E-05	0.0000E+00
43	8.0473E+03	1.2500E-01	4.9773E-05	0.0000E+00
44	7.1017E+03	1.2500E-01	4.1255E-05	0.0000E+00
45	6.2673E+03	1.2500E-01	3.4195E-05	0.0000E+00
46	5.5308E+03	1.2500E-01	2.8E42E-05	0.0000E+00
47	4.8809E+03	1.2500E-01	2.3491E-05	0.0000E+00
48	4.3074E+03	1.2500E-01	1.9471E-05	0.0000E+00
49	3.8013E+03	1.2500E-01	1.6138E-05	0.0000E+00
50	3.3546E+03	1.2500E-01	1.3E75E-05	0.0000E+00
51	2.9604E+03	1.2500E-01	1.1086E-05	0.0000E+00
52	2.6126E+03	1.2500E-01	9.1885E-06	0.0000E+00
53	2.3056E+03	1.2500E-01	7.6159E-06	0.0000E+00
54	2.0347E+03	1.2500E-01	6.3122E-06	0.0000E+00
55	1.7956E+03	1.2500E-01	5.2318E-06	0.0000E+00
56	1.5846E+03	1.2500E-01	4.3362E-06	0.0000E+00
57	1.3984E+03	1.2500E-01	3.5942E-06	0.0000E+00
58	1.2341E+03	1.2500E-01	2.9790E-06	0.0000E+00
59	1.0891E+03	1.2500E-01	2.4693E-06	0.0000E+00
60	9.6112E+02	2.5000E-01	3.7432E-06	0.0000E+00
61	7.4852E+02	2.5000E-01	2.5717E-06	0.0000E+00
62	5.8295E+02	2.5000E-01	1.7E69E-06	0.0000E+00
63	4.5400E+02	2.5000E-01	1.2140E-06	0.0000E+00
64	3.5357E+02	2.5000E-01	8.3414E-07	0.0000E+00
65	2.7536E+02	2.5000E-01	5.7315E-07	0.0000E+00
66	2.1445E+02	2.5000E-01	3.9380E-07	0.0000E+00
67	1.6702E+02	2.5000E-01	2.7060E-07	0.0000E+00
68	1.3007E+02	2.5000E-01	1.8E94E-07	0.0000E+00
69	1.0130E+02	5.0000E-01	2.1558E-07	0.0000E+00
70	6.1442E+01	1.7500E+00	1.9E94E-07	0.0000E+00
			1.0000E+00	1.0000E+00

TABLE B-LXIV
ZPR-3-56B 25-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Ad joint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Ad joint (rho/n/s)
1	2.0000E+07	1.1931E+00	2.8864E-02	3.1883E-03	2.7025E+00	3.6268E-06	3.4027E-02
2	6.0653E+06	5.0000E-01	1.2176E-01	1.4312E-02	7.9765E-01	1.0981E-05	1.3293E-02
3	3.6788E+06	5.0000E-01	2.2008E-01	3.6931E-02	7.9760E-01	4.5098E-05	1.4494E-02
4	2.2313E+06	5.0000E-01	2.2897E-01	5.2677E-02	7.5041E-01	1.7569E-04	1.4914E-02
5	1.3533E+06	5.0000E-01	1.7196E-01	6.6413E-02	1.3695E+00	6.1499E-04	3.0105E-02
6	8.2085E+05	5.0000E-01	1.0706E-01	1.1625E-01	1.3374E+00	1.2136E-03	2.7179E-02
7	4.9787E+05	5.0000E-01	5.9704E-02	9.7337E-02	9.8891E-01	1.6080E-03	1.6718E-02
8	3.0197E+05	5.0000E-01	3.1191E-02	1.1291E-01	6.3914E-01	1.2995E-03	8.9568E-03
9	1.8316E+05	5.0000E-01	1.5680E-02	1.0710E-01	6.2104E-01	1.7217E-03	8.4843E-03
10	1.1109E+05	5.0000E-01	7.7027E-03	9.8774E-02	6.0119E-01	1.4188E-03	5.8853E-03
11	6.7379E+04	5.0000E-01	3.6939E-03	7.3793E-02	5.8155E-01	1.4116E-03	4.8754E-03
12	4.0868E+04	5.0000E-01	1.7543E-03	6.2919E-02	8.5279E-01	7.9432E-04	3.6507E-03
13	2.4787E+04	5.0000E-01	8.3041E-04	5.5931E-02	1.1423E+00	3.3643E-04	3.8135E-03
14	1.5034E+04	5.0000E-01	3.9241E-04	3.7939E-02	1.1669E+00	2.8511E-04	4.1267E-03
15	9.1188E+03	5.0000E-01	1.8527E-04	2.0988E-02	1.1972E+00	4.4028E-04	3.5968E-03
16	5.5308E+03	5.0000E-01	8.7441E-05	1.3747E-02	1.2391E+00	1.8518E-04	3.0049E-03
17	3.3546E+03	5.0000E-01	4.1266E-05	4.9074E-03	1.2631E+00	1.1127E-04	3.1066E-03
18	2.0347E+03	5.0000E-01	1.9474E-05	1.1780E-02	1.3463E+00	2.9832E-04	3.2332E-03
19	1.2341E+03	5.0000E-01	9.1915E-06	6.7529E-03	1.0565E+00	2.9129E-04	2.3248E-03
20	7.4852E+02	5.0000E-01	4.3386E-06	3.3963E-03	7.7925E-01	2.8806E-04	1.4477E-03
21	4.5400E+02	5.0000E-01	2.0481E-06	1.2985E-03	7.6352E-01	2.3236E-04	1.3275E-03
22	2.7536E+02	5.0000E-01	9.6695E-07	4.7828E-04	8.5725E-01	2.3670E-04	1.3791E-03
23	1.6702E+02	5.0000E-01	4.5654E-07	1.4288E-04	8.7939E-01	2.2760E-04	1.3257E-03
24	1.0130E+02	5.0000E-01	2.1558E-07	2.6033E-05	5.6074E-01	9.0399E-05	6.4649E-04
25	6.1442E+01	1.7500E+00	1.9294E-07	1.1835E-05	5.3998E-01	2.2339E-03	6.4081E-04
	1.0677E+01		1.0000E+00	1.0000E+00		1.5575E-02	

TABLE B-LXV
ZPR-3-56B 25-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.1931E+00	2.8864E-02	0.0000E+00
2	6.0653E+06	5.0000E-01	1.2176E-01	0.0000E+00
3	3.6788E+06	5.0000E-01	2.2008E-01	0.0000E+00
4	2.2313E+06	5.0000E-01	2.2897E-01	0.0000E+00
5	1.3533E+06	5.0000E-01	1.7196E-01	0.0000E+00
6	8.2085E+05	5.0000E-01	1.0706E-01	0.0000E+00
7	4.9787E+05	5.0000E-01	5.9704E-02	0.0000E+00
8	3.0197E+05	5.0000E-01	3.1191E-02	0.0000E+00
9	1.8316E+05	5.0000E-01	1.5680E-02	0.0000E+00
10	1.1109E+05	5.0000E-01	7.7027E-03	0.0000E+00
11	6.7379E+04	5.0000E-01	3.6939E-03	0.0000E+00
12	4.0868E+04	5.0000E-01	1.7543E-03	0.0000E+00
13	2.4787E+04	5.0000E-01	8.3041E-04	0.0000E+00
14	1.5034E+04	5.0000E-01	3.9241E-04	0.0000E+00
15	9.1188E+03	5.0000E-01	1.8527E-04	0.0000E+00
16	5.5308E+03	5.0000E-01	8.7441E-05	0.0000E+00
17	3.3546E+03	5.0000E-01	4.1266E-05	0.0000E+00
18	2.0347E+03	5.0000E-01	1.9474E-05	0.0000E+00
19	1.2341E+03	5.0000E-01	9.1915E-06	0.0000E+00
20	7.4852E+02	5.0000E-01	4.3386E-06	0.0000E+00
21	4.5400E+02	5.0000E-01	2.0481E-06	0.0000E+00
22	2.7536E+02	5.0000E-01	9.6695E-07	0.0000E+00
23	1.6702E+02	5.0000E-01	4.5654E-07	0.0000E+00
24	1.0130E+02	5.0000E-01	2.1558E-07	0.0000E+00
25	6.1442E+01	1.7500E+00	1.9294E-07	0.0000E+00
			1.0000E+00	1.0000E+00

TABLE B-LXVI

ZPR-6-6A 70-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Adjoint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Adjoint (rho/n/s)
1	2.0000E+07	1.9315E-01	6.3092E-06	5.4305E-07	1.8582E+00	5.9547E-10	3.3155E-02
2	1.6487E+07	2.5000E-01	1.2201E-04	1.0897E-05	1.6149E+00	1.0737E-08	2.7193E-02
3	1.2840E+07	2.5000E-01	1.1286E-03	8.7699E-05	1.3666E+00	8.0701E-08	2.1620E-02
4	1.0000E+07	2.5000E-01	5.7746E-03	5.1705E-04	1.3278E+00	4.2180E-07	1.8436E-02
5	7.7880E+06	2.5000E-01	1.8609E-02	1.6951E-03	1.2041E+00	1.3178E-06	1.5099E-02
6	6.0653E+06	2.5000E-01	4.1857E-02	4.0044E-03	1.0837E+00	2.8301E-06	1.1439E-02
7	4.7237E+06	2.5000E-01	7.1296E-02	6.8280E-03	1.0714E+00	4.7192E-06	1.0040E-02
8	3.6788E+06	2.5000E-01	9.8044E-02	1.1272E-02	1.0833E+00	6.7280E-06	9.2349E-03
9	2.8650E+06	2.5000E-01	1.1445E-01	1.8528E-02	1.0691E+00	8.7272E-06	8.6503E-03
10	2.2313E+06	2.5000E-01	1.1791E-01	2.0050E-02	1.0318E+00	9.7727E-06	7.7738E-03
11	1.7377E+06	2.5000E-01	1.1044E-01	2.4813E-02	9.7970E-01	1.2989E-05	6.5903E-03
12	1.3533E+06	1.2500E-01	5.0174E-02	1.4065E-02	9.3045E-01	9.4586E-06	4.6655E-03
13	1.1943E+06	1.2500E-01	4.6250E-02	1.4414E-02	9.2199E-01	1.3676E-05	4.6355E-03
14	1.0540E+06	1.2500E-01	4.2054E-02	1.2190E-02	9.1896E-01	2.0213E-05	5.0837E-03
15	9.3014E+05	1.2500E-01	3.7862E-02	1.7529E-02	9.1401E-01	2.8467E-05	5.3537E-03
16	8.2085E+05	1.2500E-01	3.3787E-02	2.1475E-02	9.1615E-01	3.8851E-05	5.5576E-03
17	7.2440E+05	1.2500E-01	2.9759E-02	2.4319E-02	9.1907E-01	5.7216E-05	5.4881E-03
18	6.3928E+05	1.2500E-01	2.6174E-02	2.8928E-02	9.2158E-01	7.7710E-05	4.9977E-03
19	5.6416E+05	1.2500E-01	2.2853E-02	3.2139E-02	9.2702E-01	9.3060E-05	4.4035E-03
20	4.9787E+05	1.2500E-01	1.9795E-02	2.2132E-02	9.3236E-01	1.0577E-04	3.8608E-03
21	4.3937E+05	1.2500E-01	1.7059E-02	1.7743E-02	9.3217E-01	1.1078E-04	3.3514E-03
22	3.8774E+05	2.5000E-01	2.7149E-02	5.3926E-02	9.2900E-01	2.6503E-04	2.9375E-03
23	3.0197E+05	2.5000E-01	1.9718E-02	5.7077E-02	9.2699E-01	2.6424E-04	2.2221E-03
24	2.3518E+05	2.5000E-01	1.4170E-02	5.4575E-02	9.2573E-01	2.4415E-04	1.6644E-03
25	1.8316E+05	2.5000E-01	1.0139E-02	5.0813E-02	9.2121E-01	2.1347E-04	1.3261E-03
26	1.4264E+05	2.5000E-01	7.1551E-03	5.8755E-02	9.1683E-01	2.2872E-04	1.1145E-03
27	1.1109E+05	2.5000E-01	5.0335E-03	5.0367E-02	9.1386E-01	2.1039E-04	9.1735E-04
28	8.6517E+04	2.5000E-01	3.5035E-03	5.4287E-02	9.1037E-01	2.5196E-04	7.9828E-04
29	6.7379E+04	2.5000E-01	2.4159E-03	3.7017E-02	9.0762E-01	2.4670E-04	7.0105E-04
30	5.2475E+04	2.5000E-01	1.6620E-03	4.2627E-02	9.0650E-01	2.3067E-04	5.8871E-04
31	4.0868E+04	2.5000E-01	1.1424E-03	4.0621E-02	9.1075E-01	2.1773E-04	4.8597E-04
32	3.1828E+04	1.2500E-01	4.2912E-04	7.3565E-03	9.2154E-01	3.0827E-05	4.0227E-04
33	2.8088E+04	1.2500E-01	3.5560E-04	2.1796E-02	9.2194E-01	7.2469E-05	4.1209E-04
34	2.4787E+04	1.2500E-01	2.9466E-04	1.9410E-02	9.3011E-01	6.8925E-05	4.1202E-04
35	2.1875E+04	1.2500E-01	2.4414E-04	1.7302E-02	9.4104E-01	5.4976E-05	3.7186E-04
36	1.9304E+04	1.2500E-01	2.0226E-04	1.5021E-02	9.5090E-01	4.1763E-05	3.3541E-04
37	1.7036E+04	1.2500E-01	1.6757E-04	1.1283E-02	9.5855E-01	2.5875E-05	3.0587E-04
38	1.5034E+04	1.2500E-01	1.3882E-04	1.2585E-02	9.6705E-01	2.3167E-05	3.0566E-04
39	1.3268E+04	1.2500E-01	1.1500E-04	1.0908E-02	9.7709E-01	1.7476E-05	2.9764E-04
40	1.1709E+04	1.2497E-01	9.5247E-05	1.0700E-02	9.8797E-01	1.4337E-05	2.9713E-04
41	1.0333E+04	1.2503E-01	7.8942E-05	8.9815E-03	1.0000E+00	1.0783E-05	2.9199E-04
42	9.1188E+03	1.2500E-01	6.5377E-05	6.2844E-03	1.0104E+00	6.6297E-06	2.8235E-04
43	8.0473E+03	1.2500E-01	5.4159E-05	5.6247E-03	1.0182E+00	5.1739E-06	2.8079E-04
44	7.1017E+03	1.2500E-01	4.4865E-05	6.1487E-03	1.0281E+00	4.9026E-06	2.9278E-04
45	6.2673E+03	1.2500E-01	3.7168E-05	5.3738E-03	1.0380E+00	3.8789E-06	2.9899E-04
46	5.5308E+03	1.2500E-01	3.0791E-05	5.1602E-03	1.0486E+00	3.4852E-06	3.0916E-04
47	4.8809E+03	1.2500E-01	2.5509E-05	4.2405E-03	1.0542E+00	2.8868E-06	3.1533E-04
48	4.3074E+03	1.2500E-01	2.1134E-05	3.3105E-03	1.0584E+00	2.1881E-06	3.1209E-04
49	3.8013E+03	1.2500E-01	1.7509E-05	2.3604E-03	1.0587E+00	2.1130E-06	3.2984E-04
50	3.3546E+03	1.2500E-01	1.4506E-05	1.0649E-03	1.0610E+00	1.7310E-06	3.3632E-04
51	2.9604E+03	1.2500E-01	1.2019E-05	3.5129E-04	1.0646E+00	1.0518E-06	3.8157E-04
52	2.6126E+03	1.2500E-01	9.9581E-06	1.2400E-03	1.0665E+00	6.4745E-07	4.6775E-04
53	2.3056E+03	1.2500E-01	8.2510E-06	2.6297E-03	1.0711E+00	5.5505E-07	5.0003E-04
54	2.0347E+03	1.2500E-01	6.8364E-06	3.4226E-03	1.0802E+00	5.6001E-07	5.6293E-04
55	1.7956E+03	1.2500E-01	5.6646E-06	3.6013E-03	1.0787E+00	7.3801E-07	5.6947E-04
56	1.5846E+03	1.2500E-01	4.6935E-06	3.4136E-03	1.0938E+00	5.7197E-07	5.6373E-04
57	1.3984E+03	1.2500E-01	3.8892E-06	3.1895E-03	1.1051E+00	8.3840E-07	6.0763E-04
58	1.2341E+03	1.2500E-01	3.2228E-06	2.2514E-03	1.0740E+00	4.9103E-07	4.9939E-04
59	1.0891E+03	1.2500E-01	2.6707E-06	2.2680E-03	1.1479E+00	4.5443E-07	5.8780E-04
60	9.6112E+02	2.5000E-01	4.0474E-06	3.5820E-03	1.1679E+00	1.0285E-06	6.2353E-04
61	7.4852E+02	2.5000E-01	2.7796E-06	2.4211E-03	1.2277E+00	6.3690E-07	6.6252E-04
62	5.8295E+02	2.5000E-01	1.9090E-06	1.5711E-03	1.2469E+00	4.7102E-07	7.5799E-04
63	4.5400E+02	2.5000E-01	1.3111E-06	8.9607E-04	1.1978E+00	2.1995E-07	6.6960E-04
64	3.5357E+02	2.5000E-01	9.0065E-07	6.2685E-04	1.1906E+00	1.7162E-07	7.0331E-04
65	2.7536E+02	2.5000E-01	6.1866E-07	3.7487E-04	1.2484E+00	9.7932E-08	7.3738E-04
66	2.1445E+02	2.5000E-01	4.2494E-07	2.1284E-04	1.1897E+00	6.0187E-08	7.0004E-04
67	1.6702E+02	2.5000E-01	2.9195E-07	1.1715E-04	1.1992E+00	3.3562E-08	7.3643E-04
68	1.3007E+02	2.5000E-01	2.0056E-07	5.8325E-05	1.1908E+00	9.2255E-09	5.8451E-04
69	1.0130E+02	5.0000E-01	2.3248E-07	3.9430E-05	1.3265E+00	2.5535E-09	1.4261E-03
70	6.1442E+01	1.7500E+00	2.0797E-07	1.5923E-05	1.5256E+00	8.8104E-09	2.0489E-03
	1.0677E+01		1.0000E+00	1.0000E+00		3.3781E-03	

