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Summary of JENDL-2 General Purpose File

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The general purpose file of the second version of Japanese Evaluated Nuclear Data Library (JENDL-2) was released in December 1982. Recently, descriptive data were added to JENDL-2 and at the same time the first revision of numerical data was performed. JENDL-2 (Rev1) consists of the data for 89 nuclides and about 211,000 records in the ENDF/B-IV format. In this report, full listings of presently added descriptive data are given to summarize the JENDL-2 general purpose file. The 2200-m/sec and 14-MeV cross sections, resonance integrals, Maxwellian and fission spectrum averaged cross sections are given in a table. Average cross sections were also calculated in suitable energy intervals.

Keywords :
JENDL-2, Evaluated Data File, Descriptive Data, Resonance Integral, 2200-m/sec Cross Section, 14-MeV Cross Section.

JENDL－2 General Purpose ファイルの概要

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（1984年5月12日受理）

日本の評価ずみデータライブラリー第2版（JENDL－2）のGeneral Purpose ファイルは1982年12月に公開された。最近，JENDL－2にデータの様子を示すコメント情報を追加すると同時に第1回目の数値データの修正を行った。このJENDL－2（Rev 1）は89核種のデータを含み，ENDF／B－IV フォーマットで約211,000 レコードから成っている。本報告では，JENDL－2 General Purpose ファイルの概要を示すために，今回加えられたコメント情報が示される。2200 m／sec および14 MeV断面積，共鳴積分値，マックスエルおよび核分裂スペクトルでの平均断面積が表に与えられる。さらに適当なエネルギー区間を用いた平均断面積も計算された。

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Preface

The general purpose file of the second version of Japanese Evaluated Nuclear Data Library (JENDL-2) was released in December 1982. However this library, called JENDL-2 (Rev0), does not contain descriptive data of evaluation. Recently the descriptive data were added and some errors already encountered in numerical data were corrected. This newly revised version of JENDL-2 is called as JENDL-2 (Rev1).

This report gives full listings of the descriptive data and some numerical data tables in order to summarize the JENDL-2 general purpose file. Details of correction of numerical data are described in Appendix 3, for the convenience of JENDL-2 users. Full documentation of JENDL-2 is now under preparation as a JAERI report.

Descriptive Data

In order to complete descriptive data part of JENDL-2 general purpose file, each evaluator of JENDL-2 data was asked to write a brief documentation, and to send it to the JAERI Nuclear Data Center. These descriptive data gathered were modified to correctly describe the present JENDL-2 (Rev1) and inserted into MF=1 of JENDL-2. All of them are listed in this report. In the descriptive data, 2200-m/sec cross sections and resonance integrals are given for the total, elastic, capture and fission cross sections, which were calculated with RESENDD[1] and INTERN[2]. This calculation of resonance cross sections with RESENDD was made by applying accuracy of 1.0 percent.

Data of JENDL-2 (Rev1)

JENDL-2 (Rev1) contains the data of 89 nuclides and consists of about 211,000 records in the ENDF/B-IV format[3]. The data are stored in six files as shown in Table 1. Any processing codes for the ENDF/B-IV format can be used to handle JENDL-2 (Rev1). However, A special care is required in treating resonance parameters, because the parameters for the multilevel formula often contain resonances whose J value is unknown. Table 2 shows the resonance region and the applied formula of each nuclide. The nuclides having this problem are marked with asteriskes. For these nuclides, RESENDD should be used to calculate resonance cross sections. To avoid incorrect calculation and for the convenience of users, pointwise data were also prepared and stored in 14 files as listed in Table 3. The data in these pointwise files were calculated with RESENDD applying accuracy of 1.0 percent. Energies of cross sections calculated from resonance parameters are written in the seven-digit format. The pointwise data files contain the whole data of JENDL-2 except resonance parameters.

The 2200-m/sec and 14-MeV cross sections, resonance integrals, and Maxwellian and fission spectrum average cross sections were obtained from the pointwise data with INTERN. The resonance integrals were calculated by assuming a cut-off energy of 0.5 eV. The Maxwellian spectrum average cross sections were calculated in the energy interval from 10^{-5} eV to 3.0 eV, and fission spectrum average cross sections from 10^{-5} eV to 20 MeV with the following Watt-type fission spectrum.

$$S(E)=\sqrt{4/(\pi a^3 b)}\times \exp(-ab/4-E/a)\times \sinh(bE),$$

where a and b were assumed to be 0.988 MeV and 2.249×10^{-6} eV^{-1}, respectively. The results are listed in Appendix 1.

The average cross sections were also calculated in 75 energy intervals by using CRECTJ5[4] as follows.

$$\bar{\sigma_i}=\int_{E_i}^{E_{i+1}} \sigma(E)dE \ / \ (E_{i+1}-E_i).$$

The average cross sections are given in Appendix 2.

Correction of Numerical Data

Numerical data of JENDL-2 (Rev0) were checked by using FIZCON5[5] and PHYCHE[6] which are data checking codes for data in the ENDF/B format. Some characteristic data such as 2200-m/sec cross sections were calculated and compared with other evaluated data and recommended values in Refs. 7 and 8. Furthermore the data were carefully checked by eyes.

The errors found by above processes were corrected and some data were replaced with more reasonable data by mainly using CRECTJ5[4] which is a computer code for compilation of evaluated data in the ENDF/B format. Details of this revision work are described in Appendix 3 to let the JENDL-2 users know which parts of data have been revised.

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Table 1 JENDL-2 (Revision-1) Files

Tape No.	No.	Nuclide	MAT number	Records
201	1	1-H - 1	2011	249
	2	1-H - 2	2012	4623
	3	3-Li- 6	2031	698
	4	3-Li- 7	2032	610
	5	4-Be- 9	2041	545
	6	5-B - 10	2051	1857
	7	6-C - 12	2061	1175
	8	9-F - 19	2091	1148
	9	11-Na- 23	2111	1642
	10	13-Al- 27	2131	1043
	11	14-Si- 0	2140	2117
	12	20-Ca- 0	2200	2529
	13	20-Ca- 40	2201	1772
	14	20-Ca- 42	2202	875
	15	20-Ca- 43	2203	752
	16	20-Ca- 44	2204	733
	17	20-Ca- 46	2205	629
	18	20-Ca- 48	2206	729
	19	21-Sc- 45	2211	2057
	20	23-V - 51	2231	3745
			(Total	29528)
202	1	24-Cr- 0	2240	3510
	2	24-Cr- 50	2241	3314
	3	24-Cr- 52	2242	3770
	4	24-Cr- 53	2243	1457
	5	24-Cr- 54	2244	3417
	6	25-Mn- 55	2251	1986
	7	26-Fe- 0	2260	5242
	8	26-Fe- 54	2261	1156
	9	26-Fe- 56	2262	2044
	10	26-Fe- 57	2263	1099
	11	26-Fe- 58	2264	791
	12	27-Co- 59	2271	1126
	13	28-Ni- 0	2280	4291
	14	28-Ni- 58	2281	4284
	15	28-Ni- 60	2282	4197
	15	28-Ni- 61	2283	3761
	17	28-Ni- 62	2284	3769
	18	28-Ni- 64	2285	3533
			(Total	52747)
203	1	29-Cu- 0	2290	1157
	2	29-Cu- 63	2291	1379
	3	29-Cu- 65	2292	1688
	4	41-Nb- 93	2411	1997
	5	42-Mo- 0	2420	4826
	6	42-Mo- 92	2421	1106
	7	42-Mo- 94	2422	1526
	8	42-Mo- 95	2423	2645

Table 1 (continued)

Tape No.	No.	Nuclide	MAT number	Records
203	9	42-Mo- 96	2424	1862
	10	42-Mo- 97	2425	2782
	11	42-Mo- 98	2426	2387
	12	42-Mo-100	2427	2154
			(Total	25509)
204	1	72-Hf-174	2721	2621
	2	72-Hf-176	2722	3512
	3	72-Hf-177	2723	2878
	4	72-Hf-178	2724	2994
	5	72-Hf-179	2725	2363
	6	72-Hf-180	2726	2815
	7	73-Ta-181	2731	1311
	8	82-Pb- 0	2820	3005
	9	82-Pb-204	2821	3794
	10	82-Pb-206	2822	3634
	11	82-Pb-207	2823	3600
	12	82-Pb-208	2824	2787
			(Total	35314)
205	1	90-Th-228	2901	1549
	2	90-Th-230	2902	1657
	3	90-Th-232	2903	4881
	4	90-Th-233	2904	1802
	5	90-Th-234	2905	1873
	6	91-Pa-233	2911	1316
	7	92-U -233	2921	3160
	8	92-U -234	2922	1184
	9	92-U -235	2923	6307
	10	92-U -236	2924	1882
	11	92-U -238	2925	3907
	12	93-Np-237	2931	3024
	13	93-Np-239	2932	898
			(Total	33440)
206	1	94-Pu-236	2941	1012
	2	94-Pu-238	2942	1696
	3	94-Pu-239	2943	4862
	4	94-Pu-240	2944	2746
	5	94-Pu-241	2945	2683
	6	94-Pu-242	2946	1675
	7	95-Am-241	2951	4059
	8	95-Am-242	2952	1591
	9	95-Am-242m	2953	3039
	10	95-Am-243	2954	2541
	11	96-Cm-242	2961	902
	12	96-Cm-243	2962	4129
	13	96-Cm-244	2963	1279
	14	96-Cm-245	2964	2811
			(Total	35025)

Table 2 Resonance Region and Formula

Nuclide	MAT	Spin	Resolved Res.(Formula)		Unresolved Res.
1-H - 1	2011	1/2+	no resonances		
1-H - 2	2012	1+	no resonances		
3-Li- 6	2031	1+	no resonances		
3-Li- 7	2032	3/2-	no resonances		
4-Be- 9	2041	3/2-	no resonances		
5-B - 10	2051	3+	no resonances		
6-C - 12	2061	0+	no resonances		
9-F - 19	2091	1/2+	10^{-5} eV - 100 keV	(SL)	not given
11-Na- 23	2111	3/2+	500 eV - 150 keV	(ML)	not given
13-Al- 27	2131	5/2+	3 keV - 140 keV	(ML)	not given
14-Si- 0	2140		no resonances		
20-Ca- 0	2200		10^{-5} eV - 400 keV	(ML)	not given
20-Ca- 40	2201	0+	10^{-5} eV - 400 keV	(ML)	not given
20-Ca- 42	2202	0+	10^{-5} eV - 400 keV	(ML)	not given
20-Ca- 43	2203	7/2-	10^{-5} eV - 30 keV	(ML)	not given
20-Ca- 44	2204	0+	10^{-5} eV - 400 keV	(ML)	not given
20-Ca- 46	2205	0+	no resonances		
20-Ca- 48	2206	0+	10^{-5} eV - 400 keV	(ML)	not given
21-Sc- 45	2211	7/2-	10^{-5} eV - 90 keV	(ML*)	not given
23-V - 51	2231	7/2-	10^{-5} eV - 100 keV	(ML*)	not given
24-Cr- 0	2240		10^{-5} eV - 300 keV	(ML)	not given
24-Cr- 50	2241	0+	10^{-5} eV - 300 keV	(ML)	not given
24-Cr- 52	2242	0+	10^{-5} eV - 300 keV	(ML)	not given
24-Cr- 53	2243	3/2-	10^{-5} eV - 120 keV	(ML)	not given
24-Cr- 54	2244	0+	10^{-5} eV - 300 keV	(ML)	not given
25-Mn- 55	2251	5/2-	10^{-5} eV - 100 keV	(ML)	not given
26-Fe- 0	2260		10^{-5} eV - 250 keV	(ML*)	not given
26-Fe- 54	2261	0+	10^{-5} eV - 250 keV	(ML)	not given
26-Fe- 56	2262	0+	10^{-5} eV - 250 keV	(ML)	not given
26-Fe- 57	2263	1/2-	10^{-5} eV - 200 keV	(ML*)	not given
26-Fe- 58	2264	0+	10^{-5} eV - 100 keV	(ML)	not given
27-Co- 59	2271	7/2-	10^{-5} eV - 100 keV	(ML*)	not given
28-Ni- 0	2280		10^{-5} eV - 600 keV	(ML*)	not given
28-Ni- 58	2281	0+	10^{-5} eV - 600 keV	(ML)	not given
28-Ni- 60	2282	0+	10^{-5} eV - 600 keV	(ML)	not given
28-Ni- 61	2283	3/2-	10^{-5} eV - 68.5158keV	(ML*)	not given
28-Ni- 62	2284	0+	10^{-5} eV - 600 keV	(ML)	not given
28-Ni- 64	2285	0+	10^{-5} eV - 600 keV	(ML)	not given
29-Cu- 0	2290		10^{-5} eV - 35 keV	(ML*)	not given
29-Cu- 63	2291	3/2-	10^{-5} eV - 35 keV	(ML*)	not given
29-Cu- 65	2292	3/2-	10^{-5} eV - 35 keV	(ML*)	not given
41-Nb- 93	2411	9/2+	10^{-5} eV - 7 keV	(ML*)	50 keV
42-Mo- 0	2420		10^{-5} eV - 50 keV	(ML*)	100 keV
42-Mo- 92	2421	0+	10^{-5} eV - 50 keV	(ML)	100 keV
42-Mo- 94	2422	0+	10^{-5} eV - 20 keV	(ML)	100 keV
42-Mo- 95	2423	5/2+	10^{-5} eV - 2 keV	(ML*)	100 keV
42-Mo- 96	2424	0+	10^{-5} eV - 19 keV	(ML)	100 keV
42-Mo- 97	2425	5/2+	10^{-5} eV - 1.8 keV	(ML*)	100 keV
42-Mo- 98	2426	0+	10^{-5} eV - 32 keV	(ML)	100 keV
42-Mo-100	2427	0+	10^{-5} eV - 26 keV	(ML)	100 keV

Table 2 (continued.)

Nuclide	MAT	Spin	Resolved Res.	(Formula)	Unresolved Res.
72-Hf-174	2721	0+	0.5 eV - 220 eV	(ML)	50 keV
72-Hf-176	2722	0+	0.5 eV - 700 eV	(ML)	50 keV
72-Hf-177	2723	7/2-	0.5 eV - 250 eV	(ML*)	50 keV
72-Hf-178	2724	0+	0.5 eV - 1.5 keV	(ML)	50 keV
72-Hf-179	2725	9/2+	0.5 eV - 250 eV	(ML*)	50 keV
72-Hf-180	2726	0-	0.5 eV - 2.5 keV	(ML)	50 keV
73-Ta-181	2731	7/2+	10^{-5} eV - 1 keV	(ML*)	50 keV
82-Pb- 0	2820		10^{-5} eV - 500 keV	(ML)	not given
82-Pb-204	2821	0+	10^{-5} eV - 50 keV	(ML)	not given
82-Pb-206	2822	0+	10^{-5} eV - 200 keV	(ML)	not given
82-Pb-207	2823	1/2-	10^{-5} eV - 500 keV	(ML)	not given
82-Pb-208	2824	0+	10^{-5} eV - 800 keV	(ML)	not given
90-Th-228	2901	0+	10^{-5} eV - 7.798 eV	(ML)	not given
90-Th-230	2902	0+	10^{-5} eV - 564.26 eV	(ML)	not given
90-Th-232	2903	0+	10^{-5} eV - 3.5 keV	(ML)	50 keV
90-Th-233	2904	1/2+	no resonances		
90-Th-234	2905	0+	no resonances		
91-Pa-233	2911	3/2-	2.38 eV - 17 eV	(SL)	1 keV
92-U -233	2921	5/2+	1.0 eV - 100 eV	(SL)	30 keV
92-U -234	2922	0+	10^{-5} eV - 215 eV	(ML)	not given
92-U -235	2923	7/2-	1.0 eV - 100 eV	(SL)	30 keV
92-U -236	2924	0+	10^{-5} eV - 1.5 keV	(ML)	not given
92-U -238	2925	0+	10^{-5} eV - 4 keV	(ML)	50 keV
93-Np-237	2931	5/2+	10^{-5} eV - 130 eV	(SL)	30 keV
93-Np-239	2932	5/2+	no resonances		
94-Pu-236	2941	0+	10^{-5} eV - 6 eV	(SL)	not given
94-Pu-238	2942	0+	10^{-5} eV - 500 eV	(ML)	not given
94-Pu-239	2943	1/2+	1.0 eV - 598 eV	(ML*)	30 keV
94-Pu-240	2944	0+	10^{-5} eV - 4 keV	(ML)	40 keV
94-Pu-241	2945	5/2+	1.0 eV - 100 eV	(SL)	30 keV
94-Pu-242	2946	0+	10^{-5} eV - 1.29 keV	(ML)	not given
95-Am-241	2951	5/2-	10^{-5} eV - 150 eV	(ML*)	30 keV
95-Am-242	2952	1-	no resonances		
95-Am-242m	2953	5-	10^{-5} eV - 3.5 eV	(SL)	not given
95-Am-243	2954	5/2-	10^{-5} eV - 215 eV	(ML*)	30 keV
96-Cm-242	2961	0+	10^{-5} eV - 275 eV	(ML)	not given
96-Cm-243	2962	5/2+	10^{-5} eV - 27 eV	(RM*)	not given
96-Cm-244	2963	0+	10^{-5} eV - 1 keV	(ML)	not given
96-Cm-245	2964	7/2+	10^{-5} eV - 60 eV	(SL)	not given

SL : Single-level Breit-Wigner formula.
ML : Multilevel Breit-Wigner formula.
RM : Reich-Moore multilevel formula.
* : There exist resonances of which J value is unknown. The resonance cross sections should be calculated with RESENDD.

Table 3 JENDL-2 (Revision-1) Pointwise Files

Tape No.	No.	Nuclide	MAT number	Records
251	1	1-H - 1	2011	249
	2	1-H - 2	2012	4623
	3	3-Li- 6	2031	698
	4	3-Li- 7	2032	610
	5	4-Be- 9	2041	545
	6	5-B - 10	2051	1856
	7	6-C - 12	2061	1178
	8	9-F - 19	2091	1514
	9	11-Na- 23	2111	2640
	10	13-Al- 27	2131	1328
	11	14-Si- 0	2140	2117
	12	20-Ca- 0	2200	11399
	13	20-Ca- 40	2201	6783
	14	20-Ca- 42	2202	5116
	15	20-Ca- 43	2203	2713
	16	20-Ca- 44	2204	3610
	17	20-Ca- 46	2205	629
	18	20-Ca- 48	2206	1053
			(Total	48661)
252	1	21-Sc- 45	2211	14497
	2	23-V - 51	2231	5796
	3	24-Cr- 0	2240	10630
	4	24-Cr- 50	2241	7283
	5	24-Cr- 52	2242	7520
	6	24-Cr- 53	2243	4052
	7	24-Cr- 54	2244	5438
			(Total	55216)
253	1	25-Mn- 55	2251	12420
	2	26-Fe- 0	2260	16075
	3	26-Fe- 54	2261	3923
	4	26-Fe- 56	2262	10162
	5	26-Fe- 57	2263	4921
	6	26-Fe- 58	2264	2470
	7	27-Co- 59	2271	15448
			(Total	65419)
254	1	28-Ni- 0	2280	23058
	2	28-Ni- 58	2281	15734
	3	28-Ni- 60	2282	12653
	4	28-Ni- 61	2283	8263
	5	28-Ni- 62	2284	9837
	6	28-Ni- 64	2285	7665
			(Total	77210)

Table 3 (continued)

Tape No.	No.	Nuclide	MAT number	Records
255	1	29-Cu- 0	2290	5528
	2	29-Cu- 63	2291	4901
	3	29-Cu- 65	2292	3879
	4	41-Nb- 93	2411	20915
	5	42-Mo- 0	2420	36674
			(Total	71897)
256	1	42-Mo- 92	2421	10865
	2	42-Mo- 94	2422	9020
	3	42-Mo- 95	2423	7899
	4	42-Mo- 96	2424	11714
	5	42-Mo- 97	2425	9044
	6	42-Mo- 98	2426	19043
	7	42-Mo-100	2427	18711
			(Total	86296)
257	1	72-Hf-174	2721	4172
	2	72-Hf-176	2722	6408
	3	72-Hf-177	2723	9617
	4	72-Hf-178	2724	6918
	5	72-Hf-179	2725	6637
	6	72-Hf-180	2726	5576
	7	73-Ta-181	2731	19543
			(Total	58871)
258	1	82-Pb- 0	2820	14750
	2	82-Pb-204	2821	6589
	3	82-Pb-206	2822	10144
	4	82-Pb-207	2823	9336
	5	82-Pb-208	2824	4426
			(Total	45245)
259	1	90-Th-228	2901	1917
	2	90-Th-230	2902	8156
	3	90-Th-232	2903	60674
	4	90-Th-233	2904	1802
	5	90-Th-234	2905	1873
	6	91-Pa-233	2911	2792
			(Total	77214)
260	1	92-U -233	2921	5934
	2	92-U -234	2922	5861
	3	92-U -235	2923	12839
	4	92-U -236	2924	22484
			(Total	47118)
261	1	92-U -238	2925	73607
	2	93-Np-237	2931	17079
	3	93-Np-239	2932	898
			(Total	91584)

Table 3 (continued)

Tape No.	No.	Nuclide	MAT number	Records
262	1	94-Pu-236	2941	1301
	2	94-Pu-238	2942	10455
	3	94-Pu-239	2943	23240
	4	94-Pu-240	2944	46408
			(Total	81404)
263	1	94-Pu-241	2945	5891
	2	94-Pu-242	2946	18636
	3	95-Am-241	2951	18743
	4	95-Am-242	2952	1591
	5	95-Am-242m	2953	3192
			(Total	48053)
264	1	95-Am-243	2954	21267
	2	96-Cm-242	2961	3664
	3	96-Cm-243	2962	5219
	4	96-Cm-244	2963	15295
	5	96-Cm-245	2964	4475
			(Total	49920)

Descriptive Data

Full listings of descriptive data of JENDL-2 (Rev1) are given. Characters of them were converted from capital letters to a normal style of mixture of capital and small letters. To output them, the ATF (Advanced Text Formatter for science) system of the FACOM-M 380 computer was used.

1-H - 1 MAT number = 2011

```
  1-H -  1 Hitachi     Eval-Apr76 M.Yamamoto
JAERI-1261             Dist-Mar83 Rev1-Nov83
History
83-03 Compliled by K.Shibata
      Main part was carried over from JENDL-1 data evaluated by
      M.Yamamoto.  Details are given in ref. /1/.
83-11 MF=2 was added. The transformation matrix given for MT=2 of
      MF=4.

MF=1  General Information
  MT=451  Descriptive Data and Dictionary

MF=2  Resonance Parameters
  MT=151  Scattering radius only

      2200-m/s cross sections and calculated res. integrals.
                  2200-m/s        res. integ.
        elastic    20.44  b           -
        capture     0.332 b         0.149 b
        total      20.77  b           -

MF=3  Neutron Cross Sections
  MT=1    Total Cross Section
        Sum of elastic and capture cross sections
  MT=2    Elastic Scattering Cross Section
        Below 100 keV, calculated by using effective range and
        scattering length parameters of Lomon and Wilson/2/.
        Above 100 keV, the data of Hopkins and Breit/3/ were
        recommended.
  MT=102  Capture Cross Section
        The data of Horsley/4/ were recommended.
  MT=251  Mu-bar
        Calculated from the data in MF=4.

MF=4  Angular Distributions of Secondary Neutrons
  MT=2
        Below 100 keV, isotropic in the center of mass system was
        assumed.  Above 100 keV, the data of hopkins and breit/3/
        were recommended.
```

References

1) Igarasi S. et al.: JAERI-1261 (1979).
2) Lomon E. and. Wilson R.: Phys. Rev. C9(1974) 1392.
3) Hopkins J.C. and Breit G.: Nucl. Data Table A9(1971) 137.
4) Horsley A.: Nucl. Data A2(1966) 243.

1-H - 2 MAT number = 2012

```
  1-H -  2 JAERI       Eval-Jul82 K.Shibata,T.Narita,S.Igarasi
JAERI-M 83-006         Dist-Mar83 Rev1-Nov83
History
83-01 New evaluation for JENDL-2.  Details are given in Ref. /1/.
      Data were compiles by the authors.
83-11 MF=2 was added.

MF=1  General Information
  MT=451   Descriptive data and dictionary

MF=2  Resonance Parameters
  MT=151   Scattering radius only

      2200-m/s cross sections and calculated res. integrals.
                  2200-m/s        res. integ.
         elastic    3.389   b         -
         capture    0.00055 b       0.000286 b
         total      3.390   b         -

MF=3  Neutron Cross Sections
  MT=1       Total
         Based on a least-squares fit to the experimental data of
         /2/-/8/.
  MT=2       Elastic
         Elastic = Total - (n,2n) - Capture.
  MT=16      (n,2n)
         Based on a least-squares fit.
         Data listed in /9/-/11/ were used.
  MT=102     Capture
         Below 1 keV, 1/v form normalized to the data of
                      Ishikawa /12/.
         Above 1 keV, evaluated on the basis of the inverse
                      reaction /13/.
  MT=251     Mu-bar
         Calculated from the data in MF=4.

MF=4  Angular Distributions of Secondary Neutrons
  MT=2,16
         Calculated from the three-body model based on
         the Faddeev equation /14/.

MF=5,6  Energy and Energy-Angular Distributions of Secondary
        Neutrons
  MT=16 The three-body model calculation.
```

References

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8) Foster, Jr., D.G. and Glasgow, D.W. : Phys. Rev. C3(1971)576.
9) Holmberg, M. : Nucl. Phys. A129 (1969) 327.
10) Pauletta, G. and Brooks, F.D. : Nucl. Phys. A255 (1975) 267.
11) Catron, H.C. et al. : Phys. Rev. 123 (1961) 218.
12) Ishikawa, H. : Nucl. Instr. Meth. 109 (1973) 493.
13) Gunn, J.C. and Irving, J. : Phil. Mag. 42 (1951) 1353.
14) Ebenhoh, W. : Nucl. Phys. A191 (1972) 97.

3-Li- 6　　MAT number = 2031

```
 3-Li-  6 JAERI       Eval-Jul77 S.Komoda,S.Igarasi
JAERI-M-7148          Dist-Mar83 Rev1-Nov83
History
77-01 New evaluation for JENDL-1.  Details given in Ref. /1/.
81-12 Partly revised by S.Komoda /2/ for JENDL-2, and compiled
      by T.Nakagawa.
83-11 Comment data were added.

MF=1  General Information
  MT=451  Descriptive data and dictionary

MF=2  Resonance Parameters
  MT=151  No resonance parameters given. Scattering radius only.

    2200-m/s cross sections and calculated res. integrals
                   2200-m/s      res.integ.
       elastic      0.736 b          -
       capture      0.028 b       0.0126 b
       (n,alpha)  936.3   b      423.     b
       total      937.1   b          -

MF=3  Neutron Cross Sections
  MT=1      Total
          Sum of all the partial cross sections.
  MT=2      Elastic
          Calculated with the Kapur-Peierls theory.  Details given
          in Ref. /1/.  Between 2 and 6 MeV, based on the experi-
          mental data by Knitter et al. /5/ and Lane et al. /6/.
  MT=4      Total inelastic
          Sum of MT=52 and 91.
  MT=52     Inelastic (discrete)
          Based on the data of Presser et al. /3/.
  MT=102    Capture
          The thermal cross section of Bartholemew and Campion /4/
          was extrapolated as 1/v up to 20MeV.
  MT=107    (n,alpha)
          Calculated with the Kapur-Peierls theory.  Details given
          in Ref./1/.
  MT=24,91,103    (n,2n alpha)p, inelastic(cont), (n,p)
          The data of ENDF/B-IV are recommended.
  MT=251    Mu-bar
          Calculated from the data in MF=4.

MF=4  Angular Distributions of Secondary Neutrons
  MT=2      Based on the experimental data /5/-/8/.
  MT=24     Isotropic in the lab system.
  MT=52     Isotropic in the center-of-mass system.
  MT=91     ENDF/B-IV recommended.

MF=5  Energy Distributions of Secondary Neutrons
```

MT=24,91 Evaporation spectrum.
Values of nuclear temperature were taken from ENDF/B-IV.

References

1) Komoda, S. and Igarasi, S.: JAERI-M 7148 (1977).
Komoda, S. and Igarasi, S.: J. Nucl. Sci. Technol. 15 (1978) 79.
2) Komoda, S.: private communication.
3) Presser, G. et al.: Nucl. Phys. A3 (1969) 679.
4) Bartholmew, G.A. and Campion, P.J.: Can. J. Phys. 35(1957)1347
5) Knitter, H.-H. et al.: EUR 5726E (1977).
6) Lane, R.O. et al.: Lowell Conf. (1976).
7) Cookson et al.: Nucl. Phys. A91 (1967) 273.
8) Hyakutake et al.: J. Nucl. Sci. Technol. 11 (1974) 407.

3-Li- 7 MAT number = 2032

3-Li- 7 JAERI Eval-Jul82 K.Shibata
Dist-Mar83 Rev1-Nov83

History
82-01 New evaluation for JENDL-2 by K.Shibata.
83-11 MF=2 was added. Some Q values and transformation matrix of
MT=2 in MF=4 were modified.

MF=1 General Information
MT=451 Descriptive data and dictionary

MF=2 Resonance Parameters
MT=151 Scattering radius only

2200-m/s cross sections and calculated res. integrals.

	2200-m/s	res. integ.
elastic	1.049 b	-
capture	0.0454 b	0.0204 b
total	1.094 b	-

MF=3 Neutron Cross Sections
MT=1 Total
Below 1 keV, Total = 1.04894 + Capture (b).
Above 1 keV, data listed in /1/-/6/ were used.
MT=2 Elastic
Elastic = Total - Reaction.
MT=4 Total inelastic
Sum of MT=51 and 91.
MT=16 (n,2n)Li-6
ENDF/B-IV recommended.
MT=24 (n,2n)alpha-d
ENDF/B-IV recommended.
MT=51 (n,n')
Leading to the 1st level (0.47748 MeV) in Li-7.
Data listed in /7/,/8/ were used.
MT=91 (n,n')alpha-t
Data listed in /9/-/14/ were used.
MT=102 Capture
1/v form normalized to the data of Jurney /15/.
MT=104 (n,d)He-6
ENDF/B-IV recommended.
MT=251 Mu-bar
Calculated from the data in File4.

MF=4 Angular Distributions of Secondary Neutrons
MT=2

1.0E-5 eV to 40 keV	:	Isotropic.
50 keV to 14 MeV	:	Data listed in /16/-/18/ used.
14 MeV to 20 MeV	:	Optical model calculation with parameters of /19/.

MT=16,24,91
Isotropic in the laboratory system.

MT=51
Isotropic in the center-of-mass system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,24,91
Evaporation spectrum.
Values of nuclear temperature taken from ENDF/B-IV.

References

1) Hibdon, C.T. and Langsdorf, Jr., A. : ANL-5171, p.7 (1954).
2) Hibdon, C.T. and Mooring, F.P. : '68 Washington Conf.
3) Meadows, J.W. and Whalen, J.F. : Nucl. Sci. Eng. 41(1970)351.
4) Foster, Jr., D.G. and Glasgow, D.W. : Phys. Rev. C3(1971)576.
5) Goulding, C.A. et al. : private communication (1972).
6) Lamaze, G.P. et al. : Bull. Am. Phys. Soc. 24 (1979) 862.
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8) Presser, G. and Bass, R. : Nucl. Phys. A182 (1972) 321.
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16) Lane, R.O. et al. : Ann. Phys. 12 (1961) 135.
17) Hogue, H.H. et al. : Nucl. Sci. Eng. 69 (1979) 22.
18) Knox, H.D. et al. : Nucl. Sci. Eng.69 (1979) 223.
19) Watson, B.A. et al. : Phys. Rev. 182 (1969) 977.

4-Be- 9 MAT number = 2041

4-Be- 9 JAERI+ Eval-Sep82 K.Sibata,K.Ioki(MAPI)
Dist-Mar83 Rev1-Nov83

History
82-09 New evaluation wad made by K.Sibata(JAERI) and K.Ioki(MAPI)
83-11 Comment was added.

MT=1 General Information
MT=451 Descriptive data

MT=2 Resonance Parameters
MT=151 Scattering radius only

2200-m/sec cross sections and resonance integrals.

	2200 m/sec	res. integ.
elastic	6.000 b	-
capture	0.0076 b	3.42 milli-b
total	6.0076 b	-

MT=3 Neutron Cross Sections
MT=1 Total
Below 1 keV, Total = 6.0 + Capture (b).
Above 1 keV, data listed in /1/-/10/ were used.

MT=2 Elastic
Elastic = Total - Reaction.

MT=16 (n,2n)
Data listed in /11/-/15/ were used.

MT=102 Capture
1/v form normalized to the data of Jurney /16/.

MT=103 (n,p)
Evaluated on the basis of the data of Augustson and Menlove /17/ by taking account of the branching ratio of 35 percent for Li9 => Be9* => 2a + n.

MT=104 (n,d)
Based on the data of Scoebel /18/.

MT=105 (n,t)
Based on the data of Biro et al. /19/ and Qaim and Wolfle /20/.

MT=107 (n,alpha)
Data listed in /21/-/25/ were used.
Only the transition to the ground state in He6 is given.

MT=251 Mu-bar
Calculated from the data in File4.

MT=4 Angular Distributions of Secondary Neutrons
MT=2

1.0E-5 eV t0 40 keV	: Isotropic in the center-of-mass sys.
50 keV to 14 MeV	: Data listed in /26/-/31/ used.
15 MeV to 20 MeV	: Optical model calculation with parameters of Ref./32/.

MT=16
Isotropic in the laboratory system.

MT=5 Energy Distributions of Secondary Neutrons
MT=16
Evaporation spectrum.

References

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32) Agee, F.P. and Rosen, L. : LA-3538-MS, 1966.

5-B － 10 MAT number = 2051

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 5-B - 10 Hitachi       Eval-Apr76 M.Yamamoto
JAERI-1261              Dist-Mar83 Rev1-Nov83
History
76-01 Evaluation was made for JENDL-1 by M.Yamamoto. Details are
      given in Ref. /1/.
83-03 JENDL-2 data were taken from JENDL-1.
83-11 Comment was added.

MF=1  General Information
 MT=451   Comments and Dictionary

MF=2  Resonance Parameters
 MT=151   Scattering radius only

    2200-m/sec cross sections and resonance integrals
                      2200 m/sec      res. integ.
          elastic        2.173 b          -
          capture        0.503 b         0.0643 b
          (n,alpha)      3836. b         1720.  b
          (n,t 2alpha)   0.566 milli-b   0.234  b
          total          3839. b          -

MF=3  Neutron Cross Sections
 MT=1     Total
      Sum of partial cross sections
 MT=2     Elastic scattering
      Below 580 keV, calculated from the resonance parameters in
      BNL-325, 3rd ed. /2/.  Above 580 keV, ENDF/B-IV recommended.
 MT=4     Total inelastic
      Sum of MT=51 to 91.
 MT=16    (n,2n)
      A straight line passing through the data of Mather and Pain
      /3/ was assumed.
 MT=51-61,91,103,104,113   inelastic, (n,p), (n,d) and (n,t2a)
      ENDF/B-IV recommended.
 MT=102  Capture
      1/v curve normalized to the recommended value of Ref./2/.
 MT=107,780,781   (n,a), (n,a0) and (n,a1)
      Below 235 keV, based on the measured data of Sowerby et al.
      /4/.  Above 235 keV, ENDF/B-IV recommended.
 MT=113  (n,t 2a)
      ENDF/B-IV recommended.
 MT=251  Mu-bar
      ENDF/B-IV recommended.

MF=4  Angular Distributions of Secondary Neutrons
 MT=2,16,51-61,91
      ENDF/B-IV recommended.