TABLE B-LXVII

ZPR-6-6A 70-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.9315E-01	6.3727E-06	5.0145E-06
2	1.6487E+07	2.5000E-01	1.2285E-04	1.0480E-04
3	1.2840E+07	2.5000E-01	1.1336E-03	1.0268E-03
4	1.0000E+07	2.5000E-01	5.7892E-03	5.4765E-03
5	7.7880E+06	2.5000E-01	1.8631E-02	1.8147E-02
6	6.0653E+06	2.5000E-01	4.1873E-02	4.1525E-02
7	4.7237E+06	2.5000E-01	7.1293E-02	7.1371E-02
8	3.6788E+06	2.5000E-01	9.8024E-02	9.8463E-02
9	2.8650E+06	2.5000E-01	1.1443E-01	1.1490E-01
10	2.2313E+06	2.5000E-01	1.1790E-01	1.1814E-01
11	1.7377E+06	2.5000E-01	1.1045E-01	1.1032E-01
12	1.3533E+06	1.2500E-01	5.0182E-02	5.0018E-02
13	1.1943E+06	1.2500E-01	4.6255E-02	4.6142E-02
14	1.0540E+06	1.2500E-01	4.2060E-02	4.1930E-02
15	9.3014E+05	1.2500E-01	3.7871E-02	3.7681E-02
16	8.2085E+05	1.2500E-01	3.3793E-02	3.3665E-02
17	7.2440E+05	1.2500E-01	2.9765E-02	2.9630E-02
18	6.3928E+05	1.2500E-01	2.6174E-02	2.6170E-02
19	5.6416E+05	1.2500E-01	2.2851E-02	2.2887E-02
20	4.9787E+05	1.2500E-01	1.9791E-02	1.9869E-02
21	4.3937E+05	1.2500E-01	1.7057E-02	1.7102E-02
22	3.8774E+05	2.5000E-01	2.7145E-02	2.7229E-02
23	3.0197E+05	2.5000E-01	1.9713E-02	1.9815E-02
24	2.3518E+05	2.5000E-01	1.4161E-02	1.4344E-02
25	1.8316E+05	2.5000E-01	1.0132E-02	1.0282E-02
26	1.4264E+05	2.5000E-01	7.1470E-03	7.3210E-03
27	1.1109E+05	2.5000E-01	5.0280E-03	5.1465E-03
28	8.6517E+04	2.5000E-01	3.5003E-03	3.5704E-03
29	6.7379E+04	2.5000E-01	2.4145E-03	2.4436E-03
30	5.2475E+04	2.5000E-01	1.6617E-03	1.6689E-03
31	4.0868E+04	2.5000E-01	1.1425E-03	1.1397E-03
32	3.1828E+04	1.2500E-01	4.2926E-04	4.2620E-04
33	2.8088E+04	1.2500E-01	3.5577E-04	3.5224E-04
34	2.4787E+04	1.2500E-01	2.9483E-04	2.9114E-04
35	2.1875E+04	1.2500E-01	2.4431E-04	2.4066E-04
36	1.9304E+04	1.2500E-01	2.0243E-04	1.9894E-04
37	1.7036E+04	1.2500E-01	1.6772E-04	1.6448E-04
38	1.5034E+04	1.2500E-01	1.3896E-04	1.3599E-04
39	1.3268E+04	1.2500E-01	1.1513E-04	1.1245E-04
40	1.1709E+04	1.2497E-01	9.5358E-05	9.2972E-05
41	1.0333E+04	1.2503E-01	7.9040E-05	7.6931E-05
42	9.1188E+03	1.2500E-01	6.5464E-05	6.3615E-05
43	8.0473E+03	1.2500E-01	5.4234E-05	5.2623E-05
44	7.1017E+03	1.2500E-01	4.4931E-05	4.3534E-05
45	6.2673E+03	1.2500E-01	3.7225E-05	3.6020E-05
46	5.5308E+03	1.2500E-01	3.0840E-05	2.9804E-05
47	4.8809E+03	1.2500E-01	2.5550E-05	2.4663E-05
48	4.3074E+03	1.2500E-01	2.1169E-05	2.0411E-05
49	3.8013E+03	1.2500E-01	1.7539E-05	1.6894E-05
50	3.3546E+03	1.2500E-01	1.4532E-05	1.3983E-05
51	2.9604E+03	1.2500E-01	1.2040E-05	1.1575E-05
52	2.6126E+03	1.2500E-01	9.9765E-06	9.5829E-06
53	2.3056E+03	1.2500E-01	8.2666E-06	7.9339E-06
54	2.0347E+03	1.2500E-01	6.8495E-06	6.5683E-06
55	1.7956E+03	1.2500E-01	5.6757E-06	5.4375E-06
56	1.5846E+03	1.2500E-01	4.7029E-06	4.5017E-06
57	1.3984E+03	1.2500E-01	3.8972E-06	3.7262E-06
58	1.2341E+03	1.2500E-01	3.2295E-06	3.0859E-06
59	1.0891E+03	1.2500E-01	2.6763E-06	2.5559E-06
60	9.6112E+02	2.5000E-01	4.0560E-06	3.8716E-06
61	7.4852E+02	2.5000E-01	2.7856E-06	2.6558E-06
62	5.8295E+02	2.5000E-01	1.9133E-06	1.8216E-06
63	4.5400E+02	2.5000E-01	1.3142E-06	1.2490E-06
64	3.5357E+02	2.5000E-01	9.0277E-07	8.5746E-07
65	2.7536E+02	2.5000E-01	6.2016E-07	5.8810E-07
66	2.1445E+02	2.5000E-01	4.2601E-07	4.0307E-07
67	1.6702E+02	2.5000E-01	2.9269E-07	2.7680E-07
68	1.3007E+02	2.5000E-01	2.0108E-07	1.8983E-07
69	1.0130E+02	5.0000E-01	2.3310E-07	2.1995E-07
70	6.1442E+01	1.7500E+00	2.0853E-07	1.9660E-07
			1.0000E+00	1.0000E+00

TABLE B-LXVIII

ZPR-6-6A 25-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Ad joint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Ad joint (rho/n/s)
1	2.0000E+07	1.1931E+00	2.5640E-02	2.3113E-03	2.7074E+00	1.8316E-06	4.2422E-02
2	6.0653E+06	5.0000E-01	1.1315E-01	1.0832E-02	7.9152E-01	7.5493E-06	7.8888E-03
3	3.6788E+06	5.0000E-01	2.1250E-01	2.9800E-02	7.9051E-01	1.5455E-05	6.5668E-03
4	2.2313E+06	5.0000E-01	2.2835E-01	4.4863E-02	7.3878E-01	2.2762E-05	5.2756E-03
5	1.3533E+06	5.0000E-01	1.7634E-01	5.8199E-02	1.3536E+00	7.1814E-05	7.2495E-03
6	8.2085E+05	5.0000E-01	1.1257E-01	1.0686E-01	1.3530E+00	2.6684E-04	7.5097E-03
7	4.9787E+05	5.0000E-01	6.4003E-02	9.3802E-02	1.0260E+00	4.8158E-04	3.7278E-03
8	3.0197E+05	5.0000E-01	3.3887E-02	1.1165E-01	6.8046E-01	5.0839E-04	1.4274E-03
9	1.8316E+05	5.0000E-01	1.7294E-02	1.0957E-01	6.7507E-01	4.4219E-04	8.9637E-04
10	1.1109E+05	5.0000E-01	8.5370E-03	1.0465E-01	6.7000E-01	4.6236E-04	6.3011E-04
11	6.7379E+04	5.0000E-01	4.0779E-03	7.9645E-02	6.6628E-01	4.7737E-04	4.7370E-04
12	4.0868E+04	5.0000E-01	1.9271E-03	6.9774E-02	1.0116E+00	3.2103E-04	4.7758E-04
13	2.4787E+04	5.0000E-01	9.0863E-04	6.3016E-02	1.3885E+00	1.9154E-04	5.2343E-04
14	1.5034E+04	5.0000E-01	4.2801E-04	4.3174E-02	1.4442E+00	6.5763E-05	4.3795E-04
15	9.1188E+03	5.0000E-01	2.0157E-04	2.3432E-02	1.5039E+00	2.0583E-05	4.2417E-04
16	5.5308E+03	5.0000E-01	9.4942E-05	1.5072E-02	1.5499E+00	1.0673E-05	4.6513E-04
17	3.3546E+03	5.0000E-01	4.4734E-05	5.2859E-03	1.5658E+00	3.9853E-06	6.1911E-04
18	2.0347E+03	5.0000E-01	2.1084E-05	1.3627E-02	1.6005E+00	2.7084E-06	8.4612E-04
19	1.2341E+03	5.0000E-01	9.9409E-06	8.1014E-03	1.2450E+00	1.9740E-06	6.2831E-04
20	7.4852E+02	5.0000E-01	4.6886E-06	3.9921E-03	9.0886E-01	1.1079E-06	5.2172E-04
21	4.5400E+02	5.0000E-01	2.2118E-06	1.5229E-03	8.7723E-01	3.9158E-07	5.0424E-04
22	2.7536E+02	5.0000E-01	1.0436E-06	5.8772E-04	8.9549E-01	1.5812E-07	5.2793E-04
23	1.6702E+02	5.0000E-01	4.9250E-07	1.7548E-04	8.7782E-01	4.2788E-08	4.8515E-04
24	1.0130E+02	5.0000E-01	2.3248E-07	3.9430E-05	4.8720E-01	2.5535E-09	5.2377E-04
25	6.1442E+01	1.7500E+00	2.0797E-07	1.5923E-05	5.6033E-01	8.8104E-09	7.5253E-04
	1.0677E+01		1.0000E+00	1.0000E+00		3.3781E-03	

TABLE B-LXIX

ZPR-6-6A 25-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.1931E+00	2.5683E-02	2.4761E-02
2	6.0653E+06	5.0000E-01	1.1317E-01	1.1290E-01
3	3.6788E+06	5.0000E-01	2.1246E-01	2.1337E-01
4	2.2313E+06	5.0000E-01	2.2835E-01	2.2846E-01
5	1.3533E+06	5.0000E-01	1.7637E-01	1.7577E-01
6	8.2085E+05	5.0000E-01	1.1258E-01	1.1235E-01
7	4.9787E+05	5.0000E-01	6.3994E-02	6.4200E-02
8	3.0197E+05	5.0000E-01	3.3874E-02	3.4160E-02
9	1.8316E+05	5.0000E-01	1.7279E-02	1.7603E-02
10	1.1109E+05	5.0000E-01	8.5282E-03	8.7168E-03
11	6.7379E+04	5.0000E-01	4.0762E-03	4.1125E-03
12	4.0868E+04	5.0000E-01	1.9276E-03	1.9182E-03
13	2.4787E+04	5.0000E-01	9.0929E-04	8.9522E-04
14	1.5034E+04	5.0000E-01	4.2849E-04	4.1835E-04
15	9.1188E+03	5.0000E-01	2.0185E-04	1.9579E-04
16	5.5308E+03	5.0000E-01	9.5093E-05	9.1772E-05
17	3.3546E+03	5.0000E-01	4.4815E-05	4.3076E-05
18	2.0347E+03	5.0000E-01	2.1125E-05	2.0234E-05
19	1.2341E+03	5.0000E-01	9.9613E-06	9.5134E-06
20	7.4852E+02	5.0000E-01	4.6983E-06	4.4774E-06
21	4.5400E+02	5.0000E-01	2.2163E-06	2.1065E-06
22	2.7536E+02	5.0000E-01	1.0462E-06	9.9117E-07
23	1.6702E+02	5.0000E-01	4.9377E-07	4.6664E-07
24	1.0130E+02	5.0000E-01	2.3310E-07	2.1995E-07
25	6.1442E+01	1.7500E+00	2.0853E-07	1.9660E-07
			1.0000E+00	1.0000E+00