MF=5  Energy Distributions of Secondary Neutrons
 MT=16,91
```

ENDF/B-IV recommended.

References

1) Igarasi S. et al.: JAERI-1261 (1979).
2) Mughabghab S.F. and Garber D.I.: BNL-325, 3rd Edition (1973).
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6-C － 12　　MAT number = 2061

6-C － 12 Hitachi　　Eval-Apr76 M.Yamamoto
JAERI-1261　　Dist-Mar83
History
76-04 Recommendation was made by M.Yamamoto (Hitachi) for
JENDL-1. Details given in Ref./1/.
83-03 Main part of JENDL-2 data was carried over from JENDL-1.
83-11 Comment was added.

MF=1 General Information
MT=451 Comments and dictionary

MF=2 Resonance Parameters
MT=151 Scattering radius only

2200-m/sec cross sections and resonance integrals

	2200-m/sec	res. integ.
elastic	4.699 b	-
capture	0.0034 b	0.00153 b
total	4.702 b	-

MF=3 Neutron Cross Sections
MT=1 Total
Sum of partial cross sections.
MT=2 Elastic scattering
Below 2 MeV, based on the evaluated data of Nishimura et al.
/2/. Avobe 2 MeV, ENDF/B-IV recommended.
MT=4 Total inelastic
sum of MT=51 and 91.
MT=51,91,107 Inelastic scattering and (n,a)
ENDF/B-IV recommended.
MT=102 Capture
1/v curve normalized to the recommended value of BNL-325
3rd edition/3/.
MT=251 Mu-bar
ENDF/B-IV recommended.

MF=4 Angular Distributions of Secondary Neutrons
MT=2,51
ENDF/B-IV recommended.
MT=91
Isotropic distributions in the center-of-mass system were
assumed, and transformed into the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=91
ENDF/B-IV recommended.

References
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3) Mughabghab S.F. and Garber D.I.: BNL-325, 3rd Edition (1973).

9-F - 19   MAT number = 2091

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 9-F - 19 JAERI        Eval-Apr77 T.Sugi and K.Nishimura
JAERI-M 7253(1977)     Dist-Mar83 Rev1-Nov83
History
77-04 Data above 100 keV were evaluated by T.Sugi and K.Nishimura
      (JAERI). Details are given in Ref. /1/.
83-01 Resonance parameters were evaluated by T.Sugi.
83-11 Modification of angular distributions was made.  Comment
      data were added in MF=1.

MF=1  General Information
  MT=451  Descriptive data and dictionary

MF=2  Resonance Parameters
  MT=151  Resolved resonance parameters : 1.0E-5 eV - 100 keV
      The single-level Breit-Wigner formula was used.
      Res. energis and Gam-n : The first three levels were based
         on Johnson et al. /2/.  The 4th level was based on
         Mughabghab and Garber /3/.
      Gam-g : The first three levels were based on Macklin and
         Winters /4/.  The 4th level was taken from the mean value
         of Macklin and Winters /4/, and Gabbard et al. /5/.
      J : Based on Mughabghab and Garber /3/.

      Calculated 2200-m/s cross sections and res. integrals.
                          2200 m/s      res. integ.
         elastic          3.641 b           -
         capture          9.6 milli-b   19.6 milli-b
         total            3.651 b           -

MF=3  Neutron Cross Sections
  Below 100 keV
      Background data are given.
  Above 100 keV
  MT=1     Total cross section
      Between 100 keV and 5.0 keV, evaluated based on the following
      experimental data.
           Energy range          Experiments
         100keV - 300keV         Hibdon /7/
         300keV - 500keV         Whalen et al. /8/
         500keV - 1.15MeV        Cabe /9/
         1.15MeV - 2.2MeV        Elwyn /10/
         2.2MeV - 5.0 MeV        Foster and Glasgow /11/
      5.0MeV - 8.5MeV : Determined from the least-squares fitting
         of the experimental data.  See Ref. /1/.
      8.5MeV - 20MeV  : Calculated with the optical model by using
         the code ELIESE-3 /12/.  The optical potential parameters
         were determined with the code TOTALCS /13/ so that the
         calculated cross section curve is fitted to the experim-
         ental data from 3.1 MeV to 20 MeV.
           Optical potential parameters
               V  = 45.54 - 0.733*E     (MeV),
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Ws = 15.53 (der.Woods-Saxon) (MeV),
Vso= 10.0 (MeV),
r0 = rs = rso = 1.31 (fm),
a = aso= 0.66 (fm),
b = 0.47 (fm).

MT=2 Elastic scattering cross section
Derived by subtracting the nonelastic from the total cross section.

MT=3 Nonelastic (not given in file)
1.0E-5 - 6MeV : Sum of all cross sections other than elastic scattering.
6MeV - 20MeV : Calculated with the Hauser-Feshbach method (ELIESE-3 /12/).

MT=4 Total inelastic scattering cross section
Up to 1 MeV : Sum of the inelastic scattering cross sections for the lowest two levels of 110 keV and 197 keV.
1MeV - 5.5MeV : Calculated with the Hauser-Feshbach method (ELIESE-3 /12/). The optical potential parameters are
V = 51.56 - 1.492*E (MeV),
Ws = 11.82 (der. Woods-Saxon) (MeV).
The other parameters are the same as those for the total cross section. These parameters were determined so that the calculated total cross section curve is fitted to the experimental data from 0.61 MeV to 20 MeV.
5.5MeV - 20MeV : Derived by subtracting the (n,alpha), (n,p), (n,d), (n,t), (n,n'alpha), (n,alpha n'), (n,n'p), (n,p n'), (n,2n) and capture cross sections from the nonelastic.

MT=16 (n,2n) cross section
Calculated by fitting the Pearlstein's function /14/ to the experimental data.

MT=22 (n,n' alpha) and (n,alpha n') cross sections
Calculated with a statistical model by using Pearlstein's empirical formula.

MT=28 (n,n' p) and (n,p n') cross sections
Calculated with a statistical model by using Pearlstein's empirical formula.

MT=51-56 Inelastic for the lowest six excited states
Up to 1MeV : Based on the experimental data of Broder et al. /16/.
1MeV - 5.5MeV : Calculated with the Hauser-Feshbach method (ELIESE-3 /12/) taking into account (n,alpha) and (n,p) as competing processes. The level scheme of F-19, N-16 O-19 were taken from Ajzenberg-Selove /17/,/18/.
5.5MeV - 20MeV : Ratio of the inelastic scattering cross sections for the lowest six excited states and for the continuum to the total inelastic scattering cross section were calculated with the Hauser-Feshbach method (ELIESE-3 /12/). The level density parameter of 3.609 (1/MeV) /19/ and pairing energy of 2.52 MeV /20/ were used.

MT=91 Inelastic to continuum
Calculated with the same method as MT=51-56, 5.5 MeV - 20 MeV.

MT=102 Capture cross section
100keV - 1.87MeV : Based on the experimental data of

Gabbard et al. /5/.
1.87MeV － 20MeV : Assumed to decrease with 1/v law.
MT=103 (n,p) cross section
Up to 9MeV : Based on the experimental data of Bass et al. /21/.
9MeV － 20MeV : Calculated with the statistical model by using Pearlstein' empirical formula.
MT=104 (n,d) cross section
Calculated with the Pearlstein's empirical formula /15/. The cross section was normalized to 39.5 milli-barns at 14.4 MeV.
MT=105 (n,t) cross section
Calculated with the Pearlstein's empirical formula /15/. The cross section was normalized to 15.0 milli-barns at 14.4 MeV.
MT=107 (n,alpha) cross section
Below 9 MeV, Based on the following experimental data;

Up to 4MeV	Davis et al. /22/,
4MeV － 5.5MeV	Smith et al. /23/,
5.5MeV － 9MeV	Bass et al. /21/.

Above 9 MeV, Calculated with the Pearlstein's formula.
MT=251 Average cosine in the laboratory system
Derived from the angular distributions.

MF=4 Angular Distributions of Secondary Neutrons
MT=2
Calculated with optical model (CASTHY /24/).
MT=16,22,28
Assumed to be isotropic in the laboratory system.
MT=51-56
Assumed to be isotropic in the center-of-mass system.
MT=91
Assumed to be isotropic in the center-of-mass system and transformed into the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,22,28,91
Evaporation spectra were given.

References

1) Sugi T. and Nishimura K.: JAERI-M 7253 (1977), english translation : ORNL-TR-4605.
2) Johnson C.H. et al.: ORNL-5025 (1975).
3) Mughabghab S.F. and Garger D.I.: BNL 325, 3rd Ed. Vol.1 (1973)
4) Macklin R.L. and Winters R.R.: Phys. Rev. C7, 1766 (1973).
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23) Smith D.M. et al.: Phys. Rev. 117, 514 (1960).
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11-Na- 23 MAT number = 2111

11-Na-23 Hitachi Eval-Mar75 M.Yamamoto
JAERI 1261 Dist-Mar83 Rev1-Nov83
History
75-03 Evaluated by M.Yamamoto and compiled by C.G. for JENDL-1 with some modifications. Detailes are given in Ref. /1/.
83-03 JENDL-1 data were taken for JENDL-2, and MF=5 was modified.
83-11 Q values and MF=4 were corrected.

MF=1 General Information
MT=451 Descriptive data and dictionary

MF=2 Resonance Parameters
MT=151 Resolved resonance parameters
Evaluation was made on the basis of recommended values by Mughabghab and Garber /2/, Paik and Pitterle /3/, and the experimental data by Hockenbury et al. /4/. Resonance cross sections can be obtained with MLBW formula in the energy region from 500 eV to 150 keV.

2200-m/s cross sections and calculated res. integrals.

	2200-m/s	res. integ.
elastic	3.170 b	-
capture	0.530 b	0.329 b
total	3.700 b	-

MF=3 Neutron Cross Sections

Thermal energy region (from 1.0E-5 eV to 500 eV)
The total and capture cross sections of 3.7 and 0.53 barns were taken from BNL-325 3rd ed. /2/, and the form of 1/v was assumed for the capture cross section.

Resonance energy region (from 500 eV to 150 keV)
Small background cross sections were given for the total and capture cross sections to connect smoothly resonance cross sections with those for below and above resonance region.

Above 150 keV
MT=1 Total
Based on the following experimental data.
150 keV - 550 keV : Stelson and Preston /5/
550 keV - 10 MeV : Cierjacks et al. /6/
Above 10 MeV : Glasgow and Foster /7/
MT=2 Elastic scattering
Obtained by subtructing partial cross sections from the total cross section.
MT=4 Total inelastic scattering
Below 4 MeV, summation of partial inelastic scattering cross sections (MT=51 - 57). Above 4 MeV, based on the evaluated data by Schmidt /8/ and the experimental data by Martin and

Stewart /9/ and Sukhanov and Rakavishnikov /10/.
MT=51 Inelastic scattering to the first level
Based on the experimental data by Towle and Gilboy /11/, Chien and Smith /12/, Lind and Day /13/ and Shipley et al. /14/.
MT=52-57 Inelastic scattering to the second to 7th levels
Based on the data by Freeman and Montague /15/, Lind and Day /13/, Towle and Owens /16/ and the evaluated data by Schmidt /8/.
MT=91 Inelastic scattering to continuum level
Determined from the total and partial inelastic scattering cross sections.
MT=16 (n,2n)
Based on the data by Menlove et al. /17/.
MT=102 Capture
Based on the data by le Rigoleur et al. /18/.
MT=103 (n,p)
Based on the data by Williamson /19/, Bass and Saleh /20/ and Picard and Williamson /21/.
MT=107 (n,alpha)
Based on the data by Williamson /19/ and Woelfer and Bormann /22/.
MT=251 Mu-bar
Obtained from the angular distributions (MF=4,MT=2).

MF=4 Angular Distributions of Secondary Neutrons
MT=2 Based on the compilation work by Garber et al. /23/, and evaluation work by Moorhead /24/.
MT=16 Isotropic in the lab system.
MT=51-57 Isotropic in the center-of-mass system.
MT=91 Isotropic distribution in the center-of-mass system was transformed into the lab system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,91 Evapolation spectrum

References

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2) Mughabghab S.F. and Garber D.I.: BNL 325, 3rd Edition Vol.1 (1973).
3) Paik N.C. and Pitterle T.A.: WARD-4181-2 (1971).
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13-Al- 27   MAT number = 2131

13-Al- 27 JAERI   Eval-Mar75 JENDL C.G.
JAERI 1261   Dist-Mar83 Rev1-Nov83
History
75-03 Evaluated for JENDL-1 by JENDL Compilation Group. Details are given in Ref. /1/.
83-03 JENDL-1 data were taken for JENDL-2.
83-11 Angular distributions were modified.

MF=1 General Information
  MT=451 Descriptive data and dictionary

MF=2 Resonance Parameters
  MT=151 Resolved resonance psrameters for MLBW formula
    The resonance parameters were taken from BNL-325 3rd edition /2/ and some modifications were made so that the calculated total cross section might satisfactorily reproduce the experimental data. A negative resonance was added.

    2200-m/s cross sections and calculated res. integrals.

	2200-m/s	res. integ.
elastic	1.500 b	-
capture	0.230 b	0.147 b
total	1.730 b	-

MF=3 Neutron Cross Sections

  Below 3 keV
    The 2200-m/s cross sections recommended in Ref. /2/ were adopted. The capture cross section was assumed to have the the form of 1/v below 500 eV and was estimated by an eye guide between 500 eV and 3 keV. The elastic scattering was assumed to be constant.

  Resonance energy region (from 3 keV to 140 keV)
    Background cross sections were given to reproduce the resonance structure around 10 keV.

  Above 140 keV
  MT=1 Total
    Obtained with an eye-guide method.
  MT=2 Elastic scattering
    Obtained by subtructing partial cross sections from the total cross section.
  MT=4,51-58,91 Inelastic scattering cross sections
    Calculated with optical and statistical models by using the code CASTHY /3/. The following optical potential parameters were determined to reproduce well the total cross section. The capture, (n,p), (n,alpha) and (n,2n) reactions were taken into account as the competing processes.

    Optical potential parameters

V = 42.39 - 0.18*E, Ws= 4.5, Vso= 5.8 (MeV)
r = rso = 1.235, rs= 1.137 (fm)
a = aso = 0.65 , as= 0.6 (fm)

Level scheme

No.	Energy (MeV)	Spin-Parity
g.s.	0.0	5/2 +
1	0.842	1/2 +
2	1.013	3/2 +
3	1.65	5/2 +
4	1.83	5/2 +
5	2.21	7/2 +
6	2.73	5/2 +
7	2.98	3/2 +
8	3.00	9/2 +

Levels above 3.7 MeV were assumed to be overlapping.

MT=16 (n,2n)
Calculated with Pearlstein's method /4/.
MT=102 Capture
Obtained with an eye-guide method.
MT=103 (n,p)
Evaluated data by Asami /5/ were adopted.
MT=107 (n,alpha)
Evaluated data by Kanda and Nakasima /6/ were adopted.
MT=251 Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons
MT=2 Calulated with optical model.
MT=16 Isotropic in the lab system.
MT=51-58 Isotropic in the center-of-mass system.
MT=91 Isotropic distribution in the center-of-mass system was transformed into the lab system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,91 Evaporation spectrum

References

1) Igarasi S. et al.: JAERI 1261 (1979).
2) Mughabghab S.F. and Garber D.I.: BNL 325, 3rd Edition, Vol.1 (1973).
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1 of Natural Silicon

14-Si- 0 MAT number = 2140

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 14-Si- 0 JAERI       Eval-Mar76 T.Asami
JAERI 1261            Dist-Mar83 Rev1-Nov83
History
76-03 The evaluation was made by T.Asami (JAERI) for JENDL-1.
      Details are given in Ref. /1/.
83-03 JENDL-1 data were adopted for JENDL-2 and extended to 20
      MeV.
83-11 Small correction was made. Comment data were added.

MF=1  General Information
  MT=451  Descriptive data and dictionary

MF=2  Resonance Parameters
  MT=151  No resonance parameters are given.

     2200-m/sec cross sections and calculated resonance integrals.
                      2200 m/sec       Res. Integ.
         elastic       2.200 b            -
         capture       0.156 b          0.079 b
         total         2.356 b            -

MF=3  Neutron Cross Sections

Energy region below 1 keV.
  MT=1    Total
     Sum of the elastic scattering and capture cross sections.
  MT=2    Elastic scattering
     The constant value of 2.2 barns was taken from Ref. /2/.
  MT=102  Capture
     The cross section of 0.156 barns at 0.0253 eV was obtained
     for natural silicon from the following experimental data.
        For Si-28 and Si-29: Spitz and Boer /3/.
        For Si-30          : Koehler and Knopf /4/, Ryves /5/.
     The shape of cross section was assumed to be the form of 1/v.

Energy region above 1 keV.
  MT=1    Total
     Obtained by averaging the following experimental data.
        Below 200 keV: Fields and Walt /6/.
        Above 200 keV: Cierjacks et al. /7/, Schwartz et al. /8/,
                       Perey et al. /9/, Cabe and Cance /10/.
  MT=2    Elastic scattering
     Obtained by subtracting partial cross sections from the total
     cross section.
  MT=4,51-83,91  Inelastic scattering
     Calculated with a statistical and optical model code CASTHY
     /11/.  The optical potential parameters of Bhat et al. /12/
     was used.  The level schemes are listed below.  The capture,
     (n,p), (n,alpha) and (n,2n) reactions were taken into account
     as the competing processes.
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Level schemes for Si isotopes

No.	Si-28 Energy(MeV)		Si-29 Energy(MeV)		Si-30 Energy(MeV)	
g.s.	0.0	0+	0.0	1/2+	0.0	0+
1	1.799	2+	1.273	3/2+	2.235	2+
2	4.617	4+	2.028	5/2+	3.498	2+
3	4.975	0+	2.425	3/2+	3.770	1+
4	6.267	3+	3.067	5/2+	3.788	0+
5	6.691	0+	3.623	7/2-	4.809	2+
6	6.878	3-	4.080	7/2+	4.830	3+
7	6.889	4+	4.741	9/2+	5.230	3+
8	7.381	1+	4.839	1/2+	5.280	4+
9	7.416	2+	4.895	5/2+	5.372	0+
10	7.798	3+	4.933	3/2-	5.487	3-
11	7.935	2+			5.612	2+
12					5.951	4-

Overlapping levels were assumed above 8.25 MeV for Si-28, 5.2 MeV for Si-29 and 6.5 MeV for Si-30.

The Q values of inelastic levels of natural silicon were adjusted to keep the threshold energy of each level.

MT=16 (n,2n)
Constructed from the isotope data evaluated as follows. For Si-28, evaluation was based on the experimental data. For others, the cross section was calculated with Pearlstein's method /13/.

MT=102 Capture
For the energy region from 1 keV to 1.6 MeV, the cross section was calculated from the resonance parameters of Boldeman et al. /14/ and Kenney et al. /15/, and averaged. Then it was renormalized at 1 keV to the 1/v cross section mentioned above. Above 1.6 MeV, the cross section was estimated so as to increase and pass througth the value of 0.56 milli-barns at 14.1 MeV which was obtained from the experimental data by Cvelber et al. /16/ and Rigaud et al. /17/.

MT=103 (n,p)
Constructed from the isotope data evaluated as follows.
Si-28: From 5.0 to 7.8 MeV, the cross section was obtained by eye-guiding the experimental data of Marion et al. /18/ and Jeronymo et al. /19/. The shape of the data of Bass et al. /20/ was adopted, and renormalized by the factor of 1.4 in the energy range from 7.8 MeV to 9.0 MeV. Above 9.0 MeV, the curve was drawn by an eye guide.
Si-29: The shape of the Si-28(n,p) cross section was normalized to 0.120 barns at 14.5 MeV /21,22,23/.
Si-30: Ignored.

MT=107 (n,alpha)
Constructed from the isotope data evaluated as follows.
Si-28: Based on the data of Birk et al. /24/, Mainsbridge et al. /25/ and Singh /23/.
Si-29: Based on the data of Konijn and Lauber /26/, Birk et al. /24/ and Singh /23/.
Si-30: The same shape as the Si-28(n,alpha) was adopted and normalized to 0.070 barns at 14.5 MeV /22,23/.

MT=251 Mu-bar
Calculated with CASTHY /11/.

MF=4 Angular Distributions of Secondary Neutrons
MT=2 Calculated with CASTHY /11/.
MT=16 Isotropic in the laboratory system.
MT=51-88 Isotropic in the center-of-mass system.
MT=91 Isotropic distribution in the center-of-mass system was transformed into the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,91 Evaporation spectra.

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20-Ca- 0 MAT number = 2200

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 20-Ca-  0 Mitsui E.S.Eval-Apr80 M.Hatchya
                     Dist-Mar83 Rev1-Feb84
History
80-04 New evaluation was made by M.Hatchya (Mitsui).
83-11 Ang. Dist. was modified, and comment data were added.
84-02 The total and elastic scattering cross sections were re-
      evaluated on the basis of experimental data.

MF=1  General Information
  MT=451  Descriptive data and dictionary

MF=2  Resonance Parameters
  MT=151  Resolved resonance parameters for MLBW formula
      Parameters were evaluated on the basis of the following
      data.
         Ca-40          : BNL 325 3rd ed. /1/, Musgrove et al. /2/,
                          Singh et al. /3/.
         Ca-42,43,44    : Musgrove et al. /4/.
         Ca-46          : no resonances were given.
         Ca-48          : BNL 325 3rd ed. /1/.
      Resonance energy region of each isotope is
         Ca-40,42,44 : below 400 keV.
         Ca-43       : below  30 keV.
         Ca-48       : below 500 keV.

      Calculated 2200-m/sec cross sectionsand resonance integrals.
                       2200-m/sec      Res.Integ.
         elastic         2.963  b         -
         capture         0.4307 b       0.226 b
         (n,alpha)       0.0024 b       0.349 b
         total           3.396  b         -

MF=3  Neutron Cross Sections
  Above resonance region.
  MT=1    Total cross section
      Between 400 keV and 5.0 MeV, the cross section was deter-
      mined from the experimental data by Perey et al. /5/ and
      Cierjacks /6/.  Above 5.0 MeV, the optical model calculation
      with CASTHY /7/ was adopted.

          Optical potential parameters for Ca-40, 43, 44, 46 and
          48 taken from Ref. /8/.
               V   = 46.72           (MeV),
               Ws  =  9.13           (MeV),
               Vso=  5.37            (MeV),
               r0  = rso = 1.26      (fm),
               rs  = 1.39            (fm),
               a   = aso = 0.76      (fm),
               b   = 0.40            (fm).

          Optical potential parameters for Ca-42 obtained so as to
```

reproduce the Ca-42 total cross section

V = 52.06 - 0.023*e (MeV),

Ws = 5.57 (MeV),

Vso= 5.37 (MeV),

Others are the same as above parameters.

MT=2 Elastic scattering cross section

Derived by subtracting partial cross sections from the total cross section.

MT=4,51-88,91 Inelastic scattering cross sections

Calculated with optical and statistical model code CASTHY/7/

Level scheme

Level scheme for Ca-40 was taken from Ref./8/ and for other isotopes from Table of Isotopes /9/. Q-values of natural calcium data were re-calculated from threshold energies.

MT	-Q(keV)	Ca-40	Ca-42	Ca-43	Ca-44	Ca-46	Ca-48
51	372.2	–	–	373 5/2-	–	–	–
52	592.4	–	–	593 3/2-	–	–	–
53	988.7	–	–	990 3/2+	–	–	–
54	1154.5	–	–	–	1157 2+	–	–
55	1342.8	–	–	–	–	1347 2+	–
56	1392.3	–	–	1395 5/2+	–	–	–
57	1522.9	–	1525 2+	–	–	–	–
58	1835.3	–	1837 0+	–	–	–	–
59	1879.4	–	–	–	1884 0+	–	–
60	2278.2	–	–	–	2283 4+	–	–
61	2420.9	–	2424 2+	–	–	–	–
62	2650.8	–	–	–	2657 2+	–	–
63	2749.3	–	2752 4+	–	–	–	–
64	3014.5	–		–	–	3024 2+	–
65	3185.8	–	3189 6+	–	–	–	–
66	3441.2	–	3445 3-	–	–	–	–
67	3601.7	–	–	–	–	3613 3-	–
68	3737.3	3737 3-	–	–	–	–	–
69	3816.3	–	–	–	–	–	3832 2+
70	3904.3	3904 2+	–	–	–	–	–
71	4484.9	–	–	–	–	–	4503 4+
72	4488.7	–	–	–	–	–	4507 3-
73	4492.3	4492 5-	–	–	–	–	–
74	4593.3	–	–	–	–	–	4612 3+
75	5249.4	5249 2+	–	–	–	–	–
76	5348.0	–	–	–	–	–	5370 3-
77	5627.4	5627 2+	–	–	–	–	–
78	6285.5	6285 3-	–	–	–	–	–
79	6585.5	6585 3-	–	–	–	–	–
80	6910.5	6910 2+	–	–	–	–	–
81	6932.5	6932 3-	–	–	–	–	–
82	7860.6	7860 2+	–	–	–	–	–
83	7930.6	7930 4+	–	–	–	–	–
84	8090.6	8090 2+	–	–	–	–	–
85	8280.6	8280 2+	–	–	–	–	–

3 of Natural Calcium

86	8371.6	8371	4+	-	-	-	-	-
87	8540.6	8540	2+	-	-	-	-	-
88	8553.6	8553	5-	-	-	-	-	-
91	1928.2	8900	c	3884 c	1931 c	3285 c	4463 c	6614 c

Level density parameters (Gilbert and Cameron /10/)

isotope	40	41	42	43	44	45
a (1/MeV)	5.43	6.00	6.58	7.00	7.10	7.12
S-C(1/SQRT(MeV))	2.42	2.59	2.75	2.88	2.95	3.00
Delta(MeV)	3.87	1.83	3.47	1.83	3.27	1.83
Ex (MeV)	10.12	7.99	9.54	7.82	9.18	7.66

isotope	46	47	48	49
a (1/MeV)	7.135	7.075	6.84	7.20
S-C(1/SQRT(MeV))	3.03	3.08	3.07	3.19
Delta(MeV)	3.37	1.83	3.13	1.83
Ex (MeV)	9.131	7.522	8.76	7.39

MT=16 (n,2n) cross section
Based on available data.

MT=22,28 (n,n'alpha) and (n,n'p) cross sections
Derived from the calculation by Fu /8/ and available data.

MT=102 Capture cross section
Calculated with CASTHY /7/.

MT=103,107 (n,p) and (n,alpha) cross sections
Statistical and pre-equilibrium model calculations using the optical potential parameters and the level density parameters given above. Fitted to available data.

MT=111 (n,2p) cross section
This cross section was given only for Ca-40 by adopting the calculated values by Fu /8/.

MT=251 Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons

MT=2
Optical model calculation

MT=51-88
Isotropic in the center-of-mass system.

MT=16,22,28
Isotropic in the laboratory system.

MT=91
Isotropic distribution in the center-of-mass system was transformed into the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,22,28,91
Evaporation spectra.

References

1) Mughabghab S.F. and Garber D.I.: BNL-325, 3rd Edition, Vol.1 (1973).
2) Musgrove A.R.de L. et al.: Nucl. Phys. A259, 365 (1976).
3) Singh U.N. et al.: Phys. Rev. C10, 2143 (1974)
4) Musgrove A.R.de L. et al.: Nucl. Phys. A279, 317 (1977).
5) Cierjacks S.: KfK-1000 (1968).
6) Perey F.G. et al.: ORNL-4823 (1972).
7) Igarasi S.: J. Nucl. Sci. Thecnol., 12, 67 (1975).
8) Fu C.Y.: Atomic Data and Nuclear Data Table 17, 127 (1976).
9) Lederer C.M. and Shirley V.S.: Table of Isotopes, 7th Ed., Wiley-Interscience (1978).
10) Gilbert A. and Cameron A.G.W.: Can. J. Phys. 43, 1446 (1965).

20-Ca- 40 MAT number = 2201

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20-Ca- 40 Mitsui E.S.Eval-Apr80 M.Hatchya
                     Dist-Mar83 Rev1-Feb84
History
80-04 New evaluation was made by M.Hatchya (Mitsui).
83-11 Ang. dist. was modified.
84-02 Comment was added.

MF=1  General Information
  MT=451  Descriptive data and dictionary

MF=2  Resonance Parameters
  MT=151  Resolved resonance parameters for MLBW formula
      Resonance energy region = 1.0E-5 eV to 400 keV.
      Parameters were evaluated on the basis of the following
      data.
          BNL 325 3rd ed. /1/, Musgrove et al. /2/,
          Singh et al. /3/.

      Calculated 2200-m/sec cross sections and resonance integrals
                       2200-m/sec       Res.Integ.
         elastic        3.010 b            -
         capture        0.410 b          0.216 b
         (n,alpha)      0.0025 b         0.355 b
         total          3.423 b            -

MF=3  Neutron Cross Sections
  Above resonance region.
  MT=1    Total cross section
      The optical model calculation with CASTHY /4/ was adopted.

          Optical potential parameters taken from Ref. /5/.
               V   = 46.72            (MeV),
               Ws  =  9.13            (MeV),
               Vso=  5.37             (MeV),
               r0  = rso = 1.26       (fm),
               rs  = 1.39             (fm),
               a   = aso= 0.76        (fm),
               b   = 0.40             (fm).

  MT=2    Elastic scattering cross section
      Derived by subtracting partial cross sections from the total
      cross section.
  MT=4,51-66,91 Inelastic scattering cross sections
      Calculated with optical and statistical model code CASTHY
      /4/.

          Level scheme
          ------------
               Taken from Ref./6/

          No.        Energy(MeV)  Spin-Paity
```

g.s.	0.0	0 +
1	3.737	3 −
2	3.904	2 +
3	4.492	5 −
4	5.249	2 +
5	5.627	2 +
6	6.285	3 −
7	6.585	3 −
8	6.910	2 +
9	6.932	3 −
10	7.860	2 +
11	7.930	4 +
12	8.090	2 +
13	8.280	2 +
14	8.371	4 +
15	8.540	2 +
16	8.553	5 −

Continuum levels were assumed above 8.99 MeV.

Level density parameters (Gilbert and Cameron /7/)

isotope	40	41
a (1/MeV)	5.43	6.00
S-C(1/SQRT(MeV))	2.42	2.59
Delta(MeV)	3.87	1.83
Ex (MeV)	10.12	7.99

MT=16 (n,2n) cross section
Based on available data.
MT=22,28 (n,n'alpha) and (n,n'p) cross sections
Derived from the calculation by Fu /5/.
MT=102 Capture cross section
Calculated with CASTHY /4/.
MT=103,107 (n,p) and (n,alpha) cross sections
Statistical and pre-equilibrium model calculations using the optical potential parameters and the level density parameters given above. Fitted to available data.
MT=111 (n,2p) cross section
The calculated values by Fu /5/ were adopted.
MT=251 Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons
MT=2,51-66,91
Optical model calculation
MT=16,22,28
Isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,22,28,91
Evaporation spectra.

References
1) Mughabghab S.F. and Garber D.I.: BNL-325, 3rd Edition, Vol.1

(1973).
2) Musgrove A.R.de L. et al.: Nucl. Phys. A259, 365 (1976).
3) Singh U.N. et al.: Phys. Rev. C10, 2143 (1974)
4) Igarasi S.: J. Nucl. Sci. Thecnol., 12, 67 (1975).
5) Fu C.Y.: Atomic Data and Nuclear Data Table 17, 127 (1976).
6) Lederer C.M. and Shirley V.S.: Table of Isotopes, 7th Ed., Wiley-Interscience (1978).
7) Gilbert A. and Cameron A.G.W.: Can. J. Phys. 43, 1446 (1965).

20-Ca- 42 MAT number = 2202

20-Ca- 42 Mitsui E.S.Eval-Apr80 M.Hatchya
Dist-Mar83 Rev1-Feb84

History
80-04 New evaluation was made by M.Hatchya (Mitsui).
83-11 Ang. dist. was modified.
84-02 Comment was added.

MF=1 General Information
MT=451 Descriptive data and dictionary

MF=2 Resonance Parameters
MT=151 Resolved resonance parameters for MLBW formula
Resonance energy region = 1.0E-5 eV to 400 keV.
Parameters were evaluated on the basis of the experimental data by Musgrove et al. /1/.

Calculated 2200-m/sec cross sections and resonance integrals

	2200-m/sec	Res.Integ.
elastic	1.230 b	-
capture	0.680 b	0.384 b
total	1.910 b	-

MF=3 Neutron Cross Sections
Above resonance region.
MT=1 Total cross section
The optical model calculation with CASTHY /2/ was adopted.

Optical potential parameters were taken from Ref. /3/, and modified so as to reproduce the Ca-42 total cross section

V = 52.06 - 0.023*E (MeV),
Ws = 5.57 (MeV),
Vso= 5.37 (MeV),
r0 = rso = 1.26 (fm),
rs = 1.39 (fm),
a = aso= 0.76 (fm),
b = 0.40 (fm).

MT=2 Elastic scattering cross section
Derived by subtracting partial cross sections from the total cross section.
MT=4,51-56,91 Inelastic scattering cross sections
Calculated with optical and statistical model code CASTHY /2/.

Level scheme

Taken from Table of Isotopes /4/.

No. Energy(MeV) Spin-Parity

g.s.	0.0	0 +
1	1.5246	2 +
2	1.8373	0 +
3	2.4236	2 +
4	2.7523	4 +
5	3.1893	6 +
6	3.445	3 −

Levels above 3.884 MeV were assumed to be overlapping.

Level density parameters (Gilbert and Cameron /5/)

isotope	42	43
a (1/MeV)	6.58	7.00
S-C(1/SQRT(MeV))	2.75	2.88
Delta(MeV)	3.47	1.83
Ex (MeV)	9.54	7.82

MT=16 (n,2n) cross section
Based on available data.
MT=102 Capture cross section
Calculated with CASTHY /2/.
MT=107 (n,alpha) cross section
Statistical and pre-equilibrium model calculations using the optical potential parameters and the level density parameters given above. Fitted to available data.
MT=251 Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons
MT=2,51-56,91
Optical model calculation
MT=16
Isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,91
Evaporation spectra.

References

1) Musgrove A.R.de L. et al.: Nucl. Phys. A279, 317 (1977).
2) Igarasi S.: J. Nucl. Sci. Thecnol., 12, 67 (1975).
3) Fu C.Y.: Atomic Data and Nuclear Data Table 17, 127 (1976).
4) Lederer C.M. and Shirley V.S.: Table of Isotopes, 7th Ed., Wiley-Interscience (1978).
5) Gilbert A. and Cameron A.G.W.: Can. J. Phys. 43, 1446 (1965).

20-Ca- 43 MAT number = 2203

20-Ca- 43 Mitsui E.S.Eval-Apr80 M.Hatchya
Dist-Mar83 Rev1-Feb84

History
80-04 New evaluation was made by M.Hatchya (Mitsui).
83-11 Ang. dist. was modified.
84-02 Comment was added.

MF=1 General Information
MT=451 Descriptive data and dictionary

MF=2 Resonance Parameters
MT=151 Resolved resonance parameters for MLBW formula
Resonance energy region = 1.0E-5 eV to 30 keV.
Parameters were evaluated on the basis of the data of Musgrove et al. /1/.

Calculated 2200-m/sec cross sections and resonance integrals

	2200-m/sec	Res.Integ.
elastic	2.997 b	–
capture	6.200 b	3.20 b
total	9.197 b	–

MF=3 Neutron Cross Sections
Below 30 keV, background cross sections were given to reproduce the thermal capture cross section of 6.2 barns /2/ and reasonable elastic scattering cross section. Above resonance region, data were evaluated as follows.

MT=1 Total cross section
The optical model calculation with CASTHY /3/ was adopted.

Optical potential parameters were taken from Ref. /4/.
V = 46.72 (MeV),
Ws = 9.13 (MeV),
Vso= 5.37 (MeV),
r0 = rso = 1.26 (fm),
rs = 1.39 (fm),
a = aso= 0.76 (fm),
b = 0.40 (fm).

MT=2 Elastic scattering cross section
Derived by subtracting partial cross sections from the total cross section.
MT=4,51-54,91 Inelastic scattering cross sections
Calculated with optical and statistical model code CASTHY /3/.

Level scheme

Level scheme was taken from Table of Isotopes /5/.

No.	Energy(MeV)	Spin-Parity
g.s.	0.0	7/2 -
1	0.3728	5/2 -
2	0.5934	3/2 -
3	0.9903	3/2 +
4	1.3946	5/2 +

Levels above 1.9314 MeV were assumed to be overlapping.

Level density parameters (Gilbert and Cameron /6/)

isotope	43	44
a (1/MeV)	7.00	7.10
S-C(1/SQRT(MeV))	2.88	2.95
Delta(MeV)	1.83	3.27
Ex (MeV)	7.82	9.18

MT=16 (n,2n) cross section
Based on available data.
MT=102 Capture cross section
Calculated with CASTHY /3/.
MT=103,107 (n,p) and (n,alpha) cross sections
Statistical and pre-equilibrium model calculations using the optical potential parameters and the level density parameters given above. Fitted to available data.
MT=251 Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons
MT=2,51-54,91
Optical model calculation
MT=16
Isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,91
Evaporation spectra.

References

1) Musgrove A.R.de L. et al.: Nucl. Phys. A279, 317 (1977).
2) Mughabghab S.F. and Garber D.I.: BNL-325, 3rd Edition, Vol.1 (1973).
3) Igarasi S.: J. Nucl. Sci. Thecnol., 12, 67 (1975).
4) Fu C.Y.: Atomic Data and Nuclear Data Table 17, 127 (1976).
5) Lederer C.M. and Shirley V.S.: Table of Isotopes, 7th Ed., Wiley-Interscience (1978).
6) Gilbert A. and Cameron A.G.W.: Can. J. Phys. 43, 1446 (1965).

20-Ca- 44 MAT number = 2204

20-Ca- 44 Mitsui E.S.Eval-Apr80 M.Hatchya
Dist-Mar83 Rev1-Feb84

History
80-04 New evaluation was made by M.Hatchya (Mitsui).
83-11 Ang. dist. was modified.
84-02 Comment was added.

MF=1 General Information
MT=451 Descriptive data and dictionary

MF=2 Resonance Parameters
MT=151 Resolved resonance parameters for MLBW formula
Resonance energy region = 1.0E-5 eV to 400 keV.
Parameters were evaluated on the basis of the data of Musgrove et al. /1/.

Calculated 2200-m/sec cross sections and resonance integrals

	2200-m/sec	Res.Integ.
elastic	1.323 b	-
capture	0.8799 b	0.429 b
total	2.203 b	-

MF=3 Neutron Cross Sections
Below 400 keV, background cross sections were given to reproduce the thermal capture cross section of 0.88 barns /2/. Above resonance region, data were evaluated as follows.

MT=1 Total cross section
The optical model calculation with CASTHY /3/ was adopted.

Optical potential parameters were taken from Ref. /4/.
V = 46.72 (MeV),
Ws = 9.13 (MeV),
Vso= 5.37 (MeV),
r0 = rso = 1.26 (fm),
rs = 1.39 (fm),
a = aso= 0.76 (fm),
b = 0.40 (fm).

MT=2 Elastic scattering cross section
Derived by subtracting partial cross sections from the total cross section.
MT=4,51-54,91 Inelastic scattering cross sections
Calculated with optical and statistical model code CASTHY /3/.

Level scheme

Level scheme was taken from Table of Isotopes /5/.

No. Energy(MeV) Spin-Parity

g.s.	0.0	0 +
1	1.157	2 +
2	1.8835	0 +
3	2.2831	4 +
4	2.6565	2 +

Levels above 3.2849 MeV were assumed to be overlapping.

Level density parameters (Gilbert and Cameron /6/)

isotope	44	45
a (1/MeV)	7.10	7.12
S-C(1/SQRT(MeV))	2.95	3.00
Delta(MeV)	3.27	1.83
Ex (MeV)	9.18	7.66

MT=16 (n,2n) cross section
Based on available data.
MT=102 Capture cross section
Calculated with CASTHY /3/.
MT=103,107 (n,p) and (n,alpha) cross sections
Statistical and pre-equilibrium model calculations using the optical potential parameters and the level density parameters given above. Fitted to available data.
MT=251 Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons
MT=2,51-54,91
Optical model calculation
MT=16
Isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,91
Evaporation spectra.

References

1) Musgrove A.R.de L. et al.: Nucl. Phys. A279, 317 (1977).
2) Mughabghab S.F. and Garber D.I.: BNL-325, 3rd Edition, Vol.1 (1973).
3) Igarasi S.: J. Nucl. Sci. Thecnol., 12, 67 (1975).
4) Fu C.Y.: Atomic Data and Nuclear Data Table 17, 127 (1976).
5) Lederer C.M. and Shirley V.S.: Table of Isotopes, 7th Ed., Wiley-Interscience (1978).
6) Gilbert A. and Cameron A.G.W.: Can. J. Phys. 43, 1446 (1965).

20-Ca- 46 MAT number = 2205

20-Ca- 46 Mitsui E.S.Eval-Apr80 M.Hatchya
Dist-Mar83 Rev1-Feb84

History
80-04 New evaluation was made by M.Hatchya (Mitsui).
83-11 Ang. dist. was modified.
84-02 Comment was added.

MF=1 General Information
MT=451 Descriptive data and dictionary

MF=2 Resonance Parameters
MT=151 No resonance parameters

2200-m/sec cross sections and calculated resonance integrals

	2200-m/sec	Res.Integ.
elastic	2.900 b	-
capture	0.7400 b	0.339 b
total	3.640 b	-

MF=3 Neutron Cross Sections
Thermal region was assumed to be below 1.0 keV. The capture and elastic scattering cross sections were assumed to be 0.74 barns /1/ and 2.9 barns at 0.0253 eV, respectively. The total cross section was calculated as a sum of these two. Above 1.0 keV, data were evaluated as follows.

MT=1 Total cross section
The optical model calculation with CASTHY /2/ was adopted.

Optical potential parameters were taken from Ref. /3/.
V = 46.72 (MeV),
Ws = 9.13 (MeV),
Vso= 5.37 (MeV),
r0 = rso = 1.26 (fm),
rs = 1.39 (fm),
a = aso= 0.76 (fm),
b = 0.40 (fm).

MT=2 Elastic scattering cross section
Derived by subtracting partial cross sections from the total cross section.

MT=4,51-53,91 Inelastic scattering cross sections
Calculated with optical and statistical model code CASTHY /2/.

Level scheme

Level scheme was taken from Table of Isotopes /4/.

No.	Energy(MeV)	Spin-Parity
g.s.	0.0	0 +

1	1.347	2 +
2	3.024	2 +
3	3.613	3 −

Levels above 4.463 MeV were assumed to be overlapping.

Level density parameters (Gilbert and Cameron /5/)

isotope	46	47
a (1/MeV)	7.135	7.075
S-C(1/SQRT(MeV))	3.03	3.08
Delta(MeV)	3.37	1.83
Ex (MeV)	9.131	7.522

MT=16 (n,2n) cross section
Based on available data.
MT=102 Capture cross section
Calculated with CASTHY /2/.
MT=103,107 (n,p) and (n,alpha) cross sections
Statistical and pre-equilibrium model calculations using the optical potential parameters and the level density parameters given above. Fitted to available data.
MT=251 mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons
MT=2,51-53,91
Optical model calculation
MT=16
Isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,91
Evaporation spectra.

References
1) Mughabghab S.F. et al.: Neutron Cross Sections, Vol. 1, Part A (1981).
2) Igarasi S.: J. Nucl. Sci. Thecnol., 12, 67 (1975).
3) Fu C.Y.: Atomic Data and Nuclear Data Table 17, 127 (1976).
4) Lederer C.M. and Shirley V.S.: Table of Isotopes, 7th Ed., Wiley-Interscience (1978).
5) Gilbert A. and Cameron A.G.W.: Can. J. Phys. 43, 1446 (1965).

20-Ca- 48 MAT number = 2206

20-Ca- 48 Mitsui E.S.Eval-Apr80 M.Hatchya
Dist-Mar83 Rev1-Feb84

History
80-04 New evaluation was made by M.Hatchya (Mitsui).
83-11 Ang. dist. was modified.
84-02 Comment was added.

MF=1 General Information
MT=451 Descriptive data and dictionary

MF=2 Resonance Parameters
MT=151 Resolved resonance parameters for MLBW formula
Resonance energy region = 1.0E-5 eV to 400 keV.
No s-wave resonances were given. P-wave resonance paremeters were evaluated on the basis of BNL 325 3rd ed. /1/.

Calculated 2200-m/sec cross sections and resonance integrals

	2200-m/sec	Res.Integ.
elastic	2.900 b	-
capture	1.090 b	0.492 b
total	3.990 b	-

MF=3 Neutron Cross Sections
Below 400 keV, background cross sections were given.
Above resonance region, data were evaluated as follows.

MT=1 Total cross section
The optical model calculation with CASTHY /2/ was adopted.

Optical potential parameters were taken from Ref. /3/.

V = 46.72	(MeV),
Ws = 9.13	(MeV),
Vso= 5.37	(MeV),
r0 = rso = 1.26	(fm),
rs = 1.39	(fm),
a = aso= 0.76	(fm),
b = 0.40	(fm).

MT=2 Elastic scattering cross section
Derived by subtracting partial cross sections from the total cross section.
MT=4,51-55,91 Inelastic scattering cross sections
Calculated with optical and statistical model code CASTHY /2/.

Level scheme

Level scheme was taken from Table of Isotopes /4/.

No.	Energy(MeV)	Spin-Parity
g.s.	0.0	0 +

1	3.8317	2 +
2	4.503	4 +
3	4.5069	3 −
4	4.6119	3 +
5	5.3696	3 −

Levels above 6.6137 MeV were assumed to be overlapping.

Level density parameters (Gilbert and Cameron /5/)

isotope	48	49
a (1/MeV)	6.84	7.20
S-C(1/SQRT(MeV))	3.07	3.19
Delta(MeV)	3.13	1.83
Ex (MeV)	8.76	7.39

MT=16 (n,2n) cross section
Based on available data.
MT=102 Capture cross section
Calculated with CASTHY /2/.
MT=103 (n,p) cross sections
Statistical and pre-equilibrium model calculations using the optical potential parameters and the level density parameters given above. Fitted to available data.
MT=251 Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons
MT=2,51-55,91
Optical model calculation
MT=16
Isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,91
Evaporation spectra.

References

1) Mughabghab S.F. and Garber D.I.: BNL-325, 3rd Edition, Vol.1 (1973).
2) Igarasi S.: J. Nucl. Sci. Thecnol., 12, 67 (1975).
3) Fu C.Y.: Atomic Data and Nuclear Data Table 17, 127 (1976).
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5) Gilbert A. and Cameron A.G.W.: Can. J. Phys. 43, 1446 (1965).

21-Sc- 45 MAT number = 2211

21-Sc- 45 UTOK,JAERI Eval-Feb82 Y.Oka,T.Nakagawa,Y.Kikuchi
JAERI-M 9981 Dist-Mar83 Rev1-Nov83

History
82-02 Evaluation was maded by Y.Oka (Tokyo University), T.Nakagawa and Y.Kikuchi (JAERI). Details are given in Ref. /1/.
83-11 Angular dist. was modified and comment was added.

MF=2,MT=151 Resonance parameters for MLBW formula
Resolved resonance regin : 1.0E-5 eV - 90 keV
On the basis of the data of Liou+ /2/ and Kenny+ /3/.
Adjusted to reproduce
1) total cross section minimum at 2 keV : 0.23 b /4/.
2) thermal cross sections of BNL-325,3rd ed.

Calculated thermal cross sections and resonance integrals:

	2200 m/s value	res.int.
total	51.05 b	-
elastic	25.03 b	-
capture	26.02 b	11.3 b

MF=3 Cross Sections
MT=1,2,4,51-61,91,102 Sig-t,Sig-el,Sig-in,Sig-c
Calculated with optical and statistical models.
Optical potential parameters were obtained by fitting the data of Foster+ /5/ and Barnard+ /6/ :

V = 56.15 - 0.2189*En	,Ws= 8.698	,Vso= 6.874	(MeV)
r = 1.16	,rs= 1.288	,rso= 1.185	(fm)
a = 0.677	,b = 0.310	,aso= 0.76	(fm)

Statistical model calculation with CASTHY code /7/.
Competing processes : (n,p),(n,alpha),(n,2n).
Level fluctuation considered.
The level scheme taken from Ref./8/:

No	Energy(MeV)	Spin-Parity
g.s.	0	7/2 -
1	0.0124	3/2 +
2	0.3764	3/2 -
3	0.5429	5/2 +
4	0.7202	5/2 +
5	0.9391	1/2 +
6	0.9745	7/2 +
7	1.2364	11/2 -
8	1.3032	3/2 +
9	1.4334	9/2 +
10	1.6615	9/2 -
11	1.8006	5/2 +

Continuum levels assumed above 1.9 MeV.
The level density parameters : Gilbert and Cameron /9/.
The gamma-ray strength function was determined so that Sig-c = 32 mb at 100 keV /3/.

MT=16　　(n,2n)
Evaluated on the basis of the data of Holub+ /10/.

MT=103,107　　(n,p),(n,alpha)
Taken from compilation by Alley and Lessler /11/.

MT=251　　Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons
MT=2　　Calculated with optical model.
MT=16　　Isotropic in laboratory system.
MT=51-61　　90 deg. symmetry in center of mass system.
MT=91　　90 deg. symmetry in laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,91　　Evaporation spectrum.

References
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23-V - 51 MAT number = 2231

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 23-V - 51 JAERI          Eval-Oct82 S.Tanaka
JAERI-M 82-151            Dist-Mar83 Rev1-Feb84
History
82-10 Evaluation was made by S. Tanaka (JAERI).  Details are
      given in Ref. /1/.
83-11 Q value and threshold energy of 2nd level was corrected.
      Comment data were added.
84-02 Background cross sections were replaced with correct data.

MF=1  General Information
  MT=451  Descriptive data and dictionary

MF=2, MT=151          Resonance parameters
   Resolved resonances for MLBW formula : 1.0E-5 eV - 100 keV
           Parameters were taken from BNL 325 3rd edition /2/, and
           modified to reproduce experimental total cross section.
           Cross sections calculated with these parameters are to
           be corrected by adding MF=3, MT=1, 2 and 102 data.

      Calculated 2200-m/sec cross sections and resonance integrals
                       2200 m/sec      Res. Integ.
           elastic      4.805 b           -
           capture      4.900 b         2.53 b
           total        9.705 b           -

MF=3  Neutron Cross Sections
   Below 100 keV.
      Background cross sections are given.
   100 - 500 keV.
      MT=1   Total
           Based on the following experimental data.
           100 - 220 keV, data of Rohr and Friedland /3/.
           220 - 360 keV, data of Smith et al. /4/ with energy
                          shift.
           360 - 500 keV, data of Cierjacks et al. /5/.
      MT=2   Elastic scattering
           Obtained by subtracting the sum of MT=102 and 51 from
           MT=1.
      MT=51  Inelastic scattering to the 1st level
           Hauser-Feshbach calculation mentioned below.
      MT=102 capture
           Based on the following experimental data.
           100 - 210 keV, data of Winter et al. /6/.
           210 - 500 keV, data of Dudey et al. /7/.
   Above 0.5 MeV.
      MT=1,2,4,51-76,91,102  Total, Elastic, Inelastic and Capture
           Calculated with optical and statistical models except
           for MT=51 and 52 data in 4.5 - 20 MeV, which follow the
           data of Perey and Kinney /8/ and extrapolation of their
           data above 8.5 MeV.  The effect of this exception and
           threshold reactions are reflected in MT=2 data.
```

The spherical optical potential parameters:

$V = 49.50 - 0.33*En$, $Vso = 7.0$ (MeV)
$Ws = 4.6 + 0.34*En$, $Wv = 0$ (MeV)
$r = rs = rso = 1.23$ (fm)
$a = aso = 0.65$, $b = 0.48$ (fm).

Statistical model calculation with CASTHY code /9/ was perfomed. MT=102 data were normalized to the experimental data of Dudey et al. /7/ at 0.5 MeV.

The level scheme taken from Ref. /10/:

No	Energy(MeV)	Spin-Parity
g.s.	0	7/2 -
1	0.320	5/2 -
2	0.929	3/2 -
3	1.609	11/2 -
4	1.813	9/2 -
5	2.409	3/2 -
6	2.545	1/2 +
7	2.675	3/2 +
8	2.699	15/2 -
9	2.790	(9/2 -)
10	3.084	5/2 -
11	3.195	(5/2 -)
12	3.215	3/2 -
13	3.262	5/2 -
14	3.280	5/2(+)
15	3.381	3/2 -
16	3.383	9/2 -
17	3.386	13/2 -
18	3.396	13/2 -
19	3.412	(9/2 -)
20	3.452	9/2 -
21	3.515	(13/2 -)
22	3.569	(13/2 -)
23	3.576	(3/2 -)
24	3.614	11/2 -
25	3.631	(1/2 -)
26	3.674	3/2 -

( ) : arbitrarily assigned.

Continuum levels assumed above 3.68 MeV. The level density parameters of Dilg et al. /11/ were used.

MT=16 (n,2n)

Guided by experimental data of Frehaut et al. /12/.

MT=22 (n,n'alpha)

Based on the assertion of Hillman /13/.

MT=28 (n,n')

Given by subtractiong the (n,p) cross section (MT=103) from the (n,xp) cross section calculated by Kitazawa and Isogai /14/.

MT=103 (n,p)

Kitazawa and Isogai's calculation /14/ normalized to Bormann's experimental data /15/ at 13.2 MeV.

MT=104 (n,d)

Calculation of Guerther et al. /16/.

MT=105 (n,t)

Roughly the same shape as the (n,d) cross section was adopted by normalizing to 0.001 barns at 14 MeV.

MT=107 (n,alpha)
Follows experimental data of Paulsen et al. /17/.
MT=251 Mu-ber
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons
MT=2 Calculated with optical model.
MT=51-76,91 Calculated with Hauser-Feshbach formula.
MT=16,22,28 Isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,22,28,91 Evaporation spectra.

References

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2) Maghabghab,S.F. and Garber,D.I:BNL 325,3rd Ed.,Vol.1 (1973).
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5) Cierjacks,S. et al.:KfK 1000 (1968).
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16) Guenther,P. et al.:ANL/NDM-24 (1977).
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24-Cr- 0 MAT number = 2240

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24-Cr- 0 JAERI        Eval-Aug82 T.Asami
                      Dist-Mar83 Rev1-Nov83
History
82-08 New evaluation was made by T. Asami (JAERI) for JENDL-2.
83-11 Modification for MF=4.

MF=1  General Information
  MT=451  Descriptive data and dictionary

MF=2  Resonance Parameters
  MT=151  Resolved resonance parameters for MLBW formula
     Resolved resonance region :
            1.0E-5 eV to 300 keV for Cr-50, Cr-52 and Cr-54.
            1.0E-5 eV to 120 keV for Cr-53.
     Resonance parameters were evaluated from the following data:
        Cr-50 : Stieglitz+71 /1/, Beer+74 /2/, Allen+77 /3/ and
                Kenny+77 /4/.
        Cr-52 : same as above.
        Cr-53 : same as above and Mueller+71 /5/.
        Cr-54 : Stieglitz+71 /1/, BNL-325 /6/, Allen+77 /3/ and
                Kenny+77 /4/.
     For unknown radiative widths, assumed were average values
     of known widths.  Effective scattering radii of Cr-50, Cr-53
     and Cr-54 were taken from BNL-325 /6/ and radius of Cr-52
     was detrmined to get a good fit to the experimental total
     cross sections.

     calculated 2200-m/s cross sections and res. integrals.
                       2200-m/s      res. integ.
        elastic         3.830 b          -
        capture         3.070 b        1.60 b
        total           6.900 b          -

MF=3  Neutron Cross Sections

  Below 300 keV.
     Background cross sections were applied to reproduce the
     2200-m/s capture cross section of 3.07 barns and elastic
     scattering of 3.8 barns.  Contribution from Cr-53 in the
     energy range from 120 to 300 keV were also considered as
     background cross sections.

  Above 300 keV.
  MT=1    Total
     Cross sections in the energy range of 300 keV to 7 MeV were
     estimated from the experimental data of Cierjacks+68 /7/.
     the data above 7 MeV were calculated by using optical model
     code CASTHY /8/.  Potential parameters /9/ were obtained by
     fitting average total cross section of natural chromium.
        V = 50.05 - 0.262*E, Ws= 4.87 + 0.352*E, Vso= 7.0 (MeV)
        r0= 1.24           , rs= 1.4           , rso= 1.24(fm)
```

2 of Natural Chromium

a0= 0.48 , b = 0.4 , aso= 0.48(fm)

MT=2 Elastic scattering
(Total)- (All other partial cross sections)
MT=4,51-90,91 Inelastic scattering
Calculated with statistical and optical model code CASTHY/9/ for four stable isotopes, and constructed taking into account of their isotope abundances. In the calculation, optical potential parameters given above and level density parameters by Yoshida /10/ were used. Level schemes were taken from Ref. /11/. Level energies and corresponding isotopes are as follows:

MT	Energy(MeV)	Isotope	MT	Energy(MeV)	Isotope
51	0.5638	53	71	2.7071	53
52	0.7839	50	72	2.7678	52
53	0.8343	54	73	2.7711	53
54	1.0060	53	74	2.8256	53
55	1.2891	53	75	2.8275	54
56	1.4341	52	76	2.9268	50
57	1.5361	53	77	2.9649	52
58	1.8225	54	78	2.9920	53
59	1.8829	50	79	3.0718	54
60	1.9729	53	80	3.0831	53
61	2.1717	53	81	3.0920	53
62	2.2332	53	82	3.1139	52
63	2.3200	53	83	3.1369	53
64	2.3697	52	84	3.1578	54
65	2.4523	53	85	3.1618	52
66	2.6177	54	86	3.1636	50
67	2.6471	52	87	3.1666	50
68	2.6561	53	88	3.1782	53
69	2.6686	53	89	3.2203	54
70	2.7056	53	90	3.2428	53

Contributions from the levels above 3.260 MeV were put together into continuum (MT=91).
MT=16 (n,2n)
Constructed from the evaluated (n,2n) data for CR-50, 52, 53 and 54. Data for Cr-50 and Cr-52 were estimated from the experimental data. Data for Cr-53 and 54 were obtained from calculations with evaporation-model code GROGI /12/, and adjusted to the expermental data of Frehaut+80 /13/ for natural chrominm in the energy range below 15 MeV.
MT=28 (n,n'p)
Constructed from the evaluated (n,n'p) data for Cr-50, 52, 53 and 54 which were calculated with evaporation-model code GROGI /12/, and normalized to the experimental data.
MT=102 Capture
Calculated with statistical and optical model code CASTHY/8/, and normalized to reproduce 10 milli-barns at 50 keV.
MT=103 (n,p)
Constructed from the evaluated (n,p) data for Cr-50, 52, 53 and 54 which were calculated with evaporation-model code GROGI /12/, and normalized to the experimental data.
MT=107 (n,alpha)
Constructed from the evaluated (n,aLpha) data for Cr-50, 52, 53 and 54 which were calculated with evaporation-model code

GROGI /12/, and normalized to the experimental data. Data for Cr-52 were modified in the energies below 10 MeV to repoduce the experimental data of Paulsen+80 /4/ for natural chromium.

MT=251 Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons

MT=2	Calculated with optical model.
MT=51-90	Isotoropic in the center-of-mass system.
MT=16,28,91	Isotoropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,28,91 Evaporation spectra were given.

References

1) Stieglitz R.G. et al.: Nucl. Phys. A163, 592 (1971).
2) Beer H. and Spencer R.P.: KfK-2063 (1974), also Nucl. Phys. A240, 29 (1975).
3) Allen B.J. and Musgrove A.R.de L.: Neutron Data of Structural Materials for FBR, 1977 geel Geeting, p.447, Pergamon Prees (1979).
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7) Cierjacks S. et al.: KfK-1000 (1968).
8) Igarasi S.: J. Nucl. Sci. Thecnol., 12, 67 (1975).
9) Kawai M.: unpublished.
10) Yoshida T.: unpublished.
11) Lederer C.M. and Shirley V.S.: Table of Isotopes, 7th Ed., (1978).
12) Gilat J.: BNL-50246(T-580) (1970).
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24-Cr- 50 MAT number = 2241

24-Cr- 50 JAERI Eval-Aug82 T.Asami
Dist-Mar83 Rev1-Nov83

History
82-08 New evaluation was made by T. Asami (JAERI) for JENDL-2.
83-11 Modification for MF=4.

MF=1 General Information
MT=451 Descriptive Data and Dictionary

MF=2 Resonance Parameters
MT=151 Resolved resonance parameters for MLBW
Resolved resonance region : 1.0E-5 eV - 300 keV
Evaluation based on the experimental data by Stieglitz+71 /1/, Beer+74 /2/, Allen+77 /3/ and Kenny+77 /4/.
assumed gamma width = 1.81 eV for s-wave and 0.92 eV for p-wave resonances.
Effective scattering radius = 5.4 fm /5/.

Calculated 2200-m/s cross sections and res. integrals.

	2200-m/s	res. integ.
elastic	8.581 b	-
capture	15.90 b	7.77 b
total	24.48 b	-

MF=3 Neutron Cross Sections

Resonance region (from 1.0E-5 eV to 300 keV)
Background cross sections were applied to reproduce the 2200-m/s capture cross section of 15.9 +- 0.2 barns /5/, and to modify the elastic scattering cross section in the lower energy region.

Above 300 keV
MT=1 Total
Calculated with optical model. Potential parameters /6/ were obtained by fitting Cr-natural average total cross section.

V = 50.05 - 0.262*E, Ws= 4.87 + 0.352*E, Vso= 7.0 (MeV)
r0= 1.24 , rs= 1.4 , rso= 1.24(fm)
a0= 0.48 , b = 0.4 , aso= 0.48(fm)

MT=2 Elastic scattering
(Total)- (All other partial cross sections)
MT=4,51-70,91 Inelastic scattering
Calculated with statistical and optical model code CASTHY/7/.

Level scheme taken from Ref. /8/.

No.	Energy(MeV)	Spint-Parity
g.s.	0.0	0 +
1	0.7833	2 +
2	1.8814	4 +

3	2.9245	2 +
4	3.1611	2 +
5	3.1641	6 +
6	3.3247	4 +
7	3.5946	4 +
8	3.6101	4 +
9	3.6295	1 +
10	3.6940	0 +
11	3.6978	2 +
12	3.7924	5 +
13	3.8261	6 +
14	3.8443	3 +
15	3.8500	0 +
16	3.8752	6 +
17	3.8953	2 +
18	3.8983	4 +
19	3.9377	3 +
20	4.0517	0 +

Continuum levels assumed above 4.066 MeV.
Level density parameters of Yoshida /9/ were used.

MT=16 (n,2n)
Evaluated mainly on the basis of the experimental data of Bormann65 /10/.

MT=28 (n,n'p)
Calculated with evaporation-model code GROGI /11/, and normalized to 0.393 barns at 14.7 MeV which was estimated from the experimental data of Qaim+82 /12/ and Grimes+79/13/.

MT=102 Capture
Calculated with statistical and optical model code CASTHY/7/.

MT=103 (n,p)
Calculated with evaporation-model code GROGI /11/, and normalized to 0.437 barns at 14.7 MeV which was estimated based on the experimental data of Grimes+79 /13/.

MT=107 (n.alpha)
Calculated with evaporation-model code GROGI /11/, and normalized to 0.108 barns at 14.8 MeV which is an average value of the experimental data of Grimes+79 /13/ and Dolja+73 /14/.

MT=251 Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons
MT=2,51-70 Calculated with CASTHY /7/.
MT=91 Calculated with CASTHY, and the same distribution was assumed in the lab system.
MT=16,28 Assumed to be isotropic in the lab system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,28,91 Evaporation spectra were given.

References

1) Stieglitz R.G. et al.: Nucl. Phys. A163, 592 (1971).
2) Beer H. and Spencer R.P.: KfK-2063 (1974), also Nucl. Phys. A240, 29 (1975).
3) Allen B.J. and Musgrove A.R.De L.: Neutron Data of Structural Materials for FBR, 1977 Geel Meeting, p.447, Pergamon Prees

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5) Mughabghab S.F. and Garber D.L.: BNL-325 3rd Ed., Vol.1 (1973)
6) Kawai M.: unpublished.
7) Igarasi S.: J. Nucl. Sci. Thecnol., 12, 67 (1975).
8) Lederer C.M. and Shirley V.S.: Table of Isotopes, 7th Ed., (1978).
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14) Dolja G.P. et al.: 1973 Kiev Conf., Vol.3, 131 (1973).

24-Cr- 52   MAT number = 2242

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 24-Cr- 52 JAERI       Eval-Aug82 T.Asami
                       Dist-Mar83 Rev1-Nov83
History
82-08 New evaluation was made by T. Asami (JAERI) for JENDL-2.
83-11 Modification for MF=4.

MF=1  General Information
  MT=451  Descriptive data and dictionary

MF=2  Resonance Parameters
  MT=151  Resolved resonance parameters for MLBW formula
     Resolved resonance region : 1.0E-5 eV - 300 keV
     Evaluation based on the experimental data by Stieglitz+71
     /1/, Beer+74 /2/, Allen+77 /3/ and Kenny+77 /4/.
     Assumed gamma width = 1.86 eV for s-wave and 0.57 eV for
                              p-wave resonances.
     Effective scattering radius = 5.1 fm.

     Calculated 2200-m/s cross sections and res. integrals.
                        2200-m/s      res. integ.
        elastic         2.223 b          -
        capture         0.7599b        0.493 b
        total           2.983 b          -

MF=3  Neutron Cross Sections

  Resonance region (from 1.0E-5 eV to 300 keV)
     Background cross sections were applied to reproduce the
     2200-m/s capture cross section of 0.76 +- 0.06 barns /5/,
     and to modify the elastic scattering cross section in the
     lower energy region.

  Above 300 keV
  MT=1     Total
     Calculated with optical model.  Potential parameters /6/
     were obtained by fitting Cr-natural average total cross
     section.
        V = 50.05 - 0.262*E, Ws= 4.87 + 0.352*E, Vso= 7.0 (MeV)
        r0= 1.24           , rs= 1.4            , rso= 1.24(fm)
        a0= 0.48           , b = 0.4            , aso= 0.48(fm)

  MT=2     Elastic scattering
     (Total)- (All other partial cross sections)
  MT=4,51-73,91  Inelastic scattering
     Calculated with statistical and optical model code CASTHY/7/.
     Calculated values for MT=51 and 52 were modified using the
     experimental ones of Kinney+74 /21/ in the energies above
     5.0 MeV.

     Level scheme taken from Ref. /8/.
         No.      Energy(MeV)    Spint-Parity
```

2 of chromium-52

g.s.	0.0	0 +
1	1.4341	2 +
2	2.3696	4 +
3	2.6470	0 +
4	2.7677	4 +
5	2.9648	2 +
6	3.1138	6 +
7	3.1617	2 +
8	3.4152	4 +
9	3.4722	3 +
10	3.6158	5 +
11	3.7000	2 +
12	3.7717	2 +
13	3.9460	4 +
14	3.9512	1 +
15	4.0154	5 +
16	4.0380	4 +
17	4.5630	3 +
18	4.6270	5 +
19	4.7060	2 +
20	4.7410	2 +
21	4.7507	8 +
22	4.7940	0 +
23	4.8045	6 +

Continuum levels assumed above 4.816 MeV.
Level density parameters of Yoshida /9/ were used.

MT=16 (n,2n)
Evaluated mainly on the basis of the experimental data of Wenusch+62 /10/, Bormann+68 /11/, Maslov+72 /12/, Qaim72/13/, Sailer+77 /14/ and Molla81 /15/.

MT=28 (n,n'p)
Calculated with evaporation-model code GROGI /16/, and normalized to 0.085 barns at 14.8 MeV which was estimated from the experimental data of Grimes+79/17/.

MT=102 Capture
Calculated with statistical and optical model code CASTHY/7/, and normalized to reproduce 10 milli-barns at 50 keV for Cr-natural.

MT=103 (n,p)
Calculated with evaporation-model code GROGI /16/, and normalized to 0.095 barns at 14.7 MeV which is an average value of the experimental data. Calculated data below 9 MeV were modified using the experimental data of Smith+79 /18/.

MT=107 (n,alpha)
Calculated with evaporation-model code GROGI /16/.
Calculated values were normalized to 0.038 barns at 14.8 MeV which is an average value of the experimental data of Grimes+79 /17/ and Dolja+73 /19/, and modified to reproduce the experimental values of Cr-natural (n,a) by Paulsen+80/20/ in the energy region below 10 MeV.

MT=251 Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons
MT=2,51-70 Calculated with CASTHY /7/.
MT=91 Calculated with CASTHY, and the same distribution

was assumed in the lab system.
MT=16,28 Assumed to be isotropic in the lab system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,28,91 evaporation spectra were given.

References

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21) Kinney W.E. et al.: ORNL-4806 (1974).

24-Cr- 53   MAT number = 2243

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24-Cr- 53 JAREI        Eval-Aug82 T.Asami
                       Dist-Mar83 Rev1-Nov83
History
82-08 New evaluation was made by T. Asami (JAERI) for JENDL-2.
83-11 Modification for MF=4.

MF=1  General Information
  MT=451  Descriptive data and dictionary

MF=2  Resonance Parameters
  MT=151  Resolved resonance parameters for MLBW formula
     Resolved resonance region : 1.0E-5 eV -- 120 keV
     Evaluation mainly based on the experimental data by Stieglitz
     +71 /1/, Beer+74 /2/, Allen+77 /3/, Kenny+77 /4/ and
     Mueller+71/5/.
     Assumed gamma width = 2.21 eV for s-wave and 0.61 eV for
                           p-wave resonances.
     Effective scattering radius = 6.9 fm /6/.

     Calculated 2200-m/s cross sections and res. integrals.
                      2200-m/s      res. integ.
        elastic       16.31  b          -
        capture       18.20  b        8.86 b
        total         34.51  b          -

MF=3  Neutron Cross Sections

  Resonance region (from 1.0E-5 eV to 120 keV)
     Background cross sections were applied to reproduce the
     2200-m/s capture cross section of 18.2 -- 1.5 barns /6/.
     and to modify the elastic scattering cross section in the
     lower energy region.

  Above 120 keV
  MT=1    Total
     Calculated with optical model.  Potential parameters /7/
     were obtained by fitting Cr-natural average total cross
     section.
        V = 50.05 - 0.262*E, Ws= 4.87 + 0.352*E, Vso= 7.0 (MeV)
        r0= 1.24          , rs= 1.4           , rso= 1.24(fm)
        a0= 0.48          , b = 0.4           , aso= 0.48(fm)

  MT=2    Elastic scattering
      (Total)- (All other partial cross sections)
  MT=4.51-72.91  Inelastic scattering
      Calculated with statistical and optical model code CASTHY/8/.

      Level scheme taken from Ref. /9/.
         No.      Energy(MeV)    Spint-Parity
         g.s.      0.0              3/2 -
          1        0.5640           1/2 -
```

2	1.0063	5/2 -
3	1.2895	7/2 -
4	1.5366	7/2 -
5	1.9736	5/2 -
6	2.1724	11/2 -
7	2.2330	9/2 -
8	2.3208	3/2 -
9	2.4531	3/2 -
10	2.6570	5/2 -
11	2.6695	1/2 -
12	2.7065	13/2 -
13	2.7080	3/2 -
14	2.7720	5/2 -
15	2.8266	11/2 -
16	2.9930	7/2 -
17	3.0841	15/2 -
18	3.0930	5/2 -
19	3.1380	5/2 -
20	3.1793	3/2 -
21	3.2439	11/2 -
22	3.2610	5/2 -

Continuum levels assumed above 3.435 MeV.
Level density parameters of Yoshida /10/ were used.

MT=16 (n,2n)
Calculated with evalporation-model code GROGI /11/, and normalized to the evaluated value of Boedy+73 /18/ (0.89 b at 14.8 MeV) and modified to reproduce the experimental values of Cr-natural (n,2n) by Frehau+80 /19/ in the range of 9.0 to 15 MeV.

MT=28 (n,n'p)
Calculated with evaporation-model code GROGI /11/, and normalized to 7.2 milli-barns at 14.8 MeV which is an average value of the experimental data by Husain+67 /12/ and Webber+68 /13/.

MT=102 Capture
Calculated with statistical and optical model code CASTHY/8/, and normalized to reproduce 10 milli-barns at 50 keV for Cr-natural.

MT=103 (n,p)
Calculated with evaporation-model code GROGI /11/, and normalized to 0.0416 barns at 14.8 MeV (average value of the experimental data by Husain+67 /12/, Prasad+71 /14/, Valkonen76 /15/ and Qaim+77 /16/).

MT=107 (n,alpha)
Calculated with evaporation-model code GROGI /11/, and normalized to 0.0451 barns at 14.7 MeV by Dolja+73 /14/.

MT=251 Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons

MT=2 Calculated with CASTHY /7/.
MT=16,28 Assumed to be isotropic in the lab system.
MT=51-72 Assumed to be isotropic in the center-of-mass system.
MT=91 Calculated with CASTHY, and the same distribution was assumed in the lab system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,28,91 Evaporation spectra were given.

References

1) Stieglitz R.G. et al.: Nucl. Phys. A163, 592 (1971).
2) Beer H. and Spencer R.P.: KfK-2063 (1974), also Nucl. Phys. A240, 29 (1975).
3) Allen B.J. and Musgrove A.R.De L.: Neutron Data of Structural Materials for FBR, 1977 Geel Meeting, p.447, Pergamon Prees (1979).
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24-Cr- 54 MAT number = 2244

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 24-Cr- 54 JAERI       Eval-Aug82 T.Asami
                       Dist-Mar83 Rev1-Nov83
History
82-08 New evaluation was made by T. Asami (JAERI) for JENDL-2.
83-11 Modification for MF=4.

MF=1  General Information
  MT=451  Descriptive data and dictionary

MF=2  Resonance Parameters
  MT=151  Resolved resonance parameters for MLBW formula
     Resolved resonance region : 1.0E-5 eV - 300 keV
     Evaluation based on the experimental data by Stieglitz+71
     /1/, Allen+77 /2/ and Kenny+77 /3/, and the recommended
     data in BNL-325 3rd edition /4/.
     Assumed gamma width = 2.5 eV for s-wave and 0.28 eV for
                           p-wave resonances.
     Effective scattering radius = 4.8 fm /5/.

     Calculated 2200-m/s cross sections and res. integrals.
                     2200-m/s     res. integ.
        elastic       1.914 b        -
        capture       0.360 b      0.193 b
        total         2.274 b        -

MF=3  Neutron Cross Sections

  Resonance region (from 1.0E-5 eV to 300 keV)
     Background cross sections were applied to reproduce the
     2200-m/s capture cross section of 0.36 +- 0.04 barns /5/,
     and to modify the elastic scattering cross section in the
     lower energy region.

  Above 300 keV
  MT=1    Total
     Calculated with optical model.  Potential parameters /5/
     were obtained by fitting Cr-natural average total cross
     section.
        V = 50.05 - 0.262*E, Ws= 4.87 + 0.352*E, Vso= 7.0 (MeV)
        r0= 1.24            , rs= 1.4          , rso= 1.24(fm)
        a0= 0.48            , b = 0.4          , aso= 0.48(fm)

  MT=2    Elastic scattering
     (Total)- (All other partial cross sections)
  MT=4,51-71,91  Inelastic scattering
     Calculated with statistical and optical model code CASTHY/6/.

     Level scheme taken from Ref. /7/.
        No.      Energy(MeV)    Spint-Parity
        g.s.      0.0             0 +
         1        0.8349          2 +
```

2	1.8237	4 +
3	2.6195	2 +
4	2.8294	0 +
5	3.0739	2 +
6	3.1600	2 +
7	3.2225	6 +
8	3.3920	1 +
9	3.4366	2 +
10	3.4680	1 +
11	3.5140	2 +
12	3.6552	4 +
13	3.7198	2 +
14	3.7858	4 +
15	3.7989	4 +
16	3.8640	2 +
17	3.9340	1 +
18	3.9900	3 +
19	4.0160	0 +
20	4.0450	6 +
21	4.0832	4 +

Continuum levels assumed above 4.088 MeV.
Level density parameters of Yoshida /8/ were used.

MT=16 (n,2n)
Calculated with evaporation-model code GROGI /9/, and normalized to 1.12 barns at 14.8 MeV which was evaluated by Boedy+73 /15/.

MT=102 Capture
Calculated with statistical and optical model code CASTHY/6/, and normalized to reproduce 10 milli-barns at 50 keV for Cr-natural.

MT=103 (n,p)
Calculated with evaporation-model code GROGI /9/, and normalized to 0.016 barns at 14.7 MeV (average value of the experimental data by Husain+67 /10/, Valkonen76 /11/ and Qaim+77 /12/).

MT=107 (n,alpha)
Calculated with evaporation-model code GROGI /9/, and normalized to 0.014 barns at 14.7 MeV which is an average value of the experimental data by Husain+67 /10/, Qaim74 /13/ and Sailer+77 /14/.

MT=251 Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons

MT=2,51-70	Calculated with CASTHY /6/.
MT=91	Calculated with CASTHY, and the same distribution was assumed in the lab system.
MT=16	Assumed to be isotropic in the lab system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,91 Evaporation spectra were given.

References

1) Stieglitz R.G. et al.: Nucl. Phys. A163, 592 (1971).
2) Allen B.J. and Musgrove A.R.De L.: Neutron Data of Structural Materials for FBR, 1977 Geel Meeting, p.447, Pergamon Prees

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7) Lederer C.M. and Shirley V.S.: Table of Isotopes, 7th Ed., (1978).
8) Yoshida T.: unpublished.
9) Gilat J.: BNL-50246(T-580) (1970).
10) Husain L. et al.: J. Inorg. Nucl. Chem., 29, 2665 (1967).
11) Valkonen M.: data in EXFOR file (1976).
12) Qaim S.M. et al.: Nucl. Phys., A283, 269 (1977).
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14) Sailer K. et al.: 1977 Kiev Conf., Vol.1, 246 (1977).
15) Boedy Z.T. and Csikai J.: Atom. Energ. Rev., 11, 153 (1973).

25-Mn- 55 MAT number = 2251

25-Mn- 55 FBEC Eval-Dec82 T.Hojuyama
Dist-Mar83 Rev1-Nov83

History
82-12 Data were evaluated by T. Hojuyama (FBEC) for JENDL-2.
83-11 Comment was added.

MF=1 General Information
MT=451 Descriptive data and dictionary

MF=2 Resonance Parameters
MT=151 Resolved resonance parameters for MLBW formula
Energy range from 1.0E-5 to 1.0E+5 eV. Resonance parameters were taken from BNL-325 4th ed.(Ref.1). Effective scattering radius was determined to 5.3 fermi.

Calculated 2200-m/s cross sections and resonance integrals

	2200 m/sec	res. integ.
elastic	2.184 b	-
capture	13.32 b	14.6 b
total	15.50 b	-

MF=3 Neutron Cross Sections
MT= 1 Total cross section
Obtained with optical model calculation. Optical potential parameters were taken from Kawai's evalvation(Ref.2).
——Optical potential parameters——
V =47.856-0.032*En (MeV)
Ws= 5.288+0.342*En (MeV)
Vso=6.90 (MeV)
r0 = rso = 1.24 , rs=1.41 (fm)
aso= a = 0.522, b=0.392 (fm)
MT= 2 Elastic scattering cross section
Obtained by statistical model calculations.
MT=4 & from 51 to 91 Inelastic scattering cross sections
Obtained by statistical and optical model calculations.
Level scheme taken from N.D.S.(Ref.3)

No.	Energy(MeV)	Spin-Parity
g.s.	0.0	5/2 -
1	0.1260	7/2 -
2	0.9843	9/2 -
3	1.2900	1/2 -
4	1.2922	11/2 -
5	1.5289	3/2 -
6	1.8853	7/2 -
7	2.1985	7/2 -
8	2.2153	5/2 -
9	2.2533	3/2 -
10	2.2694	1/2 +
11	2.3118	13/2 -
12	2.3666	5/2 -
13	2.3990	5/2 -

14 2.4286 1/2 +
15 2.5648 3/2 -
Continuum levels assumed above 2.58 MeV.

MT= 16 (n,2n) cross section
Besed on the following exp. data ;
Paulsen(Ref.4) : Thr. - 14.7 MeV
Auchampaugh(Ref.5) : 14.7 - 20.0 MeV
Normalization ;
Energy : 14.7 MeV
Cross section : 787 mb
Data-base : Barrall(Ref.6) & Auchampaugh(Ref.5)

MT=22 & 28 (n,n'a) & (n,n'p) cross sections
Determined by statistical model calculation with preequilibrium effect corrections(Ref.7).
Normalization ;
Method : Cross-section systematics
Energy : 14.7 MeV
Cross-section : 5 mb(n,n'a) & 11 mb(n,n'p)

MT=102 Capture cross section
Based on following exp. data ;
Garg(Ref.8) : < 0.7MeV Dovbenko(Ref.9) : < 1.0MeV
Dovbenko & Menlove(Ref.10) : < 3.5MeV
Menlove : < 10 MeV Schwerer(Ref.11)&Budnar(Ref.12) : > 10 MeV

MT=103 (n,p) cross section
Determined by statistical model calculation(Ref.7)
Normalization ;
Energy : 14.7 MeV
Cross-section : 44.7 mb
Data-base : Prasad(Ref.13) & Allan(Ref.14)

MT=107 (n,a) cross section
Based on the statistical model calculation(Ref.7) <13MeV, and exp. data(Zupranska(Ref.15)) >13MeV.
Normalization ;
Energy : 14.7 MeV
Cross-section : 28.5 mb
Data-base : Dresler(Ref.16) & Zupranska

MT=251 Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons

MT= 2 Elastic scattering based on statistical & optical model calculation.

MT= 16,22,28 & 91 The angular distributions of the secondary neutrons from (n,2n),(n,n'a),(n,n'p) & inelastic processes to the continuum levels assumed to be isotropic in the laboratory system.

MT= from 51 to 65 The angular distributions of the secondary neutrons from inelastic processes assumed to be isotropic in the c.o.m. system.

MF=5 Energy Distributions of Secondary Neutrons

MT= 16,22,28 and 91 The evaporation spectrum assumed for the secondary neutrons from (n,2n),(n,n'a), (n,n'p) & in- elastic processes.

References

1) Mughabghab et al.: Neutron Cross Sections,1A,(1981)
2) Kawai: NEANDC(J)-61/U(1979)18 (JNDC Progress Report)
3) Kocher: Nucl. Data Sheets,18,(1976) 463
4) Paulsen et al.: J. Nucl. Energy,19AB,(1965) 907
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7) Young et al.: LA-6947 (1977)
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8) Garg et al.: Phys. Rev.,18C,(1978) 2079
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12) Budnar et al.: INDC(YUG)-6 (1979)
13) Prasad et al.: Nuovo Cimento,3A,(1971) 467
14) Allan: Nucl. Phys.,24,(1961) 274
15) Zupranska et al.: Acta Phys. Polonica,11B,(1980) 853
16) Dresler: Proc.2nd Int. Symp. on Neutron Induced Reactions, Smolenice (1979) 109

26-Fe- 0 MAT number = 2260

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26-Fe-  0 JNDC        Eval-Oct78 S.Iijima,H.Yamakoshi
                      Dist-Mar83 Rev1-Nov83
History
78-10 New evaluation for JENDL-2.  Details given in Ref. /1/.
83-03 Resonance region was revised by T.Asami and T.Narita.
      The file structure was modified and background data were
      evaluated to reproduce the same cross sections as before.
83-11 The Q values were adjusted to threshold energies.  Other
      small corrections were made.

Natural iron data constructed from Fe-isotopes.  Fe-58 was ignored
because of small abundance.

MF=1  General Information
  MT=451  Descriptive data and dictionary

MF=2  Resonance Parameters
  MT=151 Resolved resonances
      Resonance region = 1.0E-5 eV to 250.0 keV
      The multilevel Breit-Wigner formula was used.  Parameters
      were adopted from the following sources.
         Fe-54 : Pandey+/2/ for 0 - 680 keV. R=5.6 fm from Ref.1
         Fe-56 : Perey+/3/ for -2.0 - 400 keV. R=5.4 fm from fit-
                 ting to total cross section below 60 keV.
         Fe-57 : Allen+/4/ for s-wave resonances, and Beer+/5/
                 for p-wave resonances in 0 - 185 keV.
      For Fe-56, a negative level was added at -3.75 keV with
      neutron width of 100 eV and gamma width of 1.0 eV.  Neutron
      width of 27.67-keV resonance was taken as 1420 eV.

      Calculated 2200 m/s cross sections and res. integrals.
                      2200-m/s      res. integ.
         elastic      12.44  b          -
         capture       2.514 b        1.349 b
         total        14.95  b          -

MF=3  Neutron Cross Sections
      Below 250 keV, background cross sections were given.

  MT=1    Total
      For energies 250 keV - 20 meV, fine resolution data were
      taken by eye-guide using interactive display of NDES (
      Neutron Data Evaluation System) developed by T.Nakagawa at
      the Nuclear Data Center, JAERI.  Below 4 MeV, data of
      Carlson+/6/ were adopted.  Above 4 MeV, data of Cierjacks+
      /7/ were adopted.  Spherical optical model calculation was
      also made (but not adopted as the total cross section for
      JENDL-2).  Parameters are as follows.
         For Fe-56
            V  = 52.644-0.002*E-0.006*E**2, r0=1.166, a0=0.371
            Ws = 2.869+0.289*E            , rs=1.450, as=0.480
```

Vso= 6.138 , rso=1.166,aso=0.371

For Fe-54 and -57

V = 50.136-0.150*E , r0=1.240, a0=0.500

Ws = 4.600+0.340*E , rs=1.400, as=0.400

Vso= 7.00 , rso=1.240,aso=0.500

Energies in MeV unit, lengths in fm unit.

MT=2 Elastic scattering

Given as total minus other cross sections

MT=16 (n,2n)

Calculated using essentially the method of Pearlstein. Normalized to experimental data at 14 MeV.

MT=4,51-91 Inelastic scattering

Level excitation cross sections were calculated for each isotope with the optical and statistical model code CASTHY /8/, and the results were modified to obtain a better fit to experimental data. The modifications are :

Fe-54 : Calculation was multiplied by a factor of 1.5.

Fe-56 : Calculation was multiplied by a factor of 1.17. The 1st level excitation below 2.12 MeV was replaced with fine resolution data of Kinney+ /9/.

Fe-57 : CASTHY calculation for 1st level (14.4 keV) Excitation was replaced in the energy from 14.65 keV to 200 keV by calculated cross sections from resonance parameters.

For natural iron, isotopic level excitation cross sections with about equal threshold energies were condensed together. Isotopic level schemes recommended by R.Nakasima and condensed level scheme are tabulated below. Q-values of natural iron levels were calculated from their threshold energies.

		Fe-54		Fe-56		Fe-57	
No.	-(Q-val(MeV))	E(MeV)	J-P	E(MeV)	J-P	E(MeV)	J-P
1	0.0144	-		-		0.0144	3/2-
2	0.1366	-		-		0.1366	5/2-
3	0.3666	-		-		0.3667	3/2-
4	0.7064	-		-		0.7067	5/2-
5	0.8468	-		0.8468	2+	-	
6	1.0076	-		-		1.008	7/2-
7	1.1976	-		-		1.198	9/2-
8	1.2647	-		-		1.2651	1/2-
9	1.3563	-		-		1.3568	(1/2-)
10	1.4091	1.4082	2+	-		-	
11	1.6271	-		-		1.6277	3/2-
12	1.7251	-		-		1.7257	3/2-
13	1.9743	-		-		1.975	(1/2-)
						1.9894	9/2-
14	2.0850	-		2.0851	4+	-	
15	2.1162	-		-		2.117	5/2-
16	2.5397	2.5382	4+	-		-	
17	2.5629	2.5613	0+			-	
18	2.6574			2.6576	2+	-	
19	2.9416	2.9499	6+	2.9417	0+	-	
		2.9590	2+	2.9600	2+		
20	3.1199	-		3.1200	(1+)	-	
				3.1229	4+		

3 of Natural Iron

21	3.1680	3.1661 2+	－	－
22	3.2972	3.2952 4+	－	－
23	3.3470	3.3450 3−	3.3702 2+ 3.3884 6+	－
24	3.4451	－	3.4454 3+ 3.4493 1+	－
25	3.6007	－	3.6009 2+ 3.6019 2+ 3.6070 0+	－
26	3.7478	－	3.7480 2+ 3.7558 6+	－
27	3.8318	3.8338 4+	3.832 2+ 3.8565 3+	－
28	4.0354	4.033 4+ 4.047 4+ 4.072 3+	4.0940 (3+)	－
29	4.1001	－	4.1003 (3+) 4.1200 (4+)	－
30	4.2656	4.263 4+ 4.292 0+	4.2982 4+ 4.302 (0+)	－
31	4.3948	－	4.3950 3+ 4.401 (2+)	－
32	4.4582	－	4.4584 3+	－
33	4.5098	－	4.5100 3−	－

Continuum level excition including each isotopic continuum level and 15, 16, 17, 18, 19, 20th levels of Fe-54.

Level density parameters for modified Gilbert-Cameron formula (as proposed in FPND Conf., Petten (1977) /10,11/) are as follows. For nortation, see Ref. /11/.

Isotope	a(1/MeV)	T(MeV)	C(1/MeV)	EX(MeV)
Fe-54	6.19	1.45	0.532	12.0
Fe-55	6.90	1.30	1.274	9.0
Fe-56	7.58	1.27	0.746	10.0
Fe-57	8.27	1.14	1.694	7.70
Fe-58	8.45	1.16	0.742	10.0

MT=102 Capture

Background cross section was given below 3 keV. Between 3 and 800 keV, recommended cross section by Ribon /12/ was adopted. Above 800 keV, CASTHY calculation was used adjusting S-gamma to the experimental cross sections of 10 mb at 200 keV for Fe-54 and 5.5 mb at 200 keV for Fe-56. obtained effective S-gamma values are 0.34E-4 for Fe-54 and 0.18E-4 for Fe-56. The S-gamma of 3.53E-4 was used for Fe-57 without adjustment. Giant dipole resonance parameters were taken from systematics of compilation by Berman /13/.

MT=103,107 (n,p) and (n,alpha)

Adopted from experimental data. For Fe-56 (n,alpha), the same cross section as Fe-54 was adopted.

MT=251 Mu-bar

Calculated with CASTHY /8/.

MF=4 Angular Distributions of Secondary Neutrons

MT=2 : CASTHY-code calculation

MT=51-88 : Isotropic in the center-of-mass system

MT=16,91 : Isotropic in the laboratry system

MF=5 Energy Distributions of Secondary Neutrons
MT=16,91 : Evaporation spectrum

References

1) Iijima S. et al.: Proc. NEANDC Topical Discussions in 1979.
Kawai M.: ibid.
Yoshida T.: ibid.
Yamakoshi H. et al.: J. Nucl. Sci. Technol., 17, 477 (1980).
Iijima S. et al.: to be published as JAERI-M report.
2) Pandey M.S. et al.: Proc. Conf. Nuclear Cross Sections and Technology, Washington D.C., (1975), p.748.
3) Perey F.G. et al.: Proc. Specialist Meeting on Neutron Data of Structural Materials for Fast Reactors, Geel, (1977), p.530.
4) Allen B.J. et al.: ibid. (Loc.Cit.), p.476.
5) Beer H. and Spencer R.R.: KfK-2063 (1974).
6) Carlson A.D. and Cerbone R.J.: Nucl. Sci. Eng., 42, 28 (1970).
7) Cierjacks P. et al.: KfK-1000 (1968).
8) Igarasi S. : J. Nucl. Sci. Technol., 12, 67 (1975).
9) Kinney W.E. and Perey F.G.: Nucl. Sci. Eng., 63, 418 (1977).
10) Gruppelaar H.: ECN-13 (1977).
11) Iijima S.: IAEA-213, Proc. IAEA Second Advisory Group Meeting on Fission Product Nuclear Data, Petten, (1977), p.279.
12) Ribon P.: 1977 Geel Conf. (Loc.Cit.), p.168 (1977).
13) Berman B.L.: Atom. Data and Nucl. Data Tables, 15, No.4 (1975)

26-Fe- 54　　MAT number = 2261

26-Fe- 54 JNDC　　Eval-Oct78 S.Iijima,H.Yamakoshi
　　　　　　　　Dist-Mar83 Rev1-Feb84

History
78-10 New evaluation for JENDL-2. Details given in Ref. /1/.
83-11 Small corrections were made.
84-02 Effective scattering radius was corrected. Comment was added.

MF=1 General Information
  MT=451 Descriptive data and dictionary

MF=2 Resonance Parameters
  MT=151 Resolved resonances
    Resonance region - 1.0E-5 eV to 250.0 keV
    The multilevel Breit-Wigner formula was used. Parameters were adopted mainly from Pandey+/2/ by assuming the average radiative width to be 2.5 eV /3/. R=5.6 fm was taken from Ref. /4/.

    Calculated 2200-m/s cross sections and res. integrals.

	2200-m/s	Res. Integ.
elastic	0.4929 b	-
capture	2.156 b	1.33 b
total	2.649 b	-

MF=3 Neutron Cross Sections
    Below 250 keV, background cross sections were given for the total and elastic scattering cross sections on the upper side of the first resonance. Above 250 keV, the cross sections were evaluated as follows.
  MT=1 Total
    Spherical optical model calculation was made by using code CASTHY /5/. Optical potential parameters/1/ are as follows,

        V = 50.136-0.150*E   , r0=1.240, a0=0.500
        Ws = 4.600+0.340*E   , rs=1.400, as=0.400
        Vso= 7.00   , rso=1.240,aso=0.500
              (energies in MeV, lengths in fm)
  MT=2 Elastic scattering
    Given as total minus other cross sections
  MT=16 (n,2n)
    Calculated using essentially the method of Pearlstein /6/, and normalized to experimental data at 14 MeV.
  MT=4,51-91 Inelastic scattering
    Level excitation cross sections were calculated with the optical and statistical model code CASTHY /5/, and the results were multiplied by a factor of 1.5 to obtain a better fit to experimental data. Level scheme was recommended by R.Nakasima /7/ as follows.

No.	Energy(MeV)	Spin-Parity
g.s.	0.0	0 +

1	1.4082	2 +
2	2.5382	4 +
3	2.5613	0 +
4	2.9499	6 +
5	2.9590	2 +
6	3.1661	2 +
7	3.2952	4 +
8	3.3450	3 −
9	3.8338	4 +
10	4.033	4 +
11	4.047	4 +
12	4.072	3 +
13	4.263	4 +
14	4.2916	0 +
15	4.578	2 +
16	4.655	2 +
17	4.696	4 +
18	4.700	3 +
19	4.780	3 −
20	4.949	4 +

Continuum levels were assumed above 5.0 MeV.

Level density parameters for modified Gilbert-Cameron formula (as proposed in FPND Conf., Petten (1977) /8,9/) are as follows. For nortation, see Ref. /9/.

isotope	a(1/MeV)	T(MeV)	C(1/MeV)	Ex(MeV)
Fe-54	6.19	1.45	0.532	12.0
Fe-55	6.90	1.30	1.274	9.0

MT=102 Capture

CASTHY calculation was used adjusting S-gamma to the experimental cross sections of 10 mb at 200 keV. Obtained effective S-gamma value is 0.34E-4. Giant dipole resonance parameters were taken from systematics of compilation by Berman /10/.

MT=103,107 (n,p) and (n,alpha)

Adopted from experimental data.

MT=251 Mu-bar

Calculated with CASTHY /5/.

MF=4 Angular Distributions of Secondary Neutrons

MT=2 : CASTHY-code calculation
MT=51-70 : Isotropic in the center-of-mass system
MT=16,91 : Isotropic in the laboratry system

MF=5 Energy Distributions of Secondary Neutrons

MT=16,91 : Evaporation spectrum

References

1) Iijima S. et al.: Proc. NEANDC Topical Discussions in 1979.
Kawai M.: ibid.
Yoshida T.: ibid.
Yamakoshi H. et al.: J. Nucl. Sci. Technol., 17, 477 (1980).
Iijima S. et al.: to be published as JAERI-M report.
2) Pandey M.S. et al.: Proc. Conf. Nuclear Cross Sections and Technology, Washington D.C., (1975), p.748.

3) Spencer R.R. and Beer H.: KfK 2046, 79 (1975).
4) Mughabghab S.F. and Garber D.I.: BNL 325, 3rd Ed. Vol. 1 (1973).
5) Igarasi S. : J. Nucl. Sci. Technol., 12, 67 (1975).
6) Pearlstein S.: Nucl. Sci. Eng., 23, 238 (1965).
7) Nakasima R.: private communication.
8) Gruppelaar H.: ECN-13 (1977).
9) Iijima s.: IAEA-213, Proc. IAEA Second Advisory Group Meeting on Fission Product Nuclear Data, Petten, (1977), p.279.
10) Berman B.L.: Atom. Data and Nucl. Data Tables, 15, No.4 (1975)

26-Fe- 56 MAT number = 2262

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26-Fe- 56 JNDC          Eval-Oct78 S.Iijima,H.Yamakoshi
                        Dist-Mar83 Rev1-Feb84
History
78-10 New evaluation for JENDL-2.  Details given in Ref. /1/.
83-11 Small corrections were made.
84-02 Background data were modified.  Comment data were added.

MF=1  General Information
  MT=451  Descriptive data and dictionary

MF=2  Resonance Parameters
  MT=151 Resolved resonances
      Resonance region = 1.0E-5 eV to 250.0 keV
      The multilevel Breit-Wigner formula was used.  Parameters
      were adopted from the experimental data by Perey+ /2/.
      R=6.5 fm was selected to reproduce the 24-keV window cross
      section.  Neutron width of 27.67-keV resonance was taken as
      1420 eV.

      Calculated 2200-m/s cross sections and res. integrals.
                         2200-m/s      Res. Integ.
         elastic         12.46  b         -
         capture          2.813 b        1.44 b
         total           15.18  b         -

MF=3  Neutron Cross Sections
      Below 250 keV, background cross sections were given to
      reproduce the thermal elastic scattering cross section of
      12.46 barns /3/.  Above 250 keV, cross sections were
      evaluated as follows.
  MT=1    Total
      Spherical optical model calculation was made by using CASTHY
      code /4/.  Parameters /1/ are as follows,
           V   = 52.644-0.002*E-0.006*E**2, r0=1.166, a0=0.371
           Ws  = 2.869+0.289*E            , rs=1.450, as=0.480
           Vso= 6.138                     , rso=1.166,aso=0.371
                 (energies in MeV, lengths in fm).
  MT=2    Elastic scattering
      Given as total minus other cross sections.  Fine structure
      in the MeV region is due to the inelastic scattering cross
      section.
  MT=16   (n,2n)
      Calculated using essentially the method of Pearlstein /5/.
      Normalized to experimental data at 14 MeV.
  MT=4,51-77,91  Inelastic scattering
      Level excitation cross sections were calculated with the
      optical and statistical model code CASTHY /4/.  The result
      was multiplied by a factor of 1.17.  The 1st level
      excitation below 2.12 MeV was replaced with fine resolution
      data of Kinney+ /6/.  Level scheme was recommended by
      R.Nakasima /7/.
```

No.	Energy(MeV)	Spin-Parity
g.s	0.0	0 +
1	0.8468	2 +
2	2.0851	4 +
3	2.6576	2 +
4	2.9417	0 +
5	2.9600	2 +
6	3.1200	(1 +)
7	3.1229	4 +
8	3.3702	2 +
9	3.3884	6 +
10	3.4454	3 +
11	3.4493	1 +
12	3.6009	2 +
13	3.6019	2 −
14	3.6070	0 +
15	3.7480	2 +
16	3.7558	6 +
17	3.832	2 +
18	3.8565	3 +
19	4.0940	(3 +)
20	4.1003	(3 +)
21	4.1200	(4 +)
22	4.2982	4 +
23	4.302	(0 +)
24	4.3950	3 +
25	4.401	(2 +)
26	4.4584	3 +
27	4.5100	3 −

Continuum levels were assumed above 4.6 MeV.