TABLE B-LXX

SNEAK-7A 70-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux ($n/cm^2/s$)	Central Ad joint ($\rho/n/g$)	Edge Flux ($n/cm^2/s$)	Edge Ad joint ($\rho/n/g$)
1	2.0000E+07	1.9315E-01	7.6888E-06	1.2237E-06	1.7722E+00	1.4086E-09	3.6578E-02
2	1.6487E+07	2.5000E-01	1.4298E-04	2.3809E-05	1.6035E+00	2.5172E-08	3.0108E-02
3	1.2840E+07	2.5000E-01	1.2900E-03	1.9332E-04	1.3814E+00	1.8983E-07	2.3976E-02
4	1.0000E+07	2.5000E-01	6.4635E-03	1.0850E-03	1.3106E+00	9.7246E-07	2.0450E-02
5	7.7880E+06	2.5000E-01	2.0424E-02	3.6301E-03	1.1996E+00	3.0596E-06	1.6728E-02
6	6.0653E+06	2.5000E-01	4.5078E-02	8.5692E-03	1.0667E+00	6.5801E-06	1.2685E-02
7	4.7237E+06	2.5000E-01	7.5395E-02	1.3741E-02	1.0742E+00	1.0697E-05	1.1152E-02
8	3.6788E+06	2.5000E-01	1.0190E-01	2.0264E-02	1.0800E+00	1.4800E-05	1.0258E-02
9	2.8650E+06	2.5000E-01	1.1707E-01	3.3480E-02	1.0493E+00	1.9249E-05	9.6150E-03
10	2.2313E+06	2.5000E-01	1.1887E-01	3.4580E-02	1.0275E+00	2.1445E-05	8.6569E-03
11	1.7377E+06	2.5000E-01	1.0992E-01	3.8227E-02	9.8182E-01	2.7884E-05	7.3660E-03
12	1.3533E+06	1.2500E-01	4.9494E-02	2.0315E-02	9.4365E-01	1.9874E-05	5.3072E-03
13	1.1943E+06	1.2500E-01	4.5346E-02	2.0305E-02	9.3290E-01	2.8082E-05	5.2683E-03
14	1.0540E+06	1.2500E-01	4.0994E-02	1.7265E-02	9.3114E-01	4.0876E-05	5.7335E-03
15	9.3014E+05	1.2500E-01	3.6682E-02	2.3599E-02	9.1779E-01	5.6057E-05	5.9990E-03
16	8.2085E+05	1.2500E-01	3.2552E-02	2.8404E-02	9.1673E-01	7.5517E-05	6.2072E-03
17	7.2440E+05	1.2500E-01	2.8583E-02	2.9064E-02	9.1555E-01	1.0780E-04	6.1331E-03
18	6.3928E+05	1.2500E-01	2.5014E-02	2.9843E-02	9.1851E-01	1.4154E-04	5.6117E-03
19	5.6416E+05	1.2500E-01	2.1734E-02	2.9206E-02	9.2350E-01	1.6348E-04	4.9831E-03
20	4.9787E+05	1.2500E-01	1.8761E-02	2.1911E-02	9.2995E-01	1.8100E-04	4.4023E-03
21	4.3937E+05	1.2500E-01	1.6104E-02	1.9841E-02	9.2829E-01	1.8817E-04	3.8537E-03
22	3.8774E+05	2.5000E-01	2.5544E-02	4.9919E-02	9.1883E-01	4.3227E-04	3.3928E-03
23	3.0197E+05	2.5000E-01	1.8452E-02	5.1372E-02	9.1304E-01	4.1737E-04	2.6115E-03
24	2.3518E+05	2.5000E-01	1.3205E-02	4.8421E-02	9.1047E-01	3.7936E-04	1.9968E-03
25	1.8316E+05	2.5000E-01	9.3672E-03	4.4648E-02	9.0629E-01	3.2910E-04	1.6157E-03
26	1.4264E+05	2.5000E-01	6.6096E-03	4.4434E-02	9.0160E-01	3.3861E-04	1.3705E-03
27	1.1109E+05	2.5000E-01	4.6335E-03	4.0483E-02	8.9563E-01	3.0904E-04	1.1460E-03
28	8.6517E+04	2.5000E-01	3.2247E-03	3.8933E-02	8.8888E-01	3.4202E-04	9.9977E-04
29	6.7379E+04	2.5000E-01	2.2257E-03	3.5144E-02	8.8356E-01	3.3863E-04	8.9450E-04
30	5.2475E+04	2.5000E-01	1.5330E-03	3.2962E-02	8.7921E-01	3.1048E-04	7.6118E-04
31	4.0868E+04	2.5000E-01	1.0548E-03	3.0092E-02	8.7907E-01	2.7139E-04	6.3330E-04
32	3.1828E+04	1.2500E-01	3.9650E-04	9.3941E-03	8.8143E-01	4.1454E-05	5.3270E-04
33	2.8088E+04	1.2500E-01	3.2871E-04	1.5812E-02	8.7788E-01	8.8461E-05	5.4506E-04
34	2.4787E+04	1.2500E-01	2.7249E-04	1.2790E-02	8.7808E-01	8.0740E-05	5.4712E-04
35	2.1875E+04	1.2500E-01	2.2587E-04	1.2317E-02	8.8339E-01	6.2353E-05	5.0412E-04
36	1.9304E+04	1.2500E-01	1.8720E-04	1.1294E-02	8.8721E-01	4.5427E-05	4.6627E-04
37	1.7036E+04	1.2500E-01	1.5514E-04	9.7103E-03	8.9213E-01	2.5516E-05	4.3452E-04
38	1.5034E+04	1.2500E-01	1.2857E-04	1.0352E-02	8.9393E-01	2.5717E-05	4.4977E-04
39	1.3268E+04	1.2500E-01	1.0655E-04	9.2306E-03	9.0037E-01	1.9565E-05	4.4955E-04
40	1.1709E+04	1.2497E-01	8.8271E-05	9.0883E-03	9.0546E-01	1.7267E-05	4.6431E-04
41	1.0333E+04	1.2503E-01	7.3182E-05	8.1674E-03	9.1232E-01	1.3175E-05	4.6946E-04
42	9.1188E+03	1.2500E-01	6.0625E-05	6.7804E-03	9.2235E-01	8.1545E-06	4.6343E-04
43	8.0473E+03	1.2500E-01	5.0236E-05	6.7110E-03	9.2177E-01	6.3743E-06	4.6530E-04
44	7.1017E+03	1.2500E-01	4.1626E-05	6.6154E-03	9.2267E-01	5.9281E-06	4.8766E-04
45	6.2673E+03	1.2500E-01	3.4493E-05	5.9097E-03	9.3433E-01	4.6299E-06	5.0205E-04
46	5.5308E+03	1.2500E-01	2.8582E-05	5.7777E-03	9.4134E-01	4.0118E-06	5.2068E-04
47	4.8809E+03	1.2500E-01	2.3683E-05	5.1969E-03	9.5288E-01	3.2853E-06	5.3205E-04
48	4.3074E+03	1.2500E-01	1.9625E-05	4.8377E-03	9.6160E-01	2.5151E-06	5.2693E-04
49	3.8013E+03	1.2500E-01	1.6262E-05	4.6798E-03	9.7321E-01	2.4414E-06	5.5271E-04
50	3.3546E+03	1.2500E-01	1.3476E-05	4.2518E-03	9.7765E-01	2.0502E-06	5.5669E-04
51	2.9604E+03	1.2500E-01	1.1167E-05	3.7501E-03	9.8502E-01	1.3367E-06	6.1281E-04
52	2.6126E+03	1.2500E-01	9.2542E-06	3.2658E-03	9.8590E-01	1.0878E-06	7.3031E-04
53	2.3056E+03	1.2500E-01	7.6690E-06	3.1855E-03	9.9529E-01	1.0173E-06	7.7658E-04
54	2.0347E+03	1.2500E-01	6.3551E-06	2.8604E-03	1.0288E+00	1.0458E-06	8.8696E-04
55	1.7956E+03	1.2500E-01	5.2665E-06	2.5657E-03	1.0422E+00	1.2752E-06	9.0099E-04
56	1.5846E+03	1.2500E-01	4.3642E-06	2.3021E-03	1.0805E+00	1.0805E-07	8.9622E-04
57	1.3984E+03	1.2500E-01	3.6168E-06	2.0652E-03	1.1233E+00	1.0824E-06	9.7946E-04
58	1.2341E+03	1.2500E-01	2.9974E-06	1.6536E-03	1.0747E+00	5.9155E-07	8.1445E-04
59	1.0891E+03	1.2500E-01	2.4842E-06	1.5382E-03	1.1420E+00	4.9270E-07	9.4535E-04
60	9.6112E+02	2.5000E-01	3.7653E-06	2.4845E-03	1.1199E+00	9.4071E-07	1.0149E-03
61	7.4852E+02	2.5000E-01	2.5863E-06	1.8682E-03	1.1555E+00	5.4166E-07	1.1170E-03
62	5.8295E+02	2.5000E-01	1.7766E-06	1.2511E-03	1.2683E+00	3.7606E-07	1.3113E-03
63	4.5400E+02	2.5000E-01	1.2203E-06	8.7751E-04	1.2026E+00	1.7382E-07	1.1832E-03
64	3.5357E+02	2.5000E-01	8.3837E-07	6.1095E-04	1.2060E+00	1.4305E-07	1.2564E-03
65	2.7536E+02	2.5000E-01	5.7593E-07	3.5781E-04	1.2801E+00	8.1778E-08	1.3190E-03
66	2.1445E+02	2.5000E-01	3.9561E-07	2.2120E-04	1.3336E+00	5.1757E-08	1.2371E-03
67	1.6702E+02	2.5000E-01	2.7182E-07	1.3311E-04	1.3350E+00	2.9414E-08	1.2716E-03
68	1.3007E+02	2.5000E-01	1.8673E-07	7.3033E-05	1.3921E+00	8.1908E-09	9.2800E-04
69	1.0130E+02	5.0000E-01	2.1648E-07	5.0347E-05	1.6695E+00	5.5536E-09	1.7227E-03
70	6.1442E+01	1.7500E+00	1.9370E-07	1.4080E-05	1.6141E+00	4.1258E-09	3.2835E-03
	1.0677E+01		1.0000E+00	1.0000E+00		5.0458E-03	

TABLE B-LXXI

SNEAK-7A 70-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.9315E-01	8.1361E-06	5.1607E-06
2	1.6487E+07	2.5000E-01	1.4937E-04	1.0681E-04
3	1.2840E+07	2.5000E-01	1.3343E-03	1.0396E-03
4	1.0000E+07	2.5000E-01	6.6308E-03	5.5179E-03
5	7.7880E+06	2.5000E-01	2.0813E-02	1.8224E-02
6	6.0653E+06	2.5000E-01	4.5692E-02	4.1608E-02
7	4.7237E+06	2.5000E-01	7.6100E-02	7.1411E-02
8	3.6788E+06	2.5000E-01	1.0252E-01	9.8436E-02
9	2.8650E+06	2.5000E-01	1.1746E-01	1.1483E-01
10	2.2313E+06	2.5000E-01	1.1901E-01	1.1807E-01
11	1.7377E+06	2.5000E-01	1.0986E-01	1.1028E-01
12	1.3533E+06	1.2500E-01	4.9402E-02	5.0013E-02
13	1.1943E+06	1.2500E-01	4.5205E-02	4.6139E-02
14	1.0540E+06	1.2500E-01	4.0828E-02	4.1933E-02
15	9.3014E+05	1.2500E-01	3.6503E-02	3.7689E-02
16	8.2085E+05	1.2500E-01	3.2353E-02	3.3674E-02
17	7.2440E+05	1.2500E-01	2.8396E-02	2.9641E-02
18	6.3928E+05	1.2500E-01	2.4809E-02	2.6174E-02
19	5.6416E+05	1.2500E-01	2.1530E-02	2.2889E-02
20	4.9787E+05	1.2500E-01	1.8563E-02	1.9868E-02
21	4.3937E+05	1.2500E-01	1.5923E-02	1.7102E-02
22	3.8774E+05	2.5000E-01	2.5247E-02	2.7227E-02
23	3.0197E+05	2.5000E-01	1.8211E-02	1.9809E-02
24	2.3518E+05	2.5000E-01	1.3006E-02	1.4333E-02
25	1.8316E+05	2.5000E-01	9.2074E-03	1.0270E-02
26	1.4264E+05	2.5000E-01	6.4860E-03	7.3079E-03
27	1.1109E+05	2.5000E-01	4.5445E-03	5.1364E-03
28	8.6517E+04	2.5000E-01	3.1647E-03	3.5634E-03
29	6.7379E+04	2.5000E-01	2.1879E-03	2.4395E-03
30	5.2475E+04	2.5000E-01	1.5093E-03	1.6666E-03
31	4.0868E+04	2.5000E-01	1.0400E-03	1.1384E-03
32	3.1828E+04	1.2500E-01	3.9132E-04	4.2577E-04
33	2.8088E+04	1.2500E-01	3.2461E-04	3.5192E-04
34	2.4787E+04	1.2500E-01	2.6923E-04	2.9090E-04
35	2.1875E+04	1.2500E-01	2.2328E-04	2.4048E-04
36	1.9304E+04	1.2500E-01	1.8514E-04	1.9881E-04
37	1.7036E+04	1.2500E-01	1.5351E-04	1.6438E-04
38	1.5034E+04	1.2500E-01	1.2727E-04	1.3592E-04
39	1.3268E+04	1.2500E-01	1.0551E-04	1.1240E-04
40	1.1709E+04	1.2497E-01	8.7446E-05	9.2934E-05
41	1.0333E+04	1.2503E-01	7.2524E-05	7.6904E-05
42	9.1188E+03	1.2500E-01	6.0099E-05	6.3595E-05
43	8.0473E+03	1.2500E-01	4.9816E-05	5.2610E-05
44	7.1017E+03	1.2500E-01	4.1290E-05	4.3525E-05
45	6.2673E+03	1.2500E-01	3.4224E-05	3.6013E-05
46	5.5308E+03	1.2500E-01	2.8366E-05	2.9800E-05
47	4.8809E+03	1.2500E-01	2.3511E-05	2.4661E-05
48	4.3074E+03	1.2500E-01	1.9487E-05	2.0410E-05
49	3.8013E+03	1.2500E-01	1.6151E-05	1.6893E-05
50	3.3546E+03	1.2500E-01	1.3386E-05	1.3983E-05
51	2.9604E+03	1.2500E-01	1.1095E-05	1.1576E-05
52	2.6126E+03	1.2500E-01	9.1960E-06	9.5834E-06
53	2.3056E+03	1.2500E-01	7.6220E-06	7.9346E-06
54	2.0347E+03	1.2500E-01	6.3172E-06	6.5692E-06
55	1.7956E+03	1.2500E-01	5.2360E-06	5.4388E-06
56	1.5846E+03	1.2500E-01	4.3397E-06	4.5031E-06
57	1.3984E+03	1.2500E-01	3.5971E-06	3.7281E-06
58	1.2341E+03	1.2500E-01	2.9814E-06	3.0876E-06
59	1.0891E+03	1.2500E-01	2.4712E-06	2.5573E-06
60	9.6112E+02	2.5000E-01	3.7461E-06	3.8735E-06
61	7.4852E+02	2.5000E-01	2.5737E-06	2.6574E-06
62	5.8295E+02	2.5000E-01	1.7683E-06	1.8231E-06
63	4.5400E+02	2.5000E-01	1.2150E-06	1.2505E-06
64	3.5357E+02	2.5000E-01	8.3481E-07	8.5850E-07
65	2.7536E+02	2.5000E-01	5.7361E-07	5.8903E-07
66	2.1445E+02	2.5000E-01	3.9413E-07	4.0397E-07
67	1.6702E+02	2.5000E-01	2.7083E-07	2.7742E-07
68	1.3007E+02	2.5000E-01	1.8610E-07	1.9031E-07
69	1.0130E+02	5.0000E-01	2.1577E-07	2.2051E-07
70	6.1442E+01	1.7500E+00	1.9310E-07	1.9710E-07
			1.0000E+00	1.0000E+00

TABLE B-LXXII

SNEAK-7A 25-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Ad joint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Ad joint (rho/n/s)
1	2.0000E+07	1.1931E+00	2.8328E-02	4.9335E-03	2.6766E+00	4.2485E-06	4.7084E-02
2	6.0653E+06	5.0000E-01	1.2047E-01	2.2310E-02	7.8849E-01	1.7277E-05	8.7796E-03
3	3.6788E+06	5.0000E-01	2.1897E-01	5.3745E-02	7.8423E-01	3.4049E-05	7.3154E-03
4	2.2313E+06	5.0000E-01	2.2879E-01	7.2807E-02	7.4004E-01	4.9329E-05	5.9013E-03
5	1.3533E+06	5.0000E-01	1.7252E-01	8.1484E-02	1.3721E+00	1.4489E-04	8.2161E-03
6	8.2085E+05	5.0000E-01	1.0788E-01	1.1652E-01	1.3533E+00	4.8834E-04	8.4471E-03
7	4.9787E+05	5.0000E-01	6.0410E-02	9.1670E-02	1.0228E+00	8.0144E-04	4.2903E-03
8	3.0197E+05	5.0000E-01	3.1657E-02	9.9793E-02	6.7161E-01	7.9674E-04	1.6973E-03
9	1.8316E+05	5.0000E-01	1.5977E-02	8.9082E-02	6.6586E-01	6.6770E-04	1.0998E-03
10	1.1109E+05	5.0000E-01	7.8581E-03	7.9417E-02	6.5725E-01	6.5105E-04	7.9030E-04
11	6.7379E+04	5.0000E-01	3.7587E-03	6.8106E-02	6.4924E-01	6.4911E-04	6.0980E-04
12	4.0868E+04	5.0000E-01	1.7800E-03	5.5299E-02	9.7173E-01	4.0131E-04	6.3019E-04
13	2.4787E+04	5.0000E-01	8.4070E-04	4.6112E-02	1.3041E+00	2.1404E-04	7.1894E-04
14	1.5034E+04	5.0000E-01	3.9657E-04	3.6838E-02	1.3304E+00	7.5725E-05	6.7514E-04
15	9.1188E+03	5.0000E-01	1.8698E-04	2.6016E-02	1.3631E+00	2.5087E-05	7.0657E-04
16	5.5308E+03	5.0000E-01	8.8153E-05	2.0492E-02	1.4103E+00	1.2254E-05	7.8536E-04
17	3.3546E+03	5.0000E-01	4.1567E-05	1.4453E-02	1.4525E+00	5.4920E-06	9.8573E-04
18	2.0347E+03	5.0000E-01	1.9603E-05	9.7934E-03	1.5745E+00	4.3131E-06	1.3493E-03
19	1.2341E+03	5.0000E-01	9.2468E-06	5.6763E-03	1.2289E+00	2.0250E-06	1.0220E-03
20	7.4852E+02	5.0000E-01	4.3629E-06	3.1193E-03	8.9273E-01	9.1772E-07	8.9436E-04
21	4.5400E+02	5.0000E-01	2.0587E-06	1.4885E-03	8.8710E-01	3.1686E-07	8.9853E-04
22	2.7536E+02	5.0000E-01	9.7154E-07	5.7901E-04	9.6262E-01	1.3354E-07	9.4142E-04
23	1.6702E+02	5.0000E-01	4.5855E-07	2.0615E-04	1.0044E+00	3.7605E-08	8.1014E-04
24	1.0130E+02	5.0000E-01	2.1648E-07	5.0347E-05	6.1490E-01	5.5536E-09	6.3448E-04
25	6.1442E+01	1.7500E+00	1.9370E-07	1.4080E-05	5.9450E-01	4.1258E-09	1.2093E-03
	1.0677E+01		1.0000E+00	1.0000E+00		5.0458E-03	