Level density parameters for modified Gilbert-Cameron formula (as proposed in FPND conf., Petten (1977) /8,9/) are as follows. For nortation, see Ref. /9/.

isotope	a(1/MeV)	T(MeV)	C(1/MeV)	Ex(MeV)
Fe-56	7.58	1.27	0.746	10.0
Fe-57	8.27	1.14	1.694	7.70

MT=102 Capture
CASTHY calculation was used adjusting S-gamma to the experimental cross sections of 5.5 mb at 200 keV. Obtained effective S-gamma value is 0.18E-4. Giant dipole resonance parameters were taken from systematics of compilation by Berman /10/.

MT=103,107 (n,p) and (n,alpha)
Adopted were the same cross section as Fe-54 which was evaluated from experimental data.

MT=251 Mu-bar
Calculated with CASTHY /4/.

MF=4 Angular Distributions of Secondary Neutrons
MT=2 : CASTHY-code calculation
MT=51-77 : Isotropic in the center-of-mass system
MT=16,91 : Isotropic in the laboratry system

MF=5 Energy Distributions of Secondary Neutrons
MT=16,91 : Evaporation spectrum

References

1) Iijima S. et al.: Proc. NEANDC Topical Discussions in 1979.
Kawai M.: ibid.
Yoshida T.: ibid.
Yamakoshi H. et al.: J. Nucl. Sci. Technol., 17, 477 (1980).
Iijima S. et al.: to be published as JAERI-M report.
2) Perey F.G. et al.: Proc. Specialist Meeting on Neutron Data of Structural Materials for Fast Reactors, Geel, (1977), p.530.
3) Mughabghab S.F. et al.: Neutron Cross Sections, Vol. 1, Part A (1981).
4) Igarasi S. : J. Nucl. Sci. Technol., 12, 67 (1975).
5) Pearlstein S.: Nucl. Sci. Eng., 23, 238 (1965).
6) Kinney W.E. and Perey F.G.: Nucl. Sci. Eng., 63, 418 (1977).
7) Nakasima R.: private communication.
8) Gruppelaar H.: ECN-13 (1977).
9) Iijima S.: IAEA-213, Proc. IAEA Second Advisory Group Meeting on Fission Product Nuclear Data, Petten, (1977), p.279.
10) Berman B.L.: Atom. Data and Nucl. Data Tables, 15, No.4 (1975)

26-Fe- 57 MAT number = 2263

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26-Fe- 57 JNDC        Eval-Oct78 S.Iijima,H.Yamakoshi
                      Dist-Mar83 Rev1-Feb84
History
78-10 New evaluation for JENDL-2.  Details given in Ref. /1/.
83-11 Small corrections were made.
84-02 Comment was added.

MF=1  General Information
  MT=451  Descriptive data and dictionary

MF=2  Resonance Parameters
  MT=151 Resolved resonances
      Resonance region = 1.0E-5 eV to 200.0 keV
      The multilevel Breit-Wigner formula was used.  Parameters
      were adopted from Allen+/2/ for s-wave resonances, and
      Beer+/3/ for p-wave resonances in 0 - 185 keV.

      Calculated 2200-m/s cross sections and res. integrals.
                        2200-m/s      Res. Integ.
         elastic         0.2021 b         -
         capture         2.462 b        1.45 b
         total           2.664 b          -

MF=3  Neutron Cross Sections
      Below 200 keV, background cross section was given for the
      capture cross section to reproduce the value of (2.48+-0.3)
      barns /4/ at 0.0253 eV.  The background data for the total
      cross section contain also contributions from the inelastic
      scattering cross section.  Above 200 keV, the data were
      evaluated as follows.

  MT=1     Total
      Spherical optical model calculation was made with CASTHY
      code /5/.  Parameters /1/ are as follows.
           V   = 50.136-0.150*E             , r0=1.240, a0=0.500
           Ws  = 4.600+0.340*E              , rs=1.400, as=0.400
           Vso= 7.00                        , rso=1.240,aso=0.500
                 (energies in MeV unit, lengths in fm unit)
  MT=2     Elastic scattering
      Given as total minus other cross sections
  MT=16    (n,2n)
      Calculated using essentially the method of Pearlstein /6/,
      and normalized to experimental data at 14 MeV.
  MT=4,51-64,91  Inelastic scattering
      Level excitation cross sections were calculated with the
      optical and statistical model code CASTHY /5/.  The
      calculation for 1st level (14.4 keV) excitation was replaced
      in the energy from 14.65 keV to 200 keV by calculated cross
      sections from resonance parameters.

      Level scheme was recommended by R.Nakasima /7/.
```

No.	Energy(MeV)	Spin-Parity
g.s.	0.0	1/2 -
1	0.0144	3/2 -
2	0.1366	5/2 -
3	0.3667	3/2 -
4	0.7067	5/2 -
5	1.008	7/2 -
6	1.198	9/2 -
7	1.2651	1/2 -
8	1.3568	(1/2 -)
9	1.6277	3/2 -
10	1.7257	3/2 -
11	1.975	(1/2 -)
12	1.9894	9/2 -
13	2.117	5/2 -
14	2.207	5/2 -

Continuum levels were assumed above 2.3 MeV.

Level density parameters for modified Gilbert-Cameron formula (as proposed in FPND conf., Petten (1977) /8,9/) are as follows. For nortation, see Ref. /9/.

isotope	a(1/MeV)	T(MeV)	C(1/MeV)	Ex(MeV)
Fe-57	8.27	1.14	1.694	7.70
Fe-58	8.45	1.16	0.742	10.0

MT=102 Capture
Calculated with CASTHY adopting the S-gamma of 3.53E-4. Giant dipole resonance parameters were taken from systematics of compilation by Berman /10/.

MT=251 Mu-bar
Calculated with CASTHY /5/.

MF=4 Angular Distributions of Secondary Neutrons
MT=2 : CASTHY code calculation
MT=51-64 : Isotropic in the center-of-mass system
MT=16,91 : Isotropic in the laboratry system

MF=5 Energy Distributions of Secondary Neutrons
MT=16,91 : Evaporation spectrum

References

1) Iijima S. et al.: Proc. NEANDC Topical Discussions in 1979.
Kawai M.: ibid.
Yoshida T.: ibid.
Yamakoshi H. et al.: J. Nucl. Sci. Technol., 17, 477 (1980).
Iijima S. et al.: to be published as JAERI-M report.
2) Allen B.J. et al.: ibid. (loc.cit.), p.476.
3) Beer H. and Spencer R.R.: KfK-2063 (1974).
4) Mughabghab S.F. et al.: Neutron Cross Sections, Vol. 1, Part A (1981).
5) Igarasi S. : J. Nucl. Sci. Technol., 12, 67 (1975).
6) Pearlstein S.: Nucl. Sci. Eng., 23, 238 (1965).
7) Nakasima R.: private communication.
8) Gruppelaar H.: ECN-13 (1977).
9) Iijima S.: IAEA-213, Proc. IAEA Second Advisory Group Meeting on Fission Product Nuclear Data, Petten, (1977), p.279.
10) Berman B.L.: Atom. Data and Nucl. Data Tables, 15, No.4 (1975)

26-Fe- 58 MAT number = 2264

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26-Fe- 58 JAERI        Eval-Mar76 JENDL-CG
                       Dist-Mar83 Rev1-Jan84
History
76-03 Evaluation for JENDL-1 /1/ was made by JENDL-1 Compilation
      Group.
83-03 Resonance region was revised by T.Asami (JAERI).  MF=5 was
      also revised.
84-01 Comment was added.

MF=1  General Information
  MT=451  Descriptive data and dictionary

MF=2  Resonance Parameters
  MT=151 Resolved resonances
      Resonance region = 1.0E-5 eV to 100.0 keV
      The multilevel Breit-Wigner formula was used.  Parameters
      were adopted from the recommended values by Mughabghab et
      al.  /2/.

      Calculated 2200-m/s cross sections and res. integrals.
                          2200-m/s      res. integ.
         elastic          2.821 b           -
         capture          1.280 b         1.83 b
         total            4.101 b           -

MF=3  Neutron Cross Sections
  Below 100 keV, background cross sections were given to reproduce
  the thermal cross section recommended in Ref. /2/.  Above 100
  keV, the data were evaluated as follows.

  MT=1,2,4,51-58,91,102  Total, Elastic, Inelastic and Capture
      Calculated with optical and statistical model code CASTHY
      /3/.  Optical potential parameters were determined by
      Yamakoshi /1/ to reproduce the smoothed total cross section.
         V  = 46.0-0.25*En (MeV), Wi = 0.125*En-0.0004*En**2 (MeV)
         Ws = 14.0-0.2*En  (MeV), Vso= 6.0  (MeV)
           (Gaussian form)
         R  = 1.16*a**1/3+0.4821 (fm), a0 = 0.62  (fm)
         Ri = 1.16*a**1/3+0.8799 (fm), ai = 0.62  (fm)
         Rs = 1.16*a**1/3+0.8799 (fm), as = 0.7   (fm)
         Rso= 1.16*a**1/3-0.3443 (fm), aso= 0.62  (fm)
      The level scheme was taken from Refs. /4,5/ as follows.
          No.      Energy(MeV)  Spin-Parity
         g.s.       0.0           0 +
           1        0.8106        2 +
           2        1.6745        2 +
           3        2.133         3 +
           4        2.257         0 +
           5        2.596         4 +
           6        2.782         1 +
           7        2.876         2 +
```

8 3.084 2 +

Levels above 3.15 MeV were assumed to be overlapping. The (n,2n), (n,p) and (n,alpha) reactions were considered as competing processes.

MT=16 (n,2n)
Calculated with Pearlstein's method /6/, and normalized to 1.06 barns /7/ at 14.5 MeV.

MT=103 (n,p)
Adopted from the evaluated data of Alley and Lessler /8/.

MT=107 (n,alpha)
The shape of cross section was taken from Schmit's evaluation /9/ and normalized to the data of Gardner and Yu-Wen /10/.

MT=251 Mu-bar
Calculated with CASTHY /3/.

MF=4 Angular Distributions of Secondary Neutrons
MT=2 : CASTHY-code calculation
MT=51-58 : Isotropic in the center-of-mass system
MT=16,91 : Isotropic in the laboratry system

MF=5 Energy Distributions of Secondary Neutrons
MT=16,91 : Evaporation spectrum

References

1) Igarasi S. et al.: JAERI 1261 (1979).
2) Mughabghab S.F. et al.: "Neutron Cross Sections, Vol. 1, Part A", Academic Press (1981).
3) Igarasi S. : J. Nucl. Sci. Technol., 12, 67 (1975).
4) Lederer C.M. et al.: "Table of Isotopes, Sixth Edition", John Wiley and Sons Inc. (1967).
5) Raman S.: Nucl. Data Sheets, 3, 145 (1970).
6) Pearlstein S.: Nucl. Sci. Eng., 23, 238 (1965).
7) Boedy Z.T.: INDC(HUN)-10 (1973).
8) Alley W.E. and Lessler R.M.: Nucl. Data Tables, 11, 622 (1973).
9) Schmit J.J: KfK-120 (1966).
10) Gardner L. and Yu-Wen Yu.: Nucl. Phys., 60, 49 (1964).

27-Co- 59 MAT number = 2271

27-Co- 59 FUJI+ Eval-Nov82 T.Aoki,T.Asami
Dist-Mar83 Rev1-Jan84

History
82-11 Evaluation was completed by T.Aoki(FUJI) and T.Asami(JAERI).
84-01 Resonance parameters were revised and comment was added.

MF=1 General Information
  MT=451 Descriptive data and dictionary

MF=2 Resonance Parameters
  MT=151 Resolved resonance parameters for MLBW formula
    Energy range : from 1.0E-5 eV to 100 keV.
    Resonance energies, neutron and radiative widths were taken from recommended values of Mughabghab et al. /1/. Radiative widths assumed for resonances whose widths were not recommended were 0.56 eV and 0.7 eV for s-wave and p-wave resonances, respectively. Two negative resonances were adopted also from Ref. /1/. The effective scattering radius and parameters of the -500-keV resonance were adjusted to reproduce the thermal cross sections recommended in Ref. /1/.

    Calculated 2200-m/sec cross sections and resonance integrals.

	2200-m/sec	res. integ.
elastic	6.001 b	-
capture	37.18 b	75.6 b
total	43.18 b	-

MF=3 Neutron Cross Sections
  Below 100 keV: Resonance region. Background cross sections are zero.
  Above 100 keV: Data were evaluated for the following MT's.

MT= 1	total cross section
MT= 2	elastic scattering cross section
MT= 4	total inelastic scattering cross section
MT= 16	(n,2n) cross section
MT=51-57	inelastic scattering cross sections to discrete levels
MT= 91	inelastic scattering cross section to continuum levels
MT=102	capture cross section
MT=103	(n,p) cross section
MT=107	(n,alpha) cross section
MT=251	mu-bar

    Cross sections were calculated with optical and statistical model code CASTHY /2/. The optical potential parameters were selected by Kawai /3/ to reproduce average total cross section in the high energy region.

V = 49.69 - 0.135*En,	Ws = 4.331-0.198*En,	Vso=7.00	(MeV)
r = 1.240	, rs = 1.400	, rso=1.240	(fm)
a = 0.541	, b = 0.400	, aso=0.541	(fm)

    The inelastic scattering cross sections were given for seven discrete levels of which level scheme was taken from Ref. /4/.

No.	Energy (MeV)	Spin-Parity
g.s.	0.0	7/2 −
1	1.099	3/2 −
2	1.292	3/2 −
3	1.434	1/2 −
4	1.482	5/2 +
5	1.745	7/2 −
6	2.063	7/2 −
7	2.088	9/2 −

Levels above 2.154 MeV were assumed to be continuum. The level density parameters of Gilbert and Cameron /5/ were used. The (n,2n), (n,p) and (n,a) cross sections were taken into account as competing processes. The evaluation of these cross sections were made as follows.

(n,2n) based on the experimental data of Paulsen and Liskien /6/.

(n,p) calculated with GNASH /7/, and normalized to the experimental data of Smith and Meadows /8,9/ at 5 MeV.

(n,alpha) evaluated from the experimental data of Santry and Butler /10/.

The mu-bar was also calculated with CASTHY /2/.

MF=4 Angular Distributions of Secondary Neutrons
MT=2,51-57 : Calculated with CASTHY /2/.
MT=16 : Assumed to be isotropic in the laboratory system.
MT=91 : Calculated with CASTHY /2/.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,91 : Evaporation spectra.

References

1) Mughabghab S.F. et al.: "Neutron Cross Sections, Vol. 1, Part A.", Academic Press, (1981).
2) Igarasi S.: J. Nucl. Sci. Technol., 61, 477 (1976).
3) Kawai M.: Contribution to 1979 NEANDCc Topical Discussions.
4) Lederer C.M. and Shirley V.S. (Ed.): "Table of Isotopes 7th Ed.", Wiley-Interscience (1978).
5) Gilbert A. and Cameron A.G.W.: Can. J. Phys., 43, 1446 (1965).
6) Paulsen A. and Liskien H.: J. Nucl. Energy, AB19, 907 (1965).
7) Young P.G. and Arthur E.D.: LA-6947 (1977).
8) Smith D.L. and Meadows J.W.: ANL/NDM-10 (1975).
9) Smith D.L. and Meadows J.W.: Nucl. Sci. Eng., 60, 187 (1976).
10) Santry D.C. and Butler J.P.: Can. J. Phys., 42, 1030 (1964).

1 of Natural Nickel

28-Ni- 0 MAT number = 2280

```
28-Ni- 0 JAERI       Eval-Nov79 Y.Kikuchi and N.Sekine
                     Dist-Dec79 Rev1-Nov83
History
79-11 New evaluation for JENDL-2.  MF's 2, 3 and 4 were reliesed
      as JENDL-2B /1/.
83-03 MF 5 was added as final JENDL-2 data.
83-11 Comment was added.

MF=1,MT=451   Comments and dictionary

MF=2,MT=151   Resolved resonance parameters : 1.0E-5 eV - 600 keV
     Evaluation based on the following data.
         Ni-58 : Trans.  : Perey+/2/ , Syme+/3/ ,Farrel+/5/
                 Capt.   : Perey+/2/ , Froehner/4/ ,Hockenbury+/6/
         Ni-60 : Trans.  : Syme+/3/ ,Stieglitz+/7/,Farrel+/5/
                 Capt.   : Froehner/4/,Stieglitz+/7/,Hockenbury+/6/
         Ni-61 : Trans.  : Cho+/8/
                 Capt.   : Froehner/4/,Hockenbury+/5/
         Ni-62 : Trans.  : Beer+/9/ ,Farrel+/5/
                 Capt.   : Beer+/9/
         Ni-64 : Trans.  : Beer+/9/ ,Farrel+/5/
                 Capt.   : Beer+/9/
     A negative resonance added for Ni-58.
     Assumed Gam-g : 2 eV for s-wave res. and 1 eV for p-wave.

     Calculated 2200 m/s values and resonance integrals (barn):
                          2200 m/s value        res.int.
          total             21.20                  -
          elastic           16.77                  -
          capture            4.429                2.22

MF=3  Neutron Cross Sections
   Background cross sections (BGCS) applied to resonance region.
     MT=1,2 : Positive or negative BGCS to compensate errors
              due to constant R and resonance truncation /10/.
     MT=102 : Smooth positive BGCS above 10 keV.

   Cross sections above resonance region evaluated as follows :

     MT=1  : Total cross section
        Calculated with optical model.
        Potential parameters obtained by fitting nat-Ni data /11/:
           V =51.33 - 0.331*En ,Ws=8.068 + 0.112*En ,Vso=7.0 (MeV)
           r0=rso=1.24         ,rs=1.40                      (fm)
           a0=aso=0.541        ,b =0.4                       (fm)

     MT=2 : Elastic scattering
        (Total) - (All the other partial cross sections).

     MT=16 : (n,2n)
      Ni-58
```

Data of JENDL-1, evaluated on the basis of plenty experimental data, extended up to 20 MeV.

Ni-60,-61,-62,-64

Calculated with evaporation model.

MT=17 : (n,3n) given only for Ni-64.

Calculated with evaporation model.

MT=22 : (n,na) given only for Ni-58.

Evaluated on the analogy of Cu-65 (n,na) cross section.

MT=28 : (n,np)

Calculated with evaporation model.

MT=51-90,91 : Inelastic scattering

Calculated with the statistical model code CASTHY /12/.

Competing processes : (n,2n),(n,3n),(n,np),(n,na), (n,p),(n,a).

Level fluctuation considered.

Inelastic scattering to the 1st level for even-A isotopes evaluated on the basis of experimental data up to 7 MeV. Direct reaction calculated with DWBA and added above 7 MeV

The level scheme for each isotope taken from Ref./13/.

Ni-58

No	Energy(MeV)	Spin-Parity	No	Energy(MeV)	Spin-Parity
g.s.	0	0 +	12	3.6206	4 +
1	1.4545	2 +	13	3.7757	4 +
2	2.4595	4 +	14	3.8989	2 +
3	2.7757	2 +	15	4.1080	2 +
4	2.9026	1 +	16	4.2900	3 +
5	2.9428	0 +	17	4.3430	6 +
6	3.0383	2 +	18	4.3490	4 +
7	3.2645	2 +	19	4.3800	5 −
8	3.4208	3 +	20	4.4010	4 +
9	3.5240	4 +	21	4.4498	0 +
10	3.5313	0 +	22	4.4720	3 −
11	3.5942	1 +			

continuum levels assumed above 4.517 MeV.

Ni-60

No	Energy(MeV)	Spin-Parity	No	Energy(MeV)	Spin-Parity
g.s.	0	0 +	12	3.3183	0 +
1	1.3325	2 +	13	3.3810	4 +
2	2.1589	2 +	14	3.3936	2 +
3	2.2848	0 +	15	3.5300	0 +
4	2.5058	4 +	16	3.5890	3 +
5	2.6262	3 +	17	3.6197	3 +
6	3.1190	4 +	18	3.6710	4 +
7	3.1241	2 −	19	3.7290	3 +
8	3.1300	4 +	20	3.7355	1 +
9	3.1864	3 +	21	3.7410	0 +
10	3.1941	1 +	22	3.8714	2 +
11	3.2694	2 +			

Continuum levels assumed above 3.895 MeV.

Ni-61

No	Energy(MeV)	Spin-Parity	No	Energy(MeV)	Spin-Parity

3 of Natural Nickel

g.s.	0	3/2 -	11	1.7298	3/2 -
1	0.0674	5/2 -	12	1.8080	7/2 -
2	0.2830	1/2 -	13	1.9780	9/2 +
3	0.6560	3/2 -	14	1.9970	3/2 -
4	0.9088	5/2 -	15	2.0030	7/2 -
5	1.0150	7/2 -	16	2.0190	7/2 -
6	1.1000	3/2 -	17	2.1140	9/2 +
7	1.1323	5/2 -	18	2.1230	1/2 -
8	1.1857	3/2 -	19	2.4100	5/2 -
9	1.4580	7/2 -	20	2.4660	7/2 -
10	1.6100	5/2 -			

Continuum levels assumed above 2.528 MeV.

Ni-62

No	Energy(MeV)	Spin-Parity	No	Energy(MeV)	Spin-Parity
g.s.	0	0 +	11	3.2699	2 +
1	1.1729	2 +	12	3.2774	4 +
2	2.0486	0 +	13	3.3703	1 +
3	2.3018	2 +	14	3.4620	4 -
4	2.3364	4 +	15	3.4860	0 +
5	2.8912	0 +	16	3.5185	2 +
6	3.0582	2 +	17	3.5229	3 +
7	3.1580	2 +	18	3.7570	3 -
8	3.1765	4 +	19	3.8493	1 +
9	3.2577	2 +	20	3.8530	2 +
10	3.2620	4 +	21	3.8600	2 +

Continuum levels assumed above 3.967 MeV.

Ni-64

No	Energy(MeV)	Spin-Parity	No	Energy(MeV)	Spin-Parity
g.s.	0	0 +	11	3.393	3 +
1	1.3459	2 +	12	3.459	1 +
2	2.2750	0 +	13	3.483	4 +
3	2.6080	4 +	14	3.560	3 -
4	2.7500	2 +	15	3.647	2 +
5	2.8650	0 +	16	3.748	4 +
6	2.8850	2 +	17	3.795	1 +
7	2.9710	2 +	18	3.808	3 +
8	3.0280	0 +	19	3.848	5 -
9	3.1650	4 +	20	3.965	4 +
10	3.2730	2 +			

Continuum levels assumed above 4.084 MeV.

The inelastic levels of each isotope are grouped in natural Nickel file as follows :

MT	-Q(MeV)	Ni-58	Ni-60	Ni-61	Ni-62	Ni-64
51	0.0674	-	-	51	-	-
52	0.2828	-	-	52	-	-
53	0.6556	-	-	53	-	-
54	0.9082	-	-	54	-	-
55	1.0144	-	-	55	-	-
56	1.0993	-	-	56,57	-	-
57	1.1719	-	-	58	51	-
58	1.3320	-	51		-	51
59	1.4549	51	-	59,60	-	-
				61,62	-	-
60	1.9768	-	-	63,64	52	-
				65,66		

				67,68		
61	2.1582	–	52	–	–	52
62	2.2840	–	53	69	53,54	–
63	2.4601	52	–	70	–	–
64	2.5049	–	54	–	–	53
65	2.6253	–	55	–	–	54
66	2.7763	53	–	–	55	55,56
67	2.9033	54	–	–	–	–
68	2.9435	55	–	–	–	57,58
69	3.0390	56	–	–	56	–
70	3.1179	–	56,57 58	–	57,58	59
71	3.1853	–	59,60	–	59,60	–
72	3.2652	57	61	–	61,62	60
73	3.3172	–	62	–	63	–
74	3.3798	–	63,64	–	–	61
75	3.4216	58	–	–	64,65 66,67	62.63
76	3.5248	59,60	65		–	64
77	3.5878	61	66	–	–	65
78	3.6185	62	67	–	–	–
79	3.6697	–	68	–	–	–
80	3.7277	–	69,70 71		68	66
81	3.7761	63	–	–	69,70 71	67,68 69
82	3.8701	–	72	–	–	–
83	3.8998	64	–	–	–	70
84	4.1089	65	–	–	–	–
85	4.2910	67	–	–	–	–
86	4.3440	68,69	–	–	–	–
87	4.3810	70	–	–	–	–
88	4.4020	71	–	–	–	–
89	4.4508	72	–	–	–	–
90	4.4730	73	–	–	–	–
91	2.5264	91	91	91	91	91

The level density parameters evaluated by Yoshida /14/.

Ni-isotope	57	58	59	60	61
a (1/MeV)	5.00	6.45	6.97	7.55	8.14
Delta (MeV)	1.20	2.47	1.20	2.47	1.20
Ex (MeV)	6.33	7.30	8.00	10.00	7.00
Tc (MeV)	1.44	1.49	1.35	1.26	1.17

Ni-isotope	62	63	64	65
a (1/MeV)	8.77	9.37	9.98	10.57
Delta (MeV)	2.60	1.20	2.70	1.20
Ex (MeV)	9.00	3.00	4.32	4.00
Tc (MeV)	1.08	1.36	1.15	0.947

MT=102 : Capture

Calculated with the statistical model code CASTHY /12/.

Competing processes : (n,2n),(n,3n),(n,np),(n,na),
(n,p),(n,a).

Level fluctuation considered.

The gamma-ray strength function obtained from the capture cross section of natural-Ni ; 9.6 mb at 450 keV.
Ni-58 : 4.62E-5 , Ni-60 : 2.77E-5
Ni-61 : 1.94E-4 , Ni-62 : 9.52E-6
Ni-64 : 5.87E-6

MT=103 : (n,p)
Ni-58,Ni-60
Data of JENDL-1, evaluated on the basis of plenty experimental data, extended up to 20 MeV.
Ni-61,-62,-64
Evaluated on the analogy of Ni-60 (n,p) cross section.

MT=107 : (n,a)
Evaluated on the analogy of Co-59 (n,a) cross section.

MT=251 : Mu-bar
Calculated with CASTHY /12/.

MF=4 Angular Distributions of Secondary Neutrons
MT=2 : Calculated with optical model.
MT=16,17,22,28,91 : Isotropic in laboratory system.
MT=51-90 : Isotropic in center of mass system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17,22,28,91 : Evaporation spectrum.

References

1) Kikuchi Y. et al.: J.Nucl.Sci.Technol.,17,567(1980).
2) Perey F.G et al.: Neutron Data of Structural Materials for FBR ,1977 Geel Meet.,p.503,Pergamon Press(1979).
3) Syme D.B. et al.: ibid,p.703.
4) Froehner F. : ibid,p.138.
5) Farrell J.A. et al.: Ann.Phys.,37,367 (1966).
6) Hockenbury R.W. et al.: Phys.Rev.,178,1746 (1969).
7) Stieglitz R.G. et al.: Nucl.Phys.,A163,592 (1971).
8) Cho et al.: Nuclear Data for Reactors, Proc. 1970 Helsinki Conf., p.619, IAEA(1970).
9) Beer H. and Spencer R.R.: Nucl.Phys.,A240,29 (1975).
10) Kikuchi Y. and Sekine N. : to be published as JAERI-M report.
11) Kawai M. : unpublished.
12) Igarasi S.: J.Nucl.Sci.Technol.,12,67 (1975).
13) Lederer C.M. and Shirley V.S.: Table of Isotopes,7th Edition, Wiley-Interscience (1978).
14) Yoshida T. : unpublished.

28-Ni- 58 MAT number = 2281

28-Ni- 58 JAERI Eval-Aug82 Y.Kikuchi and N.Sekine
Dist-Mar83 Rev1-Nov83

History
82-08 New evaluation for JENDL-2 was made by Y.Kikuchi (JAERI) and
N.Sekine (HEC)
83-11 Comment was added.

MF=1,MT=451 Comments and dictionary

MF=2,MT=151 Resolved resonance parameters : 1.0E-5 eV - 600 keV
Evaluation based on the following data.
Transmission : Perey+/1/ , Syme+/2/ ,Farrel+/4/,
Capture : Perey+/1/ , Froehner/3/ ,Hockenbury+/5/.
Two negative resonances added.
Assumed Gam-g : 2 eV for s-wave res. and 1 eV for p-wave.

Calculated 2200 m/s values and resonance integrals (barn):

	2200 m/s value	res. int.
total	30.62	-
elastic	26.02	-
capture	4.605	2.21

MF=3 Neutron Cross Sections
Background cross sections (BGCS) applied to resonance region.
MT=1,2 : Many point BGCS to compensate errors due to constant
R and resonance truncation /6/.
MT=102 : Smooth BGCS to correct p-wave level missing above
200 keV.

Cross sections above 600 keV evaluated as follows :

MT=1 : Total cross section
Calculated with optical model.
Potential parameters obtained by fitting nat-Ni data /7/:
V =51.33 - 0.331*En ,Ws=8.068 + 0.112*En ,Vso=7.0 (MeV)
r0=rso=1.24 ,rs=1.40 (fm)
a0=aso=0.541 ,b =0.4 (fm)

MT=2 : Elastic scattering
(Total) - (All the other partial cross sections).

MT=16,103 : (n,2n),(n,p)
Data of JENDL-1, evaluated on the basis of plenty experimen
tal data, extended up to 20 MeV.

MT=22 : (n,n'a)
Evaluated on the analogy of Cu-65(n,na) cross section.

MT=28 : (n,n'p)
Calculated with evaporation model.

MT=51 : Inelastic scattering to the 1st level
Evaluated on the basis of experimental data up to 7 MeV.
Direct reaction calculated with DWBA and added above 7 MeV

MT=52-72,91,102 : Inelastic scattering and capture
Calculated with the statistical model code CASTHY /8/.
Competing processes : (n,2n),(n,p),(n,a),(n,np),(n,na).
Level fluctuation considered.
The level scheme taken from Ref./9/.

No	Energy(MeV)	Spin-Parity
g.s.	0.0	0 +
1	1.4545	2 +
2	2.4595	4 +
3	2.7757	2 +
4	2.9026	1 +
5	2.9428	0 +
6	3.0383	2 +
7	3.2645	2 +
8	3.4208	3 +
9	3.5240	4 +
10	3.5313	0 +
11	3.5942	1 +
12	3.6206	4 +
13	3.7757	4 +
14	3.8989	2 +
15	4.1080	2 +
16	4.2900	3 +
17	4.3430	6 +
18	4.3490	4 +
19	4.3800	5 −
20	4.4010	4 +
21	4.4498	0 +
22	4.4720	3 −

Continuum levels assumed above 4.517 MeV.
The level density parameters evaluated by Yoshida /10/.

Ni-isotope	57	58	59
a (1/MeV)	5.00	6.45	6.97
Delta(MeV)	1.20	2.47	1.20
Ex (MeV)	6.33	7.30	8.00
Tc (MeV)	1.44	1.49	1.35

The gamma-ray strength function of 4.62E-5 obtained from the capture cross section of natural-Ni.

MT=107 : (n,a)
Evaluated on the analogy of Co-59(n,a) cross section.

MT=251 : Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons
MT=2 : Calculated with optical model.
MT=16,22,28 : Isotropic in the laboratory system.
MT=51-72 : 90 degree symmetric in the center-of-mass system, calculated with CASTHY.
MT=91 : 90 degree symmetric in the laboratory system, calculated with CASTHY.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,22,28,91 : Evaporation spectrum.

References

1) Perey F.G. et al.: Neutron Data of Structural Materials for FBR,1977 Geel Meet.,p.503,Pergamon Press(1979).
2) Syme D.B. et al.: ibid,p.703.
3) Froehner F. : ibid,p.138.
4) Farrell J.A. et al.: Ann.Phys.,37,367 (1966).
5) Hockenbury R.W. et al.: Phys.Rev.,178,1746 (1969).
6) Kikuchi Y. and Sekine N. : to be published as JAERI-M report.
7) Kawai M. : unpublished.
8) Igarasi S.: J.Nucl.Sci.Technol.,12,67 (1975).
9) Lederer C.M. and Shirley V.S.: Table of Isotopes,7th Edition, Wiley-Interscience (1978).
10) Yoshida T. : unpublished.

28-Ni- 60　　MAT number = 2282

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28-Ni- 60 JAERI        Eval-Aug82 Y.Kikuchi and N.Sekine
                       Dist-Mar83 Rev1-Nov83
History
82-08 New evaluation for JENDL-2 was made by Y.Kikuchi (JAERI) and
      N.Sekine (HEC).
83-11 Comment was added.

MF=1,MT=451   Comments and dictionary

MF=2,MT=151   Resolved resonance parameters : 1.0E-5 eV - 600 keV
        Evaluation based on the following data.
           Transmission : Syme+/1/ ,Stieglitz+/3/,Farrel+/4/,
           Capture      : Froehner/2/,Stieglitz+/3/,Hockenbury+/5/
        A negative resonance added.
        Assumed Gam-g : 2 eV for s-wave res. and 1 eV for p-wave.

        Calculated 2200 m/s values and resonance integrals (barn):
                              2200 m/s value        res. int.
           total                  3.813                 -
           elastic                1.013                 -
           capture                2.801                1.50

MF=3  Neutron Cross Sections
  Background cross sections (BGCS) applied to resonance region.
     MT=1,2 : Many point BGCS to compensate errors due to constant
              R and resonance truncation /6/.
     MT=102 : Smooth BGCS near 12.5 keV and above 150 keV.

  Cross sections above 600 keV evaluated as follows :

     MT=1 : Total cross section
        Calculated with optical model.
        Potential parameters obtained by fitting nat-Ni data /7/:
           V =51.33 - 0.331*En ,Ws=8.068 + 0.112*En ,Vso=7.0 (MeV)
           r0=rso=1.24         ,rs=1.40                      (fm)
           a0=aso=0.541        ,b =0.4                       (fm)

     MT=2 : Elastic scattering
        (Total) - (All the other partial cross sections).

     MT=16,28 : (n,2n) and (n,np)
        Calculated with evaporation model.