TABLE B-LXXIII

SNEAK-7A 25-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.1931E+00	2.8936E-02	2.4894E-02
2	6.0653E+06	5.0000E-01	1.2179E-01	1.1302E-01
3	3.6788E+06	5.0000E-01	2.1998E-01	2.1327E-01
4	2.2313E+06	5.0000E-01	2.2887E-01	2.2835E-01
5	1.3533E+06	5.0000E-01	1.7194E-01	1.7577E-01
6	8.2085E+05	5.0000E-01	1.0709E-01	1.1238E-01
7	4.9787E+05	5.0000E-01	5.9740E-02	6.4197E-02
8	3.0197E+05	5.0000E-01	3.1217E-02	3.4141E-02
9	1.8316E+05	5.0000E-01	1.5693E-02	1.7578E-02
10	1.1109E+05	5.0000E-01	7.7092E-03	8.6998E-03
11	6.7379E+04	5.0000E-01	3.6972E-03	4.1061E-03
12	4.0868E+04	5.0000E-01	1.7559E-03	1.9161E-03
13	2.4787E+04	5.0000E-01	8.3117E-04	8.9457E-04
14	1.5034E+04	5.0000E-01	3.9275E-04	4.1815E-04
15	9.1188E+03	5.0000E-01	1.8543E-04	1.9574E-04
16	5.5308E+03	5.0000E-01	8.7514E-05	9.1764E-05
17	3.3546E+03	5.0000E-01	4.1299E-05	4.3077E-05
18	2.0347E+03	5.0000E-01	1.9490E-05	2.0239E-05
19	1.2341E+03	5.0000E-01	9.1988E-06	9.5184E-06
20	7.4852E+02	5.0000E-01	4.3421E-06	4.4805E-06
21	4.5400E+02	5.0000E-01	2.0498E-06	2.1090E-06
22	2.7536E+02	5.0000E-01	9.6774E-07	9.9299E-07
23	1.6702E+02	5.0000E-01	4.5693E-07	4.6773E-07
24	1.0130E+02	5.0000E-01	2.1577E-07	2.2051E-07
25	6.1442E+01	1.7500E+00	1.9310E-07	1.9710E-07
			1.0000E+00	1.0000E+00

TABLE B-LXXIV

SNEAK-7B 70-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Ad joint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Ad joint (rho/n/s)
1	2.0000E+07	1.9315E-01	7.4333E-06	8.9556E-07	2.2040E+00	1.0107E-09	2.9939E-02
2	1.6487E+07	2.5000E-01	1.3955E-04	1.7128E-05	1.9251E+00	1.7930E-08	2.4526E-02
3	1.2840E+07	2.5000E-01	1.2665E-03	1.3871E-04	1.6589E+00	1.3575E-07	1.9470E-02
4	1.0000E+07	2.5000E-01	6.3734E-03	8.1476E-04	1.5678E+00	7.0783E-07	1.6566E-02
5	7.7880E+06	2.5000E-01	2.0208E-02	2.6831E-03	1.3594E+00	2.2187E-06	1.3543E-02
6	6.0653E+06	2.5000E-01	4.4724E-02	6.2466E-03	1.1606E+00	4.7605E-06	1.0255E-02
7	4.7237E+06	2.5000E-01	7.4974E-02	1.0105E-02	1.1275E+00	7.8522E-06	8.9870E-03
8	3.6788E+06	2.5000E-01	1.0153E-01	1.5856E-02	1.1298E+00	1.1048E-05	8.2538E-03
9	2.8650E+06	2.5000E-01	1.1683E-01	2.5174E-02	1.0987E+00	1.4269E-05	7.7242E-03
10	2.2313E+06	2.5000E-01	1.1879E-01	2.2896E-02	1.0574E+00	1.5594E-05	6.9372E-03
11	1.7377E+06	2.5000E-01	1.0998E-01	2.6939E-02	9.7692E-01	2.0287E-05	5.8679E-03
12	1.3533E+06	1.2500E-01	4.9562E-02	1.5127E-02	9.0021E-01	1.4426E-05	4.1910E-03
13	1.1943E+06	1.2500E-01	4.5437E-02	1.5422E-02	8.8504E-01	2.0292E-05	4.1865E-03
14	1.0540E+06	1.2500E-01	4.1101E-02	1.2033E-02	8.7953E-01	2.9033E-05	4.5976E-03
15	9.3014E+05	1.2500E-01	3.6797E-02	2.0354E-02	8.6956E-01	3.9969E-05	4.8294E-03
16	8.2085E+05	1.2500E-01	3.2674E-02	2.8311E-02	8.6537E-01	5.4850E-05	4.9859E-03
17	7.2440E+05	1.2500E-01	2.8699E-02	3.1398E-02	8.6026E-01	7.9995E-05	4.8912E-03
18	6.3928E+05	1.2500E-01	2.5133E-02	3.3980E-02	8.5693E-01	1.0732E-04	4.4351E-03
19	5.6416E+05	1.2500E-01	2.1850E-02	3.3994E-02	8.5520E-01	1.2649E-04	3.9049E-03
20	4.9787E+05	1.2500E-01	1.8870E-02	2.1950E-02	8.5219E-01	1.4168E-04	3.4254E-03
21	4.3937E+05	1.2500E-01	1.6204E-02	1.7431E-02	8.4565E-01	1.4768E-04	2.9795E-03
22	3.8774E+05	2.5000E-01	2.5711E-02	5.1822E-02	8.3479E-01	3.3959E-04	2.6088E-03
23	3.0197E+05	2.5000E-01	1.8584E-02	5.9058E-02	8.1922E-01	3.2909E-04	1.9872E-03
24	2.3518E+05	2.5000E-01	1.3310E-02	5.7149E-02	8.0446E-01	3.0051E-04	1.5088E-03
25	1.8316E+05	2.5000E-01	9.4510E-03	5.1128E-02	7.8895E-01	2.6148E-04	1.2168E-03
26	1.4264E+05	2.5000E-01	6.6713E-03	5.4950E-02	7.7412E-01	2.7166E-04	1.0312E-03
27	1.1109E+05	2.5000E-01	4.6784E-03	4.7456E-02	7.5692E-01	2.4919E-04	8.6162E-04
28	8.6517E+04	2.5000E-01	3.2555E-03	4.9559E-02	7.4117E-01	2.7977E-04	7.5287E-04
29	6.7379E+04	2.5000E-01	2.2460E-03	4.4052E-02	7.2481E-01	2.8143E-04	6.7360E-04
30	5.2475E+04	2.5000E-01	1.5462E-03	4.1125E-02	7.1032E-01	2.6229E-04	5.7347E-04
31	4.0868E+04	2.5000E-01	1.0635E-03	3.5266E-02	7.0303E-01	2.3404E-04	4.7969E-04
32	3.1828E+04	1.2500E-01	3.9966E-04	9.0020E-03	7.0000E-01	3.5279E-05	4.0613E-04
33	2.8088E+04	1.2500E-01	3.3128E-04	1.9061E-02	6.9739E-01	7.5737E-05	4.1560E-04
34	2.4787E+04	1.2500E-01	2.7457E-04	1.5590E-02	6.9766E-01	6.9904E-05	4.1800E-04
35	2.1875E+04	1.2500E-01	2.2756E-04	1.4225E-02	7.0120E-01	5.4668E-05	3.8708E-04
36	1.9304E+04	1.2500E-01	1.8857E-04	1.2353E-02	7.0352E-01	4.0248E-05	3.5999E-04
37	1.7036E+04	1.2500E-01	1.5627E-04	9.5769E-03	7.0670E-01	2.6887E-05	3.3680E-04
38	1.5034E+04	1.2500E-01	1.2949E-04	1.0444E-02	7.0984E-01	2.2829E-05	3.4933E-04
39	1.3268E+04	1.2500E-01	1.0729E-04	8.9268E-03	7.1711E-01	1.7391E-05	3.5008E-04
40	1.1709E+04	1.2497E-01	8.8879E-05	8.6898E-03	7.2405E-01	1.5340E-05	3.6265E-04
41	1.0333E+04	1.2503E-01	7.3679E-05	7.4458E-03	7.3308E-01	1.1710E-05	3.6808E-04
42	9.1188E+03	1.2500E-01	6.1030E-05	5.5006E-03	7.4378E-01	7.2410E-06	3.6474E-04
43	8.0473E+03	1.2500E-01	5.0567E-05	5.2628E-03	7.4403E-01	5.5896E-06	3.6712E-04
44	7.1017E+03	1.2500E-01	4.1897E-05	5.1783E-03	7.4860E-01	5.1373E-06	3.8562E-04
45	6.2673E+03	1.2500E-01	3.4715E-05	4.3900E-03	7.6191E-01	3.9683E-06	3.9801E-04
46	5.5308E+03	1.2500E-01	2.8763E-05	4.2781E-03	7.7189E-01	3.3838E-06	4.1386E-04
47	4.8809E+03	1.2500E-01	2.3832E-05	3.6868E-03	7.8460E-01	2.7282E-06	4.2349E-04
48	4.3074E+03	1.2500E-01	1.9748E-05	3.2815E-03	7.9390E-01	2.0544E-06	4.1989E-04
49	3.8013E+03	1.2500E-01	1.6363E-05	3.1612E-03	8.0481E-01	1.9399E-06	4.4067E-04
50	3.3546E+03	1.2500E-01	1.3558E-05	2.7905E-03	8.1003E-01	1.5856E-06	4.4408E-04
51	2.9604E+03	1.2500E-01	1.1235E-05	2.3413E-03	8.2023E-01	1.0116E-06	4.8925E-04
52	2.6126E+03	1.2500E-01	9.3097E-06	1.9678E-03	8.2548E-01	7.9972E-07	5.8398E-04
53	2.3056E+03	1.2500E-01	7.7146E-06	1.7799E-03	8.4026E-01	7.2450E-07	6.2166E-04
54	2.0347E+03	1.2500E-01	6.3926E-06	1.5332E-03	8.7871E-01	7.0843E-07	7.1139E-04
55	1.7956E+03	1.2500E-01	5.2973E-06	1.3223E-03	8.9802E-01	8.0631E-07	7.2323E-04
56	1.5846E+03	1.2500E-01	4.3896E-06	1.1063E-03	9.4246E-01	5.5302E-07	7.2005E-04
57	1.3984E+03	1.2500E-01	3.6376E-06	9.6108E-04	9.8852E-01	6.1323E-07	7.8850E-04
58	1.2341E+03	1.2500E-01	3.0146E-06	7.1368E-04	9.3561E-01	3.2744E-07	6.5380E-04
59	1.0891E+03	1.2500E-01	2.4983E-06	6.1299E-04	1.0165E+00	2.6214E-07	7.6104E-04
60	9.6112E+02	2.5000E-01	3.7866E-06	9.2101E-04	9.9706E-01	4.5501E-07	8.1699E-04
61	7.4852E+02	2.5000E-01	2.6008E-06	6.0889E-04	1.0466E+00	2.4941E-07	8.9981E-04
62	5.8295E+02	2.5000E-01	1.7864E-06	3.5773E-04	1.1869E+00	1.4826E-07	1.0620E-03
63	4.5400E+02	2.5000E-01	1.2270E-06	2.2039E-04	1.1047E+00	6.1879E-08	9.5377E-04
64	3.5357E+02	2.5000E-01	8.4295E-07	1.3572E-04	1.1109E+00	4.4551E-08	1.0146E-03
65	2.7536E+02	2.5000E-01	5.7905E-07	6.7924E-05	1.1742E+00	2.3202E-08	1.0667E-03
66	2.1445E+02	2.5000E-01	3.9774E-07	3.5502E-05	1.2020E+00	1.2623E-08	1.0026E-03
67	1.6702E+02	2.5000E-01	2.7328E-07	1.8307E-05	1.1812E+00	6.0857E-09	1.0506E-03
68	1.3007E+02	2.5000E-01	1.8772E-07	8.5800E-06	1.2116E+00	1.5530E-09	8.0430E-04
69	1.0130E+02	5.0000E-01	2.1762E-07	5.2978E-06	1.5299E+00	3.8774E-10	1.8672E-03
70	6.1442E+01	1.7500E+00	1.9471E-07	1.9449E-06	1.5395E+00	1.0179E-09	2.6505E-03
	1.0677E+01		1.0000E+00	1.0000E+00		4.0539E-03	

TABLE B-LXXV

SNEAK-7B 70-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.9315E-01	7.6603E-06	5.2132E-06
2	1.6487E+07	2.5000E-01	1.4282E-04	1.0754E-04
3	1.2840E+07	2.5000E-01	1.2893E-03	1.0440E-03
4	1.0000E+07	2.5000E-01	6.4595E-03	5.5314E-03
5	7.7880E+06	2.5000E-01	2.0408E-02	1.8247E-02
6	6.0653E+06	2.5000E-01	4.5041E-02	4.1628E-02
7	4.7237E+06	2.5000E-01	7.5337E-02	7.1418E-02
8	3.6788E+06	2.5000E-01	1.0185E-01	9.8430E-02
9	2.8650E+06	2.5000E-01	1.1703E-01	1.1482E-01
10	2.2313E+06	2.5000E-01	1.1887E-01	1.1806E-01
11	1.7377E+06	2.5000E-01	1.0995E-01	1.1029E-01
12	1.3533E+06	1.2500E-01	4.9515E-02	5.0018E-02
13	1.1943E+06	1.2500E-01	4.5365E-02	4.6141E-02
14	1.0540E+06	1.2500E-01	4.1015E-02	4.1935E-02
15	9.3014E+05	1.2500E-01	3.6705E-02	3.7693E-02
16	8.2085E+05	1.2500E-01	3.2572E-02	3.3675E-02
17	7.2440E+05	1.2500E-01	2.8603E-02	2.9642E-02
18	6.3928E+05	1.2500E-01	2.5027E-02	2.6170E-02
19	5.6416E+05	1.2500E-01	2.1745E-02	2.2883E-02
20	4.9787E+05	1.2500E-01	1.8768E-02	1.9861E-02
21	4.3937E+05	1.2500E-01	1.6112E-02	1.7097E-02
22	3.8774E+05	2.5000E-01	2.5556E-02	2.7218E-02
23	3.0197E+05	2.5000E-01	1.8459E-02	1.9801E-02
24	2.3518E+05	2.5000E-01	1.3206E-02	1.4322E-02
25	1.8316E+05	2.5000E-01	9.3680E-03	1.0263E-02
26	1.4264E+05	2.5000E-01	6.6070E-03	7.2998E-03
27	1.1109E+05	2.5000E-01	4.6321E-03	5.1310E-03
28	8.6517E+04	2.5000E-01	3.2244E-03	3.5603E-03
29	6.7379E+04	2.5000E-01	2.2263E-03	2.4382E-03
30	5.2475E+04	2.5000E-01	1.5340E-03	1.6662E-03
31	4.0868E+04	2.5000E-01	1.0558E-03	1.1385E-03
32	3.1828E+04	1.2500E-01	3.9697E-04	4.2590E-04
33	2.8088E+04	1.2500E-01	3.2915E-04	3.5207E-04
34	2.4787E+04	1.2500E-01	2.7289E-04	2.9106E-04
35	2.1875E+04	1.2500E-01	2.2622E-04	2.4064E-04
36	1.9304E+04	1.2500E-01	1.8751E-04	1.9896E-04
37	1.7036E+04	1.2500E-01	1.5542E-04	1.6452E-04
38	1.5034E+04	1.2500E-01	1.2882E-04	1.3605E-04
39	1.3268E+04	1.2500E-01	1.0676E-04	1.1251E-04
40	1.1709E+04	1.2497E-01	8.8454E-05	9.3037E-05
41	1.0333E+04	1.2503E-01	7.3340E-05	7.6995E-05
42	9.1188E+03	1.2500E-01	6.0760E-05	6.3676E-05
43	8.0473E+03	1.2500E-01	5.0351E-05	5.2680E-05
44	7.1017E+03	1.2500E-01	4.1725E-05	4.3586E-05
45	6.2673E+03	1.2500E-01	3.4577E-05	3.6066E-05
46	5.5308E+03	1.2500E-01	2.8653E-05	2.9845E-05
47	4.8809E+03	1.2500E-01	2.3744E-05	2.4700E-05
48	4.3074E+03	1.2500E-01	1.9677E-05	2.0443E-05
49	3.8013E+03	1.2500E-01	1.6305E-05	1.6921E-05
50	3.3546E+03	1.2500E-01	1.3512E-05	1.4007E-05
51	2.9604E+03	1.2500E-01	1.1198E-05	1.1596E-05
52	2.6126E+03	1.2500E-01	9.2799E-06	9.6007E-06
53	2.3056E+03	1.2500E-01	7.6906E-06	7.9492E-06
54	2.0347E+03	1.2500E-01	6.3733E-06	6.5815E-06
55	1.7956E+03	1.2500E-01	5.2818E-06	5.4490E-06
56	1.5846E+03	1.2500E-01	4.3771E-06	4.5116E-06
57	1.3984E+03	1.2500E-01	3.6277E-06	3.7350E-06
58	1.2341E+03	1.2500E-01	3.0065E-06	3.0934E-06
59	1.0891E+03	1.2500E-01	2.4918E-06	2.5622E-06
60	9.6112E+02	2.5000E-01	3.7769E-06	3.8811E-06
61	7.4852E+02	2.5000E-01	2.5945E-06	2.6627E-06
62	5.8295E+02	2.5000E-01	1.7823E-06	1.8267E-06
63	4.5400E+02	2.5000E-01	1.2244E-06	1.2529E-06
64	3.5557E+02	2.5000E-01	8.4119E-07	8.6014E-07
65	2.7536E+02	2.5000E-01	5.7792E-07	5.9010E-07
66	2.1445E+02	2.5000E-01	3.9704E-07	4.0463E-07
67	1.6702E+02	2.5000E-01	2.7281E-07	2.7789E-07
68	1.3007E+02	2.5000E-01	1.8743E-07	1.9061E-07
69	1.0130E+02	5.0000E-01	2.1729E-07	2.2085E-07
70	6.1442E+01	1.7500E+00	1.9444E-07	1.9742E-07
			1.0000E+00	1.0000E+00

TABLE B-LXXVI

SNEAK-7B 25-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Ad joint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Ad joint (rho/n/s)
1	2.0000E+07	1.1931E+00	2.7994E-02	3.6546E-03	3.2143E+00	3.0812E-06	3.8372E-02
2	6.0653E+06	5.0000E-01	1.1970E-01	1.6352E-02	8.4388E-01	1.2613E-05	7.0967E-03
3	3.6788E+06	5.0000E-01	2.1836E-01	4.1030E-02	8.2191E-01	2.5316E-05	5.8928E-03
4	2.2313E+06	5.0000E-01	2.2877E-01	4.9835E-02	7.5028E-01	3.5881E-05	4.7226E-03
5	1.3533E+06	5.0000E-01	1.7290E-01	6.2936E-02	1.3035E+00	1.0372E-04	6.5665E-03
6	8.2085E+05	5.0000E-01	1.0836E-01	1.2768E-01	1.2679E+00	3.6865E-04	6.7187E-03
7	4.9787E+05	5.0000E-01	6.0784E-02	9.1204E-02	9.3406E-01	6.2895E-04	3.3244E-03
8	3.0197E+05	5.0000E-01	3.1893E-02	1.1621E-01	5.9883E-01	6.2960E-04	1.2894E-03
9	1.8316E+05	5.0000E-01	1.6122E-02	1.0608E-01	5.7648E-01	5.3313E-04	8.2907E-04
10	1.1109E+05	5.0000E-01	7.9339E-03	9.7015E-02	5.5251E-01	5.2895E-04	5.9544E-04
11	6.7379E+04	5.0000E-01	3.7922E-03	8.5177E-02	5.2929E-01	5.4371E-04	4.5993E-04
12	4.0868E+04	5.0000E-01	1.7944E-03	6.3328E-02	7.7466E-01	3.4507E-04	4.7998E-04
13	2.4787E+04	5.0000E-01	8.4697E-04	5.1745E-02	1.0360E+00	1.8751E-04	5.5391E-04
14	1.5034E+04	5.0000E-01	3.9933E-04	3.5506E-02	1.0637E+00	6.7269E-05	5.2745E-04
15	9.1188E+03	5.0000E-01	1.8821E-04	2.0332E-02	1.1058E+00	2.1936E-05	5.5893E-04
16	5.5308E+03	5.0000E-01	8.8706E-05	1.4408E-02	1.1637E+00	1.0106E-05	6.2614E-04
17	3.3546E+03	5.0000E-01	4.1817E-05	8.8795E-03	1.2156E+00	4.1214E-06	7.8888E-04
18	2.0347E+03	5.0000E-01	1.9717E-05	4.9227E-03	1.3674E+00	2.6810E-06	1.0855E-03
19	1.2341E+03	5.0000E-01	9.2995E-06	2.2477E-03	1.0877E+00	1.0446E-06	8.2312E-04
20	7.4852E+02	5.0000E-01	4.3872E-06	9.6663E-04	8.2373E-01	3.9767E-07	7.2354E-04
21	4.5400E+02	5.0000E-01	2.0700E-06	3.5612E-04	8.1714E-01	1.0643E-07	7.2597E-04
22	2.7536E+02	5.0000E-01	9.7679E-07	1.0343E-04	8.7638E-01	3.5826E-08	7.6319E-04
23	1.6702E+02	5.0000E-01	4.6100E-07	2.6887E-05	8.8250E-01	7.6387E-09	6.8411E-04
24	1.0130E+02	5.0000E-01	2.1762E-07	5.2978E-06	5.6425E-01	3.8774E-10	6.8863E-04
25	6.1442E+01	1.7500E+00	1.9471E-07	1.9449E-06	5.6777E-01	1.0179E-09	9.7753E-04
	1.0677E+01		1.0000E+00	1.0000E+00		4.0539E-03	

TABLE B-LXXVII

SNEAK-7B 25-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Reflector
1	2.0000E+07	1.1931E+00	2.8307E-02	2.4935E-02
2	6.0653E+06	5.0000E-01	1.2038E-01	1.1305E-01
3	3.6788E+06	5.0000E-01	2.1888E-01	2.1325E-01
4	2.2313E+06	5.0000E-01	2.2882E-01	2.2835E-01
5	1.3533E+06	5.0000E-01	1.7260E-01	1.7579E-01
6	8.2085E+05	5.0000E-01	1.0795E-01	1.1237E-01
7	4.9787E+05	5.0000E-01	6.0437E-02	6.4176E-02
8	3.0197E+05	5.0000E-01	3.1665E-02	3.4123E-02
9	1.8316E+05	5.0000E-01	1.5975E-02	1.7563E-02
10	1.1109E+05	5.0000E-01	7.8565E-03	8.6913E-03
11	6.7379E+04	5.0000E-01	3.7603E-03	4.1044E-03
12	4.0868E+04	5.0000E-01	1.7819E-03	1.9165E-03
13	2.4787E+04	5.0000E-01	8.4204E-04	8.9517E-04
14	1.5034E+04	5.0000E-01	3.9736E-04	4.1859E-04
15	9.1188E+03	5.0000E-01	1.8741E-04	1.9601E-04
16	5.5308E+03	5.0000E-01	8.8379E-05	9.1910E-05
17	3.3546E+03	5.0000E-01	4.1681E-05	4.3153E-05
18	2.0347E+03	5.0000E-01	1.9660E-05	2.0277E-05
19	1.2341E+03	5.0000E-01	9.2753E-06	9.5367E-06
20	7.4852E+02	5.0000E-01	4.3768E-06	4.4894E-06
21	4.5400E+02	5.0000E-01	2.0656E-06	2.1130E-06
22	2.7536E+02	5.0000E-01	9.7496E-07	9.9474E-07
23	1.6702E+02	5.0000E-01	4.6024E-07	4.6849E-07
24	1.0130E+02	5.0000E-01	2.1729E-07	2.2085E-07
25	6.1442E+01	1.7500E+00	1.9444E-07	1.9742E-07
			1.0000E+00	1.0000E+00

TABLE B-LXXVIII

ZPR-9-31 70-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux ($n/cm^2/s$)	Central Ad joint ($rho/n/s$)	Edge Flux ($n/cm^2/s$)	Edge Ad joint ($rho/n/s$)
1	2.0000E+07	1.9315E-01	8.0380E-06	8.9173E-07	2.1685E+00	8.5332E-10	1.9209E-02
2	1.6487E+07	2.5000E-01	1.4642E-04	1.6972E-05	1.9201E+00	1.4701E-08	1.5442E-02
3	1.2840E+07	2.5000E-01	1.3079E-03	1.3834E-04	1.6075E+00	8.7600E-08	1.1856E-02
4	1.0000E+07	2.5000E-01	6.5163E-03	7.2794E-04	1.5027E+00	4.5420E-07	1.1270E-02
5	7.7880E+06	2.5000E-01	2.0522E-02	2.3126E-03	1.3379E+00	1.2015E-06	1.0559E-02
6	6.0653E+06	2.5000E-01	4.5201E-02	5.2716E-03	1.1577E+00	2.2879E-06	9.8093E-03
7	4.7237E+06	2.5000E-01	7.5504E-02	8.9883E-03	1.1260E+00	3.3562E-06	9.4882E-03
8	3.6788E+06	2.5000E-01	1.0197E-01	1.3232E-02	1.1182E+00	5.6959E-06	9.6600E-03
9	2.8650E+06	2.5000E-01	1.1710E-01	1.9289E-02	1.0998E+00	1.2772E-05	9.8970E-03
10	2.2313E+06	2.5000E-01	1.1887E-01	2.3479E-02	1.0539E+00	2.2251E-05	9.5951E-03
11	1.7377E+06	2.5000E-01	1.0990E-01	2.8180E-02	9.8201E-01	3.6344E-05	9.1336E-03
12	1.3533E+06	1.2500E-01	4.9479E-02	1.6082E-02	9.0167E-01	3.0279E-05	8.5353E-03
13	1.1943E+06	1.2500E-01	4.5324E-02	1.7576E-02	8.8483E-01	4.8437E-05	8.8032E-03
14	1.0540E+06	1.2500E-01	4.0969E-02	1.9738E-02	8.8004E-01	6.5022E-05	9.0697E-03
15	9.3014E+05	1.2500E-01	3.6655E-02	2.1004E-02	8.7976E-01	7.7305E-05	9.3125E-03
16	8.2085E+05	1.2500E-01	3.2521E-02	2.1202E-02	8.7817E-01	6.6608E-05	8.7619E-03
17	7.2440E+05	1.2500E-01	2.8556E-02	2.4149E-02	8.7223E-01	1.2515E-04	9.4769E-03
18	6.3928E+05	1.2500E-01	2.4982E-02	2.8223E-02	8.6495E-01	1.8810E-04	9.1256E-03
19	5.6416E+05	1.2500E-01	2.1701E-02	3.1351E-02	8.6020E-01	1.5244E-04	7.4217E-03
20	4.9787E+05	1.2500E-01	1.8729E-02	3.0514E-02	8.5429E-01	1.5397E-04	6.6306E-03
21	4.3937E+05	1.2500E-01	1.6076E-02	2.8578E-02	8.4676E-01	1.1579E-04	6.2300E-03
22	3.8774E+05	2.5000E-01	2.5499E-02	6.6617E-02	8.3572E-01	5.9066E-04	7.0939E-03
23	3.0197E+05	2.5000E-01	1.8414E-02	6.0429E-02	8.1989E-01	4.9738E-04	5.6774E-03
24	2.3518E+05	2.5000E-01	1.3173E-02	5.5414E-02	8.0549E-01	3.6577E-04	4.3884E-03
25	1.8316E+05	2.5000E-01	9.3394E-03	5.0533E-02	7.8860E-01	2.1911E-04	4.0167E-03
26	1.4264E+05	2.5000E-01	6.5882E-03	5.4897E-02	7.7323E-01	5.5593E-04	4.2404E-03
27	1.1109E+05	2.5000E-01	4.6183E-03	4.7214E-02	7.5537E-01	3.0591E-04	3.1221E-03
28	8.6517E+04	2.5000E-01	3.2151E-03	4.8772E-02	7.3834E-01	5.3238E-04	3.5116E-03
29	6.7379E+04	2.5000E-01	2.2201E-03	3.3688E-02	7.2125E-01	3.7044E-04	3.8276E-03
30	5.2475E+04	2.5000E-01	1.5298E-03	3.8845E-02	7.0864E-01	3.1355E-04	2.5435E-03
31	4.0868E+04	2.5000E-01	1.0531E-03	3.5878E-02	7.0064E-01	3.1082E-04	2.4611E-03
32	3.1828E+04	1.2500E-01	3.9596E-04	7.1295E-03	6.9820E-01	1.5825E-05	2.9592E-03
33	2.8088E+04	1.2500E-01	3.2833E-04	1.9167E-02	6.9606E-01	6.5618E-04	3.1756E-03
34	2.4787E+04	1.2500E-01	2.7222E-04	1.5867E-02	6.9697E-01	3.9374E-04	3.2336E-03
35	2.1875E+04	1.2500E-01	2.2567E-04	1.3838E-02	7.0136E-01	2.7333E-04	2.6667E-03
36	1.9304E+04	1.2500E-01	1.8706E-04	1.2130E-02	7.0366E-01	1.8279E-04	2.2724E-03
37	1.7036E+04	1.2500E-01	1.5505E-04	9.1010E-03	7.0721E-01	7.4802E-05	1.9531E-03
38	1.5034E+04	1.2500E-01	1.2852E-04	1.0311E-02	7.1015E-01	1.0381E-04	2.0399E-03
39	1.3268E+04	1.2500E-01	1.0651E-04	8.8122E-03	7.1786E-01	8.3796E-05	1.9751E-03
40	1.1709E+04	1.2497E-01	8.8252E-05	8.6215E-03	7.2436E-01	1.1002E-04	1.9922E-03
41	1.0333E+04	1.2503E-01	7.3175E-05	7.2404E-03	7.3354E-01	8.6821E-05	1.8203E-03
42	9.1188E+03	1.2500E-01	6.0625E-05	5.1969E-03	7.4386E-01	4.3819E-05	1.6417E-03
43	8.0473E+03	1.2500E-01	5.0240E-05	4.8125E-03	7.4463E-01	2.9860E-05	1.6460E-03
44	7.1017E+03	1.2500E-01	4.1634E-05	5.0670E-03	7.5012E-01	4.2585E-05	1.7020E-03
45	6.2673E+03	1.2500E-01	3.4502E-05	4.2859E-03	7.6273E-01	3.9308E-05	1.7182E-03
46	5.5308E+03	1.2500E-01	2.8591E-05	4.0562E-03	7.7259E-01	4.6065E-05	1.7389E-03
47	4.8809E+03	1.2500E-01	2.3693E-05	3.3213E-03	7.8468E-01	4.2757E-05	1.7338E-03
48	4.3074E+03	1.2500E-01	1.9635E-05	2.6264E-03	7.9377E-01	3.8165E-05	1.7447E-03
49	3.8013E+03	1.2500E-01	1.6271E-05	1.8794E-03	8.0281E-01	4.9451E-05	1.7859E-03
50	3.3546E+03	1.2500E-01	1.3484E-05	8.5670E-04	8.0816E-01	5.6370E-05	1.7852E-03
51	2.9604E+03	1.2500E-01	1.1175E-05	2.9089E-04	8.1279E-01	5.1446E-05	1.7387E-03
52	2.6126E+03	1.2500E-01	9.2610E-06	1.0236E-03	8.1448E-01	3.1038E-05	1.7006E-03
53	2.3056E+03	1.2500E-01	7.6750E-06	2.1154E-03	8.2232E-01	3.9954E-05	1.7539E-03
54	2.0347E+03	1.2500E-01	6.3604E-06	2.6481E-03	8.4384E-01	5.4900E-05	1.8126E-03
55	1.7956E+03	1.2500E-01	5.2712E-06	2.6970E-03	8.5618E-01	6.0461E-05	1.8126E-03
56	1.5846E+03	1.2500E-01	4.3683E-06	2.4666E-03	8.9884E-01	6.1382E-05	1.8647E-03
57	1.3984E+03	1.2500E-01	3.6204E-06	2.2794E-03	9.3406E-01	6.5567E-05	1.8285E-03
58	1.2341E+03	1.2500E-01	3.0005E-06	1.5774E-03	8.8364E-01	4.1566E-05	1.7769E-03
59	1.0891E+03	1.2500E-01	2.4868E-06	1.5693E-03	9.6651E-01	4.9602E-05	1.9429E-03
60	9.6112E+02	2.5000E-01	3.7694E-06	2.4323E-03	9.4140E-01	1.0286E-04	1.9504E-03
61	7.4852E+02	2.5000E-01	2.5894E-06	1.7010E-03	9.7773E-01	9.6323E-05	1.8725E-03
62	5.8295E+02	2.5000E-01	1.7788E-06	1.0436E-03	1.1061E+00	9.5346E-05	1.7904E-03
63	4.5400E+02	2.5000E-01	1.2219E-06	6.0309E-04	1.0164E+00	5.7954E-05	1.6880E-03
64	3.5357E+02	2.5000E-01	8.3952E-07	4.0846E-04	1.0293E+00	5.0796E-05	1.6786E-03
65	2.7536E+02	2.5000E-01	5.7676E-07	2.2908E-04	1.1367E+00	6.3730E-05	1.9713E-03
66	2.1445E+02	2.5000E-01	3.9622E-07	1.2960E-04	1.1697E+00	6.4517E-05	1.9700E-03
67	1.6702E+02	2.5000E-01	2.7225E-07	6.7368E-05	1.1345E+00	6.1141E-05	1.9280E-03
68	1.3007E+02	2.5000E-01	1.8705E-07	3.3641E-05	1.1981E+00	6.0149E-05	1.8954E-03
69	1.0130E+02	5.0000E-01	2.1685E-07	1.7688E-05	1.5074E+00	4.5299E-05	1.8507E-03
70	6.1442E+01	1.7500E+00	1.9406E-07	6.1417E-06	1.4707E+00	5.6811E-04	1.8198E-03
	1.0677E+01		1.0000E+00	1.0000E+00		8.8611E-03	