     MT=51 : Inelastic scattering to the 1st level
        Evaluated on the basis of experimental data up to 7 MeV.
        Direct reaction calculated with dwba and added above 7 MeV

     MT=52-72,91,102 : Inelastic scattering and capture
        Calculated with the statistical model code CASTHY /8/.
           Competing processes : (n,2n),(n,p),(n,a),(n,np).
           Level fluctuation considered.
```

The level scheme taken from Ref./9/.

No	Energy(MeV)	Spin-Parity
g.s.	0	0 +
1	1.3325	2 +
2	2.1589	2 +
3	2.2848	0 +
4	2.5058	4 +
5	2.6262	3 +
6	3.1190	4 +
7	3.1241	2 +
8	3.1300	4 +
9	3.1864	3 +
10	3.1941	1 +
11	3.2694	2 +
12	3.3183	0 +
13	3.3810	4 +
14	3.3936	2 +
15	3.5300	0 +
16	3.5890	3 +
17	3.6197	3 +
18	3.6710	4 +
19	3.7290	3 +
20	3.7355	1 +
21	3.7410	0 +
22	3.8714	2 +

Continuum levels assumed above 3.895 MeV.

The level density parameters evaluated by Yoshida /10/.

Ni-isotope	59	60	61
a (1/MeV)	6.97	7.55	8.14
Delta(MeV)	1.20	2.47	1.20
Ex (MeV)	8.00	10.00	7.00
Tc (MeV)	1.35	1.26	1.17

The gamma-ray strength function of 2.31E-5 obtained from the capture cross section data of Ernst+/11/.

MT=103 : (n,p)
Data of JENDL-1 , evaluated on the basis of plenty experimental data , extended up to 20 MeV.

MT=107 : (n,a)
Evaluated on the analogy of Co-59(n,a) cross section.

MT=251 : Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons

MT=2 : Calculated with optical model.
MT=16,28 : Isotropic in the laboratory system.
MT=51-72 : 90 degree symmetric in the center-of-mass system, calculated with CASTHY.
MT=91 : 90 degree symmetric in the laboratory system, calculated with CASTHY.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,28,91 : Evaporation spectrum.

References

1) Syme D.B. et al.: Neutron Data of Structural Materials for FBR, 1977 Geel Meet.,p.703,Pergamon Press(1979).
2) Froehner F. : ibid,p.138.
3) Stieglitz R.G. et al.: Nucl.Phys.,A163,592 (1971).
4) Farrell J.A. et al.: Ann.Phys.,37,367 (1966).
5) Hockenbury R.W. et al.: Phys.Rev.,178,1746 (1969).
6) Kikuchi Y. and Sekine N. : to be published as JAERI-M report.
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9) Lederer C.M. and Shirley V.S.: Table of Isotopes,7th Edition, Wiley-Interscience (1978).
10) Yoshida T. : unpublished.
11) Ernst A. et al.: Nuclear Data for Reactors, Proc. 1970 Helsinki Conf, p.633,IAEA(1970)

28-Ni- 61 MAT number = 2283

28-Ni- 61 JAERI Eval-Aug82 Y.Kikuchi and N.Sekine
Dist-Mar83 Rev1-Nov83

History
82-08 New evaluation for JRNDL-2 was made by Y.Kikuchi (JAERI) and
N.Sekine (HEC).
83-11 Comment was added.

MF=1,MT=451 Comments and dictionary

MF=2,MT=151 Resolved resonance parameters : 1.0E-5 eV - 68.5keV
Evaluation based on the following data.
Transmission : Cho+/1/
Capture : Froehner/2/,Hockenbury+/3/
A negative resonance added.
Assumed Gam-g : 2 eV for s-wave res. and 1 eV for p-wave.

Calculated 2200 m/s values and resonance integrals (barn):

	2200 m/s value	res.int
total	12.12	-
elastic	9.611	-
capture	2.506	2.44

MF=3 Neutron Cross Sections
Background cross sections (BGCS) applied to resonance region.
MT=1,2 : Many point BGCS to compensate errors due to constant
R and resonance truncation /4/.
MT=102 : Smooth BGCS above 40 keV.

Cross sections above 68.5 keV evaluated as follows :

MT=1 : Total cross section
Calculated with optical model.
Potential parameters obtained by fitting nat-Ni data /5/:
V =51.33 - 0.331*En ,Ws=8.068 + 0.112*En ,Vso=7.0 (MeV)
r0=rso=1.24 ,rs=1.40 (fm)
a0=aso=0.541 ,b =0.4 (fm)

MT=2 : Elastic scattering
(Total) - (All the other partial cross sections).

MT=16,28 : (n,2n) and (n,np)
Calculated with evaporation model.

MT=51-70,91,102 : Inelastic scattering and capture
Calculated with the statistical model code CASTHY /6/.
Competing processes : (n,2n),(n,p),(n,a),(n,np).
Level fluctuation considered.
The level scheme taken from Ref./7/.

No	Energy(MeV)	Spin-Parity
g.s.	0	3/2 -
1	0.0674	5/2 -

2	0.2830	1/2 -
3	0.6560	3/2 -
4	0.9088	5/2 -
5	1.0150	7/2 -
6	1.1000	3/2 -
7	1.1323	5/2 -
8	1.1857	3/2 -
9	1.4580	7/2 -
10	1.6100	5/2 -
11	1.7298	3/2 -
12	1.8080	7/2 -
13	1.9780	9/2 +
14	1.9970	3/2 -
15	2.0030	7/2 -
16	2.0190	7/2 -
17	2.1140	9/2 +
18	2.1230	1/2 -
19	2.4100	5/2 -
20	2.4660	7/2 -

Continuum levels assumed above 2.528 MeV.

The level density parameters evaluated by Yoshida /8/

Ni-isotope	60	61	62
a (1/MeV)	7.55	8.14	8.77
Delta(MeV)	2.47	1.20	2.60
Ex (MeV)	10.00	7.00	9.00
Tc (MeV)	1.26	1.17	1.08

The gamma-ray strength function of 4.65E-4 obtained from the capture cross section data of Ernst+ /10/

MT=103 : (n,p)
Evaluated on the analogy of Ni-60(n,p) cross section.

MT=107 : (n,a)
Evaluated on the analogy of Co-59(n,a) cross section.

MT=251 : Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons

MT=2 : Calculated with optical model.
MT=16,28 : Isotropic in the laboratory system.
MT=51-70 : 90 degree symmetric in the center-of-mass system, calculated with CASTHY.
MT=91 : 90 degree symmetric in the laboratory system, calculated with CASTHY.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,28,91 : Evaporation spectrum.

References

1) Cho et al.: Nuclear Data for Reactors, Proc. 1970 Helsinki Conf., p.619, IAEA(1970).
2) Froehner F. : Neutron Data of Structural Materials for FBR, 1977 Geel Meet.,p.138,Pergamon Press(1979).
3) Hockenbury R.W. et al.: Phys.Rev.,178,1746 (1969).
4) Kikuchi Y. and Sekine N. : to be published as JAERI-M report.

5) Kawai M. : unpublished.
6) Igarasi S.: J.Nucl.Sci.Technol.,12,67 (1975).
7) Lederer C.M. and Shirley V.S.: Table of Isotopes,7th Edition, Wiley-Interscience (1978).
8) Yoshida T. : unpublished.
9) Ernst A. et al.: Nuclear Data for Reactors, Proc. 1970 Helsinki Conf., p.633, IAEA(1970).

28-Ni- 62 MAT number = 2284

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28-Ni- 62 JAERI       Eval-Aug82 Y.Kikuchi and N.Sekine
                      Dist-Mar83 Rev1-Nov83
History
82-08 New evaluation for JENDL-2 was made by Y.Kikuchi (JAERI) and
      N.Sekine (hec).
83-11 Comment was added.

MF=1,MT=451   Comments and dictionary

MF=2,MT=151   Resolved resonance parameters : 1.0E-5 eV - 600 keV
        Evaluation based on the following data.
           Transmission : Beer+/1/ ,Farrel+/2/,
           Capture      : Beer+/1/
        Assumed Gam-g : 2 eV for s-wave res. and 1 eV for p-wave.

        Calculated 2200 m/s values and resonance integrals (barn):
                             2200 m/s value        Res.Int
           total                23.70                 -
           elastic               9.505                -
           capture              14.20                6.91

MF=3  Neutron Cross Sections
  Background cross sections (BGCS) applied to resonance region.
     MT=1,2 : Many point BGCS to compensate errors due to constant
              R and resonance truncation /3/.
     MT=102 : Smooth BGCS above 150 keV.

  Cross sections above 600 keV evaluated as follows :

     MT=1 : Total cross section
        Calculated with optical model.
        Potential parameters obtained by fitting nat-Ni data /4/:
           V =51.33 - 0.331*En ,Ws=8.068 + 0.112*En ,Vso=7.0 (MeV)
           r0=rso=1.24         ,rs=1.40                      (fm)
           a0=aso=0.541        ,b =0.4                       (fm)

     MT=2 : Elastic scattering
        (Total) - (All the other partial cross sections).

     MT=16,28 : (n,2n) and (n,np)
        Calculated with evaporation model.

     MT=51 : Inelastic scattering to the 1st level
        Evaluated on the basis of experimental data up to 7 MeV.
        Direct reaction calculated with DWBA and added above 7 MeV.

     MT=52-71,91,102 : Inelastic scattering and capture
        Calculated with the statistical model code CASTHY /5/.
           Competing processes : (n,2n),(n,p),(n,a),(n,np).
           Level fluctuation considered.
        The level scheme taken from Ref./6/.
```

No	Energy(MeV)	Spin-Parity
g.s.	0	0 +
1	1.1729	2 +
2	2.0486	0 +
3	2.3018	2 +
4	2.3364	4 +
5	2.8912	0 +
6	3.0582	2 +
7	3.1580	2 +
8	3.1765	4 +
9	3.2577	2 +
10	3.2620	4 +
11	3.2699	2 +
12	3.2774	4 +
13	3.3703	1 +
14	3.4620	4 +
15	3.4860	0 +
16	3.5185	2 +
17	3.5229	3 +
18	3.7570	3 −
19	3.8493	1 +
20	3.8530	2 +
21	3.8600	2 +

Continuum levels assumed above 3.967 MeV.

The level density parameters evaluated by Yoshida /7/.

Ni-isotope	61	62	63
a (1/MeV)	8.14	8.77	9.37
Delta(MeV)	1.20	2.60	1.20
Ex (MeV)	7.00	9.00	3.00
Tc (MeV)	1.17	1.08	1.36

The gamma-ray strength function of 1.38E-5 obtained from the capture cross section data of Beer+/1/.

MT=103 : (n,p)
Evaluated on the analogy of Ni-60(n,p) cross section.

MT=107 : (n,a)
Evaluated on the analogy of Co-59(n,a) cross section.

MT=251 : Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons

MT=2	: Calculated with optical model.
MT=16,28	: Isotropic in the laboratory system.
MT=51-71	: 90 degree symmetric in the center-of-mass system, calculated with CASTHY.
MT=91	: 90 degree symmetric in the laboratory system, calculated with CASTHY.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,28,91 : Evaporation spectrum.

References

1) Beer H. and Spencer R.R.: Nucl.Phys.,A240,29 (1975).
2) Farrell J.A. et al.: Ann.Phys.,37,367 (1966).

3) Kikuchi Y. and Šekine N. : to be published as JAERI-M report.
4) Kawai M. : unpublished.
5) Igarasi S.: J.Nucl.Sci.Technol.,12,67 (1975).
6) Lederer C.M. and Shirley V.S.: Table of Isotopes,7th Edition, Wiley-Interscience (1978).
7) Yoshida T. : unpublished.

28-Ni- 64　　MAT number = 2285

28-Ni- 64 JAERI　　Eval-Aug82 Y.Kikuchi and N.Sekine
Dist-Mar83 Rev1-Nov83

History
82-08 New evaluation for JENDL-2 was made by Y.Kikuchi (JAERI) and
N. Sekine (HEC).
83-11 Comment was added.

MF=1,MT=451　Comments and dictionary

MF=2,MT=151　Resolved resonance parameters : 1.0E-5 eV - 600 keV
Evaluation based on the following data.
Transmission : Beer+/1/ ,Farrel+/2/,
Capture　　: Beer+/1/
Assumed Gam-g : 2 eV for s-wave res. and 1 eV for p-wave.

Calculated 2200 m/s values and resonance integrals (barn):

	2200 m/s value	Res.Int
total	1.515	-
elastic	0.003464	-
capture	1.480	0.819

MF=3 Neutron Cross Sections
Background cross sections (BGCS) applied to resonance region.
MT=1,2 : Many point bgcs to compensate errors due to constant
R and resonance truncation /3/.
MT=102 : Smooth bgcs above 370 keV.

Cross sections above 600 keV evaluated as follows :

MT=1 : Total cross section
Calculated with optical model.
Potential parameters obtained by fitting nat-Ni data /4/:
V =51.33 - 0.331*En ,Ws=8.068 + 0.112*En ,Vso=7.0 (MeV)
r0=rso=1.24　　,rs=1.40　　(fm)
a0=aso=0.541　　,b =0.4　　(fm)

MT=2 : Elastic scattering
(Total) - (All the other partial cross sections).

MT=16,17 : (n,2n) and (n,3n)
Calculated with evaporation model.

MT=51 : Inelastic scattering to the 1st level
Direct reaction calculated with DWBA, added above 7 MeV

MT=52-70,91,102 : Inelastic scattering and capture
Calculated with the statistical model code CASTHY /5/.
Competing processes : (n,2n),(n,3n),(n,p),(n,a).
Level fluctuation considered.
The level scheme taken from Ref./6/.
No　　Energy(MeV)　　Spin-Parity

g.s.	0	0 +
1	1.3459	2 +
2	2.2750	0 +
3	2.6080	4 +
4	2.7500	2 +
5	2.8650	0 +
6	2.8850	2 +
7	2.9710	2 +
8	3.0280	0 +
9	3.1650	4 +
10	3.2730	2 +
11	3.393	3 +
12	3.459	1 +
13	3.483	4 +
14	3.560	3 −
15	3.647	2 +
16	3.748	4 +
17	3.795	1 +
18	3.808	3 +
19	3.848	5 −
20	3.965	4 +

Continuum levels assumed above 4.084 MeV.

The level density parameters evaluated by Yoshida /7/.

Ni-isotope	62	63	64	65
a (1/MeV)	8.77	9.37	9.98	10.57
Delta (MeV)	2.60	1.20	2.70	1.20
Ex (MeV)	9.00	3.00	4.32	4.00
Tc (MeV)	1.08	1.36	1.15	0.947

The gamma-ray strength function of 7.67E-6 obtained from the capture cross section data of Beer+/1/.

MT=103 : (n,p)
Evaluated on the analogy of Ni-60(n,p) cross section.

MT=107 : (n,a)
Evaluated on the analogy of Co-59(n,a) cross section.

MT=251 : Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons
- MT=2 : Calculated with optical model.
- MT=16,17 : Isotropic in the laboratory system.
- MT=51-70 : 90 degree symmetric in the center-of-mass system, calculated with CASTHY.
- MT=91 : 90 degree symmetric in the laboratory system, calculated with CASTHY.

MF=5 Energy Distributions of Secondary Neutrons
- MT=16,17,91 : Evaporation spectrum.

References

1) Beer H. and Spencer R.R.: Nucl.Phys.,A240,29 (1975).
2) Farrell J.A. et al.: Ann.Phys.,37,367 (1966).
3) Kikuchi Y. and Sekine N. : to be published as JAERI-M report.
4) Kawai M. : unpublished.

5) Igarasi S.: J.Nucl.Sci.Technol.,12,67 (1975).
6) Lederer C.M. and Shirley V.S.: Table of Isotopes,7th Edition, Wiley-Interscience (1978).
7) Yoshida T. : unpublished.

29-Cu- 0 MAT number = 2290

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29-Cu-  0 JAERI,MAPI Eval-Mar82 S.Igarasi,M.Sasaki
                     Dist-Mar83 Rev1-Jan84
History
75-03 Evaluation was made for JENDL-1 by M.Sakaki(MAPI).
83-03 Data in the energy region above 35 keV were re-evaluated
      for JENDL-2 by S.Igarasi (JAERI), and the background data
      in the resonance region were modified.
84-01 Comment was added.

MF=1  General Information
  MT=451  Descriptive data and dictionary

MF=2  Resonance Parameters
  MT=151  Resolved resonance parameters for MLBW formula
     Resonance region = 1.0E-5 eV to 35 keV.
     Parameters of each isotope were mainly taken from BNL-325 3rd
     edition /1/.  A bound level was added to reproduce the 2200
     m/sec capture cross section of each isotope.  The effective
     scattering radius of 6.70 fm was taken from Ref.  /2/ for
     Cu-63 and 6.56 fm /1/ for Cu-65.

     Calculated 2200-m/s cross sections and res. integrals.
                       2200 m/s       res. integ.
        elastic         7.859 b          -
        capture         3.775 b        3.40 b
        total          11.63  b          -

MF=3  Neutron Cross Sections
  Below 35 keV, all background cross sections are zero.
  Above 35 kev, data were constructed from isotope data which
  were evaluated as follows.
  MT=1     Total
     Optical and statistical model calculation was made with code
     CASTHY /3/.  The optical potential parameters used for both
     isotopes are as follows (in the units of MeV and fermi),
      V  = 46.0 - 0.250*E       , R0 = 1.16*A**1/3+0.6, a0 = 0.62
      Wi =0.125*E-0.0004*E**2, Ri = 1.16*A**1/3+0.6, ai = 0.62
      Ws = 7.0                  , Rs = 1.16*A**1/3+1.1, as = 0.35
      Wso= 7.0                  , Rso= 1.16*A**1/3+0.6, aso= 0.60
  MT=2     Elastic scattering
     (Total)-(All other partial cross sections)
  MT=4,51-67,91  Inelastic scattering
     Optical and statistical model calculation was made by taking
     into account of competing processes of (n,2n), (n,n'a) and
     (n,a) reactions for Cu-63, and (n,2n), (n,n'a) and (n,p) for
     Cu-65.  The level schemes were taken from Ref. /4/.
         Cu-nat              Cu-63                 Cu-65
       MT  Energy(MeV)   Energy(MeV)  J-p      Energy(MeV)  J-p
       51   0.6698       0.66962    1/2 -         -
       52   0.7704          -                   0.7706     1/2 -
       53   0.9623       0.96206    5/2 -         -
```

2 of Natural Copper

54	1.1153	－		1.11554	5/2 －
55	1.3274	1.32703	7/2 －	－	
56	1.4124	1.41203	5/2 －	－	
57	1.4815	－		1.48183	7/2 －
58	1.5475	1.54702	3/2 －	－	
59	1.6231	－		1.62344	5/2 －
60	1.7246	－		1.72494	3/2 －
61	1.8618	1.8613	5/2 －	－	
62	2.0117	2.0111	3/2 －	－	
63	2.0926	－		2.093	5/2 －
64	2.2118	－		2.2123	3/2 －
65	2.2795	－		2.280	5/2 －
66	2.3277	－		2.3282	3/2 －
67	2.5305	－		2.531	9/2 ＋
91	2.0506	above 2.05		above 2.54	

MT=16,22,103,107 (n,2n),(n,n'a),(n,p) and (n,a)
Recommended by Kobayashi /5/.
MT=102 Capture
Calculated with CASTHY /3/ and normalized to the value of 23.7 milli-barns for Cu-63 and 11.9 milli-barns for Cu-65 at 230 keV which were measured by Zaikin /6/.
MT=251 Mu-bar
Calculated with CASTHY /3/.

MF=4 Angular Distributions of Secondary Neutrons
MT=2 : Calculated with CASTHY /3/.
MT=16,22,91 : Assumed to be isotropic in the lab system.
MT=51,67 : Assumed to be isotropic in the center-of-mass system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,22,91 : Evaporation spectra.

References

1) Mughabghab S.F. and Garber D.I.: BNL 325, 3rd Ed., vol. 1 (1973).
2) Mughabghab S.F. et al.: "Neutron Cross Sections, Vol. 1, Part A", Academic Press (1981).
3) Igarasi S.: J. Nucl. Sci. Technol., 12, 67 (1975).
4) Auble R.L.: Nuclear Data Sheets, 14, 119 (1975).
5) Kobayashi K.: private communication.
6) Zaikin G.G. et al.: Atomnaya Energiya, 25, 526 (1968).

29-Cu- 63 MAT number = 2291

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29-Cu- 63 JAERI,MAPI Eval-Mar82 S.Igarasi,M.Sasaki
                     Dist-Mar83 Rev1-Jan84
History
75-03 Evaluation was made for JENDL-1 by M.Sakaki(MAPI).
83-03 Data in the energy region above 35 keV were re-evaluated
      for JENDL-2 by S.Igarasi (JAERI), and the background data
      in the resonance region were modified.
84-01 Comment was added.

MF=1  General Information
  MT=451  Descriptive data and dictionary

MF=2  Resonance Parameters
  MT=151  Resolved resonance parameters for MLBW formula
     Resonance region = 1.0E-5 eV to 35 keV.
     Parameters were mainly taken from BNL-325 3rd edition /1/.
     A bound level was added to reproduce the 2200-m/sec capture
     cross section of 4.5 +- 0.1 barns /1/.  The effective scat-
     tering radius of 0.67 fm was taken from Ref. /2/.

     Calculated 2200-m/s cross sections and res. integrals.
                    2200 m/s      res. integ.
        elastic      4.979 b          -
        capture      4.492 b        5.41 b
        total        9.471 b          -

MF=3  Neutron Cross Sections
  Below 35 keV, all background cross sections are zero.
  Above 35 keV, data were evaluated as follows.
  MT=1     Total
     Optical and statistical model calculation was made with
     code CASTHY /3/.  The optical potential parameters used are
     as follows (in the units of MeV and fermi),
      V  = 46.0 - 0.250*E       , R0 = 1.16*A**1/3+0.6, a0 = 0.62
      Wi =0.125*E-0.0004*E**2, Ri = 1.16*A**1/3+0.6, ai = 0.62
      Ws = 7.0                 , Rs = 1.16*A**1/3+1.1, as = 0.35
      Wso= 7.0                 , Rso= 1.16*A**1/3+0.6, as = 0.60
  MT=2     Elastic scattering
     (Total)-(All other partial cross sections)
  MT=4,51-57,91  Inelastic scattering
     Optical and statistical model calculation was made by taking
     into account of (n,2n), (n,n'a) and (n,a) reactions as com-
     peting processes.  The level scheme was taken from Ref. /4/.
        No.     Energy(MeV)   Spin-Parity
        g.s.     0.0           3/2 -
         1       0.66962       1/2 -
         2       0.96206       5/2 -
         3       1.32703       7/2 -
         4       1.41203       5/2 -
         5       1.54702       3/2 -
         6       1.8613        5/2 -
```

7 2.0111 3/2 -

Levels above 2.05 MeV were assumed to be overlapping.

MT=16,22,107 (n,2n),(n,n'a) and (n,a)
Recommended by Kobayashi /5/.

MT=102 Capture
Calculated with CASTHY /3/ and normalized to the value of 23.7 milli-barns at 230 keV which was measured by Zaikin /6/.

MT=251 Mu-bar
Calculated with CASTHY /3/.

MF=4 Angular Distributions of Secondary Neutrons

MT=2,51-57 : Calculated with CASTHY /3/.
MT=16,22 : Assumed to be isotropic in the lab system.
MT=91 : Calculated with CASTHY in the center-of-mass system, and assumed to be the same in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,22,91 : Evaporation spectra.

References

1) Mughabghab S.F. and Garber D.I.: BNL 325, 3rd Ed., vol. 1 (1973).
2) Mughabghab S.F. et al.: "Neutron Cross Sections, Vol. 1, Part A", Academic Press (1981).
3) Igarasi S.: J. Nucl. Sci. Technol., 12, 67 (1975).
4) Auble R.L.: Nuclear Data Sheets, 14, 119 (1975).
5) Kobayashi K.: private communication.
6) Zaikin G.G. et al.: Atomnaya Energiya, 25, 526 (1968).

29-Cu- 65　　MAT number = 2292

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29-Cu- 65 JAERI,MAPI Eval-Mar82 S.Igarasi,M.Sasaki
                     Dist-Mar83 Rev1-Jan84
History
75-03 Evaluation was made for JENDL-1 by M.Sakaki(MAPI).
83-03 Data in the energy region above 35 keV were re-evaluated
      for JENDL-2 by S.Igarasi (JAERI), and the background data
      in the resonance region were modified.
84-01 Comment was added.

MF=1  General Information
  MT=451  Descriptive data and dictionary

MF=2  Resonance Parameters
  MT=151  Resolved resonance parameters for MLBW formula
    Resonance region = 1.0E-5 eV to 35 keV.
    Parameters were mainly taken from BNL 325 3rd edition /1/.  A
    bound level was added to reproduce the 2200-m/sec capture
    cross section of 2.17 +- 0.03 barns /1/.  The effective scat-
    tering radius of 6.56 fm was taken from Ref. /1/.

    Calculated 2200-m/s cross sections and res. integrals.
                    2200 m/s      res. integ.
       elastic      14.30  b          -
       capture       2.170 b        2.13 b
       total        16.47  b          -

MF=3  Neutron Cross Sections
  Below 35 keV. all background cross sections are zero.
  Above 35 keV, data were evaluated as follows,
  MT=1    Total
    Optical and statistical model calculation was made with
    code CASTHY /2. The optical potential parameters used are
    as follows (in the units of MeV and fermi),
     V   = 46.0 - 0.250*E       , R0 = 1.16*A**1/3+0.6, a0 = 0.62
     Wi  =0.125*E-0.0004*E**2, Ri = 1.16*A**1/3+0.6, ai = 0.62
     Ws  = 7.0                  , Rs = 1.16*A**1/3+1.1, as = 0.35
     Wso= 7.0                   , Rso= 1.16*A**1/3+0.6, aso= 0.60
  MT=2    Elastic scattering
    (Total)-(All other partial cross sections)
  MT=4,51-60,91  Inelastic scattering
    Optical and statistical model calculation was made by taking
    into account of (n,2n), (n,n'a) and (n,p) reactions as com-
    peting processes.  The level scheme was taken from Ref. /3/.
       No.    Energy(MeV)   Spin-Parity
       g.s.    0.0           3/2 -
        1      0.7706        1/2 -
        2      1.11554       5/2 -
        3      1.48183       7/2 -
        4      1.62344       5/2 -
        5      1.72494       3/2 -
        6      2.093         5/2 -
```

7	2.2123	3/2 −
8	2.280	5/2 −
9	2.3282	3/2 −
10	2.531	9/2 +

Levels above 2.54 MeV were assumed to be overlapping.

MT=16,22,103 (n,2n),(n,n'a) and (n,p)
Recommended by Kobayashi /4/.

MT=102 Capture
Calculated with CASTHY /2/ and normalized to the value of 11.9 milli-barns at 230 keV which was measured by Zaikin /5/.

MT=251 Mu-bar
Calculated with CASTHY /2/.

MF=4 Angular Distributions of Secondary Neutrons
MT=2,51-60 : Calculated with CASTHY /2/.
MT=16,22 : Assumed to be isotropic in the lab system.
MT=91 : Calculated with CASTHY in the center-of-mass system, and assumed to be the same in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,22,91 : Evaporation spectra.

References

1) Mughabghab S.F. and Garber D.I.: BNL 325, 3rd ed., vol. 1 (1973).
2) Igarasi S.: J. Nucl. Sci. Technol., 12, 67 (1975).
3) Auble R.L.: Nuclear Data Sheets, 14, 119 (1975).
4) Kobayashi K.: private communication.
5) Zaikin G.G. et al.: Atomnaya Energiya, 25, 526 (1968).

41-Nb- 93   MAT number = 2411

```
41-Nb- 93 JNDC          Eval-Oct82 JNDC FPND W.G.
                        Dist-Mar83 Rev1-Nov83
History
82-10 New evaluation for JENDL-2 was made by W.G. on FP nuclear
      data of JNDC.
83-11 Small modification was made and comment was added.

MF=1  General Information
  MT=451  Comments and dictionary

MF=2,MT=151  Resonance Parameters
  Resolved  resonances  : 1.0E-5 eV - 7 keV
        Evaluated by M.Kawai on the basis of the following data.
           Transmission  : Garg+ /1/, Poittevin+ /2/, Iliescu+ /6/
           Scattering    : Iliescu+ /6/
           Capture       : Macklin /3/, Lopez+ /4/, Iliescu+ /6/
           Gamma spectrum: Haste+ /5/
        Assumed Gam-g    : 172 milli-eV
                           212 milli-eV for doublet
  Unresolved resonances : 7 keV - 50 keV
        Energy independent parameters are given:
           S0   = 0.37E-4  ,S1    = 5.48E-4 ,S2 = 3.65E-4,
           Dobs= 80.5 eV   ,Gam-g= 0.160 eV,R  = 6.70 fm.
  Calculated 2200 m/s values and resonance integrals (barns) :
                        2200 m/s value        res.int.
           total          7.477                 -
           elastic        6.326                 -
           capture        1.152                9.59

MF=3  Neutron Cross Sections
  Slight background correction for Sig-t and Sig-c between 30 and
  50 keV.  Cross sections above 50 keV evaluated as follows;

  MT=1  : Total
     Calculated with optical model.
     Potential parameters obtained by systematic fitting to Sig-t
     by Iijima+/7/ :
        V =46.0 - 0.25*En  ,Ws=7.0       ,Vso=7.0  (MeV)
        R0=Rso=5.89        ,Rs=6.39                (fm)
        a0=aso=0.62        ,b =0.35                (fm)

  MT=2  : Elastic scattering
     (Total) - (All other partial cross sections).

  MT=16,103,107  : (n,2n),(n,p),(n,a)
     Calculated by Y.Kanda with GNASH code /8/ considering pre-
     equilibrium process.

  MT=51-57,91,102 : Inelastic scattering and capture
      Calculated with the statistical model code CASTHY /9/.
        Competing processes : (n,2n),(n,p),(n,a)
```

Level fluctuation considered.
The level scheme taken from Ref./10/.

No	Energy(MeV)	Spin-Parity
g.s.	0.0	9/2 +
1	0.0304	1/2 −
2	0.6860	3/2 −
3	0.7440	7/2 +
4	0.8087	5/2 +
5	0.8101	5/2 −
6	0.9499	13/2 +
7	0.9791	11/2 +
8	1.0826	9/2 +
9	1:2800	3/2 −
10	1.2974	9/2 +
11	1.3156	5/2 −
12	1.3351	17/2 +
13	1.3640	7/2 −

Continuum levels assumed above 1.39 MeV.
The level density parameters evaluated by Iijima+ /11/.

Nb-isotope	91	92	93	94
a (1/MeV)	9.97	10.38	12.5	12.81
Delta(MeV)	0.93	0.0	0.72	0.0
Ex (MeV)	5.045	4.115	4.629	4.250
Tc (MeV)	0.655	0.641	0.712	0.723

The gamma-ray strength function of 19.7E-4 obtained so as to reproduce the ORELA capture data /3/.

Mt=251 Mu-bar
Calculated with opticalmodel.

MF=4 Angular Distributions of Secondary Neutrons
MT=2 : Calculated with optical model.
MT=16 : Isotropic in the laboratory system.
MT=51-57 : 90 degree symmetric in the center-of-mass system.
MT=91 : 90 degree symmetric in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,91 : Evaporation spectrum.

References

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1 of Natural Molybdenum

42-Mo- 0 MAT number = 2420

```
 42-Mo-  0 JNDC        Eval-Aug82 Y.Kikuchi et al.
                       Dist-Mar83 Rev1-Nov83
History
82-08 New evaluation was made by W.G. on FP nuclear data of JNDC.
      Natural-Mo data constructed with data of Mo-isotopes.
83-11 Comment was added.

MF=1,MT=451  Comments and dictionary

MF=2,MT=151  Resonance parameters : 1.0E-5 eV - 100 keV
  Resolved  resonances for MLBW formula.
    Evaluation based on the following data.
      Mo-92  Transmiss. : Wasson+/1/
             Capture    : Wasson+/1/,Weigmann+/2/,Musgrove+/3/
      Mo-94  Capture    : Weigmann+/2/,Musgrove+/3/
      Mo-95  Transmiss. : Shwe+/4/
             Capture    : Weigmann+/2/
      Mo-96  Capture    : Weigmann+/2/,Musgrove+/3/
      Mo-97  Transmiss. : Shwe+/4/
             Capture    : Weigmann+/2/
      Mo-98  Transmiss. : Chrien+/5/
             Capture    : Weigmann+/2/,Musgrove+/3/
      Mo-100 Transmiss. : Weigmann+/6/
             Capture    : Weigmann+/2/,Musgrove+/3/
    A negative resonance added for Mo-95,-97,-98 and -100.

  Connecting energy between resolved and unresolved resonances
    Mo-92 : 50 keV   , Mo-94 : 20 keV   , Mo-95 :  2 keV   ,
    Mo-96 : 19 keV   , Mo-97 : 1.8 keV  , Mo-98 : 32 keV   ,
    Mo-100: 26 keV   .

  Unresolved resonances up to 100 keV
    Energy independent parameters calculated with optical and
    statistical models are given.
           S0  = 0.37E-4  ,S1   = 5.48E-4 ,S2 = 3.65E-4.

  Calculated 2200 m/s values and resonance integrals (barn) :
                        2200 m/s value        Res.Int.
           total          8.037                 -
           elastic        5.486                 -
           capture        2.551               25.4

MF=3  Neutron Cross Sections
  Slight background correction are applied for Sig-t and Sig-c in
  the unresolved resonance region.

  Cross sections above 100 keV evaluated as follows

  MT=1  : Total
     Calculated with optical model.
     Potential parameters obtained by systematic fitting of Sig-t
```

by Iijima+/7/ :
V =46.0 - 0.25*En ,Ws=7.0 ,Vso=7.0 (MeV)
R0=Rso=5.89 ,Rs=6.39 (fm)
a0=aso=0.62 ,b =0.35 (fm)

MT=2 : Elastic scattering
(Total) - (All other partial cross sections).

MT=16,17,103,107 : (n,2n),(n,3n),(n,p),(n,a)
Calculated with GNASH code /8/ considering pre-equilibrium process.

MT=51-91 : Inelastic scattering
Calculated with the statistical model code CASTHY /9/.
Competing processes : (n,2n),(n,3n),(n,p),(n,a)
Level fluctuation considered.

The level scheme taken from Ref./10/ for Mo-92 and -94 ,and from evaluation by Matumoto+/11/ for the other isotopes.

Mo-92	No	Energy(MeV)	Spin-Parity	No	Energy(MeV)	Spin-Parity
	g.s.	0	0 +	4	2.5270	5 -
	1	1.5095	2 +	5	2.6130	6 +
	2	2.2826	4 +	6	2.7600	8 +
	3	2.5197	0 +	7	2.8497	3 -

Continuum levels assumed above 3 MeV.

Mo-94	No	Energy(MeV)	Spin-Parity	No	Energy(MeV)	Spin-Parity
	g.s.	0	0 +	6	2.2940	4 +
	1	0.8710	2 +	7	2.3930	2 +
	2	1.5737	4 +	8	2.4230	6 +
	3	1.7420	0 +	9	2.5337	3 -
	4	1.8642	2 +	10	2.5870	4 +
	5	2.0674	2 +	11	2.6100	5 -

Continuum levels assumed above 2.74 MeV.

Mo-95	No	Energy(MeV)	Spin-Parity	No	Energy(MeV)	Spin-Parity
	g.s.	0	5/2 +	10	1.3100	1/2 +
	1	0.2039	3/2 +	11	1.3760	3/2 +
	2	0.7658	7/2 +	12	1.4350	5/2 +
	3	0.7862	1/2 +	13	1.5410	11/2 +
	4	0.8206	3/2 +	14	1.5528	9/2 +
	5	0.9478	9/2 +	15	1.6202	3/2 +
	6	1.0391	1/2 +	16	1.6700	5/2 +
	7	1.0590	5/2 +	17	1.6830	9/2 +
	8	1.0741	7/2 +	18	1.7070	1/2 +
	9	1.2225	5/2 +	19	1.9380	11/2 -

Continuum levels assumed above 2 MeV.

Mo-96	No	Energy(MeV)	Spin-Parity	No	Energy(MeV)	Spin-Parity
	g.s.	0	0 +	8	2.0956	2 +
	1	0.7783	2 +	9	2.2193	4 +
	2	1.1479	0 +	10	2.2345	3 -
	3	1.4978	2 +	11	2.4262	3 +
	4	1.6260	2 +	12	2.4384	5 +
	5	1.6280	4 +	13	2.4406	6 +

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No	Energy(MeV)	Spin-Parity	No	Energy(MeV)	Spin-Parity
6	1.8695	4 +	14	2.4807	4 +
7	1.9783	3 +			

Continuum levels assumed above 2.5 MeV.

Mo-97 No	Energy(MeV)	Spin-Parity	No	Energy(MeV)	Spin-Parity
g.s.	0	5/2 +	11	1.2686	7/2 +
1	0.4809	3/2 +	12	1.2730	3/2 +
2	0.6579	7/2 +	13	1.2840	13/2 +
3	0.6796	1/2 +	14	1.2846	3/2 +
4	0.7195	5/2 +	15	1.4095	11/2 +
5	0.7211	3/2 +	16	1.4373	11/2 −
6	0.8882	1/2 +	17	1.4470	3/2 +
7	1.0245	7/2 +	18	1.5156	9/2 +
8	1.0926	3/2 +	19	1.5452	5/2 −
9	1.1167	9/2 +	20	1.5651	3/2 −
10	1.1486	7/2 −			

Continuum levels assumed above 1.58 MeV.

Mo-98 No	Energy(MeV)	Spin-Parity	No	Energy(MeV)	Spin-Parity
g.s.	0	0 +	10	2.1049	2 +
1	0.7349	0 +	11	2.2069	2 +
2	0.7874	2 +	12	2.2240	2 +
3	1.4323	2 +	13	2.3334	2 +
4	1.5101	4 +	14	2.3437	6 +
5	1.7585	2 +	15	2.4198	3 −
6	1.8809	3 +	16	2.4500	4 +
7	1.9650	0 +	17	2.4854	3 +
8	1.9855	1 +	18	2.5063	3 −
9	2.0176	3 −			

Continuum levels assumed above 2.53 MeV.

Mo-100 No	Energy(MeV)	Spin-Parity	No	Energy(MeV)	Spin-Parity
g.s.	0	0 +	9	2.0330	0 +
1	0.5356	2 +	10	2.0400	2 +
2	0.6944	0 +	11	2.1014	4 +
3	1.0637	2 +	12	2.3400	2 +
4	1.1361	4 +	13	2.4156	3 −
5	1.4633	2 +	14	2.4700	4 +
6	1.7657	1 +	15	2.5632	3 +
7	1.7704	3 +	16	2.5900	4 +
8	1.9081	3 −			

Continuum levels assumed above 2.62 MeV.

The inelastic levels of each isotope are grouped in natural molybdenum file as follows:

MT	−Q(MeV)	Mo-92	Mo-94	Mo-95	Mo-96	Mo-97	Mo-98	Mo-100
51	0.2039	–	–	51	–	–	–	–
52	0.4808	–	–	–	–	51	–	–
53	0.5354	–	–	–	–	–	–	51
54	0.6578	–	–	–	–	52,53	–	–
55	0.6941	–	–	–	–	–	–	52
56	0.7194	–	–	–	–	54,55	–	–
57	0.7347	–	–	–	–	–	51	–
58	0.7659	–	–	52	51	–	–	–
59	0.7863	–	–	53	–	–	52	–
60	0.8207	–	–	54	–	–	–	–

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61	0.8712	–	51	–	–	56	–	–
62	0.9479	–	–	55	–	–	–	–
63	1.0244	–	–	56	–	57	–	–
64	1.0591	–	–	57,58	–	–	–	53
65	1.0925	–	–	–	–	58,59	–	–
66	1.1356	–	–	–	52	60	–	54
67	1.2226	–	–	59	–	–	–	–
68	1.2685	–	–	–	–	61,62 63,64	–	–
69	1.3101	–	–	60	–	–	–	–
70	1.3761	–	–	61	–	65	–	–
71	1.4320	–	–	62	–	66	53	–
72	1.4468	–	–	–	–	67	–	55
73	1.4978	51	–	–	53	68	54	–
74	1.5412	–	52	63,64	–	69,70	–	–
75	1.6204	–	–	65	54,55	–	–	–
76	1.6702	–	–	66,67 68	–	–	–	–
77	1.7424	–	53	–	–	–	55	56,57
78	1.8646	–	54	–	56	–	56	–
79	1.9073	–	–	69	–	–	–	58
80	1.9646	–	–	–	57	–	57,58	–
81	2.0172	–	55	–	–	–	59	59,60
82	2.0956	–	–	–	58	–	60	61
83	2.2064	–	–	–	59,60	–	61,62	–
84	2.2836	52	56	–	–	–	–	–
85	2.3329	–	–	–	–	–	63,64	62
86	2.3935	–	57,58	–	61	–	65	63
87	2.4384	–	–	–	62,63	–	66	64
88	2.4807	–	–	–	64	–	67,68	–
89	2.5208	53,54	59	–	–	–	–	65
90	2.5676	55	60,61	–	–	–	–	66
91	1.5798	56,57 91	91	91	91	91	91	91

The level density parameters evaluated by Iijima+/12/.

Mo-isotope	91	92	93	94	95	96
a (1/MeV)	10.87	10.20	11.25	11.80	13.60	14.03
Delta(MeV)	1.28	2.21	1.28	2.00	1.28	2.40
Ex (MeV)	5.428	6.665	3.14	6.228	5.835	7.645
Tc (MeV)	0.627	0.85	0.605	0.760	0.715	0.741

Mo-isotope	97	98	99	100	101
a (1/MeV)	15.17	15.97	17.74	19.35	20.85
Delta(MeV)	1.28	2.57	1.28	2.22	1.28
Ex (MeV)	4.988	7.53	5.775	6.795	5.766
Tc (MeV)	0.618	0.671	0.605	0.600	0.549

MT=102 : Capture
Calculated with the statistical model code CASTHY /9/.
Competing processes : (n,2n),(n,3n),(n,p),(n,a)
Level fluctuation considered.
The gamma-ray strength function of each isotope was obtained so as to reproduce the ORELA capture data /3/:
Mo-92 : 9.4E-5 , Mo-94 : 2.0E-4 , Mo-95 : 2.9E-3 ,
Mo-96 : 1.7E-4 , Mo-97 : 2.9E-3 , Mo-98 : 1.4E-4 ,

Mo-100: 1.4E-4

MF=4 Angular Distributions of Secondary Neutrons
MT=2 : Calculated with optical model.
MT=51,52,53,55,57,60,62,67,69
: 90 degree symmetric in the center-of-mass system.
MT=54-90 (other than above)
: Isotropic in the center-of-mass system.
MT=16,17,91 : Isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17,91 : Evaporation spectrum.

References

1) Wasson O.A. et al.: Phys.Rev.,C7,1532 (1973).
2) Weigmann H. et al.: 1971 Knoxville Conf.,CONF-710301,p.749.
3) Musgrove A.R.de.L. et al.: Nucl.Phys.,A270,108 (1976).
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6) Weigmann H. et al.: Phys.Rev.,C20,115 (1969).
7) Iijima S. and Kawai M.: J.Nucl.Sci.Technol.,20,77 (1983).
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9) Igarasi S.: J.Nucl.Sci.Technol.,12,67 (1975).
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12) Iijima S. et al.: to be published in J.Nucl.Sci.Technol.

42-Mo- 92 MAT number = 2421

```
42-Mo- 92 JNDC          Eval-Aug82 Y.Kikuchi et al.
                        Dist-Mar83 Rev1-Nov83
History
82-08 New evaluation for JENDL-2 by W.G. on FP nuclear data of
      JNDC.
83-11 Comment was added.

MF=1,MT=451  Comments and dictionary

MF=2,MT=151  Resonance parameters
  Resolved resonances for MLBW formula : 1.0E-5 eV - 50 keV
        Evaluation based on the following data.
           Transmission : Wasson+/1/.
           Capture      : Wasson+/1/,Weigmann+/2/,Musgrove+/3/.
        Assumed Gam-g   : 200 milli-eV for s-wave and
                          425 milli-eV for p-wave
  Unresolved resonances : 50 keV - 100 keV
        Energy independent parameters are given:
           S0   = 0.37E-4  ,S1    = 5.48E-4 ,S2 = 3.65E-4,
           Dobs= 2400 eV   ,Gam-g= 0.226 eV,R  = 6.72 fm.

  Calculated 2200 m/s values and resonance integrals (barn) :
                       2200 m/s value        Res.Int.
           total         5.566                  -
           elastic       5.545                  -
           capture       0.02075              0.981

MF=3  Neutron Cross Sections
  Slight background correction for Sig-t and Sig-c between 50 and
  100 keV.
  Cross sections above 100 keV evaluated as follows.

  MT=1  : Total
     Calculated with optical model.
     Potential parameters obtained by systematic fitting to Sig-t
     by Iijima+/4/ :
        V =46.0 - 0.25*En  ,Ws=7.0       ,Vso=7.0  (MeV)
        R0=Rso=5.89        ,Rs=6.39                (fm)
        a0=aso=0.62        ,b =0.35                (fm)

  MT=2  : Elastic scattering
     (Total) - (All other partial cross sections).

  MT=16,103,107  : (n,2n),(n,p),(n,a)
     Calculated with GNASH code /5/ considering pre-equilibrium
     process.

  MT=51-57,91,102 : Inelastic scattering and capture
      Calculated with the statistical model code CASTHY /6/.
        Competing processes : (n,2n),(n,p),(n,a)
        Level fluctuation considered.
```

The level scheme taken from Ref./7/.

No	Energy(MeV)	Spin-Parity
g.s.	0	0 +
1	1.5095	2 +
2	2.2826	4 +
3	2.5197	0 +
4	2.5270	5 −
5	2.6130	6 +
6	2.7600	8 +
7	2.8497	3 −

Continuum levels assumed above 3 MeV.

The level density parameters evaluated by Iijima+/8/.

Mo-isotope	91	92	93
a (1/MeV)	10.87	10.2	11.25
Delta(MeV)	1.28	2.21	1.28
Ex (MeV)	5.428	6.665	3.14
Tc (MeV)	0.627	0.85	0.605

The gamma-ray strength function of 0.94E-4 obtained so as to reproduce the ORELA capture data /3/.

MT=251 : Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons
MT=2 : Calculated with optical model.
MT=16 : Isotropic in the laboratory system.
MT=51-57 : 90 degree symmetric in the center-of-mass system.
MT=91 : 90 degree symmetric in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,91 : Evaporation spectrum.

References
1) Wasson O.A. et al.: Phys.Rev.,C7,1532 (1973).
2) Weigmann H. et al.: 1971 Knoxville Conf.,CONF-710301,p.749.
3) Musgrove A.R.de.L. et.al.: Nucl.Phys.,A270,108 (1976).
4) Iijima S. and Kawai M.: J.Nucl.Sci.Technol.,20,77 (1983)
5) Young P.G. and Arthur E.D.: LA-6947 (1977).
6) Igarasi S.: J.Nucl.Sci.Technol.,12,67 (1975).
7) Lederer C.M. and Shirley V.S.: Table of Isotopes,7th Edition, Wiley-Interscience (1978).
8) Iijima S. et al.: to be published in J.Nucl.Sci.Technol.

42-Mo- 94 MAT number = 2422

42-Mo- 94 JNDC Eval-Aug82 Y.Kikuchi et al.
Dist-Mar83 Rev1-Nov83

History
82-08 New evaluation for JENDL-2 by W.G. on FP nuclear data of JNDC.
83-11 Comment was added.

MF=1,MT=451 Comments and dictionary

MF=2,MT=151 Resonance parameters
Resolved resonances for MLBW formula : 1.0E-5 eV - 20 keV
Evaluation based on the following data.
Capture : Weigmann+/1/,Musgrove+/2/.
Assumed Gam-g : 135 milli-eV for s-wave and 175 milli-eV for p-wave.
Unresolved resonances : 20 keV - 100 keV
Energy independent parameters are given:
S0 = 0.37E-4 ,S1 = 5.48E-4 ,S2 = 3.65E-4,
Dobs= 1150 eV ,Gam-g= 0.230 eV,R = 6.68 fm.

Calculated 2200 m/s values and resonance integrals (barn) :

	2200 m/s value	Res.Int.
total	6.011	-
elastic	5.998	-
capture	0.01311	1.43

MF=3 Neutron Cross Sections
Slight background correction for Sig t and Sig-c between 30 keV and 100 keV.
Cross sections above 100 keV evaluated as follows.

MT=1 : Total
Calculated with optical model.
Potential parameters obtained by systematic fitting to Sig-t by Iijima+/3/ :

V =46.0 - 0.25*En	,Ws=7.0	,Vso=7.0	(MeV)
R0=Rso=5.89	,Rs=6.39		(fm)
a0=aso=0.62	,b =0.35		(fm)

MT=2 : Elastic scattering
(Total) - (All other partial cross sections).

MT=16,17,103,107 : (n,2n),(n,3n),(n,p),(n,a)
Calculated with GNASH code /4/ considering pre-equilibrium process.

MT=51-61,91,102 : Inelastic scattering and capture
Calculated with the statistical model code CASTHY /5/.
Competing processes : (n,2n),(n,3n),(n,p),(n,a)
Level fluctuation considered.
The level scheme taken from Ref./6/.

No	Energy(MeV)	Spin-Parity
g.s.	0	0 +
1	0.8710	2 +
2	1.5737	4 +
3	1.7420	0 +
4	1.8642	2 +
5	2.0674	2 +
6	2.2940	4 +
7	2.3930	2 +
8	2.4230	6 +
9	2.5337	3 −
10	2.5670	4 +
11	2.6100	5 −

Continuum levels assumed above 2.74 MeV.

The level density parameters evaluated by Iijima /7/.

Mo-isotope	93	94	95
a (1/MeV)	11.25	11.80	13.60
Delta (MeV)	1.28	2.0	1.28
Ex (MeV)	3.14	6.228	5.835
Tc (MeV)	0.605	0.76	0.715

The gamma-ray strength function of 2.0E-4 obtained so as to reproduce the ORELA capture data /2/.

MT=251 : Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons
MT=2 : Calculated with optical model.
MT=16,17 : Isotropic in the laboratory system.
MT=51-61 : 90 degree symmetric in the center-of-mass system.
MT=91 : 90 degree symmetric in the laboratory systam.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17,91 : Evaporation spectrum.

References

1) Weigmann H. et al.: 1971 Knoxville Conf.,CONF-710301,p.749.
2) Musgrove A.R.de.L. et.al.: Nucl.Phys.,A270,108 (1976).
3) Iijima S. and Kawai M.: J.Nucl.Sci.Technol.,20,77 (1983).
4) Young P.G. and Arthur E.D.: LA-6947 (1977).
5) Igarasi S.: J.Nucl.Sci.Technol.,12,67 (1975).
6) Lederer C.M. and Shirley V.S.: Table of Isotopes,7th Edition, Wiley-Interscience (1978).
7) Iijima S. et al.: to be published in J.Nucl.Sci.Technol.

42-Mo- 95　　MAT number = 2423

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 42-Mo- 95 JNDC          Eval-Aug82 Y.Kikuchi et al.
                         Dist-Mar83 Rev1-Nov83
History
82-08 New evaluation for JENDL-2 by W.G. on FP nuclear data of
      JNDC.
83-11 Comment was added.

MF=1,MT=451  Comments and dictionary

MF=2,MT=151  Resonance parameters
  Resolved resonances for MLBW formula : 1.0E-5 eV - 2 keV
        Evaluation based on the following data.
           Transmission : Shwe+/1/
           Capture      : Weigmann+/2/
        Assumed Gam-g : 150 milli-eV for s-wave and
                        180 milli-eV for p-wave.
        A negative resonance added at - 20 eV.
  Unresolved resonances : 2 keV - 100 keV
        Energy independent parameters are given:
           S0   = 0.37E-4 ,S1    = 5.48E-4 ,S2 = 3.65E-4,
           Dobs= 80 eV    ,Gam-g= 0.232 eV,R  = 6.70 fm.

  Calculated 2200 m/s values and resonance integrals (barn) :
                         2200 m/s value        Res.Int.
           total           19.58                  -
           elastic          5.586                 -
           capture         13.99                 119

MF=3  Neutron Cross Sections
  Slight background correction for Sig-t and Sig-c between 40
  and 100 keV.
  Cross sections above 100 keV were evaluated as follows.

  MT=1   : Total
     Calculated with optical model.
     Potential parameters obtained by systematic fitting of Sig-t
     by Iijima+/3/ :
        V =46.0 - 0.25*En   ,Ws=7.0        ,Vso=7.0  (MeV)
        R0=Rso=5.89         ,Rs=6.39                 (fm)
        a0=aso=0.62         ,b =0.35                 (fm)

  MT=2  : Elastic scattering
     (Total) - (All other partial cross sections).

  MT=16,17,103,107  : (n,2n),(n,3n),(n,p),(n,a)
     Calculated with GNASH code /4/ considering pre-equilibrium
     process.

  MT=51-69,91,102  : Inelastic scattering and capture
      Calculated with the statistical model code CASTHY /5/.
        Competing processes : (n,2n),(n,3n),(n,p),(n,a)
```

Level fluctuation considered.
The level scheme taken from evaluation by Matumoto+/6/.

No	Energy (MeV)	Spin-Parity
g.s.	0	5/2 +
1	0.2039	3/2 +
2	0.7658	7/2 +
3	0.7862	1/2 +
4	0.8206	3/2 +
5	0.9478	9/2 +
6	1.0391	1/2 +
7	1.0590	5/2 +
8	1.0741	7/2 +
9	1.2225	5/2 +
10	1.3100	1/2 +
11	1.3760	3/2 +
12	1.4350	5/2 +
13	1.5410	11/2 +
14	1.5528	9/2 +
15	1.6202	3/2 +
16	1.6700	5/2 +
17	1.6830	9/2 +
18	1.7070	1/2 +
19	1.9380	11/2 −

Continuum levels assumed above 2 MeV.
The level density parameters evaluated by Iijima+/7/.

Mo-isotope	93	94	95	96
a (1/MeV)	11.25	11.80	13.60	14.03
Delta (MeV)	1.28	2.0	1.28	2.40
Ex (MeV)	3.14	6.228	5.835	7.645
Tc (MeV)	0.605	0.76	0.715	0.741

The gamma-ray strength function of 2.9E-3 obtained so as to reproduce the ORELA capture data /8/.

MT-251 : Mu bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons
MT=2 : Calculated with optical model.
MT=16,17 : Isotropic in the laboratory sysmtem.
MT=51-69 : 90 degree symmetric in the center-of-mass system.
MT=91 : 90 degree symmetric in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17,91 : Evaporation spectrum.

References

1) Shwe H. and Cote R.E.: Phys.Rev.179,1148 (1969)
2) Weigmann H. et al.: 1971 Knoxville Conf.,CONF-710301,p.749.
3) Iijima S. and Kawai M.: J.Nucl.Sci.Technol.,20,77 (1983).
4) Young P.G. and Arthur E.D.: LA-6947 (1977).
5) Igarasi S.: J.Nucl.Sci.Technol.,12,67 (1975).
6) Matumoto Z. et al.:JAERI-M 7734(1978).
7) Iijima S. et al.: to be published in J.Nucl.Sci.Technol.
8) Musgrove A.R.de.L. et al.: Nucl.Phys.,A270,108 (1976).

42-Mo- 96 MAT number = 2424

```
 42-Mo- 96 JNDC        Eval-Aug82 Y.Kikuchi et al.
                       Dist-Mar83 Rev1-Nov83
History
82-08 New evaluation for JENDL-2 by W.G. on FP nuclear data of
      JNDC.
83-11 Comment was added.

MF=1,MT=451  Comments and dictionary

MF=2,MT=151  Resonance parameters
  Resolved resonances for MLBW formula : 1.0E-5 eV - 19 keV
        Evaluation based on the following data.
           Capture        : Weigmann+/1/,Musgrove+/2/
        Assumed Gam-g  : 114 milli-eV for s-wave and
                         136 milli-eV for p-wave.
  Unresolved resonances : 19 keV - 100 keV
        Energy independent parameters are given:
           S0   = 0.37E-4 ,S1    = 5.48E-4 ,S2 = 3.65E-4,
           Dobs= 950 eV  ,Gam-g= 162 MeV ,R  = 6.68 fm.

  Calculated 2200 m/s values and resonance integrals (barn) :
                          2200 m/s value        Res.Int.
           total             5.322                 -
           elastic           4.727                 -
           capture           0.5954               17.6

MF=3  Neutron Cross Sections
  Slight background correction for Sig-t and Sig-c between 30
  and 100 keV.
  Cross sections above 100 keV were evaluated as follows.

  MT=1   : Total
     Calculated with optical model.
     Potential parameters obtained by systematic fitting of Sig-t
     by Iijima+/3/ :
        V =46.0 - 0.25*En  ,Ws=7.0          ,Vso=7.0  (MeV)
        R0=Rso=5.89        ,Rs=6.39                   (fm)
        a0=aso=0.62        ,b =0.35                   (fm)

  MT=2  : Elastic scattering
     (Total) - (All other partial cross sections).

  MT=16,17,103,107  : (n,2n),(n,3n),(n,p),(n,a)
     Calculated with GNASH code /4/ considering pre-equilibrium
     process.

  MT=51-64,91,102  : Inelastic scattering and capture
      Calculated with the statistical model code CASTHY /5/.
        Competing processes : (n,2n),(n,3n),(n,p),(n,a)
        Level fluctuation considered.
     The level scheme taken from evaluation by Matumoto+/6/.
```

No	Energy (MeV)	Spin-Parity
g.s.	0	0 +
1	0.7783	2 +
2	1.1479	0 +
3	1.4978	2 +
4	1.6260	2 +
5	1.6280	4 +
6	1.8695	4 +
7	1.9783	3 +
8	2.0956	2 +
9	2.2193	4 +
10	2.2345	3 −
11	2.4262	3 +
12	2.4384	5 +
13	2.4406	6 +
14	2.4807	4 +

Continuum levels assumed above 2.5 MeV.

The level density parameters evaluated by Iijima+/7/.

Mo-isotope	94	95	96	97
a (1/MeV)	11.80	13.60	14.03	15.17
Delta (MeV)	2.0	1.28	2.40	1.28
Ex (MeV)	6.228	5.835	7.645	4.988
Tc (MeV)	0.76	0.715	0.741	0.618

The gamma-ray strength function of 1.7E-4 obtained so as to reproduce the ORELA capture data /2/.

MT=251 : Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons
MT=2 : Calculated with optical model.
MT=16,17 : Isotropic in the laboratory system.
MT=51-64 : 90 degree symmetric in the center-of-mass system.
MT=91 : 90 degree symmetric in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17,91 : Evaporation spectrum.

References

1) Weigmann H. et al.: 1971 Knoxville Conf.,CONF-710301,p.749.
2) Musgrove A.R.de.L. et al.: Nucl.Phys.,A270,108 (1976).
3) Iijima S. and Kawai M.: J.Nucl.Sci.Technol.,20,77 (1983).
4) Young P.G. and Arthur E.D.: LA-6947 (1977).
5) Igarasi S.: J.Nucl.Sci.Technol.,12,67 (1975).
6) Matumoto Z. et al.:JAERI-M 7734(1978).
7) Iijima S. et al.: to be published in J.Nucl.Sci.Technol.

42-Mo- 97 MAT number = 2425

```
42-Mo- 97 JNDC        Eval-Aug82 Y.Kikuchi et al.
                      Dist-Mar83 Rev1-Nov83
History
82-08 New evaluation for JENDL-2 by W.G. on FP nuclear data of
      JNDC.
83-11 Comment was added.

MF=1,MT=451  Comments and dictionary

MF=2,MT=151  Resonance parameters
  Resolved resonances for MLBW formula : 1.0E-5 eV - 1.8 keV
      Evaluation based on the following data.
        Transmission : Shwe+/1/
        Capture      : Weigmann+/2/
      Assumed Gam-g : 130 milli-eV for s-wave and
                      150 milli-eV for p-wave.
    A negative resonance added at - 20 eV.
  Unresolved resonances : 1.8 keV - 100 keV
      Energy independent parameters are given:
        S0  = 0.37E-4 ,S1   = 5.48E-4 ,S2 = 3.65E-4,
        Dobs= 60 eV   ,Gam-g= 180 MeV ,R  = 6.67 fm.

  Calculated 2200 m/s values and resonance integrals (barn) :
                     2200 m/s value       Res.Int.
        total           7.953               -
        elastic         5.853               -
        capture         2.100              17.3

MF=3  Neutron Cross Sections
  Slight background correction for Sig-t and Sig-c between 20
  and 100 keV.
  Cross sections above 100 keV were evaluated as follows.

  MT=1   : Total
     Calculated with optical model.
     Potential parameters obtaine by systematic fitting of Sig-t
     by Iijima+/3/ :
        V =46.0 - 0.25*En  ,Ws=7.0        ,Vso=7.0  (MeV)
        R0=Rso=5.89        ,Rs=6.39                 (fm)
        a0=aso=0.62        ,b =0.35                 (fm)

  MT=2   : Elastic scattering
     (Total) - (All other partial cross sections).

  MT=16,17,103,107   : (n,2n),(n,3n),(n,p),(n,a)
     Calculated with GNASH code /4/ considering pre-equilibrium
     process.

  MT=51-70,91,102   : Inelastic scattering and capture
      Calculated with the statistical model code CASTHY /5/.
        Competing processes : (n,2n),(n,3n),(n,p),(n,a)
```

Level fluctuation considered.
The level scheme taken from evaluation by Matumoto+/6/.

No	Energy(MeV)	Spin-Parity
g.s.	0	5/2 +
1	0.4809	3/2 +
2	0.6579	7/2 +
3	0.6796	1/2 +
4	0.7195	5/2 +
5	0.7211	3/2 +
6	0.8882	1/2 +
7	1.0245	7/2 +
8	1.0926	3/2 +
9	1.1167	9/2 +
10	1.1486	7/2 −
11	1.2686	7/2 +
12	1.2730	3/2 +
13	1.2840	13/2 +
14	1.2846	3/2 +
15	1.4095	11/2 +
16	1.4373	11/2 −
17	1.4470	3/2 +
18	1.5156	9/2 +
19	1.5452	5/2 −
20	1.5651	3/2 −

Continuum levels assumed above 1.58 MeV.
The level density parameters evaluated by Iijima+/7/.

Mo-isotope	95	96	97	98
a (1/MeV)	13.60	14.03	15.17	15.94
Delta(MeV)	1.28	2.40	1.28	2.57
Ex (MeV)	5.835	7.645	4.988	7.53
Tc (MeV)	0.715	0.741	0.618	0.671

The gamma-ray strength function of 2.9E-3 obtained so as to reproduce the ORELA capture data /8/.

MT=251 : Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons
MT=2 : Calculated with optical model.
MT=16,17 : Isotropic in the laboratory system.
MT=51-70 : 90 degree symmetric in the center-of-mass system.
MT=91 : 90 degree symmetric in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17,91 : Evaporation spectrum.

References
1) Shwe H. and Cote R.E.: Phys.Rev.179,1148 (1969).
2) Weigmann H. et al.: 1971 Knoxville Conf.,CONF-710301,p.749.
3) Iijima S. and Kawai M.: J.Nucl.Sci.Technol.,20,77 (1983).
4) Young P.G. and Arthur E.D.: LA-6947 (1977).
5) Igarasi S.: J.Nucl.Sci.Technol.,12,67 (1975).
6) Matumoto Z. et al.:JAERI-M 7734(1978).
7) Iijima S. et al.: to be published in J.Nucl.Sci.Technol.
8) Musgrove A.R.de.L. et al.: Nucl.Phys.,A270,108 (1976).

42-Mo- 98 MAT number = 2426

```
42-Mo- 98 JNDC         Eval-Aug82 Y.Kikuchi et al.
                       Dist-Mar83 Rev1-Nov83
History
82-08 New evaluation for JENDL-2 by W.G. on FP nuclear data of
      JNDC.
83-11 Comment was added.

MF=1,MT=451  Comments and dictionary

MF=2,MT=151  Resonance parameters
  Resolved resonances for MLBW formula : 1.0E-5 eV - 32 keV
       Evaluation based on the following data.
          Transmission : Chrien+/1/
          Capture      : Weigmann+/2/,Musgrove+/3/
       Assumed Gam-g : 85 milli-eV for s-wave and
                       120 milli-eV for p-wave.
       A negative resonance added at - 980eV.
  Unresolved resonances : 32 keV - 100 keV
       Energy independent parameters are given:
          S0   = 0.37E-4 ,S1    = 5.48E-4 ,S2 = 3.65E-4,
          Dobs= 950 eV  ,Gam-g= 0.133 eV,R  = 6.66 fm.

  Calculated 2200 m/s values and resonance integrals (barn) :
                      2200 m/s value      Res.Int.
          total          5.772               -
          elastic        5.642               -
          capture        0.1300             6.56

MF=3  Neutron Cross Sections
  Slight background correction for Sig-t and Sig-c between 32
  and 100 keV.
  Cross sections above 100 keV were evaluated as follows.

  MT=1   : Total
     Calculated with optical model.
     Potential parameters obtained by systematic fitting of Sig-t
     by Iijima+/4/ :
       V =46.0 - 0.25*En  ,Ws=7.0        ,Vso=7.0  (MeV)
       R0=Rso=5.89        ,Rs=6.39                 (fm)
       a0=aso=0.62        ,b =0.35                 (fm)

  MT=2   : Elastic scattering
     (Total) - (All other partial cross sections).

  MT=16,17,103,107   : (n,2n),(n,3n),(n,p),(n,a)
     Calculated with GNASH code /5/ considering pre-equilibrium
     process.

  MT=51-68,91,102   : Inelastic scattering and capture
      Calculated with the statistical model code CASTHY /6/.
        Competing processes : (n,2n),(n,3n),(n,p),(n,a)
```

Level fluctuation considered.
The level scheme taken from evaluation by Matumoto+/7/.

No	Energy(MeV)	Spin-Parity
g.s.	0	0 +
1	0.7349	0 +
2	0.7874	2 +
3	1.4323	2 +
4	1.5101	4 +
5	1.7585	2 +
6	1.8809	3 +
7	1.9650	0 +
8	1.9855	1 +
9	2.0176	3 -
10	2.1049	2 +
11	2.2069	2 +
12	2.2240	2 +
13	2.3334	2 +
14	2.3437	6 +
15	2.4198	3 -
16	2.4500	4 +
17	2.4854	3 +
18	2.5063	3 -

Continuum levels assumed above 2.53 MeV.
The level density parameters evaluated by Iijima+/8/.

Mo-isotope	96	97	98	99
a (1/MeV)	14.03	15.17	15.94	17.74
Delta(MeV)	2.40	1.28	2.57	1.28
Ex (MeV)	7.645	4.988	7.53	5.775
Tc (MeV)	0.741	0.618	0.671	0.605

The gamma-ray strength function of 1.4E-4 obtained so as to reproduce the ORELA capture data /3/.

MT=251 : Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons
MT=2 : Calculated with optical model.
MT=16,17 : Isotropic in the laboratory system.
MT=51-68 : 90 degree symmetric in the center-of-mass system.
MT=91 : 90 degree symmetric in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17,91 : Evaporation spectrum.

References
1) Chrien R.E. et al.: Phys.Rev.,C13,578(1976).
2) Weigmann H. et al.: 1971 Knoxville Conf.,CONF-710301,p.749.
3) Musgrove A.R.de.L. et al.: Nucl.Phys.,A270,108 (1976).
4) Iijima S. and Kawai M.: J.Nucl.Sci.Technol.,20,77 (1983).
5) Young P.G. and Arthur E.D.: LA-6947 (1977).
6) Igarasi S.: J.Nucl.Sci.Technol.,12,67 (1975).
7) Matumoto Z. et al.:JAERI-M 7734(1978).
8) Iijima S. et al.: to be published in J.Nucl.Sci.Technol.

42-Mo-100 MAT number = 2427

```
 42-Mo-100 JNDC        Eval-Aug82 Y.Kikuchi et al.
                       Dist-Mar83 Rev1-Nov83
History
82-08 New evaluation for JENDL-2 by W.G. on FP nuclear data of
      JNDC.
83-11 Comment was added.

MF=1,MT=451  Comments and dictionary

MF=2,MT=151  Resonance parameters
  Resolved resonances for MLBW formula : 1.0E 5 eV - 26 keV
        Evaluation based on the following data.
           Transmission : Weigmann-/1/
           Capture      : Weigmann-/2/,Musgrove-/3/
        Assumed Gam-g : 65 milli-eV for s-wave and
                        80 milli-eV for p-wave.
        A negative resonance added at - 172 eV.
  Unresolved resonances : 26 keV - 100 keV
        Energy independent parameters are given:
           S0  = 0.37E-4 ,S1   = 5.48E-4 ,S2 = 3.65E-4,
           Dobs= 620 eV  ,Gam-g= 0.85 eV ,R  = 6.64 fm.

  Calculated 2200 m/s values and resonance integrals (barn) :
                      2200 m/s value        Res.Int.
           total         5.499                 -
           elastic       5.300                 -
           capture       0.1990               3.92

MF=3  Neutron Cross Sections
  Slight background correction for Sig t and Sig-c between 26
  and 100 keV.
  Cross sections above 100 keV were evaluated as follows.

  MT=1   : Total
     Calculated with optical model.
     Potential parameters obtained by systematic fitting of Sig-t
     by Iijima+/4/ :
        V =46.0 - 0.25*En  ,Ws=7.0       ,Vso=7.0  (MeV)
        R0=Rso=5.89        ,Rs=6.39                (fm)
        a0=aso=0.62        ,b =0.35                (fm)

  MT=2   : Elastic scattering
     (Total) - (All other partial cross sections).

  MT=16,17,103,107  : (n,2n),(n,3n),(n,p),(n,a)
     Calculated with GNASH code /5/ considering pre-equilibrium
     process.

  MT=51-66,91,102  : Inelastic scattering and capture
      Calculated with the statistical model code CASTHY /6/.
        Competing processes : (n,2n),(n,3n),(n,p),(n,a)
```

Level fluctuation considered.
The level scheme taken from evaluation by Matumoto+/7/.

No	Energy(MeV)	Spin-Parity
g.s.	0	0 +
1	0.5356	2 +
2	0.6944	0 +
3	1.0637	2 +
4	1.1361	4 +
5	1.4633	2 +
6	1.7657	1 +
7	1.7704	3 +
8	1.9081	3 −
9	2.0330	0 +
10	2.0400	2 +
11	2.1014	4 +
12	2.3400	2 +
13	2.4156	3 −
14	2.4700	4 +
15	2.5632	3 +
16	2.5900	4 +

Continuum levels assumed above 2.62 MeV.
The level density parameters evaluated by Iijima+/8/.

Mo-isotope	98	99	100	101
a (1/MeV)	15.97	17.74	19.35	20.85
Delta (MeV)	2.57	1.28	2.22	1.28
Ex (MeV)	7.53	5.775	6.795	5.766
Tc (MeV)	0.671	0.605	0.600	0.549

The gamma-ray strength function of 1.4E-4 obtained so as to reproduce the ORELA capture data /3/.

MT=251 : Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Seutrons
MT=2 : Calculated with optical model.
MT=16,17 : Isotropic in the laboratory system.
MT=51-66 : 90 degree symmetric in the center-of-mass system.
MT=91 : 90 degree symmetric in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17,91 : Evaporation spectrum.

References

1) Weigmann H. et al.: Phys.Rev.,C20,115 (1969).
2) Weigmann H. et al.: 1971 Knoxville Conf.,CONF-710301,p.749.
3) Musgrove A.R.de.L. et al.: Nucl.Phys.,A270,108 (1976).
4) Iijima S. and Kawai M.: J.Nucl.Sci.Technol.,20,77 (1983).
5) Young P.G. and Arthur E.D.: LA-6947 (1977).
6) Igarasi S.: J.Nucl.Sci.Technol.,12,67 (1975).
7) Matumoto Z. et al.:JAERI-M 7734(1978).
8) Iijima S. et al.: to be published in J.Nucl.Sci.Technol.

72-Hf-174 MAT number = 2721

```
 72-Hf-174 NAIG+      Eval-Dec82 Hida,Yoshida,Iijima,Takano(JAERI)
                      Dist-Mar83 Rev1-Dec83
History
82-12 New evaluation for JENDL-2 was made by K.Hida, T.Yoshida,
      S.Iijima (NAIG) and H.Takano (JAERI).
83-12 Angular distributions were modified and comment was added.

MF=1  General Information
  MT=451  Descriptive data and dictionary

MF=2  Resonance Parameters
  MT=151 Resolved and unresolved resonance parameters
  Resolved resonances for MLBW formula
    Energy range             : 0.5 eV to 220 eV.
    Res. energies and Gam-n  : BNL-325 /1/ and Drake et al. /2/.
    Gam-gamma                : 0.060 eV assumed if unknown.
    Background cross sections introduced.
  Unresolved resonances
    Energy range             : 220 eV to 50 keV.
    S0                       : BNL-325 /1/.
    S1,R and Gam-gamma       : Adjusted so that the total cross
                               section of 9.49 b and capture
                               cross section of 0.752 b at 50 keV
                               were reproduced well.
    Parameters are D-obs = 16.0 eV, S0 = 2.80E-4, S1 = 1.06E-4,
    R = 6.01 fm and Gam-gamma = 0.0844 eV.

    2200 m/sec cross sections and calculated res. integrals.
                     2200 m/sec    res. integ.
       total          398.0 b /3/      -
       elastic          8.0 b          -
       capture        390.0 b /4/    492 b

MF=3  Neutron Cross Sections
Below 0.5 eV:
  MT=1   Total
    Sum of the elastic scattering and capture cross sections.
  MT=2   Elastic scattering
    The constant cross section of 8.0 barns was assumed.
  MT=102 Capture
    The curve in the form of 1/v was adjusted to 390 barns /4/ at
    0.0253 eV.
From 0.5 eV to 50 keV:
    Background cross sections are given.
Above 50 keV:
  MT=1,2,4,51-68,91,102  Total,elastic,inelastic and capture
    Calculated with optical and statistical models.  Optical
    potential parameters were fitted to the total cross section
    of natural hafnium.
      V0 = 38.0, Ws = 8.0+0.5*SQRT(En), Vso = 7.0 (MeV),
      a0 = 0.47, as = 0.52            , aso = 0.47 (fm),
```

r0 = 1.32, rs = 1.32 , rso = 1.32 (fm).
Statistical model calculation was made with CASTHY code /5/.
Competing processes ; (n,2n), (n,3n), (n,p), (n,alpha), and level fluctuation were considered.
Level schem taken from Table of Isotopes /6/

No.	Energy(MeV)	Spin-Parity
g.s.	0.0	0 +
1	0.0910	2 +
2	0.2975	4 +
3	0.6084	6 +
4	0.8282	0 +
5	0.9002	2 +
6	1.0622	4 +
7	1.2268	2 +
8	1.3034	3 +
9	1.3087	2 -
10	1.3194	2 +
11	1.3365	3 +
12	1.3947	4 +
13	1.4253	4 -
14	1.4429	5 -
15	1.4489	4 +
16	1.4964	2 +
17	1.5034	3 +
18	1.6261	4 +

Continuum levels assumed above 1.649 MeV.
Level density paramters were newly evaluated for Gilbert and Cameron's formula /7/.

	a(1/MeV)	C(1/MeV)	T(MeV)	Ex(MeV)
Hf-174	23.09	2.31	0.477	5.01
Hf-175	22.93	10.0	0.484	4.42

MT=16,17,103,107 (n,2n), (n,3n), (n,p) and (n,alpha)
Calculated with multi-step Hauser-Feshbach model using GNASH code /8/.
MT=251 Mu bar
Calculated with CASTHY code /5/.

MF=4 Angular Distributions of Secondary Neutrons
MT=2,51-68 : Calculated with CASTHY code /5/.
MT=16,17 : Isotropic in the laboratry system.
MT=91 : Calculated with CASTHY code /5/.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17,91 : Evaporation spectra.

References
1) Mughabghab S.F. and Garber D.I.: BNL 325 3rd Edition (1973).
2) Drake M.K., Sargis D.A. and Maung T.: EPRI NP-250 (1976).
3) Conrad C.A. et al.: Bull. Am. Phys. Soc., 14, 496 (1969).
4) Esch L.J. and Moore W.E.: Bull. Am. Phys. Soc., 6, 70 (1961).
5) Igarasi S.: J. Nucl. Sci. Technol., 12, 67 (1975).
6) Lederer C.M. and Shirley V.S.: Table of Isotopes 7th Edition (1979).
7) Gilbert A. and Cameron A.G.W.: Can. J. Phys., 43, 1446 (1965).
8) Young P.G. and Arthur E.D.: LA-6947 (1977).

72-Hf-176   MAT number = 2722

```
72-Hf-176 NAIG+        Eval-Dec82 Hida,Yoshida,Iijima,Takano(JAERI)
                       Dist-Mar83 Rev1-Dec83
History
82-12 New evaluation for JENDL-2 was made by K.Hida, T.Yoshida,
      S.Iijima (NAIG) and H.Takano (JAERI).
83-12 Angular distributions were modified and comment was added.

MF=1  General Information
  MT=451  Descriptive data and dictionary

MF=2  Resonance Parameters
  MT=151 Resolved and unresolved resonance parameters
  Resolved resonances for MLBW formula
     Energy range              : 0.5 eV to 700 eV.
     Res. energies and Gam-n   : BNL-325 /1/ and Drake et al. /2/.
     Gam-gamma                 : 0.060 eV assumed, if unknown.
     Background cross sections introduced.
  Unresolved resonances
     Energy range              : 700 eV to 50 keV.
     S0                        : Calculated with optical model.
     S1,R and Gam-gamma        : Fitted to the capture cross sec-
                                 tion of Kapchigashev /3/ at 30 keV.
     Parameters are D-obs = 32.0 eV, S0 = 1.92E-4, S1 = 1.11E-4,
     R = 7.14 fm and Gam-gamma = 0.120 eV.

     2200 m/sec cross sections and calculated res. integrals.
                       2200 m/sec     res. integ.
        total          46.00 b /4/      -
        elastic         8.00 b          -
        capture        38.00 b /5/    360 b

MF=3  Neutron Cross Sections
Below 0.5 eV:
  MT=1   Total
     Sum of the elastic scattering and capture cross sections.
  MT=2   Elastic scattering
     The constant cross section of 8.0 barns was assumed.
  MT=102 capture
     The curve in the form of 1/v was adjusted to 38 barns /4/ at
     0.0253 eV.
From 0.5 eV to 50 keV:
     Background cross sections are given.
Above 50 keV:
  MT=1,2,4,51-73,91,102  Total,elastic,inelastic and capture
     Calculated with optical and statistical models.  Optical
     potential parameters were fitted to the total cross section
     of natural hafnium.
        V0 = 38.0, Ws = 8.0+0.5*SQRT(En), Vso = 7.0 (MeV),
        a0 = 0.47, as = 0.52            , aso = 0.47 (fm),
        r0 = 1.32, rs = 1.32            , rso = 1.32 (fm).
     Statistical model calculation was made with CASTHY code /6/.
```

Competing processes ; (n,2n), (n,3n), (n,p), (n,alpha), and level fluctuation were considered.

Level schem taken from Table of Isotopes /7/

No.	Energy(MeV)	Spin-Parity
g.s.	0.0	0 +
1	0.0883	2 +
2	0.2902	4 +
3	0.5970	6 +
4	0.9980	8 +
5	1.1499	0 +
6	1.2266	2 +
7	1.2477	2 –
8	1.2932	0 +
9	1.3133	3 –
10	1.3413	2 +
11	1.3794	2 +
12	1.4046	4 –
13	1.4458	3 +
14	1.5777	3 +
15	1.6434	1 –
16	1.6723	1 +
17	1.7046	2 +
18	1.7102	3 –
19	1.7221	1 –
20	1.7675	2 –
21	1.7861	3 +
22	1.7937	3 –
23	1.8190	0 –

Continuum levels assumed above 1.840 MeV.

Level density paramters were newly evaluated for Gilbert and Cameron's formula /8/.

	a(1/MeV)	C(1/MeV)	T(MeV)	Ex(MeV)
Hf-176	22.77	1.74	0.454	4.38
Hf-177	22.61	9.06	0.486	4.38

MT=16,17,103,107 (n,2n), (n,3n), (n,p) and (n,alpha)
Calculated with multi-step Hauser-Feshbach model using GNASH code /9/.

MT=251 Mu-bar
Calculated with CASTHY code /6/.

MF=4 Angular Distributions of Secondary Neutrons
MT=2,51-68 : Calculated with CASTHY code /6/.
MT=16,17 : Isotropic in the laboratry system.
MT=91 : Calculated with CASTHY code /6/.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17,91 : Evaporation spectra.

References

1) Mughabghab S.F. and Garber D.I.: BNL 325 3rd Edition (1973).
2) Drake M.K., Sargis D.A. and Maung T.: EPRI NP-250 (1976).
3) Kapchigashev A.P.: Atomizdat. Moscow (1970).
4) Conrad C.A. et al.: Bull. Am. Phys. Soc., 14, 496 (1969).
5) Esch L.J. and Moore W.E.: Bull. Am. Phys. Soc., 6, 70 (1961).
6) Igarasi S.: J. Nucl. Sci. Technol., 12, 67 (1975).
7) Lederer C.M. and Shirley V.S.: Table of Isotopes 7 th Ed.

(1979).
8) Gilbert A. and Cameron A.G.W.: Can. J. Phys., 43, 1446 (1965).
9) Young P.G. and Arthur E.D.: LA-6947 (1977).

72-Hf-177　　MAT number = 2723

```
 72-Hf-177 NAIG+        Eval-Dec82 Hida,Yoshida,Iijima,Takano(JAERI)
                        Dist-Mar83 Rev1-Dec83
History
82-12 New evaluation for JENDL-2 was made by K.Hida, T.Yoshida,
      S.Iijima (NAIG) and H.Takano (JAERI).
83-12 Angular distributions were modified and comment was added.

MF=1  General Information
  MT=451  Descriptive data and dictionary

MF=2  Resonance Parameters
  MT=151 Resolved and unresolved resonance parameters
  Resolved resonances for MLBW formula
     Energy range              : 0.5 eV to 250 eV.
     Res. energies and Gam-n   : BNL 325 /1/ and Drake et al. /2/.
     Gam-gamma                 : 0.066 eV assumed, if unknown.
  Unresolved resonances
     Energy range              : 250 eV to 50 keV.
     S0                        : calculated with optical model.
     S1,R and Gam-gamma        : fitted to the 15 percent greater
                                 value than capture cross section
                                 of Kapchigashev /3/ at 30 keV.
     Parameters are D-obs = 2.40 eV, S0 = 1.92E-4, S1 = 1.12E-4,
     R = 6.86 fm and Gam-gamma = 0.125 eV.

     2200 m/s cross sections and calculated res. integrals.
                    2200 m/s       Res. Integ.
         total      359.0 b /4/
         elastic      7.0 b
         capture    352.0 b /5/     6950 b

MF=3  Neutron Cross Sections
Below 0.5 eV:
  MT=1   Total
     Sum of the elastic scattering and capture cross sections.
  MT=2   Elastic scattering
     The constant value of 7.0 barns was assumed at low energies.
  MT=102 Capture
     The curve in the form of 1/v was adjusted to 352 barns /5/ at
     0.0253 eV.
From 0.5 eV to 50 keV:
     Background cross sections are zero.
Above 50 keV.
  MT=1,2,4,51-66,91,102  Total,elastic,inelastic and capture
     Calculated with optical and statistical models.  Optical
     potential parameters were fitted to the total cross section
     of natural hafnium.
        V0 = 38.0, Ws = 8.0+0.5*SQRT(En), Vso = 7.0 (MeV),
        a0 = 0.47, as = 0.52          , aso = 0.47 (fm),
        r0 = 1.32, rs = 1.32          , rso = 1.32 (fm).
     Statistical model calculation was made with CASTHY code /6/.
```

Competing processes ; (n,2n), (n,3n), (n,p), (n,alpha), and level fluctuation were considered.

Level scheme taken from Table of Isotopes /7/

No.	Energy(MeV)	Spin-Parity
g.s.	0.0	7/2 −
1	0.1130	9/2 −
2	0.2497	11/2 −
3	0.3213	9/2 +
4	0.4095	13/2 −
5	0.4267	11/2 +
6	0.5081	5/2 −
7	0.5552	13/2 +
8	0.5913	15/2 −
9	0.6044	7/2 −
10	0.7085	15/2 +
11	0.7459	7/2 +
12	0.7945	17/2 −
13	0.8057	3/2 −
14	0.8474	9/2 +
15	0.8730	5/2 −
16	0.8828	17/2 +

Continuum levels assumed above 0.948 MeV.

Level density paramters were newly evaluated for Gilbert and Cameron's formula /8/.

	a(1/MeV)	C(1/MeV)	T(MeV)	Ex(MeV)
Hf-177	22.61	9.06	0.486	4.38
Hf-178	22.36	2.22	0.451	4.08

MT=16,17,103,107 (n,2n), (n,3n), (n,p) and (n,alpha)
Calculated with multi-step Hauser-Feshbach model using GNASH code /9/.

MT=251 Mu-bar
Calculated with CASTHY code /6/.

MF=4 Angular Distributions of Secondary Neutrons

MT=2,51-66 : Calculated with CASTHY code /6/.
MT=16,17 : Isotropic in the laboratory system.
MT=91 : Assumed the same distributions in the laboratory system as those calculated with CASTHY code in the center-of-mass system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,17,91 : Evaporation spectra.

References

1) Mughabghab S.F. and Garber D.I.: BNL 325 3rd Edition (1973).
2) Drake M.K., Sargis D.A. and Maung T.: EPRI NP-250 (1976).
3) Kapchigashev S.P.: Atomizdat, Moscow (1970).
4) Conrad C.A. et al.: Bull. Am. Phys. Soc., 14, 496 (1969).
5) Pavlenko et al.: 1975 Kiev Conf.,Vol. 3, 171 (1975).
6) Igarasi S.: J. Nucl. Sci. Technol., 12, 67 (1975).
7) Lederer C.M. and Shirley V.S.: Table of Isotopes, 7th Ed. (1979).
8) Gilbert A. and Cameron A.G.W.: Can. J. Phys., 43, 1446 (1965).
9) Young P.G. and Arthur E.D.: LA-6947 (1977).

72-Hf-178　　MAT number = 2724

```
72-Hf-178 NAIG+       Eval-Dec82 Hida,Yoshida,Iijima,Takano(JAERI)
                      Dist-Mar83 Rev1-Jan84
History
82-12 New evaluation for JENDL-2 was made by K.Hida, T.Yoshida,
      S.Iijima (NAIG) and H.Takano (JAERI).
83-12 Angular distributions were modified and comment was added.
84-01 Point-wise cross sections below 0.5 eV and background cross
      sections were modified.

MF=1  General Information
  MT=451  Descriptive data and dictionary

MF=2  Resonance Parameters
  MT=151 Resolved and unresolved resonance parameters
  Resolved resonances for MLBW formula
     Energy range               : 0.5 eV to 1.5 keV.
     Res. energies and Gam-n    : BNL-325 /1/ and Drake et al. /2/.
     Gam-gamma                  : 0.060 eV assumed.
     Background cross sections introduced.
  Unresolved resonances
     Energy region              : 1.5 keV to 50 keV.
     S0                         : calculated with optical model.
     S1,R and Gam-gamma         : fitted to the capture cross sec-
                                  tion of Beer and Macklin /3/.
     Parameters are D-obs = 52.5 eV, S0 = 1.92E-4, S1 = 0.435E-4,
     R = 7.17 fm and Gam-gamma = 0.060 eV.

     2200 m/s cross sections and calculated res. integrals.
                    2200 m/s      Res. Integ.
         total      91.00 b /4/       -
         elastic     5.00 b           -
         capture    86.00 b /5/    1920 b

MF=3  Neutron Cross Sections
Below 0.5 eV:
  MT=1    Total
     Sum of the elastic scattering and capture cross sections.
  MT=2    Elastic scattering
     The cross section of 5.0 barns was assumed below 0.1 eV.
     Above 0.1 eV, the cross section was connected smoothly to the
     cross sections calculated from resonance parameters.
  MT=102 Capture
     The curve in the form of 1/v was normalized to 86 barns /5/
     at 0.0253 eV.
From 0.5 eV to 50 keV:
  Background cross section was given for the elastic scattering
  cross section below 3.0 eV.
Above 50 keV:
  MT=1,2,4,51-71,91,102  Total,elastic,inelastic and capture
     Calculated with optical and statistical models.  Optical
     potential parameters were fitted to the total cross section
```

of natural hafnium.
V0 = 38.0, Ws = 8.0+0.5*SQRT(En), Vso = 7.0 (MeV),
a0 = 0.47, as = 0.52 , aso = 0.47 (fm),
r0 = 1.32, rs = 1.32 , rso = 1.32 (fm).
Statistical model calculation was made with CASTHY code /6/.
Competing processes ; (n,2n), (n,3n), (n,p), (n,alpha),
and level fluctuation were considered.
Level scheme taken from Table of Isotopes /7/

No.	Energy(MeV)	Spin-Parity
g.s.	0.0	0 +
1	0.0932	2 +
2	0.3066	4 +
3	0.6322	6 +
4	1.0585	8 +
5	1.1474	8 -
6	1.1746	2 +
7	1.1993	0 +
8	1.2602	2 -
9	1.2766	2 -
10	1.3099	1 -
11	1.3224	3 -
12	1.3624	2 -
13	1.3641	9 -
14	1.4340	0 +
15	1.4438	0 +
16	1.4790	8 -
17	1.4961	2 +
18	1.5136	1 -
19	1.5613	2 +
20	1.5665	1 -
21	1.6015	10 -

Continuum levels assumed above 1.640 MeV.
Level density paramters were newly evaluated for Gilbert and Cameron's formula /8/.

	a(1/MeV)	C(1/MeV)	T(MeV)	Ex(MeV)
Hf-178	22.36	2.22	0.451	4.08
Hf-179	22.57	6.88	0.465	3.98

MT=16,17,103,107 (n,2n), (n,3n), (n,p) and (n,alpha)
Calculated with multi-step Hauser-Feshbach model using GNASH code /9/.
MT=251 Mu-bar
Calculated with CASTHY code /6/.