TABLE B-LXXIX

ZPR-9-31 70-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Blanket	Reflector
1	2.0000E+07	1.9315E-01	8.1574E-06	5.0825E-06	0.0000E+00
2	1.6487E+07	2.5000E-01	1.4807E-04	1.0562E-04	0.0000E+00
3	1.2840E+07	2.5000E-01	1.3191E-03	1.0310E-03	0.0000E+00
4	1.0000E+07	2.5000E-01	6.5580E-03	5.4852E-03	0.0000E+00
5	7.7880E+06	2.5000E-01	2.0618E-02	1.8150E-02	0.0000E+00
6	6.0653E+06	2.5000E-01	4.5350E-02	4.1503E-02	0.0000E+00
7	4.7237E+06	2.5000E-01	7.5673E-02	7.1320E-02	0.0000E+00
8	3.6788E+06	2.5000E-01	1.0212E-01	9.8408E-02	0.0000E+00
9	2.8650E+06	2.5000E-01	1.1719E-01	1.1488E-01	0.0000E+00
10	2.2313E+06	2.5000E-01	1.1890E-01	1.1814E-01	0.0000E+00
11	1.7377E+06	2.5000E-01	1.0988E-01	1.1036E-01	0.0000E+00
12	1.3533E+06	1.2500E-01	4.9456E-02	5.0044E-02	0.0000E+00
13	1.1943E+06	1.2500E-01	4.5290E-02	4.6163E-02	0.0000E+00
14	1.0540E+06	1.2500E-01	4.0929E-02	4.1950E-02	0.0000E+00
15	9.3014E+05	1.2500E-01	3.6612E-02	3.7705E-02	0.0000E+00
16	8.2085E+05	1.2500E-01	3.2474E-02	3.3683E-02	0.0000E+00
17	7.2440E+05	1.2500E-01	2.8512E-02	2.9647E-02	0.0000E+00
18	6.3928E+05	1.2500E-01	2.4934E-02	2.6176E-02	0.0000E+00
19	5.6416E+05	1.2500E-01	2.1653E-02	2.2889E-02	0.0000E+00
20	4.9787E+05	1.2500E-01	1.8683E-02	1.9867E-02	0.0000E+00
21	4.3937E+05	1.2500E-01	1.6034E-02	1.7102E-02	0.0000E+00
22	3.8774E+05	2.5000E-01	2.5429E-02	2.7229E-02	0.0000E+00
23	3.0197E+05	2.5000E-01	1.8358E-02	1.9813E-02	0.0000E+00
24	2.3518E+05	2.5000E-01	1.3126E-02	1.4335E-02	0.0000E+00
25	1.8316E+05	2.5000E-01	9.3016E-03	1.0274E-02	0.0000E+00
26	1.4264E+05	2.5000E-01	6.5590E-03	7.3105E-03	0.0000E+00
27	1.1109E+05	2.5000E-01	4.5972E-03	5.1398E-03	0.0000E+00
28	8.6517E+04	2.5000E-01	3.2008E-03	3.5669E-03	0.0000E+00
29	6.7379E+04	2.5000E-01	2.2111E-03	2.4429E-03	0.0000E+00
30	5.2475E+04	2.5000E-01	1.5242E-03	1.6695E-03	0.0000E+00
31	4.0868E+04	2.5000E-01	1.0495E-03	1.1408E-03	0.0000E+00
32	3.1828E+04	1.2500E-01	3.9472E-04	4.2677E-04	0.0000E+00
33	2.8088E+04	1.2500E-01	3.2734E-04	3.5280E-04	0.0000E+00
34	2.4787E+04	1.2500E-01	2.7143E-04	2.9167E-04	0.0000E+00
35	2.1875E+04	1.2500E-01	2.2505E-04	2.4115E-04	0.0000E+00
36	1.9304E+04	1.2500E-01	1.8656E-04	1.9939E-04	0.0000E+00
37	1.7036E+04	1.2500E-01	1.5466E-04	1.6488E-04	0.0000E+00
38	1.5034E+04	1.2500E-01	1.2820E-04	1.3635E-04	0.0000E+00
39	1.3268E+04	1.2500E-01	1.0626E-04	1.1276E-04	0.0000E+00
40	1.1709E+04	1.2497E-01	8.8051E-05	9.3247E-05	0.0000E+00
41	1.0333E+04	1.2503E-01	7.3013E-05	7.7171E-05	0.0000E+00
42	9.1188E+03	1.2500E-01	6.0495E-05	6.3822E-05	0.0000E+00
43	8.0473E+03	1.2500E-01	5.0137E-05	5.2802E-05	0.0000E+00
44	7.1017E+03	1.2500E-01	4.1551E-05	4.3688E-05	0.0000E+00
45	6.2673E+03	1.2500E-01	3.4436E-05	3.6151E-05	0.0000E+00
46	5.5308E+03	1.2500E-01	2.8538E-05	2.9916E-05	0.0000E+00
47	4.8809E+03	1.2500E-01	2.3650E-05	2.4758E-05	0.0000E+00
48	4.3074E+03	1.2500E-01	1.9600E-05	2.0492E-05	0.0000E+00
49	3.8013E+03	1.2500E-01	1.6244E-05	1.6962E-05	0.0000E+00
50	3.3546E+03	1.2500E-01	1.3462E-05	1.4041E-05	0.0000E+00
51	2.9604E+03	1.2500E-01	1.1157E-05	1.1624E-05	0.0000E+00
52	2.6126E+03	1.2500E-01	9.2463E-06	9.6242E-06	0.0000E+00
53	2.3056E+03	1.2500E-01	7.6631E-06	7.9687E-06	0.0000E+00
54	2.0347E+03	1.2500E-01	6.3508E-06	6.5978E-06	0.0000E+00
55	1.7956E+03	1.2500E-01	5.2634E-06	5.4626E-06	0.0000E+00
56	1.5846E+03	1.2500E-01	4.3621E-06	4.5229E-06	0.0000E+00
57	1.3984E+03	1.2500E-01	3.6154E-06	3.7444E-06	0.0000E+00
58	1.2341E+03	1.2500E-01	2.9964E-06	3.1012E-06	0.0000E+00
59	1.0891E+03	1.2500E-01	2.4835E-06	2.5687E-06	0.0000E+00
60	9.6112E+02	2.5000E-01	3.7645E-06	3.8910E-06	0.0000E+00
61	7.4852E+02	2.5000E-01	2.5861E-06	2.6695E-06	0.0000E+00
62	5.8295E+02	2.5000E-01	1.7767E-06	1.8314E-06	0.0000E+00
63	4.5407E+02	2.5000E-01	1.2206E-06	1.2561E-06	0.0000E+00
64	3.5357E+02	2.5000E-01	8.3860E-07	8.6238E-07	0.0000E+00
65	2.7536E+02	2.5000E-01	5.7616E-07	5.9165E-07	0.0000E+00
66	2.1445E+02	2.5000E-01	3.9584E-07	4.0570E-07	0.0000E+00
67	1.6702E+02	2.5000E-01	2.7199E-07	2.7862E-07	0.0000E+00
68	1.3007E+02	2.5000E-01	1.8688E-07	1.9121E-07	0.0000E+00
69	1.0130E+02	5.0000E-01	2.1666E-07	2.2156E-07	0.0000E+00
70	6.1442E+01	1.7500E+00	1.9390E-07	1.9805E-07	0.0000E+00
			1.0000E+00	1.0000E+00	1.0000E+00

TABLE B-LXXX

ZPR-9-31 25-GROUP TRANSPORT THEORY SPECTRA

Group	Energy Boundary (eV)	Lethargy Width	Reactor Fission Fractions	Central Flux (n/cm ² /s)	Central Adjoint (rho/n/s)	Edge Flux (n/cm ² /s)	Edge Adjoint (rho/n/s)
1	2.0000E+07	1.1931E+00	2.8500E-02	3.1968E-03	3.1480E+00	1.7589E-06	2.5215E-02
2	6.0653E+06	5.0000E-01	1.2070E-01	1.4260E-02	8.4217E-01	5.6442E-06	7.1163E-03
3	3.6788E+06	5.0000E-01	2.1907E-01	3.2520E-02	8.1793E-01	1.8468E-05	7.2120E-03
4	2.2313E+06	5.0000E-01	2.2877E-01	5.1660E-02	7.5077E-01	5.8596E-05	6.9066E-03
5	1.3533E+06	5.0000E-01	1.7243E-01	7.4400E-02	1.3078E+00	2.2104E-04	1.3173E-02
6	8.2085E+05	5.0000E-01	1.0776E-01	1.0493E-01	1.2817E+00	5.3230E-04	1.2828E-02
7	4.9787E+05	5.0000E-01	6.0303E-02	1.2571E-01	9.3548E-01	8.6042E-04	7.3586E-03
8	3.0197E+05	5.0000E-01	3.1588E-02	1.1584E-01	5.9939E-01	8.6314E-04	3.7119E-03
9	1.8316E+05	5.0000E-01	1.5928E-02	1.0543E-01	5.7595E-01	7.7504E-04	3.0450E-03
10	1.1109E+05	5.0000E-01	7.8333E-03	9.5986E-02	5.5083E-01	8.3829E-04	2.4463E-03
11	6.7379E+04	5.0000E-01	3.7499E-03	7.2534E-02	5.2730E-01	6.8399E-04	1.9807E-03
12	4.0868E+04	5.0000E-01	1.7774E-03	6.2175E-02	7.7254E-01	5.8282E-04	3.1699E-03
13	2.4787E+04	5.0000E-01	8.4001E-04	5.0936E-02	1.0359E+00	9.2467E-04	3.7341E-03
14	1.5034E+04	5.0000E-01	3.9645E-04	3.4985E-02	1.0642E+00	3.8445E-04	2.8865E-03
15	9.1188E+03	5.0000E-01	1.8700E-04	1.9362E-02	1.1068E+00	1.5557E-04	2.4737E-03
16	5.5308E+03	5.0000E-01	8.8191E-05	1.1883E-02	1.1630E+00	1.7644E-04	2.5826E-03
17	3.3546E+03	5.0000E-01	4.1595E-05	4.2866E-03	1.2014E+00	1.7881E-04	2.5734E-03
18	2.0347E+03	5.0000E-01	1.9620E-05	1.0091E-02	1.3028E+00	2.4231E-04	2.6988E-03
19	1.2341E+03	5.0000E-01	9.2568E-06	5.5790E-03	1.0294E+00	1.9403E-04	2.0910E-03
20	7.4852E+02	5.0000E-01	4.3682E-06	2.7446E-03	7.6846E-01	1.9167E-04	1.3507E-03
21	4.5400E+02	5.0000E-01	2.0615E-06	1.0116E-03	7.5437E-01	1.0875E-04	1.2415E-03
22	2.7536E+02	5.0000E-01	9.7299E-07	3.5868E-04	8.5054E-01	1.2825E-04	1.4534E-03
23	1.6702E+02	5.0000E-01	4.5930E-07	1.0101E-04	8.6019E-01	1.2129E-04	1.4099E-03
24	1.0130E+02	5.0000E-01	2.1685E-07	1.7688E-05	5.5587E-01	4.5299E-05	6.8249E-04
25	6.1442E+01	1.7500E+00	1.9406E-07	6.1417E-06	5.4235E-01	5.6811E-04	6.7108E-04
	1.0677E+01		1.0000E+00	1.0000E+00		8.8611E-03	

TABLE B-LXXXI

ZPR-9-31 25-GROUP ZONE FISSION FRACTIONS

Group	Energy Boundary (eV)	Lethargy Width	Core	Blanket	Reflector
1	2.0000E+07	1.1931E+00	2.8651E-02	2.4777E-02	0.0000E+00
2	6.0653E+06	5.0000E-01	1.2102E-01	1.1282E-01	0.0000E+00
3	3.6788E+06	5.0000E-01	2.1930E-01	2.1328E-01	0.0000E+00
4	2.2313E+06	5.0000E-01	2.2878E-01	2.2850E-01	0.0000E+00
5	1.3533E+06	5.0000E-01	1.7229E-01	1.7586E-01	0.0000E+00
6	8.2085E+05	5.0000E-01	1.0757E-01	1.1239E-01	0.0000E+00
7	4.9787E+05	5.0000E-01	6.0146E-02	6.4199E-02	0.0000E+00
8	3.0197E+05	5.0000E-01	3.1484E-02	3.4148E-02	0.0000E+00
9	1.8316E+05	5.0000E-01	1.5861E-02	1.7585E-02	0.0000E+00
10	1.1109E+05	5.0000E-01	7.7980E-03	8.7067E-03	0.0000E+00
11	6.7379E+04	5.0000E-01	3.7353E-03	4.1123E-03	0.0000E+00
12	4.0868E+04	5.0000E-01	1.7716E-03	1.9204E-03	0.0000E+00
13	2.4787E+04	5.0000E-01	8.3770E-04	8.9709E-04	0.0000E+00
14	1.5034E+04	5.0000E-01	3.9552E-04	4.1953E-04	0.0000E+00
15	9.1188E+03	5.0000E-01	1.8662E-04	1.9646E-04	0.0000E+00
16	5.5308E+03	5.0000E-01	8.8032E-05	9.2129E-05	0.0000E+00
17	3.3546E+03	5.0000E-01	4.1528E-05	4.3259E-05	0.0000E+00
18	2.0347E+03	5.0000E-01	1.9592E-05	2.0328E-05	0.0000E+00
19	1.2341E+03	5.0000E-01	9.2445E-06	9.5608E-06	0.0000E+00
20	7.4852E+02	5.0000E-01	4.3628E-06	4.5009E-06	0.0000E+00
21	4.5400E+02	5.0000E-01	2.0591E-06	2.1185E-06	0.0000E+00
22	2.7536E+02	5.0000E-01	9.7200E-07	9.9735E-07	0.0000E+00
23	1.6702E+02	5.0000E-01	4.5887E-07	4.6983E-07	0.0000E+00
24	1.0130E+02	5.0000E-01	2.1666E-07	2.2156E-07	0.0000E+00
25	6.1442E+01	1.7500E+00	1.9390E-07	1.9805E-07	0.0000E+00
			1.0000E+00	1.0000E+00	1.0000E+00

TABLE B-LXXXII

JEZEBEL CENTRAL AVERAGE CROSS SECTIONS

<u>Material</u>	<u>Fission</u>	<u>Capture</u>	<u>Nu</u>	<u>Transport</u>
PU-239	1.75579E+00	5.77883E-02	3.15322E+00	5.45076E+00
PU-240	1.19034E+00	1.08830E-01	3.14921E+00	5.38819E+00
PU-241	1.62250E+00	1.05567E-01	3.14429E+00	5.45816E+00
GA	0.00000E+00	3.12996E-02	0.00000E+00	3.66128E+00
U-238	2.44328E-01	6.74352E-02	2.82424E+00	5.37163E+00
U-235	1.24699E+00	1.17241E-01	2.62634E+00	5.24713E+00
U-233	1.94137E+00	6.96737E-02	2.66345E+00	4.94977E+00
NP-237	1.18657E+00	2.40580E-01	3.03397E+00	5.68847E+00
V	0.00000E+00	2.22275E-03	0.00000E+00	3.00589E+00
MN-55	0.00000E+00	3.53936E-03	0.00000E+00	2.86744E+00
CU	0.00000E+00	1.04490E-02	0.00000E+00	2.85326E+00
NB-93	0.00000E+00	3.38166E-02	0.00000E+00	4.21483E+00
AU-197	0.00000E+00	9.86331E-02	0.00000E+00	4.62689E+00
H-1	0.00000E+00	4.56915E-05	0.00000E+00	1.37805E+00
BE-9	0.00000E+00	-6.66598E-02	0.00000E+00	2.30149E+00
B-10	0.00000E+00	5.54970E-01	0.00000E+00	2.39302E+00
C	0.00000E+00	1.69424E-03	0.00000E+00	2.21541E+00
N-14	0.00000E+00	1.03117E-01	0.00000E+00	1.86611E+00
O-16	0.00000E+00	7.51183E-03	0.00000E+00	2.66507E+00
AL-27	0.00000E+00	4.85717E-03	0.00000E+00	2.35737E+00
TI	0.00000E+00	5.62303E-03	0.00000E+00	2.40826E+00
FE	0.00000E+00	8.65849E-03	0.00000E+00	2.50076E+00
CO-59	0.00000E+00	8.27693E-03	0.00000E+00	2.83078E+00
NI	0.00000E+00	6.84930E-02	0.00000E+00	2.89721E+00
ZR	0.00000E+00	9.01648E-03	0.00000E+00	4.32266E+00
MO	0.00000E+00	2.97271E-02	0.00000E+00	4.44940E+00
AG-107	0.00000E+00	1.25732E-01	0.00000E+00	4.05161E+00
AG-109	0.00000E+00	1.37477E-01	0.00000E+00	4.03375E+00
TA-181	0.00000E+00	1.22270E-01	0.00000E+00	4.57687E+00
W-182	0.00000E+00	5.35738E-02	0.00000E+00	4.50621E+00
W-183	0.00000E+00	2.61822E-02	0.00000E+00	4.45531E+00
W-184	0.00000E+00	3.91364E-02	0.00000E+00	4.58672E+00
W-186	0.00000E+00	3.11573E-02	0.00000E+00	4.53192E+00
TH-232	6.04543E-02	9.12867E-02	2.44657E+00	5.42515E+00
AM-241	1.23896E+00	3.59570E-01	3.49327E+00	4.87800E+00