MF=4 Angular Distributions of Secondary Neutrons
MT=2,51-71 : Calculated with CASTHY code /6/.
MT=16,17 : Isotropic in the laboratory system.
MT=91 : Assumed the same distributions in the laboratory system as those calculated with CASTHY code in the center-of-mass system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17,91 : Evaporation spectra.

References

1) Mughabghab S.F. and Garber D.I.: BNL 325 3rd Edition (1973).
2) Drake M.K., Sargis D.A. and Maung T.: EPRI NP-250 (1976).

3) Beer H. and Macklin R.L.: Phys. Rev., C26, 1404 (1982).
4) Conrad C.A. et al.: Bull. Am. Phys. Soc., 14, 496 (1969).
5) Pavlenko et al.: 1975 Kiev Conf.,Vol. 3, 171 (1975).
6) Igarasi S.: J. Nucl. Sci. Technol., 12, 67 (1975).
7) Lederer C.M. and Shirley V.S.: Table of Isotopes, 7th Ed. (1979).
8) Gilbert A. and Cameron A.G.W.: Can. J. Phys., 43, 1446 (1965).
9) Young P.G. and Arthur E.D.: LA-6947 (1977).

72-Hf-179 MAT number = 2725

72-Hf-179 NAIG+ Eval-Dec82 Hida,Yoshida,Iijima,Takano(JAERI)
Dist-Mar83 Rev1-Dec83

History
82-12 New evaluation for JENDL-2 was made by K.Hida, T.Yoshida,
S.Iijima (NAIG) and H.Takano (JAERI).
83-12 Angular distributions were modified and comment was added.

MF=1 General Information
MT=451 Descriptive data and dictionary

MF=2 Resonance Parameters
MT=151 Resolved and unresolved resonance parameters
Resolved resonances for MLBW formula
Energy range : 0.5 eV to 250 eV.
Res. energies and Gam-n : BNL-325 /1/ and Drake et al. /2/.
Gam-gamma : 0.066 eV assumed.
Background cross sections introduced.
Unresolved resonances
Energy range : 250 eV to 50 keV.
S0 : calculated with optical model.
S1,R and Gam-gamma : fitted to the capture cross section of Beer and Macklin /3/.
Parameters are D-obs = 4.73 eV, S0 = 1.92E-4, S1 = 1.14E-4,
R = 7.12 fm and Gam-gamma = 0.063 eV.

2200 m/s cross sections and calculated res. integrals.

	2200 m/s	Res. Integ.
total	51.0 b /4/	-
elastic	6.0 b	
capture	45.0 b /1/	517 b

MF=3 Neutron Cross Sections
Below 0.5 eV:
MT=1 Total
Sum of the elastic scattering and capture cross sections.
MT=2 Elastic scattering
The constant cross section of 6.0 barns was assumed.
MT=102 Capture
The curve in the form of 1/v was normalized to 45 barns /1/
at 0.0253 eV.
From 0.5 eV to 50 keV:
Background cross section was given.
Above 50 keV:
MT=1,2,4,51-62,91,102 Total,elastic,inelastic and capture
Calculated with optical and statistical models. Optical
potential parameters were fitted to the total cross section
of natural hafnium.
V0 = 38.0, Ws = 8.0+0.5*SQRT(En), Vso = 7.0 (MeV),
a0 = 0.47, as = 0.52 , aso = 0.47 (fm),
r0 = 1.32, rs = 1.32 , rso = 1.32 (fm).
Statistical model calculation was made with CASTHY code /5/.

Competing processes ; (n,2n), (n,3n), (n,p), (n,alpha), and level fluctuation were considered.

Level scheme taken from Table of Isotopes /6/

No.	Energy(MeV)	Spin-Parity
g.s.	0.0	9/2 +
1	0.1227	11/2 +
2	0.2143	7/2 −
3	0.2688	13/2 +
4	0.3377	9/2 −
5	0.3750	1/2 −
6	0.4386	15/2 +
7	0.5184	5/2 −
8	0.6169	7/2 −
9	0.6312	17/2 +
10	0.8483	19/2 +
11	0.8702	7/2 −
12	1.0034	5/2 +

Continuum levels assumed above 1.070 MeV.

Level density paramters were newly evaluated for Gilbert and Cameron's formula /7/.

	a(1/MeV)	C(1/MeV)	T(MeV)	ex(MeV)
Hf-179	22.57	6.88	0.465	3.98
Hf-180	21.37	2.35	0.519	5.42

MT=16,17,103,107 (n,2n), (n,3n), (n,p) and (n,alpha)

Calculated with multi-step Hauser-Feshbach model using GNASH code /8/.

MF=4 Angular Distributions of Secondary Neutrons

MT=2,51-62 : Calculated with CASTHY code /6/.

MT=16,17 : Isotropic in the laboratory system.

MT=91 : Assumed the same distributions in the laboratory system as those calculated with CASTHY code in the center-of-mass system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,17,91 : Evaporation spectra.

References

1) Mughabghab S.F. and Garber D.I.: BNL 325 3rd Edition (1973).
2) Drake M.K., Sargis D.A. and Maung T.: EPRI NP-250 (1976).
3) Beer H. and Macklin R.L.: Phys. Rev., C26, 1404 (1982).
4) Conrad C.A. et al.: Bull. Am. Phys. Soc., 14, 496 (1969).
5) Igarasi S.: J. Nucl. Sci. Technol., 12, 67 (1975).
6) Lederer C.M. and Shirley V.S.: Table of Isotopes, 7th Ed. (1979).
7) Gilbert A. and Cameron A.G.W.: Can. J. Phys., 43, 1446 (1965).
8) Young P.G. and Arthur E.D.: LA-6947 (1977).

72-Hf-180 MAT number = 2726

```
72-Hf-180 NAIG+        Eval-Dec82 Hida,Yoshida,Iijima,Takano(JAERI)
                       Dist-Mar83 Rev1-Dec83
History
82-12 New evaluation for JENDL-2 was made by K.Hida, T.Yoshida,
      S.Iijima (NAIG) and H.Takano (JAERI).
83-12 Angular distributions were modified and comment was added.

MF=1  General Information
  MT=451  Descriptive data and dictionary

MF=2  Resonance Parameters
  MT=151 Resolved and unresolved resonance parameters
  Resolved resonances for MLBW formula
     Energy range              : 0.5 eV to 2.5 keV.
     Res. energies and Gam-n   : BNL-325 /1/ and Drake et al. /2/.
     Gam-gamma                 : 0.060 eV assumed, if unknown.
  Unresolved resonances
     Energy region             : 2.5 keV to 50 keV.
     S0                        : calculated with optical model.
     S1,R and Gam-gamma        : fitted to the capture cross sec-
                                 tion of Beer and Macklin /3/.
     Parameters are D-obs = 140 eV, S0 = 1.92E-4, S1 = 0.496E-4,
     R = 7.14 fm and Gam-gamma = 0.060 eV.

     2200 m/s cross sections and calculated res. integrals.
                    2200 m/s       Res. Integ.
         total      32.00 b /4/      -
         elastic    19.40 b          -
         capture    12.60 b /5/    34.6 b

MF=3  Neutron Cross Sections
Below 0.5 eV:
  Point-wise cross sections were given.
From 0.5 eV to 50 keV:
  Background cross section of zero was given.
Above 50 keV:
  MT=1,2,4,51-58,91,102  Total,elastic,inelastic and capture
     Calculated with optical and statistical models.  Optical
     potential parameters were fitted to the total cross section
     of natural hafnium.
        V0 = 38.0, Ws = 8.0+0.5*SQRT(En), Vso = 7.0 (MeV),
        a0 = 0.47, as = 0.52            , aso = 0.47 (fm),
        r0 = 1.32, rs = 1.32            , rso = 1.32 (fm).
     Statistical model calculation was made with CASTHY code /6/.
        Competing processes ; (n,2n), (n,3n), (n,p), (n,alpha),
        and level fluctuation were considered.
     Level scheme taken from Table of Isotopes /7/
        No.      Energy(MeV)   Spin-Parity
        g.s.     0.0             0 -
         1       0.0458          1 -
         2       0.0680          4 +
```

2 of Hafnium-180

3	0.0986	2 −
4	0.1700	5 +
5	0.2070	3 −
6	0.2570	1 −
7	0.2980	6 +
8	0.3320	2 −

Continuum levels assumed above 0.445 MeV.

Level density paramters were newly evaluated for Gilbert and Cameron's formula /8/.

	a(1/MeV)	C(1/MeV)	T(MeV)	Ex(MeV)
Hf-180	21.37	2.35	0.519	5.42
Hf-181	21.91	6.47	0.479	4.08

MT=16,17,103,107 (n,2n), (n,3n), (n,p) and (n,alpha)
Calculated with multi-step Hauser-Feshbach model using GNASH code /9/.

MT=251 Mu-bar
Calculated with CASTHY code /6/.

MF=4 Angular Distributions of Secondary Neutrons
MT=2,51-58 : Calculated with CASTHY code /6/.
MT=16,17 : Isotropic in the laboratory system.
MT=91 : Assumed the same distributions in the laboratory system as those calculated with CASTHY code in the center-of-mass system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17,91 : Evaporation spectra.

References

1) Mughabghab S.F. and Garber D.I.: BNL 325 3rd Edition (1973).
2) Drake M.K., Sargis D.A. and Maung T.: EPRI NP-250 (1976).
3) Beer H. and Macklin R.L.: Phys. Rev., C26, 1404 (1982).
4) Conrad C.A. et al.: Bull. Am. Phys. Soc., 14, 496 (1969).
5) Scharff-Goldhaber G. and Mckeown M.: Phys. Rev., 158, 1105 (1967).
6) Igarasi S.: J. Nucl. Sci. Technol., 12, 67 (1975).
7) Lederer C.M. and Shirley V.S.: Table of Isotopes, 7th Ed. (1979).
8) Gilbert A. and Cameron A.G.W.: Can. J. Phys., 43, 1446 (1965).
9) Young P.G. and Arthur E.D.: LA-6947 (1977).

73-Ta-181 MAT number = 2731

73-Ta-181 SRI + Eval-Mar76 H.Yamakoshi,JENDL-CG,Y.Kikuchi
Dist-Mar83 Rev1-Nov83

History
76-03 The evaluation for JENDL-1 /1/ was made by H.Yamakoshi (Ship Research Institute) and JENDL-1 Compilation Group.
83-03 JENDL-1 data were adopted for JENDL-2 and extended to 20 MeV. MF=5 was revised, and unresolved resonance parameters were added by Y. Kikuchi (JAERI).
83-11 Comment data were added.

MF=1 General Information
MT=451 Descriptive data and dictionary

MF=2 Resonance Parameters
MT=151 Resolved and unresolved resonance parameters
Resolved parameters for MLBW formula
The energy region is from 1.0E-5 eV to 1.0 keV. Parameters were taken from Ref. /2/ for positive resonances, and from ENDF/B-IV for a negative resonance. The radiative width of 0.0559 eV was assumed for the resonances whose radiative width was unknown.
Unresolved parameters
In the energy range from 1 to 50 keV, parameters were determined to reproduce the capture cross section evaluated for JENDL-1. The calculated total and elastic scattering cross sections were corrected by background cross sections. The parameters are as follows,
R = 4.435 fm, D-obs = 4.39 eV, radiative width = 0.0598 eV,
S0= 3.466E-4, S1 = 0.45E-4, S2 = 3.2E-4.

Calculated 2200 m/sec cross sections and resonance integrals.

	2200-m/sec	res. integ.
elastic	6.110 b	-
capture	21.21 b	744. b
total	27.32 b	-

MF=3 Neutron Cross Sections
Below 50 keV.
Background cross sections were given for the unresolved resonance parameters.
Above 50 keV.
MT=1 Total
Evaluated from experimental data.
MT=2 Elastic scattering
Obtained by subtracting partial cross sections from the total cross section.
MT=4,51-61,91 Inelastic scattering
Calculated with statistical and optical model code CASTHY /3/. Optical potential parameters were determined so as to reproduce the average total cross section in the high energy region.

V = 46.0-0.25*E (MeV), r =1.268, a0 =0.62 (fm)
Wi =0.125*E-0.0004*E**2 (MeV), ri =1.268, ai =0.62 (fm)
Ws =14.0-0.2*E (MeV), rs =1.316, as =0.7 (fm)
Vso=6.0 (MeV), rso=1.099, aso=0.62 (fm)

The level scheme was adopted from Ref. /4/.

No.	Energy(MeV)	Spin-Parity
g.s.	0.0	7/2 +
1	0.00621	9/2 -
2	0.13625	9/2 +
3	0.1587	11/2 -
4	0.3014	11/2 +
5	0.3390	13/2 -
6	0.4821	5/2 +
7	0.4951	13/2 +
8	0.5480	15/2 -
9	0.6151	1/2 +
10	0.6190	3/2 +
11	0.7166	15/2 +

Levels above 780 keV were assumed to overlapping.

MT=16 (n,2n)
Calculated with Pearlstein's method /5/.

MT=102 Capture
Calculated withn CASTHY /3/ by using D-obs = 4.4 eV and the average radiative width of 0.0598 eV.

MT=103 (n,p)
Calculated with Pearlstein's method /5/.

MT=251 Mu-bar
Calculated with CASTHY /3/.

MF=4 Angular Distributions of Secondary Neutrons
MT=2 Calculated with CASTHY code /3/.
MT=51-61 Isotropic in the center-of-mass system.
MT=16,91 Isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,91 Evaporation spectrum.

References
1) Igarasi S. et al.: JAERI 1261 (1979).
2) Mughabghab S.F. and Garber D.I.: BNL 325, 3rd Ed. (1973).
3) Igarasi S.: J. Nucl. Sci. Technol., 12, 67 (1975).
4) Ellis Y.A.: Nucl. Data Sheets, 9, 319 (1973).
5) Pearlstein S.: Nucl. Sci. Eng., 23, 238 (1965).

82-Pb- 0 MAT number = 2820

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82-Pb-  0 JAERI        Eval-Mar81 T.Asami
                       Dist-Mar83 Rev1-Jan84
History
81-03 Newly evaluated for JENDL-2 by T.Asami (JAERI).
84-01 Interpolation laws of cross sections and angular distribu-
      tions were corrected.  The total cross section was replaced
      with the data evaluated on the basis of experimental data.
      Comment was added.

MF=1  General Information
  MT=451  Descriptive data and dictionary

MF=2  Resonance Parameters
  MT=151  Resolved resonance parameters for MLBW formula
     Resonance ranges
        Pb-204: 1.0E-5 eV --  50 keV, Pb-206: 1.0E-5 eV - 200 keV
        Pb-207: 1.0e-5 eV - 500 keV, pb-208: 1.0E-5 eV - 500 keV
     Parameters were evaluated from the following exp. data.
        Pb-204: Block+63 /1/, Gibbons+67 /2/, Allen+73 /3/.
        Pb-206: Allen+73 /3/, Horen+79 /4/, Mizumoto+79 /5/.
        Pb-207: Allen+73 /3/, Raman+77 /6/, Horen+79 /4/.
        Pb-208: Allen+73 /3/, Wilenzick+61 /7/, Macklin+77 /8/,
                Fowler66 /9/.
     For unknown radiative widths, average values of known radia-
     tive widths were used.

     Calculated 2200-m/s cross sections and res. integrals.
                         2200 m/s       res. integ.
        elastic           11.42  b        --
        capture            0.1716b       0.148 b
        total             11.59  b        -

MF=3  Neutron Cross Sections
  Below 500 keV.
     Background cross sections are given to take account of cont-
     ribution from bound levels and to reproduce the thermal cap-
     ture cross section of 0.171 barns which was evaluated from
     the experimental data /10-12/.  Contributions from Pb-204
     and Pb-206 were added in the background cross section below
     500 keV.

  Above 500 keV.
  MT=1     Total
     Cross sections in the energies from 500 keV to 15 MeV were
     obtained based on the experimental data of Schwartz+77 /13/.
     Above 15 MeV, cross sections were calculated with optical and
     statistical model code CASTHY /14/ by using optical potentail
     parameters given below.
  MT=2     Elastic scattering
     (Total)-(All other partial cross sections)
  MT=4,51-90,91  Inelastic scattering
```

Calculated with CASTHY /14/ for each isotope and constructed taking account of their isotope abundances. Contributions from some levels of Pb-204 and 206 were lumped and contribuitions from levels above 2.9454 MeV were put together into continuum (MT=91). The optical potential parameters used in the calculation were obtained by fitting average total cross section of natural lead as follows,

V = 47.0 - 0.250*E, Ws = 2.30 + 0.41*E, Vso = 6.0 (MeV),
r0 = 1.25 , rs = 1.30 , rso = 1.30 (fm),
a0 = 0.65 , b = 0.48 , aso = 0.689 (fm).

Level density parameters for back-shifted fermi gas model were determined using low-lying level data and observed neutron resonance spacing. Some data for level density parameters were taken from Ref. /15/. Level scheme was taken from Ref. /16/. Level energies and corresponding isotopes are as follows:

MT	Energy(MeV)	Isotope	MT	Energy(MeV)	Isotope
51	0.5697	207	71	2.7260	207
52	0.8031	206	72	3.0165	206
53	0.8977	207	73	3.1800	207
54	0.8991	204	74	3.1977	208
55	1.1650	206	75	3.2000	207
56	1.2738	204	76	3.2230	207
57	1.3406	206	77	3.2793	206
58	1.4670	206	78	3.3000	207
59	1.5629	204	79	3.3840	207
60	1.6333	207	80	3.4130	207
61	1.6841	206	81	3.4750	208
62	1.9977	206	82	3.5090	207
63	2.0650	204	83	3.5830	207
64	2.2641	204	84	3.7085	208
65	2.3399	207	85	3.7440	206
66	2.3843	206	86	3.9199	208
67	2.6146	208	87	3.9464	208
68	2.6244	207	88	3.9609	208
69	2.6479	206	89	3.9957	208
70	2.6624	207	90	4.1252	208

MT=16,17,22,28,103,107 (n,2n),(n,3n),(n,n'p),(n,n'a),(n,p) and (n,a)

Calculated with evaporation model code GROGI /17/ for each isotope and constructed considering isotope abundances.

MT=102 Capture

Calculated with CASTHY /14/ for Pb-204, 206 and 207. For Pb-208, estimated from the experimental data of Pb-208 and natural lead. The capture cross section of natural lead were constructed from these isotopic data.

MT=251 Mu-bar

Calculated with CASTHY /14/.

MF=4 Angular Distributions of Secondary Neutrons

MT=2 : Calculated with CASTHY /14/.
MT=16,17,22,28 : Assumed to be isotropic in the lab system.
MT=51- 90 : Assumed to be isotropic in the center-of-mass system.
MT=91 : Assumed to be isotropic in the lab system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17,22,28,91 : Evaporation spectra.

References

1) Block R.C. and Moxon M.C.: BAPS 8, 513 (1963).
2) Gibbons J.H. and Macklin R.L.: Phys. Rev., 153, 1356 (1967).
3) Allen B.J. et al.: Phys. Rev., C8, 1504 (1973).
4) Horen D.J. et al.: Phys. Rev., C20, 478 (1979).
5) Mizumoto M. et al.: Phys. Rev., C19, 335 (1979).
6) Raman S. et al.: Phys. Rev. Lett., 39, 598 (1977).
7) Wilenzick R.M. et al.: Phys. Rev., 121, 1150 (1961).
8) Macklin R.L. et al.: Astrophys. J., 217, 222 (1977).
9) Fowler J.L.: Phys. Rev., 147, 870 (1966).
10) Cranton et al.: Nucl. Phys., A169, 95 (1971).
11) Tattersall R.B. et al.: J. Nucl. Ener., A12, 32 (1960).
12) Stefanescu Al. et al.: International Conf. on Phys. and Technol. of Research Reactors. Bucurest, p.553 (1961).
13) Schwartz R.B. et al.: NBS mono 138 (1974), data in EXFOR (1971).
14) Igarasi S.: J. Nucl. Sci. Technol., 12, 67 (1975).
15) Dilg W. et al.: Nucl. Phys., A217, 269 (1973).
16) Lederer C.M. and Shirley V.S.: Table of Isotopes, 7th Edition (1978).
17) Gilat J.: BNL-50246(T-580) (1970).

82-Pb-204　　MAT number = 2821

82-Pb-204 JAERI　　Eval-Mar81 T.Asami
　　　　　　　　　Dist-Mar83 Rev1-Nov83

History
81-03 Newly evaluated for JENDL-2 by T.Asami (JAERI).
83-11 Interpolation laws of cross sections and angular distributions were corrected. Comment data were added.

MF=1 General Information
MT=451 Descriptive Data and Dictionary

MF=2 Resonance Parameters
MT=151 Resolved Resonance Parameters for MLBW Formula
Resonance range : 10^{-5} eV to 50 keV.
Parameters were evaluated from the data of Block+63 /1/, Gibbons+67 /2/ and Allen+73 /3/. Effective scattering radius of 8.5 fm was taken from Ref. /4/. For unknown radiative widths, assumed average values of 1.2 eV for s-wave and 0.6 eV for p-wave resonances.

Calculated 2200-m/s cross sections and res. integrals.

	2200 m/s	res. integ.
elastic	11.34 b	-
capture	0.661 b	2.69 b
total	12.00 b	-

MF=3 Neutron Cross Sections
Below 50 keV.
Background cross sections are given to take account of contribution from bound levels and to reproduce the thermal capture cross section of 0.661 barns /5/.

Above 50 keV.
Cross sections were obtained from optical and statistical model calculations. The optical potential parameters were obtained by fitting average total cross section of natural lead as follows,

V = 47.0 - 0.250*E, Ws = 2.30 + 0.41*E, Vso = 6.0 (MeV),
r0 = 1.25　　, rs = 1.30　　, rso = 1.30 (fm),
a0 = 0.65　　, b = 0.48　　, aso = 0.689 (fm).

Level density parameters were determined using low-lying level data and observed neutron resonance spacing. Some data for level density parameters were taken from Ref. /6/.
MT=1 Total
Calculated with optical and statistical model code CASTHY/7/.
MT=2 Elastic Scattering
(Total)-(All other partial cross sections)
MT=4,51-68,91 Inelastic Scattering
Calculated with CASTHY /7/.
Level scheme taken from Ref. /8/.

No.	Energy(MeV)	Spin-Parity
g.s.	0.0	0 +

1	0.8991	2 +
2	1.2738	4 +
3	1.3538	2 +
4	1.5629	4 +
5	1.6047	3 +
6	1.8173	4 +
7	2.0650	5 +
8	2.1855	9 −
9	2.2578	5 −
10	2.2641	7 −
11	2.3381	5 −
12	2.3858	5 −
13	2.4050	7 −
14	2.4339	6 −
15	2.4801	6 −
16	2.5069	5 −
17	2.6271	3 −
18	2.6963	7 −

Levels above 2.945 MeV were assumed to be continuum.

MT=16,17,22,28,103,107 (n,2n),(n,3n),(n,n'p),(n,n'a),(n,p) and (n,a)

Calculated with evaporation model code GROGI /9/.

MT=102 Capture

Calculated with CASTHY /7/ and normalized to 30 milli-barns at 100 keV.

MT=251 Mu-bar

Calculated with CASTHY /7/.

MF=4 Angular Distributions of Secondary Neutrons

MT=2,51-68 : Calculated with CASTHY/7/.

MT=16,17,22,28 : Assumed to be isotropic in the lab system.

MT=91 : Assumed the same distributions in the lab system as those calculated with CASTHY in the center-of-mass system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,17,22,28,91 : Evaporation spectra.

References

1) Block R.C. and Moxon M.C.: BAPS 8, 513 (1963).
2) Gibbons J.H. and Macklin R.L.: Phys. Rev., 153, 1356 (1967).
3) Allen B.J. et al.: Phys. Rev., C8, 1504 (1973).
4) Macklin R.L. et al.: Phys. Rev., 136, B695 (1964).
5) Jurney E. et al.: ANL-6797, 236 (1963).
6) Dilg W. et al.: Nucl. Phys., A217, 269 (1973).
7) Igarasi S.: J. Nucl. Sci. Technol., 12, 67 (1975).
8) Lederer C.M. and Shirley V.S.: Table of Isotopes, 7th Edition (1978).
9) Gilat J.: BNL-50246(T-580) (1970).

82-Pb-206 MAT number = 2822

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82-Pb-206 JAERI       Eval-Mar81 T.Asami
                      Dist-Mar83 Rev1-Nov83
History
81-03 Newly evaluated for JENDL-2 by T.Asami (JAERI).
83-11 Angular distributions were corrected.  Comment data were
      added.

MF=1  General Information
  MT=451  Descriptive Data and Dictionary

MF=2  Resonance Parameters
  MT=151  Resolved Resonance Parameters for MLBW Formula
    Resonance range : 10-5 eV to 200 keV.
    Parameters were evaluated from the data of Allen+73 /1/,
    Horen+79 /2/ and Mizumoto+79 /3/.  Effective scattering
    radius of 8.5 fm was taken from Ref. /4/.  For unknown
    radiative widths, assumed average values of 0.8 eV for s-
    wave, 0.25 eV for p-wave and 0.08 eV for d-wave resonances.

    Calculated 2200-m/s cross sections and res. integrals.
                    2200 m/s       res. integ.
       elastic       11.34  b         -
       capture        0.028 b       0.0962 b
       total         11.37  b         -

MF=3  Neutron Cross Sections
  Below 200 keV.
    Background cross sections are given to take account of cont-
    ribution from bound levels and to reproduce the thermal cap-
    ture cross section of 0.028 barns which was evaluated from
    experimental data to reproduce the thermal capture cross
    section of natural lead (0.171 barns).

  Above 200 keV.
    Cross sections were obtained from optical and statistical
    model calculations.  The optical potential parameters were
    obtained by fitting average total cross section of natural
    lead as follows,
       V = 47.0 - 0.250*E, Ws = 2.30 + 0.41*e, Vso = 6.0 (MeV),
       r0 = 1.25         , rs = 1.30         , rso = 1.30 (fm),
       a0 = 0.65         , b  = 0.48         , aso = 0.689 (fm).
    Level density parameters were determined using low-lying
    level data and observed neutron resonance spacing.  Some data
    for level density parameters were taken from Ref. /5/.
  MT=1    Total
    Calculated with optical and statistical model code CASTHY/6/.
  MT=2    Elastic Scattering
    (Total)-(All other partial cross sections)
  MT=4,51-67,91  Inelastic Scattering
    Calculated with CASTHY /6/.
    Level scheme taken from Ref. /7/.
```

No.	Energy(MeV)	Spin-Parity
g.s.	0.0	0 +
1	0.8031	2 +
2	1.1650	0 +
3	1.3406	3 +
4	1.4670	2 +
5	1.6841	4 +
6	1.7030	1 +
7	1.7840	2 +
8	1.9977	4 +
9	2.1490	2 +
10	2.2002	7 −
11	2.3843	6 −
12	2.4240	2 +
13	2.6479	3 −
14	3.0165	5 −
15	3.1220	3 +
16	3.2793	5 −
17	3.744	1 +

Levels above 4.027 MeV were assumed to be continuum.

MT=16,17,22,28,103,107 (n,2n),(n,3n),(n,n'p),(n,n'a),(n,p) and (n,a)
  Calculated with evaporation model code GROGI /8/.

MT=102 Capture
  Calculated with CASTHY /6/ and normalized to 4 milli-barns at 50 keV.

MT=251 Mu-bar
  Calculated with CASTHY /6/.

MF=4 Angular Distributions of Secondary Neutrons

MT=2,51-67 : Calculated with CASTHY/6/.
MT=16,17,22,28 : Assumed to be isotropic in the lab system.
MT=91 : Assumed the same distributions in the lab system as those calculated with CASTHY in the center-of-mass system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,17,22,28,91 : Evaporation spectra.

References

1) Allen J.B. et al.: Phys. Rev., C8, 1504 (1973).
2) Horen D.J. et al.: Phys. Rev., C20, 478 (1979).
3) Mizumoto M. et al.: Phys. Rev., C19, 335 (1979).
4) Macklin R.L. et al.: Phys. Rev., 136, B695 (1964).
5) Dilg W. et al.: Nucl. Phys., A217, 269 (1973).
6) Igarasi S.: J. Nucl. Sci. Technol., 12, 67 (1975).
7) Lederer C.M. and Shirley V.S.: Table of Isotopes, 7th Edition (1978).
8) Gilat J.: BNL-50246(T-580) (1970).

82-Pb-207　　MAT number = 2823

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82-Pb-207 JAERI         Eval-Mar81 T.Asami
                        Dist-Mar83 Rev1-Nov83
History
81-03 Newly evaluated for JENDL-2 by T.Asami (JAERI).
83-11 Angular distributions were corrected.  Comment data were
      added.

MF=1  General Information
  MT=451  Descriptive Data and Dictionary

MF=2  Resonance Parameters
  MT=151  Resolved Resonance Parameters for MLBW Formula
    Resonance range : 1.0E-5 eV to 500 keV.
    Parameters were evaluated from the data of Allen+73 /1/,
    Raman+77 /2/ and Horen+78 /3/.  Effective scattering
    radius of 8.04 fm was taken from Ref. /3/.  For unknown
    radiative widths, assumed average value of 9.1 eV for s-
    wave resonances.

    Calculated 2200-m/s cross sections and res. integrals.
                     2200 m/s       res. integ.
       elastic        11.34  b          -
       capture         0.703 b        0.375 b
       total          12.04  b          -

MF=3  Neutron Cross Sections
  Below 500 keV.
    Background cross sections are given to take account of cont-
    ribution from bound levels and to reproduce the thermal cap-
    ture cross section of 0.703 barns which was evaluated from
    experimental data to reproduce the thermal capture cross
    section of natural lead (0.171 barns).

  Above 500 keV.
    Cross sections were obtained from optical and statistical
    model calculations.  The optical potential parameters were
    obtained by fitting average total cross section of natural
    lead as follows.
       V = 47.0 - 0.250*E, Ws = 2.30 + 0.41*E, Vso = 6.0 (MeV),
       r0 = 1.25         , rs = 1.30         , rso = 1.30 (fm),
       a0 = 0.65         , b  = 0.48         , aso = 0.689 (fm).
    Level density parameters were determined using low-lying
    level data and observed neutron resonance spacing.  Some data
    for level density parameters were taken from Ref. /4/.
  MT=1    Total
    Calculated with optical and statistical model code CASTHY/5/.
  MT=2    Elastic Scattering
    (Total)-(All other partial cross sections)
  MT=4,51 67,91  Inelastic Scattering
    Calculated with CASTHY /5/.
    Level scheme taken from Ref. /6/.
```

No.	Energy(MeV)	Spin-Parity
g.s.	0.0	1/2 -
1	0.5697	5/2 -
2	0.8977	3/2 -
3	1.6333	13/2 -
4	2.3399	7/2 -
5	2.6244	5/2 +
6	2.6624	7/2 +
7	2.7260	9/2 +
8	3.18	11/2 +
9	3.2	5/2 +
10	3.223	11/2 +
11	3.3	1/2 +
12	3.384	9/2 +
13	3.413	9/2 -
14	3.509	11/2 +
15	3.583	9/2 +
16	3.620	9/2 +
17	3.634	5/2 -

Levels above 4.100 MeV were assumed to be continuum.

MT=16,17,22,28,103,107 (n,2n),(n,3n),(n,n'p),(n,n'a),(n,p) and (n,a)

Calculated with evaporation model code GROGI /7/.
The calculated (n,p) cross section was normalized to 1.6 milli-barns at 14.5 MeV (Belovitckij+76 /8/). The (n,2n) cross section was normalized to 1.89 barns at 15.5 MeV. other cross sections were also normalized by the same factor as for the (n,p) cross section.

MT=102 Capture

Calculated with CASTHY /5/ and normalized to 2 milli-barns at 50 keV.

MT=251 Mu-bar

Calculated with CASTHY /5/.

MF=4 Angular Distributions of Secondary Neutrons

MT=2,51-67 : Calculated with CASTHY/5/.
MT=16,17,22,28 : Assumed to be isotropic in the lab system.
MT=91 : Assumed the same distributions in the lab system as those calculated with CASTHY in the center-of-mass system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,17,22,28,91 : Evaporation spectra.

References

1) Allen J.B. et al.: Phys. Rev., C8, 1504 (1973).
2) Raman S. et al.: Phys. Rev. Lett., 39, 598 (1977).
3) Horen D.J. et al.: Phys. Rev., C20, 478 (1979).
4) Dilg W. et al.: Nucl. Phys., A217, 269 (1973).
5) Igarasi S.: J. Nucl. Sci. Technol., 12, 67 (1975).
6) Lederer C.M. and Shirley V.S.: Table of Isotopes. 7th Edition (1978).
7) Gilat j.: BNL 50246(T-580) (1970).
8) Belovitckij G.E.: 1975 Kiev Conf., Vol.4, 209 (1976).

82-Pb-208 MAT number = 2824

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82-Pb-208 JAERE        Eval-Mar81 T.Asami
                       Dist-Mar83 Rev1-Nov83
History
81-03 Newly evaluated for JENDL-2 by T.Asami (JAERI).
83-11 Angular distributions were corrected.  Comment data were
      added.

MF=1  General Information
  MT=451  Descriptive Data and Dictionary

MF=2  Resonance Parameters
  MT=151  Resolved Resonance Parameters for MLBW Formula
     Resonance range : 1.0E-5 eV to 800 keV.
     Parameters were evaluated from the data of Allen+73 /1/,
     Wilenzick-61 /2/, Macklin+77 /3/ and Fowler66 /4/.  Effective
     scattering radius of 6.5 fm was selected.  Neutron width of
     515-keV s-wave resonance was estimated to reproduce the 2200-
     m/sec capture cross section of 0.48 milli-barns /5/.

     Calculated 2200-m/s cross sections and res. integrals.
                        2200 m/s          res. integ.
        elastic          11.49  b            -
        capture          0.4799 milli-b   7.83 milli-b
        total            11.49  b            -

MF=3  Neutron Cross Sections
  Below 800 keV.
     Background cross sections are given for the elastic scatter-
     ing cross section.

  Above 800 keV.
     Cross sections were obtained from optical and statistical
     model calculations.  The optical potential parameters were
     obtained by fitting average total cross section of natural
     lead as follows,
        V = 47.0 - 0.250*E, Ws = 2.30 + 0.41*E, Vso = 6.0 (MeV),
        r0 = 1.25         , rs = 1.30         , rso = 1.30 (fm),
        a0 = 0.65         , b  = 0.48         , aso = 0.689 (fm).
     Level density parameters were determined using low-lying
     level data and observed neutron resonance spacing.  Some data
     for level density parameters were taken from Ref. /6/.
  MT=1     Total
     Calculated with optical and statistical model code CASTHY/7/.
  MT=2     Elastic Scattering
     (Total)-(All other partial cross sections)
  MT=4,51-64,91  Inelastic Scattering
     Calculated with CASTHY /7/.
     Level scheme taken from Ref. /8/.
         No.     Energy(MeV)     Spin-Parity
         g.s.     0.0               0 +
          1       2.6146            3 -
```

2	3.1977	5 −
3	3.4750	4 −
4	3.7085	5 −
5	3.9199	6 −
6	3.9464	5 −
7	3.9609	4 −
8	3.9957	6 −
9	4.1252	4 −
10	4.1803	5 −
11	4.2962	5 −
12	4.3584	4 −
13	4.3829	6 −
14	4.4805	6 −

Levels above 4.577 MeV were assumed to be continuum.

MT=16,17 (n,2n) and (n,3n)
Calculated with evaporation model code GROGI /9/. The (n,2n) cross section was normalized to 2.01 barns at 15.5 MeV.

MT=22 (n,n'alpha)
calculated with code GROGI /9/ and normalized by the same factor as for (n,a) cross section.

MT=28 (n,n'p)
Calculated with code GROGI /9/ and normalized by the same factor as for (n,p) cross section.

MT=102 Capture
Estimaed from the following experimental data:
Leipunskii+58 /10/, Csikai+67 /11/, Drake+71 /12/, Bergqvist+72 /13/ and Diven+60 /14/.

MT=103 (n,p)
Calculated with code GROGI /9/ and normalized to an average value of experimental data by Hankla+72 /15/ and Belovitckij+76 /16/ (0.48 milli-barns at 14.5 MeV).

MT=107 (n,a)
Calculated with code GROGI /9/ and normalized to 1.5 milli-barns at 14.5 MeV by Coleman+59 /17/.

MT=251 Mu-bar
Calculated with CASTHY /7/.

MF=4 Angular Distributions of Secondary Neutrons
MT=2,51-64 : Calculated with CASTHY/7/.
MT=16,17,22,28 : Assumed to be isotropic in the lab system.
MT=91 : Assumed the same distributions in the lab system as those calculated with CASTHY in the center-of-mass system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17,22,28,91 : Evaporation spectra.

References

1) Allen J.B. et al.: Phys. Rev., C8, 1504 (1973).
2) Wilenzick R.M. et al.: Phys. Rev., 121, 1150 (1961).
3) Macklin R.L. et al.: Astophys. J., 217, 222 (1977).
4) Fowler J.L.: Phys. Rev., 147, 870 (1966).
5) Emery J.F.: ORNL-4343, 71 (1968).
6) Dilg W. et al.: Nucl. Phys., A217, 269 (1973).
7) Igarasi S.: J. Nucl. Sci. Technol., 12, 67 (1975).
8) Lederer C.M. and Shirley V.S.: Table of Isotopes, 7th Edition

(1978).
9) Gilat J.: BNL-50246(T-580) (1970).
10) Leipunskii et al.: 2nd Geneva Conf.,15, 50 (1958).
11) Csikai J. et al.: Nucl. Phys., A95, 229 (1967).
12) Drake D. et al.: Phys., Letters, B36, 557 (1971).
13) Bergqvist I. et al.: Nucl. Phys., A191, 641 (1972).
14) Diven B.C. et al.: Phys. Rev., 120, 556 (1960).
15) Hankla A.K. et al.: Nucl. Phys., A180, 157 (1972).
16) Belovitckij G.E.: 1975 Kiev Conf., Vol.4, 209 (1976).
17) Coleman R.F. et al.: Proc. Roy. Soc. (London), 73,215 (1959).

90-Th-228 MAT number = 2901

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 90-Th-228 Kyushu U.  Eval-Apr81 T.Ohsawa and M.Ohta
                      Dist-Mar83 Rev1-Nov83
History
81-04 New evaluation was made by T. Osawa and M. Ohta (Kyushu
      University).  Details of the evaluation are described in
      Ref. /1/.
83-11 Fission spectrum was added.  Resonance formula was changed
      to MLBW formula.  The total, (n,2n) and (n,3n) cross sec-
      tions were modified.  Comment was added.

MF=1  General Information
  MT=451  Comments and dictionary
  MT=452  Total number of neutrons emitted per fission
      Calculated with the semi-empirical formula of Howerton /2/.

MF=2  Resonance Parameters
  MT=151  Resolved resonances
      Resonance region is below 7.798 eV.  Parameters were given
      for the MLBW formula.  Only two resonances were observed by
      Simpson et al. /3/.  An additional term with 1/v dependence
      was assumed to reproduce the thermal capture cross section.
      Fission cross section was also assumed to have 1/v behavior.

      Calculated 2200-m/s cross sections and res. integ.(barns)
                          2200-m/s       Res. Integ.
              elastic      12.81            -
              capture     119.9           1170
              fission       0.300           1.02
              total       133.0             -

MF=3  Neutron Cross Sections
  Below 7.798 eV is the resonance region.  Background data were
  given.  The cross sections were evaluated above 7.798 eV as
  follows.
  MT=1    Total cross section
      Optical model calculation with the following parameters:
         V   = 41.0 - 0.05*E        (MeV),
         Ws  = 6.4 + 0.15*SQRT(E)   (MeV),   --- der. Woods-Saxon ---
         Vso= 7.0                   (MeV),
         r0 = rso = 1.31            (fm),
         rs  = 1.38                 (fm),
         a   = b   = aso= 0.47      (fm).
      These parameters were taken from those for Th-232 /4/.
  MT=2    Elastic scattering cross section
      Statistical and opical model calculations using the code
      CASTHY /5/.
  MT=4,51-62,91  Inelastic scattering cross section
      Statistical and optical model calculations.

        Level scheme of Th-228 /6/.
           No.       Energy(MeV)  Spin-Parity
```

g.s.	0.0	0 +
1	0.0576	2 +
2	0.1869	4 +
3	0.328	1 -
4	0.3961	3 -
5	0.5193	5 -
6	0.8317	0 -
7	0.8746	2 +
8	0.9441	2 +
9	0.952	1 -
10	0.9688	2 +
11	1.016	3 -
12	1.0224	3 +

Levels above 1.025 MeV were assumed to be overlapping.

MT=16,17 (n,2n) and (n,3n) cross sections
Calculated by means of the evaporation model of Segev and Caner /7/.

MT=18 Fission cross section
The data of Vorotnikov et al. /8/ were adopted up to 5 MeV. The fission cross section of the neighboring even-even isotope Th-230 normalized to join smoothly to the data of Vorotnikov et al. was adopted above 5 MeV.

MT=102 Capture cross section
Statistical and optical model calculations with gamma-ray strength function of 0.00791.

MT=251 Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons

MT=2,51-62,91
Statistical and optical model calculations.

MT=16,17,18
Assumed to be isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,17,91
Evaporation spectra

MT=18
Fission spectrum estimated from Z**2/A systematics by Smith et al. /9/.

References

1) Ohsawa T. and Ohta M.: Memoirs Faculty of Engineering, Kyushu Univ. 40, 149 (1980).
2) Howerton R.J.: Nucl. Sci. Eng. 62, 438 (1977).
3) Simpson O.D. et al.: ibid. 29, 423 (1967).
4) Ohsawa T. and Ohta M.: J. Nucl. Sci. Technol. 18, 408 (1981).
5) Igarasi S.: ibid. 12, 67 (1975).
6) Lederer C.M. and Shirly V.S. (Ed.): Table of Isotopes, 7th Edition (1978).
7) Segev M. and Caner M.: Ann. Nucl. Energy 5, 239 (1978).
8) Vorotnikov et al.: Sov. J. Nucl. Phys. 16, 505 (1973).
9) Smith A.B. et al.: ANL/NDM-50 (1979).

90-Th-230 MAT number = 2902

```
90-Th-230 Kyushu U.  Eval-Apr81 T.Ohsawa and M.Ohta
                     Dist-Mar83 Rev1-Nov83
History
81-04 New evaluation was made by T. Ohsawa and M. Ohta (Kyushu
      University). Details of evaluation are described in Ref.
      /1/.
83-11 Fission spectrum was added. Resonance parameters, and
      total, (n,2n) and (n,3n) cross sections were modified.
      Comment data were added.

MF=1  General Information
  MT=451  Comments and Dictionary
  MT=452  Total number of neutrons emitted per fission
      Calculated with the semi-empirical formula of Howerton /2/.