TABLE B-LXXXIII

VERA-11A CENTRAL AVERAGE CROSS SECTIONS

<u>Material</u>	<u>Fission</u>	<u>Capture</u>	<u>Nu</u>	<u>Transport</u>
PU-239	1.71928E+00	2.01883E-01	3.04024E+00	6.17036E+00
PU-240	7.86634E-01	2.62458E-01	3.09105E+00	6.15312E+00
PU-241	1.91695E+00	2.37307E-01	3.03959E+00	6.31646E+00
GA	0.00000E+00	6.18825E-02	0.00000E+00	4.03793E+00
C	0.00000E+00	9.34780E-04	0.00000E+00	2.45534E+00
FE	0.00000E+00	8.25224E-03	0.00000E+00	2.71630E+00
CR	0.00000E+00	1.38081E-02	0.00000E+00	3.13743E+00
NI	0.00000E+00	4.21170E-02	0.00000E+00	3.96431E+00
CU	0.00000E+00	2.80417E-02	0.00000E+00	3.33504E+00
U-235	1.45611E+00	2.83929E-01	2.52859E+00	6.09131E+00
U-238	1.33608E-01	1.65769E-01	2.78456E+00	6.25813E+00
PB	0.00000E+00	2.19881E-03	0.00000E+00	5.53425E+00
SN	0.00000E+00	6.45736E+00	0.00000E+00	1.16783E+01
NP-237	7.68953E-01	7.75870E-01	2.98287E+00	6.45385E+00
U-233	2.21245E+00	1.52223E-01	2.57467E+00	5.75548E+00

TABLE B-LXXXIV

ZPR-3-48 CENTRAL AVERAGE CROSS SECTIONS

<u>Material</u>	<u>Fission</u>	<u>Capture</u>	<u>Nu</u>	<u>Transport</u>
PU-239	1.80718E+00	4.41754E-01	2.96392E+00	7.77966E+00
PU-240	4.91651E-01	4.98879E-01	3.03829E+00	7.79011E+00
PU-241	2.40272E+00	4.19378E-01	2.98706E+00	8.20694E+00
PU-242	3.68703E-01	4.00203E-01	3.06501E+00	7.96877E+00
U-235	1.82655E+00	5.10485E-01	2.47719E+00	7.90715E+00
U-238	6.38961E-02	2.46220E-01	2.76930E+00	7.65875E+00
C	0.00000E+00	6.24690E-04	0.00000E+00	3.05270E+00
NA-23	0.00000E+00	1.84105E-03	0.00000E+00	3.29503E+00
FE	0.00000E+00	9.59616E-03	0.00000E+00	3.13121E+00
CR	0.00000E+00	1.83101E-02	0.00000E+00	3.78321E+00
NI	0.00000E+00	3.25974E-02	0.00000E+00	6.08352E+00
MO	0.00000E+00	1.26396E-01	0.00000E+00	6.15620E+00
AL-27	0.00000E+00	3.09935E-03	0.00000E+00	3.22264E+00
MN-55	0.00000E+00	5.67397E-02	0.00000E+00	6.72409E+00
SI	0.00000E+00	3.92852E-03	0.00000E+00	2.74257E+00
B-10	0.00000E+00	2.41718E+00	0.00000E+00	3.93330E+00
TA-181	0.00000E+00	7.89477E-01	0.00000E+00	6.35499E+00

TABLE B-LXXXV

ZEBRA-3 CENTRAL AVERAGE CROSS SECTIONS

<u>Material</u>	<u>Fission</u>	<u>Capture</u>	<u>Nu</u>	<u>Transport</u>
PU-239	1.63351E+00	1.69067E-01	2.98644E+00	6.83148E+00
PU-240	5.52264E-01	2.31504E-01	3.03350E+00	6.75410E+00
PU-241	1.80423E+00	2.13927E-01	3.00201E+00	7.10042E+00
U-235	1.36022E+00	2.65201E-01	2.49974E+00	6.79055E+00
U-238	6.45435E-02	1.42383E-01	2.79231E+00	6.85737E+00
CU	0.00000E+00	2.16539E-02	0.00000E+00	3.81693E+00
FE	0.00000E+00	7.69080E-03	0.00000E+00	2.99485E+00
C	0.00000E+00	8.84478E-04	0.00000E+00	2.93999E+00
CR	0.00000E+00	1.07012E-02	0.00000E+00	3.30288E+00
MO	0.00000E+00	5.73911E-02	0.00000E+00	5.95421E+00
MN-55	0.00000E+00	7.83098E-03	0.00000E+00	3.89083E+00
NI	0.00000E+00	2.64248E-02	0.00000E+00	4.14205E+00
AL-27	0.00000E+00	2.28799E-03	0.00000E+00	3.27662E+00
TI	0.00000E+00	7.04830E-03	0.00000E+00	3.22674E+00
SI	0.00000E+00	4.24768E-03	0.00000E+00	3.02764E+00
V	0.00000E+00	4.82935E-03	0.00000E+00	4.14895E+00
U-233	2.11973E+00	1.58079E-01	2.54157E+00	6.26156E+00
U-234	5.28053E-01	3.10756E-01	2.54987E+00	7.72949E+00
U-236	1.54559E-01	3.09210E-01	2.62565E+00	7.78197E+00
NP-237	5.36588E-01	6.62612E-01	2.92838E+00	6.94475E+00
B-10	0.00000E+00	1.14729E+00	0.00000E+00	3.43542E+00
B-11	0.00000E+00	1.58217E-04	0.00000E+00	2.87939E+00
TA-181	0.00000E+00	2.56079E-01	0.00000E+00	5.42528E+00
LI-6	0.00000E+00	8.08623E-01	0.00000E+00	2.34821E+00
AU-197	0.00000E+00	2.05339E-01	0.00000E+00	5.89987E+00
NA-23	0.00000E+00	1.05255E-03	0.00000E+00	3.10405E+00
PB	0.00000E+00	2.62052E-03	0.00000E+00	6.19415E+00
H-1	0.00000E+00	7.47691E-05	0.00000E+00	2.26097E+00

TABLE B-LXXXVI

GODIVA CENTRAL AVERAGE CROSS SECTIONS

<u>Material</u>	<u>Fission</u>	<u>Capture</u>	<u>Nu</u>	<u>Transport</u>
U-235	1.24818E+00	1.29960E-01	2.60208E+00	5.35282E+00
U-238	2.13082E-01	7.69488E-02	2.80395E+00	5.47722E+00
U-234	1.02730E+00	2.15468E-01	2.63279E+00	6.33198E+00
U-233	1.95613E+00	7.98282E-02	2.63936E+00	5.02313E+00
PU-239	1.73995E+00	6.63661E-02	3.12300E+00	5.54783E+00
NP-237	1.11165E+00	2.67483E-01	3.01005E+00	5.76466E+00
MN-55	0.00000E+00	3.75148E-03	0.00000E+00	2.90205E+00
CO-59	0.00000E+00	7.32704E-03	0.00000E+00	2.88690E+00
CU	0.00000E+00	1.09715E-02	0.00000E+00	2.90733E+00
AU-197	0.00000E+00	1.06729E-01	0.00000E+00	4.69441E+00
NB-93	0.00000E+00	3.69218E-02	0.00000E+00	4.36046E+00
H-1	0.00000E+00	4.64817E-05	0.00000E+00	1.44882E+00
BE-9	0.00000E+00	-5.16129E-02	0.00000E+00	2.39517E+00
B-10	0.00000E+00	5.85682E-01	0.00000E+00	2.49574E+00
C	0.00000E+00	1.40358E-03	0.00000E+00	2.28417E+00
AL-27	0.00000E+00	3.84452E-03	0.00000E+00	2.43458E+00
FE	0.00000E+00	7.89884E-03	0.00000E+00	2.53210E+00
NI	0.00000E+00	5.70077E-02	0.00000E+00	2.95382E+00
TH-232	5.21682E-02	1.02470E-01	2.42435E+00	5.54526E+00
PU-240	1.11530E+00	1.17906E-01	3.12461E+00	5.48241E+00

TABLE B-LXXXVII

VERA-1B CENTRAL AVERAGE CROSS SECTIONS

<u>Material</u>	<u>Fission</u>	<u>Capture</u>	<u>Nu</u>	<u>Transport</u>
U-235	1.49833E+00	3.10784E-01	2.51806E+00	6.28978E+00
U-236	2.68976E-01	3.49788E-01	2.62807E+00	7.05497E+00
U-234	6.84500E-01	3.63959E-01	2.59478E+00	7.13135E+00
U-238	1.22863E-01	1.85241E-01	2.76776E+00	6.46248E+00
C	0.00000E+00	8.05152E-04	0.00000E+00	2.52971E+00
H-1	0.00000E+00	1.06510E-04	0.00000E+00	1.92694E+00
FE	0.00000E+00	8.20346E-03	0.00000E+00	2.79788E+00
CR	0.00000E+00	1.43318E-02	0.00000E+00	3.21295E+00
NI	0.00000E+00	3.88959E-02	0.00000E+00	4.19563E+00
U-233	2.26245E+00	1.63897E-01	2.56549E+00	5.95378E+00
PU-239	1.73351E+00	2.37535E-01	3.02587E+00	6.40679E+00
PU-240	7.51556E-01	2.90811E-01	3.07796E+00	6.36581E+00
NP-237	7.31626E-01	8.63559E-01	2.97091E+00	6.64568E+00
B-10	0.00000E+00	1.44151E+00	0.00000E+00	2.97472E+00
AU-197	0.00000E+00	2.88650E-01	0.00000E+00	5.63322E+00
AL-27	0.00000E+00	3.03371E-03	0.00000E+00	2.72888E+00
NA-23	0.00000E+00	1.97305E-03	0.00000E+00	3.10868E+00

TABLE B-LXXXVIII

ZPR-3-6F CENTRAL AVERAGE CROSS SECTIONS

<u>Material</u>	<u>Fission</u>	<u>Capture</u>	<u>Nu</u>	<u>Transport</u>
U-235	1.31783E+00	2.18659E-01	2.52600E+00	5.98012E+00
U-238	1.06307E-01	1.26883E-01	2.77470E+00	6.09467E+00
U-236	2.42802E-01	2.79384E-01	2.62533E+00	6.75725E+00
U-234	6.96796E-01	2.81203E-01	2.57439E+00	6.96672E+00
AL-27	0.00000E+00	2.21392E-03	0.00000E+00	2.54884E+00
FE	0.00000E+00	7.08471E-03	0.00000E+00	2.55403E+00
CR	0.00000E+00	1.07060E-02	0.00000E+00	2.82911E+00
NI	0.00000E+00	3.21112E-02	0.00000E+00	3.40749E+00
MN-55	0.00000E+00	6.57262E-03	0.00000E+00	3.30114E+00
U-233	2.06240E+00	1.31920E-01	2.56674E+00	5.52982E+00
PU-239	1.66947E+00	1.33393E-01	3.02536E+00	6.10746E+00
PU-240	7.43094E-01	1.91512E-01	3.06049E+00	6.03930E+00
TH-232	2.55576E-02	1.53073E-01	2.39282E+00	6.23078E+00
B-10	0.00000E+00	9.37860E-01	0.00000E+00	2.95691E+00
HF	0.00000E+00	2.22216E-01	0.00000E+00	5.36220E+00
TA-181	0.00000E+00	2.14431E-01	0.00000E+00	4.99487E+00
W-182	0.00000E+00	8.67683E-02	0.00000E+00	5.03325E+00
W-183	0.00000E+00	9.54036E-02	0.00000E+00	4.97975E+00
W-184	0.00000E+00	7.10429E-02	0.00000E+00	5.12326E+00
W-186	0.00000E+00	6.04691E-02	0.00000E+00	5.05720E+00
MO	0.00000E+00	4.92009E-02	0.00000E+00	5.26161E+00
ZR	0.00000E+00	1.24151E-02	0.00000E+00	5.17679E+00
V	0.00000E+00	3.95817E-03	0.00000E+00	3.49781E+00
NB-93	0.00000E+00	6.16111E-02	0.00000E+00	4.99671E+00
NA-23	0.00000E+00	1.10498E-03	0.00000E+00	2.79731E+00
C	0.00000E+00	9.56222E-04	0.00000E+00	2.60183E+00
BE-9	0.00000E+00	-2.05801E-02	0.00000E+00	2.83434E+00
H-1	0.00000E+00	6.36320E-05	0.00000E+00	1.82040E+00

TABLE B-LXXXIX

ZPR-3-11 CENTRAL AVERAGE CROSS SECTIONS

<u>Material</u>	<u>Fission</u>	<u>Capture</u>	<u>Nu</u>	<u>Transport</u>
U-235	1.36537E+00	2.72433E-01	2.49368E+00	6.97891E+00
U-236	1.36884E-01	3.13406E-01	2.61620E+00	8.02331E+00
U-238	5.57476E-02	1.48215E-01	2.78400E+00	7.04424E+00
U-234	4.93518E-01	3.14440E-01	2.53929E+00	7.90329E+00
FE	0.00000E+00	7.65443E-03	0.00000E+00	3.05358E+00
CR	0.00000E+00	1.04575E-02	0.00000E+00	3.37003E+00
NI	0.00000E+00	2.41682E-02	0.00000E+00	4.28422E+00
MN-55	0.00000E+00	7.83065E-03	0.00000E+00	3.93708E+00
U-233	2.12676E+00	1.62596E-01	2.53576E+00	6.43655E+00
PU-239	1.62595E+00	1.74076E-01	2.97697E+00	7.00317E+00
PU-240	5.14129E-01	2.36985E-01	3.02129E+00	6.92384E+00
NP-237	4.97217E-01	6.80213E-01	2.91724E+00	7.10502E+00
B-10	0.00000E+00	1.17623E+00	0.00000E+00	3.53681E+00
TA-181	0.00000E+00	2.60103E-01	0.00000E+00	5.52905E+00
MO	0.00000E+00	5.83262E-02	0.00000E+00	6.10752E+00
NA-23	0.00000E+00	9.82072E-04	0.00000E+00	3.16548E+00
AL-27	0.00000E+00	2.15741E-03	0.00000E+00	3.38363E+00
O-16	0.00000E+00	1.34557E-03	0.00000E+00	3.65349E+00
C	0.00000E+00	8.37630E-04	0.00000E+00	3.01453E+00

TABLE B-XC

ZPR-3-12 CENTRAL AVERAGE CROSS SECTIONS

<u>Material</u>	<u>Fission</u>	<u>Capture</u>	<u>Nu</u>	<u>Transport</u>
U-235	1.47080E+00	3.24017E-01	2.49667E+00	7.08850E+00
U-238	7.54680E-02	1.74709E-01	2.77751E+00	7.06842E+00
U-234	5.23721E-01	3.61285E-01	2.56612E+00	7.88222E+00
C	0.00000E+00	7.63476E-04	0.00000E+00	2.91862E+00
FE	0.00000E+00	8.13856E-03	0.00000E+00	3.10207E+00
CR	0.00000E+00	1.31896E-02	0.00000E+00	3.49291E+00
NI	0.00000E+00	3.11305E-02	0.00000E+00	4.89519E+00
MN-55	0.00000E+00	1.22949E-02	0.00000E+00	4.73035E+00
SI	0.00000E+00	4.28864E-03	0.00000E+00	2.84000E+00
U-233	2.23671E+00	1.76957E-01	2.54259E+00	6.62821E+00
PU-239	1.66850E+00	2.29775E-01	2.98220E+00	7.09992E+00
PU-240	5.64813E-01	2.92794E-01	3.04740E+00	7.05364E+00
TA-181	0.00000E+00	3.55591E-01	0.00000E+00	5.68181E+00
NB-93	0.00000E+00	1.01889E-01	0.00000E+00	5.52959E+00
MO	0.00000E+00	7.42952E-02	0.00000E+00	5.91875E+00
AL-27	0.00000E+00	2.70030E-03	0.00000E+00	3.21665E+00

TABLE B-XCI

ZEBRA-2 CENTRAL AVERAGE CROSS SECTIONS

<u>Material</u>	<u>Fission</u>	<u>Capture</u>	<u>Nu</u>	<u>Transport</u>
U-235	1.82200E+00	5.06840E-01	2.47638E+00	8.13512E+00
U-238	6.18203E-02	2.36585E-01	2.77401E+00	7.72624E+00
H-1	0.00000E+00	1.83367E-04	0.00000E+00	2.80907E+00
O-16	0.00000E+00	1.40347E-03	0.00000E+00	3.41978E+00
FE	0.00000E+00	1.02935E-02	0.00000E+00	3.62667E+00
CR	0.00000E+00	1.83360E-02	0.00000E+00	4.17461E+00
CU	0.00000E+00	6.06311E-02	0.00000E+00	5.18886E+00
MO	0.00000E+00	1.33042E-01	0.00000E+00	6.30720E+00
MN-55	0.00000E+00	5.22785E-02	0.00000E+00	8.40754E+00
NI	0.00000E+00	3.27824E-02	0.00000E+00	6.57472E+00
AL-27	0.00000E+00	3.17766E-03	0.00000E+00	3.23509E+00
TI	0.00000E+00	1.32064E-02	0.00000E+00	7.19923E+00
SI	0.00000E+00	3.96612E-03	0.00000E+00	2.75220E+00
V	0.00000E+00	1.32976E-02	0.00000E+00	9.10676E+00
C	0.00000E+00	6.16632E-04	0.00000E+00	3.09281E+00
U-233	2.66329E+00	2.50321E-01	2.52737E+00	7.75614E+00
U-234	4.31246E-01	5.62999E-01	2.56360E+00	8.70051E+00
U-236	1.46133E-01	5.19808E-01	2.61455E+00	9.15778E+00
PU-239	1.82653E+00	4.73230E-01	2.96102E+00	8.09343E+00
PU-240	4.77898E-01	5.12584E-01	3.03824E+00	8.06334E+00
NP-237	4.46004E-01	1.52683E+00	2.94192E+00	8.34105E+00
AU-197	0.00000E+00	5.81715E-01	0.00000E+00	7.54669E+00
TA-181	0.00000E+00	7.77696E-01	0.00000E+00	6.56089E+00
NA-23	0.00000E+00	3.02310E-03	0.00000E+00	4.42654E+00
B-10	0.00000E+00	2.42694E+00	0.00000E+00	4.07689E+00
B-11	0.00000E+00	1.22183E-04	0.00000E+00	3.11065E+00
LI-6	0.00000E+00	9.94745E-01	0.00000E+00	2.22993E+00
LI-7	0.00000E+00	1.12518E-05	0.00000E+00	1.45003E+00
HF	0.00000E+00	6.66588E-01	0.00000E+00	8.12943E+00

TABLE B-XCII

ZPPR-2 CENTRAL AVERAGE CROSS SECTIONS

<u>Material</u>	<u>Fission</u>	<u>Capture</u>	<u>Nu</u>	<u>Transport</u>
PU-239	1.85423E+00	5.43303E-01	2.94053E+00	9.16012E+00
PU-240	3.84231E-01	5.93832E-01	3.01523E+00	9.17913E+00
PU-241	2.60029E+00	4.92947E-01	2.97486E+00	9.80661E+00
PU-242	2.71941E-01	4.74989E-01	3.05040E+00	9.46894E+00
PU-238	1.15072E+00	7.91740E-01	3.00123E+00	1.02220E+01
AM-241	3.04024E-01	1.86569E+00	3.38885E+00	8.89848E+00
U-235	1.97871E+00	6.03767E-01	2.46453E+00	9.46665E+00
U-238	4.41558E-02	2.84498E-01	2.76382E+00	8.89099E+00
C	0.00000E+00	5.10500E-04	0.00000E+00	3.42783E+00
O-16	0.00000E+00	8.93864E-04	0.00000E+00	3.40223E+00
NA-23	0.00000E+00	1.69714E-03	0.00000E+00	3.61606E+00
AL-27	0.00000E+00	3.20610E-03	0.00000E+00	3.51894E+00
FE	0.00000E+00	9.89934E-03	0.00000E+00	3.38024E+00
CR	0.00000E+00	2.00591E-02	0.00000E+00	4.31419E+00
NI	0.00000E+00	3.12793E-02	0.00000E+00	8.16829E+00
MN-55	0.00000E+00	6.75845E-02	0.00000E+00	8.81424E+00
CU	0.00000E+00	7.27674E-02	0.00000E+00	6.14081E+00
MO	0.00000E+00	1.47793E-01	0.00000E+00	6.84187E+00
SI	0.00000E+00	3.48298E-03	0.00000E+00	2.74190E+00
H-1	0.00000E+00	2.17181E-04	0.00000E+00	3.39731E+00
U-233	2.83436E+00	2.85683E-01	2.51689E+00	9.02472E+00
U-234	3.42262E-01	6.48246E-01	2.54666E+00	9.71522E+00
U-236	1.08208E-01	5.99617E-01	2.59977E+00	1.06560E+01
TA-181	0.00000E+00	9.65208E-01	0.00000E+00	7.49850E+00
B-10	0.00000E+00	2.86812E+00	0.00000E+00	4.79257E+00
W-182	0.00000E+00	3.18187E-01	0.00000E+00	8.77420E+00
W-183	0.00000E+00	6.43917E-01	0.00000E+00	8.93453E+00
W-184	0.00000E+00	2.56374E-01	0.00000E+00	9.49419E+00
W-186	0.00000E+00	2.16370E-01	0.00000E+00	8.89382E+00
NB-93	0.00000E+00	2.33072E-01	0.00000E+00	6.32697E+00

TABLE B-XCIII

ZPR-6-7 CENTRAL AVERAGE CROSS SECTIONS

<u>Material</u>	<u>Fission</u>	<u>Capture</u>	<u>Nu</u>	<u>Transport</u>
PU-239	1.85516E+00	5.42020E-01	2.94137E+00	8.69929E+00
PU-240	3.88294E-01	5.92382E-01	3.01666E+00	8.70462E+00
PU-241	2.59829E+00	4.91927E-01	2.97529E+00	9.25578E+00
U-235	1.97719E+00	6.02328E-01	2.46494E+00	8.93553E+00
U-238	4.50375E-02	2.85191E-01	2.76426E+00	8.53562E+00
MO	0.00000E+00	1.47626E-01	0.00000E+00	6.62925E+00
NA-23	0.00000E+00	1.69545E-03	0.00000E+00	3.46226E+00
O-16	0.00000E+00	9.14671E-04	0.00000E+00	3.30877E+00
FE	0.00000E+00	9.90988E-03	0.00000E+00	3.22158E+00
CR	0.00000E+00	2.00406E-02	0.00000E+00	4.10185E+00
NI	0.00000E+00	3.13855E-02	0.00000E+00	7.45259E+00
MN-55	0.00000E+00	6.80629E-02	0.00000E+00	7.74193E+00
PU-238	1.15509E+00	7.90675E-01	3.00246E+00	9.50461E+00
PU-242	2.75470E-01	4.74056E-01	3.05158E+00	8.97724E+00
U-234	3.46195E-01	6.47574E-01	2.54774E+00	9.29633E+00
U-236	1.09961E-01	5.98846E-01	2.60076E+00	1.00841E+01
AM-241	3.08473E-01	1.86146E+00	3.39008E+00	8.36482E+00
B-10	0.00000E+00	2.86117E+00	0.00000E+00	4.44164E+00
TA-181	0.00000E+00	9.64529E-01	0.00000E+00	7.06111E+00
C	0.00000E+00	5.14720E-04	0.00000E+00	3.31729E+00
AL-27	0.00000E+00	3.20561E-03	0.00000E+00	3.46921E+00

TABLE B-XCIV

ZPR-3-56B CENTRAL AVERAGE CROSS SECTIONS

<u>Material</u>	<u>Fission</u>	<u>Capture</u>	<u>Nu</u>	<u>Transport</u>
U-235	1.78020E+00	4.97518E-01	2.47360E+00	8.36912E+00
U-238	5.46749E-02	2.46260E-01	2.76792E+00	8.15886E+00
PU-239	1.76712E+00	4.17264E-01	2.95598E+00	8.19918E+00
PU-240	4.42311E-01	4.74509E-01	3.02871E+00	8.19477E+00
O-16	0.00000E+00	1.14387E-03	0.00000E+00	3.25228E+00
C	0.00000E+00	5.90358E-04	0.00000E+00	3.20871E+00
NA-23	0.00000E+00	1.50519E-03	0.00000E+00	3.35117E+00
CR	0.00000E+00	1.78634E-02	0.00000E+00	3.92717E+00
FE	0.00000E+00	9.01172E-03	0.00000E+00	3.06828E+00
NI	0.00000E+00	3.13030E-02	0.00000E+00	6.74682E+00
MO	0.00000E+00	1.17822E-01	0.00000E+00	6.39924E+00
MN-55	0.00000E+00	4.26558E-02	0.00000E+00	6.63754E+00
U-233	2.60361E+00	2.45225E-01	2.52436E+00	7.92631E+00
U-234	4.01059E-01	5.32939E-01	2.55507E+00	8.86302E+00
U-236	1.29378E-01	5.02209E-01	2.61075E+00	9.47161E+00
B-10	0.00000E+00	2.33732E+00	0.00000E+00	4.08413E+00
TA-181	0.00000E+00	7.18004E-01	0.00000E+00	6.59491E+00

TABLE B-XCV

ZPR-6-6A CENTRAL AVERAGE CROSS SECTIONS

<u>Material</u>	<u>Fission</u>	<u>Capture</u>	<u>Nu</u>	<u>Transport</u>
U-235	1.84985E+00	5.40038E-01	2.46693E+00	8.72841E+00
U-238	4.45906E-02	2.67026E-01	2.75710E+00	8.46769E+00
NA-23	0.00000E+00	1.50025E-03	0.00000E+00	3.42697E+00
O-16	0.00000E+00	8.53385E-04	0.00000E+00	3.32205E+00
FE	0.00000E+00	9.25261E-03	0.00000E+00	3.14317E+00
NI	0.00000E+00	3.02495E-02	0.00000E+00	7.17502E+00
CR	0.00000E+00	1.87170E-02	0.00000E+00	4.02193E+00
MN-55	0.00000E+00	4.83369E-02	0.00000E+00	7.14802E+00
U-234	3.52308E-01	5.73249E-01	2.54342E+00	9.15938E+00
U-236	1.09200E-01	5.37966E-01	2.59739E+00	9.89198E+00
MO	0.00000E+00	1.34695E-01	0.00000E+00	6.70358E+00
PU-239	1.79816E+00	4.79640E-01	2.94353E+00	8.57957E+00
B-10	0.00000E+00	2.54868E+00	0.00000E+00	4.28114E+00
TA-181	0.00000E+00	7.97371E-01	0.00000E+00	6.85538E+00
C	0.00000E+00	5.17690E-04	0.00000E+00	3.30644E+00

TABLE B-XCVI

SNEAK-7A CENTRAL AVERAGE CROSS SECTIONS

<u>Material</u>	<u>Fission</u>	<u>Capture</u>	<u>Nu</u>	<u>Transport</u>
AL-27	0.00000E+00	3.30940E-03	0.00000E+00	3.09426E+00
C	0.00000E+00	6.68587E-04	0.00000E+00	2.95427E+00
CR	0.00000E+00	1.83847E-02	0.00000E+00	3.93143E+00
FE	0.00000E+00	9.76101E-03	0.00000E+00	3.26764E+00
MN-55	0.00000E+00	4.78461E-02	0.00000E+00	7.76469E+00
MO	0.00000E+00	1.26088E-01	0.00000E+00	6.01647E+00
NB-93	0.00000E+00	1.89465E-01	0.00000E+00	5.55158E+00
NI	0.00000E+00	3.58355E-02	0.00000E+00	6.05287E+00
O-16	0.00000E+00	1.78196E-03	0.00000E+00	3.02881E+00
PU-239	1.79931E+00	4.22869E-01	2.97721E+00	7.67057E+00
PU-240	5.40461E-01	4.73267E-01	3.05752E+00	7.66811E+00
PU-241	2.36957E+00	4.04317E-01	2.99481E+00	8.08127E+00
PU-242	4.09065E-01	3.87125E-01	3.08417E+00	7.80611E+00
SI	0.00000E+00	4.35029E-03	0.00000E+00	2.65530E+00
U-235	1.80071E+00	4.87640E-01	2.48399E+00	7.78365E+00
U-238	7.87901E-02	2.45654E-01	2.77727E+00	7.54394E+00
B-10	0.00000E+00	2.34144E+00	0.00000E+00	3.82956E+00
TA-181	0.00000E+00	7.42044E-01	0.00000E+00	6.30994E+00
EU-151	0.00000E+00	3.43612E+00	0.00000E+00	9.11590E+00
EU-153	0.00000E+00	2.09736E+00	0.00000E+00	7.45147E+00

TABLE B-XCVII

SNEAK-7B CENTRAL AVERAGE CROSS SECTIONS

<u>Material</u>	<u>Fission</u>	<u>Capture</u>	<u>Nu</u>	<u>Transport</u>
AL-27	0.00000E+00	3.03623E-03	0.00000E+00	3.33753E+00
C	0.00000E+00	6.27652E-04	0.00000E+00	3.16486E+00
CR	0.00000E+00	1.66465E-02	0.00000E+00	4.00838E+00
FE	0.00000E+00	8.96778E-03	0.00000E+00	3.31323E+00
H-1	0.00000E+00	1.50141E-04	0.00000E+00	2.88002E+00
MG	0.00000E+00	1.45583E-03	0.00000E+00	4.61960E+00
MN-55	0.00000E+00	2.64425E-02	0.00000E+00	7.17991E+00
MO	0.00000E+00	1.07284E-01	0.00000E+00	6.39006E+00
NB-93	0.00000E+00	1.57694E-01	0.00000E+00	5.86439E+00
NI	0.00000E+00	3.19640E-02	0.00000E+00	6.46784E+00
O-16	0.00000E+00	1.30774E-03	0.00000E+00	3.13727E+00
PU-239	1.71138E+00	3.56361E-01	2.96206E+00	8.04902E+00
PU-240	4.51298E-01	4.16241E-01	3.03565E+00	8.03786E+00
PU-241	2.21422E+00	3.60836E-01	2.98652E+00	8.48142E+00
PU-242	3.28679E-01	3.44492E-01	3.06694E+00	8.26789E+00
SI	0.00000E+00	3.95685E-03	0.00000E+00	2.78626E+00
U-235	1.67461E+00	4.43258E-01	2.47787E+00	8.17735E+00
U-238	5.71451E-02	2.25835E-01	2.78122E+00	7.91589E+00
B-10	0.00000E+00	2.07825E+00	0.00000E+00	3.94243E+00
TA-181	0.00000E+00	5.70368E-01	0.00000E+00	6.44212E+00
EU-151	0.00000E+00	2.79427E+00	0.00000E+00	9.26273E+00
EU-153	0.00000E+00	1.76834E+00	0.00000E+00	7.57836E+00

TABLE B-XCVIII

ZPR-9-31 CENTRAL AVERAGE CROSS SECTIONS

<u>Material</u>	<u>Fission</u>	<u>Capture</u>	<u>N_v</u>	<u>Transport</u>
PU-239	1.74320E+00	3.85819E-01	2.95629E+00	7.97188E+00
PU-240	4.40334E-01	4.43700E-01	3.02454E+00	7.95950E+00
PU-241	2.27492E+00	3.81220E-01	2.98289E+00	8.40826E+00
U-235	1.72445E+00	4.69291E-01	2.47454E+00	8.10419E+00
U-238	5.20308E-02	2.29840E-01	2.76983E+00	7.87289E+00
FE	0.00000E+00	9.08937E-03	0.00000E+00	3.16015E+00
NI	0.00000E+00	3.00131E-02	0.00000E+00	6.21194E+00
CR	0.00000E+00	1.69040E-02	0.00000E+00	3.79371E+00
MN-55	0.00000E+00	3.65180E-02	0.00000E+00	6.17878E+00
MO	0.00000E+00	1.10303E-01	0.00000E+00	6.35712E+00
NR-23	0.00000E+00	1.42073E-03	0.00000E+00	3.28722E+00
C	0.00000E+00	6.11628E-04	0.00000E+00	3.17341E+00
U-233	2.54209E+00	2.35404E-01	2.52431E+00	7.63621E+00
B-10	0.00000E+00	2.19087E+00	0.00000E+00	3.99719E+00
LI-6	0.00000E+00	9.66150E-01	0.00000E+00	2.32059E+00
AL-27	0.00000E+00	2.95376E-03	0.00000E+00	3.42388E+00

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