MF=2  Resonance Parameters
  MT=151  Resolved resonances
      Resonance region is below 564.26 eV. The MLBW formula was
      selected to reproduce resonance cross sections. A total
      number of 28 resonances up to 563 eV measured by Kalebin et
      al. /3/ were adopted in the present evaluation.
      A background term with 1/v dependence was added in order to
      reproduce the thermal capture cross section.

      Calculated 2200-m/s cross sections and res. integ.(barns)
                          2200-m/s       Res. Integ.
              elastic       9.774           -
              capture      22.55          1040
              fission       0.0              1.12
              total        32.32

MF=3  Neutron Cross Sections
  Below 564.26 eV is the resonance region where the background
  cross sections are given. Above 564.26 eV, the cross sections
  were evaluated as follows.
  MT=1    Total cross section
      Optical model calculation with the following parameters:
         V   = 41.0 - 0.05*E          (MeV),
         Ws  = 6.4 + 0.15*SQRT(E)     (MeV),    -- der. Woods-Saxon --
         Vso= 7.0                     (MeV),
         r0 = rso = 1.31              (fm),
         rs = 1.38                    (fm),
         a   = b  = aso= 0.47         (fm).
      These parameters were taken from those for Th-232 /4/.
  MT=2    Elastic scattering cross section
      Statistical and opical model calculations using the code
      CASTHY /5/.
  MT=4,51-63,91  Inelastic scattering cross section
      Statistical and optical model calculations.

         Level scheme of Th-230 /6/.
```

No.	Energy(MeV)	Spin-Parity
g.s.	0.0	0 +
1	0.0534	2 +
2	0.173	4 +
3	0.357	6 +
4	0.506	1 −
5	0.571	3 −
6	0.635	0 +
7	0.678	2 +
8	0.682	5 −
9	0.781	2 +
10	0.881	4 +
11	0.951	1 −
12	1.009	2 +
13	1.012	3 −

Levels above 1.02 MeV were assumed to be overlapping.

MT=16,17 (n,2n) and (n,3n) cross sections
Calculated by means of the evaporation model of Segev and Caner /7/.

MT=18 Fission cross section
Evaluation was made on the basis of the data of Muir et al. /8/ up to 2 MeV. Above 2 MeV, the fission probability data of Back et al. /9/ were used to calculate the fission cross section.

MT=102 Capture cross section
Statistical and optical model calculations with gamma-ray strength function of 0.00791.

MT=251 Mu-bar
Calculated with CASTHY.

MF=4 Angular Distributions of Secondary Neutrons

MT=2,51-63,91
Statistical and optical model calculations.

MT=16,17,18
Assumed to be isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,17,91
Evaporation spectra.

MT=18
Fission spectrum estimated from Z**2/A sistematics by Smith et al. /10/.

References

1) Ohsawa T. and Ohta M.: Memoirs Faculty of Engineering, Kyushu Univ. 40, 149 (1980).
2) Howerton R.J.: Nucl. Sci. Eng. 62, 438 (1977).
3) Kalebin S.M. et al.: Sov. J. Atom. Energy 26, 588 (1969).
4) Ohsawa T. and Ohta M.: J. Nucl. Sci. Technol. 18, 408 (1981).
5) Igarasi S.: ibid. 12, 67 (1975).
6) Lederer C.M. and Shirly V.S. (Ed.): Table of Isotopes, 7th Edition (1978).
7) Segev M. and Caner M.: Ann. Nucl. Energy 5, 239(1978).
8) Muir D.W. et al.: Proc. 3rd Conf. on Neutron Cross Sections and Technology, Knoxville (1971), p.292.

9) Back B.B. et al.: Phys. Rev. C13, 2374 (1974).
10) Smith A.B. et al.: ANL/NDM-50 (1979).

90-Th-232 MAT number = 2903

```
 90-Th-232 Kyushu U.  Eval-Mar80 T.Ohsawa and M.Ohta
NST 18,408(1981)      Dist-Mar83 Rev1-Nov83
History
80-03 New evaluation for JENDL-2 was made by T. Ohsawa and M. Ohta
      (Kyushu University). Details given in Ref. /1/.
83-11 Comment was added.

MF=1  General Information
  MT=451  Comments and dictionary
  MT=452  Number of neutrons per fission
      Sum of MT=455 and MT=456.
  MT=454  Fission product yield data
      Taken from ENDF/B-IV.
  MT=455  Delayed neutron data
  MT=456  Number of prompt neutrons per fission
      A single linear fit by Conde and Holmberg /2/ was adopted.

MF=2  Resonance Parameters
  MT=151
  Resolved resonances for MLBW formula : 1.0E-5 eV - 3.5 keV
      Resonance parameters taken from Rahn et al. /3/ and BNL-
      325, 3rd Edition.  14 negative resonances were added.
  Unresolved resonances: 3.5 keV - 50 keV
      Parameters determined so as to reproduce the evaluated
      smooth cross sections.  Strength functions have slight
      energy dependence.
          D(J=1/2)   = 18.64 eV,    Gam-g      = 21.2 milli-eV,
          Average S0 =  0.94E-4,    Average S1 = 2.00E-4.

      Calculated 2200-m/s cross sections and res. integrals(barns)
                          2200 m/s       Res. Integ.
          elastic          12.16            -
          fission           0.0            0.636
          capture           7.258         79.9
          total            19.42            -

MF=3  Neutron Cross Sections
  Below 50 keV, background cross sections for unresolved resonance
  parameters were given.  The cross sections represented with the
  unresolved resonance parameters and those above 50 keV were
  evaluated as follows.

  MT=1,2,4,51-70,91,251  Total, elastic, inelastic, and mu-bar
      Experimental data of Foster et al. /4/, Fasoli et al. /5/,
      Kobayashi et al. /6/ and Uttley /7/ were adopted for total
      cross section.  The spherical optical potential parameters
      were obtained from fitting to the above data:
         V  = 41.0 - 0.05*E              (MeV),
         Ws = 6.4 - 0.15*SQRT(E)         (MeV),
         Vso= 7.0                        (MeV),
         r0 = rso = 1.31                 (fm),
```

rs = 1.38 (fm),
a = b = aso = 0.47 (fm).
Derivative Woods-Saxon form assumed for surface imaginary part.

Statistical model calculation with CASTHY code /8/.
Competing processes : fission, (n,2n) and (n,3n)
Level width fluctuation considered.

The level scheme taken from Refs./9/ and /10/.

No.	Energy(keV)	Spin-Parity
g.s.	0.0	0 +
1	49.5	2 +
2	162.5	4 +
3	333.0	6 +
4	555.0	8 +
5	714.3	1 −
6	730.4	0 +
7	774.1	2 +
8	774.3	3 −
9	786.3	2 +
10	829.7	3 +
11	873.1	4 +
12	883.3	5 −
13	890.4	4 +
14	960.3	5 +
15	1053.9	2 −
16	1073.3	2 +
17	1077.7	1 −
18	1078.8	0 +
19	1095.0	3 +
20	1106.0	3 −

Continuum levels assumed above 1.11 MeV.
The level density parameters of Gilbert and Cameron /11/ was used.

MT=16,17 (n,2n) and (n,3n)
Calculated by means of the evaporation model of Segev et al. /12/.

MT=18 Fission
Evaluated on the basis of the data of Behrens et al. /13/. using the U-235 fission cross section data of Matsunobu /14/.

MT=102 Capture
Evaluated on the basis of the measured data of Kobayashi et al. /15/ and Lindner et al. /16/.

MF=4 Angular Distributions of Secondary Neutrons
MT=2,51-70,91 Statistical model calculation with CASTHY /8/.
MT=16,17,18 Isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17 Evaporation spoectrum.
MT=18 Fission spectrum (Watt).
MT=455 Taken from ENDF/B-IV.

References

1) Ohsawa T. and Ohta M.: J. Nucl. Sci. Technol. 18, 408 (1981).
2) Conde H. and Holmberg M.: Proc. Symp. Phys. and Chem. of Fission, 2, 57 (1965).
3) Rahn F. et al.: Phys. Rev. C6, 1854 (1972).
4) Foster D.G. et al.: private communication; Phys. Rev. C3, 576 (1971).
5) Fasoli U. et al.: Nucl. Phys. A151, 369 (1970).
6) Kobayashi K. et al.: Nucl. Sci. Eng. 65, 347 (1978).
7) Uttley C.A. et al.: EANDC Conf. TOF-Methods (1961) p.109; 1st Conf. Nuclear Data for Reactors, Paris (1966).
8) Igarasi S.:J. Nucl. Sci. Technol. 12, 67 (1975).
9) McMurray W.R. et al.: private communication (1978).
10) McGowan F.K.:proc. Heavy-Ion Summer Study, (1972) p.32.
11) Gilbert A. and Cameron A.G.W.: Can. J. Phys. 43, 1446 (1965).
12) Segev M. and Caner M.: Ann. Nucl. Energy 5, 239 (1978).
13) Behrens J.W. et al.: UCID-17442 (1977).
14) Matsunobu H.: private communication (1979). (MAT=2923 of JENDL-2)
15) Kobayashi K. et al.: J. Nucl. Sci. Technol. 18, 823 (1981).
16) Lindner M. et al.: Nucl. Sci. Eng. 59, 387 (1976).

90-Th-233 MAT number = 2904

90-Th-233 Kyushu U. Eval-Apr81 T.Ohsawa and M.Ohta
Dist-Mar83 Rev1-Nov83

History
81-04 Evaluation was made by T. Ohsawa and M. Ohta (Kyushu University). Details of the evaluation are described in Ref. /1/.
83-11 Fission spectrum was added. The total, (n,2n) and (n,3n) cross sections were modified. Comment was added.

MF=1 General Information
MT=451 Comments and dictionary
MT=452 Total number of neutrons emitted per fission
Calculated with the semi-empirical formula of Howerton /2/.

MF=2 Resonance Parameters
MT=151 Resolved resonances
No resolved resonances were adopted, since there were no measurements made. Capture and fission cross sections at 0.0253 eV were extrapolated up to 200 eV by assuming the form of 1/v for the former, and up to 20 keV by asssuming the form of 1/v plus the constant value of 0.3 barns for the latter.

Calculated 2200-m/s cross sections and res. integ.(barns)

	2200-m/s	Res. Integ.
elastic	13.0	--
capture	1450.0	643
fission	15.0	11.1
total	1478.0	--

MF=3 Neutron Cross Sections
MT=1 Total cross section
Optical model calculation with the following parameters:

```
V   = 41.0 - 0.05*E        (MeV),
Ws  = 6.4 + 0.15*SQRT(E)   (MeV),   -- der. Woods-Saxon --
Vso= 7.0                   (MeV),
r0 = rso = 1.31            (fm),
rs = 1.38                  (fm),
a  = b  = aso= 0.47        (fm).
```

These parameters were taken from those for Th-232 /3/.
MT=2 Elastic scattering cross section
Statistical and opical model calculations using the code CASTHY /4/.
MT=4,51-65,91 Inelastic scattering cross section
Statistical and optical model calculations.

Level scheme of Th-233 /5/.

No.	Energy(MeV)	Spin-Parity
g.s.	0.0	1/2 +
1	0.01687	3/2 +
2	0.05456	5/2 +

3	0.09363	7/2 +
4	0.37121	5/2 +
5	0.53958	1/2 −
6	0.58393	1/2 +
7	0.6115	3/2 +
8	0.62902	5/2 +
9	0.6822	3/2 −
10	0.7135	1/2 +
11	0.7218	3/2 +
12	0.7695	5/2 +
13	0.8145	3/2 +
14	0.8914	3/2 +
15	0.9476	3/2 −

Levels above 0.95 MeV were assumed to be overlapping.

MT=16,17 (n,2n) and (n,3n) cross sections
Calculated by means of the evaporation model of Segev and Caner /6/.

MT=18 Fission cross section
Fission probability deduced from direct reaction /7, 8/ was used to calculate the fission cross section.

MT=102 Capture cross section
Statistical and optical model calculations with gamma-ray strength function of 0.00352.

MT=251 Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons

MT=2,51-65,91
Statistical and optical model calculations.

MT=16,17,18
Assumed to be isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,17,91
Evaporation spectra.

MT=18
Fission spectrum estimated from Z**2/A systematics of Smith et al. /9/

References

1) Ohsawa T. and Ohta M.: Memoirs Faculty of Engineering, Kyushu Univ. 40, 149 (1980).
2) Howerton R.J.: Nucl. Sci. Eng. 62, 438 (1977).
3) Ohsawa T. and Ohta M.: J. Nucl. Sci. Technol. 18, 408 (1981).
4) Igarasi S.: ibid. 12, 67 (1975).
5) Lederer C.M. and Shirly V.S. (Ed.): Table of Isotopes, 7th Edition (1978).
6) Segev M. and Caner M.: Ann. Nucl. Energy 5, 239(1978).
7) Back B.B. et al.: Phys. Rev. C13, 2374 (1974).
8) Cramer J.D. and Britt H.C.: Nucl. Sci. Eng. 41, 177 (1970).
9) Smith A.B. et al.: ANL/NDM-50 (1979).

90-Th-234 MAT number = 2905

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 90-Th-234 Kyushu U.  Eval-Apr81 T.Ohsawa and M.Ohta
                      Dist-Mar83 Rev1-Nov83
History
81-04 Evaluation was made by T. Ohsawa and M. Ohta (Kyushu
      University).  Details of the evaluation are described in
      Ref. /1/.
83-11 Fission spectrum was given.  The total, (n,2n) and (n,3n)
      cross sections were modified.  Comment was added.

MF=1  General Information
  MT=451  Comments and dictionary
  MT=452  Total number of neutrons emitted per fission
      Calculated with the semi-empirical formula of Howerton /2/.

MF=2  Resonance Parameters
  MT=151  Resolved resonances
      No resolved resonances were adopted, since there were no
      measurements made.  Capture and fission cross sections at
      0.0253 ev were extrapolated on an 1/v basis up to an energy
      of 15 eV.

      Calculated 2200-m/s cross sections and res. integ.(barns)
                          2200-m/s        Res. Integ.
              elastic       13.0              -
              capture        1.75           93.7
              fission        0.0             0.26
              total         14.75             -

MF=3  Neutron Cross Sections
  MT=1     Total cross section
      Optical model calculation with the following parameters:
         V   = 41.0 - 0.05*E        (MeV),
         Ws  = 6.4 + 0.15*SQRT(E)  (MeV),    -- der. Woods-Saxon --
         Vso= 7.0                   (MeV),
         r0 = rso = 1.31            (fm),
         rs = 1.38                  (fm),
         a   = b   = aso= 0.47      (fm).
      These parameters were taken from those for Th-232 /3/.
  MT=2     Elastic scattering cross section
      Statistical and opical model calculations using the code
      CASTHY /4/.
  MT=4,51-67,91  Inelastic scattering cross section
      Statistical and optical model calculations:

          Level scheme of Th-234 (estimated from systematics)
             No.       Energy(MeV)  Spin-Parity
              g.s.      0.0            0 +
              1         0.048          2 +
              2         0.160          4 +
              3         0.336          6 +
              4         0.576          8 +
```

2 of Thorium-234

5	0.730	0 +
6	0.767	2 +
7	0.785	2 +
8	0.853	4 +
9	0.882	1 −
10	0.889	4 +
11	0.942	3 −
12	0.987	6 +
13	1.050	5 −
14	1.053	6 +
15	1.073	8 +
16	1.206	7 +
17	1.277	8 +

Levels above 1.06 MeV were assumed to be overlapping.

MT=16,17 (n,2n) and (n,3n) cross sections
Calculated by means of the evaporation model of Segev and Caner /5/.

MT=18 Fission cross section
Fission probability deduced from direct reaction /6/ and systematics of Behrens /7/ were used to obtain fission cross section.

MT=102 Capture cross section
Statistical and optical model calculations with gamma-ray strength function of 0.00791.

MT=251 Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons

MT=2,51-67,91
Statistical and optical model calculations.

MT=16,17,18
Assumed to be isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,17,91
Evaporation spectra were given.

MT=18
Fission spectrum was estimated from Z**2/A sistematics of Smith et al. /8/.

References

1) Ohsawa T. and Ohta M.: Memoirs Faculty of Engineering, Kyushu Univ. 40, 149 (1980).
2) Howerton R.J.: Nucl. Sci. Eng. 62, 438 (1977).
3) Ohsawa T. and Ohta M.: J. Nucl. Sci. Technol. 18, 408 (1981).
4) Igarasi S.: ibid. 12, 67 (1975).
5) Segev M. and Caner M.: Ann. Nucl. Energy 5, 239(1978).
6) Back B.B. et al.: Phys. Rev. C13, 2374 (1974).
7) Behrens J.W.: UCID-17509-2 (1977); Phys. Rev. Lett. 39, 68 (1977).
8) Smith A.B. et al.: ANL/NDM 50 (1979).

91-Pa-233 MAT number = 2911

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91-Pa-233 Kyushu u.   Eval-Mar76 Y.Kanda,JENDL-CG
                      Dist-Mar83 Rev1-Jan84
History
76-03 The evaluation of Drake and Nichols /1/ was recommended
      by Kanda (Kyushu univ.) for JENDL-1.  JENDL-1 compilation
      group made partly recaluculation with optical and statis-
      model.
83-03 JENDL-1 data were adopted for JENDL-2 and extended to 20
      MeV.  MF=5 was revised.
84-01 Small modification.  Comment data were added.

MF=1  General Information
  MT=451  Descriptive data and dictionary
  MT=452  Number of neutrons per fission
     Taken from Drake and Nichols /1/, and extended to 20 MeV.

MF=2  Resonance Parameters
  MT=151 Resolved and unresolved resonance parameters
  Resolved resonances for SLBW formula : from 2.38 to 17 eV.
     Taken from the evaluation of Drake and Nichols based on
     the data by Simpson and Codding /2/.
  Unresolved resonances : from 17 eV to 1 keV.
     Taken from the evaluation of Drake and Nichols.

     2200-m/sec cross sections and calculated resonance integrals.
                         2200 m/sec         res. integ.
         elastic          11.02 b              -
         capture          42.80 b            779.  b
         fission           0.0  b              4.68 b
         total            53.82 b              -

MF=3  Neutron Cross Sections
  Below 2.38 eV.
     The evaluation of Drake and Nichols was adopted.  The cross
     sections are calculated values from resonance parameters in
     MF=2.
  Between 2.38 eV to 1 keV.
     Background cross sections of zero were given.
  Above 1 keV.
  MT=1  Total
     The sum of partial cross sections
  MT=2  Elastic scattering
     Taken from Drake and Nichols' evaluation.
  MT=4,51-66,91  Inelastic scattering
     Calculated with CASTHY /3/.  The fission, (n,2n), and (n,3n)
     were considered as competing processes. The optical poten-
     tial parameters determined by Igarasi /4/ were adopted.
        V0 = 40.5 + 0.5*En          (MeV)
        Ws = 8.2 + 0.5*SQRT(En)     (MeV)
        Wso= 7.0                    (MeV)
        r0 = rs = rso = 1.32        (fm)
```

a0 = as = aso = 0.47 (fm)

The level scheme used in the calculation is as follows,

No.	Energy (MeV)	Spin-Parity
g.s.	0.0	3/2 -
1	0.0067	1/2 -
2	0.0571	7/2 -
3	0.0710	5/2 -
4	0.0865	5/2 +
5	0.0947	3/2 +
6	0.1037	7/2 +
7	0.1090	9/2 +
8	0.1633	11/2 -
9	0.1692	1/2 +
10	0.1800	9/2 -
11	0.2017	3/2 +
12	0.2123	5/2 +
13	0.2379	5/2 +
14	0.2796	7/2 +
15	0.3004	7/2 +
16	0.3662	9/2 +

Continuum levels were assumed above 400 keV.

MT=16,17 (n,2n) and (n,3n)
Calculated with Pearlstein's method /5/.

MT=18 Fission
Taken from Drake and Nichols. The cross section was obtained by drawing a smooth curve through the experimental data /6,7/ for the range from 0.1 to 3 MeV. Above 3 MeV, it was assumed to have the same shape as similar nuclei.

MT=102 Capture
Taken from Drake and Nichols. They calculated the capture cross section from the unresolved resonance parameters.

MT=251 Mu-bar
Calculated with CASTHY /3/.

MF=4 Angular Distributions of Secondary Neutrons

MT=2	Calculated with CASTHY code /3/.
MT=51-66	Isotropic in the center-of-mass system.
MT=16,17,18,91	Isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,17,91	Evaporation spectrum.
MT=18	Maxwellian fission spectrum estimated from Z**2/A systematics /8/.

References

1) Drake N.K. and Nichols P.F.: GA-7462 (1967).
2) Simpson F.B. and Codding J.W.Jr: Nucl. Sci. Eng., 28, 133 (1967).
3) Igarasi S.: J. Nucl. Sci. Technol., 12, 67 (1975).
4) Igarasi S.: J. Nucl. Sci. Technol., 14, 1 (1977).
5) Pearlstein S.: Nucl. Sci. Eng., 23, 238 (1965).
6) Williams J.H.: LA-150 (1944).
7) Dubrovin S.M. and Shigin V.A.: Sov. Phys. Doclady, 9, 579 (1965).
8) Smith A.B. et al.: ANL/NDM-50 (1979).

92-U -233 MAT number = 2921

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 92-U -233 SAEI+        Eval-Jun82 N.Asano,H.Matsunobu,Y.Kikuchi
NST 19 1037             Dist-Mar83 Rev1-Nov83
82-06 New evaluation for JENDL-2 by N.Asano, H.Matsunobu (SAEI)
      and Y.Kikuchi (JAERI).
83-11 Comment was added.

MF=1  General Information
  MT=451  Comments and dictionary
  MT=452  Nu-total
      Sum of Nu-d and Nu-p
  MT=454  Fission yield data
      Taken from ENDF/B-IV.
  MT=455  Nu-d
      Below 4 MeV
         Nu-d = 0.007549 + 4.627E-5*ln(E(MeV))
      Between 4 and 20 MeV
         Based on the data of Masters et al. /1/ and Evans et al.
         /2/.
  MT=456  Nu-p
      Renormalization was made to 3.756 of Cf-242.
      Below 1 MeV
         Nu-p = 2.486 + 0.121*(E-DE),
         where DE is difference of average fragment kinetic energy
         between incident and thermal neutron energies.  It was
         taken from data of Boldeman et al. /3/.
      Between 1 and 2.73 MeV
         Nu-p = 2.436 + 0.1279*E
      Between 2.73 and 7.47 MeV
         Nu-p = 2.327 + 0.1678*E
      Above 7.47 MeV
         Nu-p = 2.857 + 0.09689*E

MF=2  Resonance Parameters
  MT=151
  a) Resolved resonance region ( 1 eV to 100 eV)
      Resolved resonance parameters for the single-level Breit-
      Wigner formula based on the data of Nizamuddin and Blons
      /4/.
  b) Unresolved resonance region ( 0.1 keV to 30 keV)
      Resonance parameters were deduced with ASREP code /5/ so as
      to reproduce the evaluated cross sections in this energy
      region.

MF=3  Neutron Cross Sections
 a) Thermal energy region ( below 1.0 eV)
  MT=1    Total
     Sum of partial cross sections
  MT=2    Elastic scattering
     Calculated from resolved resonance parameters by using the
     effective scattering radius of 9.93 fm.
  MT=18   Fission
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Based on data of Weston et al. /6/, Cao et al. /7/, Deruytter and Wagemans /8/ and Pshenichny et al. /9/.

MT=102 Capture
Based on the data of Weston et al. /6/.

2200-m/s cross sections and calculated res. integrals

	2200 m/s	Res. Integ.
elastic	12.70 b	-
capture	45.30 b	139 b
fission	529.9 b	772 b
total	587.9 b	-

b) Resonance Region (from 1 eV to 30 keV)
Represented with resolved and unresolved resonance parameters. Background cross section was given for the total and fission cross sections in the resolved resonance region.

c) Smooth part (above 30 keV)

MT=1 Total
Based on the data of Poenitz /10/, Green and Mitchell /11/, Foster and Glasgow /12/. Between 10 and 50 keV, and above 15 MeV, optical model calcuation was applied by using the following optical potential parameters.

V =41.8-0.20*E+0.008*E**2, Ws=6.50-0.15*E, Vso=6.0 (MeV)
r0=1.31 , rs=1.36 , rso=1.32 (fm)
a0=0.57 , b =0.44 , aso=0.50 (fm)

MT=2 Elastic
Obtained by subtructing non-elastic scattering cross section from the total cross section.

MT=4 and 51-64,91 Inelastic scattering
Based on optical and statistical model calculation.
Level scheme taken from Ref. /13/ was as follows,

No.	Energy(MeV)	Spin-Parity
g.s.	0.0	5/2 +
1	0.04035	7/2 +
2	0.0922	9/2 +
3	0.1551	11/2 +
4	0.29882	5/2 -
5	0.31191	3/2 +
6	0.3208	7/2 -
7	0.34047	5/2 +
8	0.3537	9/2 -
9	0.397	11/2 -
10	0.39849	1/2 +
11	0.41576	3/2 +
12	0.5039	7/2 -
13	0.5467	5/2 +
14	0.5971	7/2 +

Above 0.6 MeV, assumed to be overlapped.

MT=16,17 (n,2n) and (n,3n)
Calculated by Pearlstein's method /14/ and normalized to fission-spectrum-averaged value by Kobayashi /15/.

MT=18 Fission
Besed on data of Blons /16/, Gwin et al. /17/, Poenitz /18/ and Alkhazov et al. /19/. For cross section shape, based on ratio data of Carlson and Behrens /20/ and Shpak and

Smirenkin /21/.

MT=102 Capture

Based on statistical and optical model calculations, and normalized to the data of Hopkins and Diven /22/.

MT=251 Mu-bar

Based on optical model calculation.

MF=4 Angular Distributions of Secondary Neutrons

MT=2

Based on optical model calculation.

MT=51-64

Assumed to be isotropic in the center-of-mass system.

MT=16,17,18 and 91

Assumed to be isotropic in the lab system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,17,91	Evaporation spectrum.
MT=18	Maxwellian at temp. of 1.338 MeV estimated from Z^2/A systematics of Smith et al. /23/.
MT=455	Taken from ENDF/B-IV.

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92-U -234 MAT number = 2922

92-U -234 JAERI Eval-Mar76 T.Asami
Dist-Mar83 Rev1-Jan84

History
76-03 The evaluation was made by T.Asami (JAERI) for JENDL-1 /1/.
83-03 JENDL-1 data were adopted for JENDL-2 and extended to 20 MeV.
84-01 Resonance formula was changed. MT=5 and comment data were added.

MF=1 General Information
MT=451 Descriptive data and dictionary
MT=452 Number of neutrons per fission
Taken from ENDF/B-IV evaluation.

MF=2 Resonance Parameters
MT=151 Resolved resonance parameters for MLBW formula
Energy range : 1.0E-5 eV to 215.0 eV.
Parameters were adopted from James and Slaughter /2/. A bound level at -1.6777 eV was taken from Drake and Nichols /3/ to reproduce the thermal cross section.

Calculated 2200-m/sec cross sections and resonance integrals.

	2200 m/sec	res. integ.
elastic	14.72 b	–
capture	95.44 b	609. b
fission	0.006367 b	6.44 b
total	110.2 b	–

MF=3 Neutron Cross Sections
Below 215 eV: Background cross sections of zero.
Above 215 eV:
MT=1,2,4,51-63,91,102 Total, Elastic, Inelastic and Capture
Calculated with statistical and optical model code CASTHY /4/. Potential parameters were taken from Agee and Rosen /5/.

V = 40.5+0.5*En, Ws = 8.2 , Vso = 7.0 (MeV)
r = 1.32 , rs = 1.32, rso = 1.32 (fm)
a0= 0.47 , as = 0.47, aso = 0.47 (fm)

The level scheme used was as follows.

No.	Energy(MeV)	Spin-Parity
g.s.	0.0	0 +
1	0.044	2 +
2	0.144	4 +
3	0.297	6 +
4	0.499	8 +
5	0.790	1 -
6	0.811	0 +
7	0.8496	3 -
8	0.8516	2 +
9	0.9269	2 +
10	0.948	4 +

11	0.965	3 +
12	1.023	3 −
13	1.046	0 +

Levels above 1.06 MeV were assumed to be overlapping. The fission, (n,2n) and (n,3n) cross sections were used as the cross sections of competing processes. The parameters D-obs of 12.3 eV and average radiative width of 0.025 eV were adopted to normalize the gamma-ray transmission coefficients.

MT=16,17 (n,2n) and (n,3n)
Calculated with Pearlstein's method /6/.

MT=18,19,20,21 Fission
The evaluated data by Drake and Nichols /3/ were adopted from 215 eV to 2 MeV. Above 2 MeV, the cross section calculated by Jary /7/ was adopted.

MT=251 Mu-bar
Calculated with CASTHY /4/.

MF=4 Angular Distributions of Secondary Neutrons
MT=2 Calculated with CASTHY code /4/.
MT=51-63 Isotropic in the center-of-mass system.
MT=16,17,18,19,20,21,91 Isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17,91 Evaporation spectrum.
MT=18,19,20,21 Maxwellian fission spectrum taken from ENDF/B-IV.

References

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92-U -235   MAT number = 2923

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 92-U -235 SAEI+        Eval-Sep79 H.Matsunobu,A.Asami,Y.Kikuchi
79Knoxville,715         Dist-Mar83 Rev1-Nov83
History
79-09 Newly evaluated for JENDL-2 by the following evaluaters.
       A.Asami (High Energy R.I.) Resolved resonance parameters
       Y.Kikuchi (JAERI)          Unresolved resonance parameters
       H.Matsunobu (SAEI)         other quantities
83-11 Comment was added.

MF=1  General Information
  MT=451  Comments and dictionary
  MT=452  Total number of neutrons per fission
     Sum of nu-p (MT=456) and nu-d (MT=455).
  MT=454  Fission product yield data
     taken from ENDF/B-IV.
  MT=455  Delayed neutron data
     Adopted the evaluated data by Schatz /2/.
  MT=456  Number of prompt neutrons
     Evaluated on the basis of the experimental data by Boldeman
     and Walsh /3/, Soleilhac et al. /4/, Frehaut et al. /5,6/,
     Meadows and Whalen /7/, Prokhorova et al. /8,9/ and Savin
     et al. /10/.

MF=2  Resonance Parameters
  MT=151
  1) Resolved resonances : 1.0 - 100 eV
     2g*Gamma-n : Simple average of experimental data.
     Gamma-g    : Weighted average of experimental data.
     Gamma-f    : Calculated from the averaged fission area.
       Details of the evaluation given in Ref. /11/.
  2) Unresolved resonance parameters : 100 eV - 30 keV
     The evaluated total, capture and fission cross sections
     were fitted by adjusting S0, S1 and Gamma-f.
     Fixed parameters : R= 9.9 fm, Gamma-g= 45 milli-eV,
                        Dobs= 0.567 eV.

     2200-m/s cross sections and calculated res. integrals.
                   2200 m/s        res. integ.
        elastic     17.0 b             -
        fission    584.0 b           279 b
        capture     96.0 b           153 b
        total      697.0 b             -

MF=3  Neutron Cross Sections
  Below 1.0 eV: Based on the experimental data.
  Between 1.0 and 100 eV: Background data for resonance parame-
                 ters are given to well reproduce the experimen-
                 tal data.
  Above 100 eV: Data were evaluated as follows.  Between 100 ev
                 and 30 keV, the unresolved resonance parameters
                 and the background data were given to reproduce
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these cross sections.

MT=1 Total

Evaluated on the basis of the experimental data by Uttley et al. /12/, Boeckoff et al. /13/, Schwartz et al. /14/, Green et al. /15/ and Foster and Glasgow /16/.

MT=2 Elastic scattering

Evaluated on the basis of the experimental data by Smith /17/, Smith and Whalen /18/ and Knitter et al. /19/ in the energy range from 0.3 to 2.3 MeV. In the remaining energy range it was derived by subtracting sum of partial cross sections from total cross section.

MT=4,51-79,91,251 Inelastic scattering cross section and mu-bar

Evaluated on the basis of experimental data and calculation with optical and statistical models.

The optical potential parameters were obtained by fitting the experimental data of the total cross section.

V = 40.90 - 0.04*En (MeV)
Ws = 6.50 + 0.25*En (MeV)
vso= 7.0 (mev)
r0 = 1.312, rs = 1.375, ro = 1.320 (fm)
a = 0.490, b = 0.454, ao = 0.470 (fm)

Statistical model calculation with CASTHY code /20/.
Competing processes : fission (n,2n), (n,3n), (n,4n).
Level fluctuation was considered.

The level sceme taken from Ref. /21/.

No.	Energy(keV)	Spin-Parity
g.s.	0.0	7/2 -
1	0.075	1/2 +
2	13.038	3/2 +
3	46.347	9/2 -
4	51.697	5/2 +
5	81.732	7/2 +
6	103.1	11/2 -
7	129.292	5/2 +
8	150.6	9/2 +
9	170.7	13/2 -
10	171.378	7/2 +
11	197.1	11/2 +
12	225.40	9/2 +
13	249.1	15/2 -
14	291.1	11/2 +
15	294.7	13/2 +
16	332.818	5/2 +
17	338.8	17/2 -
18	357.2	15/2 +
19	367.05	7/2 +
20	368.8	13/2 +
21	393.184	3/2 +
22	412.3	9/2 +
23	426.71	5/2 +
24	438.5	19/2 -
25	445.72	7/2 +
26	474.27	7/2 +

27	510.0	9/2 +
28	532.0	9/2 +
29	550.4	21/2 −

Continuum levels assumed above 580 keV.
The level density parameters : Gilbert and Cameron /22/.

MT=16,17,37 (n,2n), (n,3n), (n,4n)
Evaluated on the basis of the following experimental data and calculation with evaporation model.
(n,2n) : Mather et al. /23/
(n,3n) and (n,4n) : Veeser and Arthur /24/

MT=18 Fission
Evaluated on the basis of the following experimental data:
100 eV − 10 keV : Perez et al. /25,26/
10 keV − 1 MeV : Szabo and Marquette /27/, Poenitz /28,29/, White /30/
1 MeV − 20 MeV : Szabo and Marquette /27/, Barton et al. /31/, Poenitz /29/, Czirr and Sidhu /32,33/, Cance and Grenier /34/
A special care was paid for evaluating the fission cross section of U-235 so that the consistency could be kept between the relative and absolute measurements for the other heavy nuclides.

MT=102 Capture
Derived from the evaluated alpha value and fission cross section below 1 MeV. Calculated with the statistical model above 1 MeV.

Alpha value was evaluated on the basis of the experimental data by Kononov et al. /35/, Dvukhsherstnov et al. /36/, Gwin et al. /37/, Bluhm and Yen /38/ and Hopkins and Diven /39/.

MF=4 Angular Distributions of Secondary Neutrons
MT=2 Calculated with optical model.
MT=51-79 Isotropic in the center-of-mass system.
MT=16,17,18,37,91 Isotropic in the lab system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17,37,91 Evaporation spectrum
MT=18,455 Taken from ENDF/B-IV.

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92-U -236　　MAT number = 2924

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 92-U -236 NAIG         Eval-Mar79 T.Yoshida
                        Dist-Mar83 Rev1-Dec83
History
79-03 New evaluation for JENDL-2 was made by T.Yoshida(NAIG).
83-03 MF=1 and MF=5 were added by Y.Kikuchi(JAERI).
83-12 MF=1,MT=451 was added.

MF=1  General Information
  MT=451  Descriptive data and dictionary
  MT=452  Number of neutrons per fission
     Taken from ENDF/B-IV.

MF=2 MT=151 Resonance parameters
  Resolved resonances for MLBW formula : 1.0E-5 eV to 1.5 keV
     Res. energies and Gam-n(for Gam-n grater than 0.1*Gam-g)
                                                 : Carraro /1/
     Gam-n (for Gam-n smaller than 0.1*Gam-g) : Mewissen /2/
     Gam-g : Mewissen /2/, when not given average value was taken.
     Gam-f : Theobald /3/.
        Average Gam-g = 23.0 milli-eV
        Average Gam-f = 0.354 milli-eV
     A negative resonance was introduced to reproduce the 2200-
     m/s capture cross section of (5.2+-0.3) barns recommened in
     BNL-325 3rd edition.

     Calculated 2200-m/s cross sections and res. integrals
                    2200-m/sec       Res. Integ.
         elastic      8.337  b           -
         fission      0.043  b          7.61 b
         capture      5.295  b         347.   b
         total       13.67   b           -

MF=3  Neutron Cross Sections
  Below 1.5 keV, all background cross sections are zero.
  Above 1.5 keV, data were evaluated as follows.

  MT=1,2,4,51-79,91,102,251  Sig-t,Sig-el,Sig-in,Sig-c,Mu-bar
     Calculated with optical and statistical models.
     The spherical optical potential parameters /4/ :
        V=40.8 - 0.05*En, Ws=0.5 + 0.15*En, Vso=7.0 (MeV),
        r=1.32, rs=1.38, rso=1.32                    (fm),
        a=as=aso=0.47                                (fm).
     Optical and statistical model calculation was made with
     CASTHY code /5/.
        Competing processes : fission, (n,2n) and (n,3n)
        Level fluctuation was considered. The gamma-ray strength
        function was determined so that the calculated capture
        cross section reproduced the measured value of 1.05 barns
        /6/ around 10 keV.
     The level scheme taken from Ref. /7/.
        No. Energy(MeV)  J-Parity    No. Energy(MeV)  J-Parity
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2 of Uranium-236

gs	0.0	0 +	1	0.04524	2 +
2	0.14948	4 +	3	0.30979	6 +
4	0.52225	8 +	5	0.68757	1 −
6	0.7442	3 −	7	0.7828	10 +
8	0.8476	5 −	9	0.91916	0 +
10	0.9581	2 +	11	0.9604	2 +
12	0.9670	1 −	13	0.9880	2 −
14	1.0014	3 +	15	1.0020	7 −
16	1.0356	3 −	17	1.0512	4 +
18	1.0529	4 −	19	1.0587	4 +
20	1.0661	3 +	21	1.0700	4 −
22	1.0862	12 +	23	1.0938	2 +
24	1.1044	5 −	25	1.1110	2 −
26	1.1267	5 +	27	1.1470	3 +
28	1.1494	3 −	29	1.1640	6 −

Continuum levels assumed above 1.17 MeV.

MT=16,17 (n,2n) and (n,3n)
Calculated with the Pearlstein's method /8/.

MT=18 Fission
Evaluated on the basis of measured data of U-236/U-235 /9,10/. To get absolute value Matsunobu's evaluation /11/ for U-235(n,f) was employed.

MF=4 Angular Distributions of Secondary Neutrons

MT=2 Calculated with optical model.
MT=51-79 Isotropic in the center-of-mass system.
MT=16-18,91 Isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,17,91 Evaporation spectrum.
MT=18 Maxwellian fission spectrum. Temperature was estimated from Z**2/A values /12/.

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92-U -238 MAT number = 2925

92-U -238 Kyushu U.+ Eval-Aug79 Y.Kanda,T.Nakagawa,Y.Kikuchi
Dist-Mar83 Rev1-Jan84

History

79-08 Evaluation was made by
T.Nakagawa(JAERI) for resonance parameters and background cross sections,
Y.Kikuchi(JAERI) for unresolved resonance parameters,
Y.Kanda(Kyushu Univ.) for cross sections above resonance region and other quantities.

83-03 MF=5 was revised.

84-01 Comment data were added.

MF=1 General Information

MT=451 Descriptive data and dictionary

The following four MTs' data were entirely taken from ENDF/B-IV evaluation.

MT=452 Number of neutrons per fission
MT=454 Fission product yields
MT=455 Delayed neutron data
MT=456 Number of prompt neutrons per fission

MF=2 Resonance parameters

MT=151 Resolved and unresolved resonance parameters

Resolved resonances for MLBW formula : from 1.0E-5 eV to 4 keV.

Reference /1/ gives an outline of the present evaluation.

Resonance energies : Evaluated on the basis of the experimental data by Poortmans et al. /2/, Olsen et al. /3,4/ and Nakajima /5/. Four negative resonances were added to consider interference effects in the low energy region.

Neutron and capture widths : Obtained from resonance areas calculated from various measurements by giving relatively high weight to the recent data /2-8/.

Sub-threshold fission widths : Determined from the fission resonance areas measured by Diffilippo et al. /9/ for 28 s-wave resonances.

Effective scattering radius : 9.48 fm obtained by averaging the values of Olsen et al. below 2.2 keV.

Unresolved resonances : from 4 keV to 50 keV.

The energy dependent parameters were determined to reproduce cross sections evaluated by Kanda (see the description of MF=3).

2200-m/sec cross sections and calculated resonance integrals.

	2200 m/sec	res. integ.
elastic	8.873 b	-
capture	2.700 b	279. b
fission	3.22E-6 b	2.05 b
total	11.57 b	-

MF=3 Neutron Cross Sections

Below 4.0 keV: Background data for resolved resonances.
The background cross sections were obtained with the picket-fence model. The contributions from missed p-wave resonances were also taken into account for the capture cross section in the energy region above 1.5 keV.

Above 4 keV.
Evaluated cross sections were replaced with unresolved resonance parameters and background cross sections in the energy region between 4 keV and 50 keV.

MT=1 Total
Evaluated from the following experimental data.
Below 500 kev: Uttley et al. /10/, Whalen et al. /11/.
0.5 - 4.5 MeV: Kopsch et al. /12/.
4.5 - 15 MeV: Foster and Glasgow /13/.
15 - 20 MeV: Bratenahl et al. /14/, Peterson et al. /15/.

MT=2 Elastic scattering
Calculated as (total)-(partial cross sections).

MT=4 Total inelastic
Evaluated by Kanda.

MT=51-75,91 Inelastic scattering
Calculated as follows by using the presently evaluated total inelastic and partial inelastic scattering cross sections of JENDL-1.
Sig(i-th level)=Sig(inel.)*(branching ratio to i-th level)
where the branching ratio to the i-th level was calculated from JENDL-1 data /16/.
The level scheme.

No.	Energy (MeV)	Spin-Parity
g.s.	0.0	0 +
1	0.0447	2 +
2	0.148	4 +
3	0.301	6 +
4	0.520	8 +
5	0.680	1 -
6	0.732	3 -
7	0.790	10 +
8	0.838	5 -
9	0.939	2 +
10	0.968	2 +
11	1.006	0 +
12	1.047	2 +
13	1.076	2 +
14	1.100	12 +
15	1.123	1 -
16	1.150	2 -
17	1.190	3 -
18	1.210	2 +
19	1.246	4 -
20	1.272	5 -
21	1.313	2 +
22	1.361	2 +
23	1.401	2 +
24	1.437	14 +
25	1.470	1 -

Continuum levels were assumed above 1.5 MeV.

MT=16,17 (n,2n) and (n,3n)

Calculated with the evaporation model of Segev and Caner /17/, and normalized to the data by Frehaut and Mosinski /18/.

MT=18 Fission
Evaluated on the basis of the data of Diffilippo et al. /19/, Behrens and Carlson /20/, Nordborg et al. /21/ and Meadows /22,23/. They were renormalized with the U-235 fission cross section evaluated by Matsunobu /24/.

MT=102 Capture
Determined mainly from the measurements by Poenitz /25/, Panitkin and Sherman /26/, Moxon /27/, Fricke et al. /28/ and Menlove and Poenitz /29/.

MT=251 Mu-bar
Taken from JENDL-1 /16/.

MF=4 Angular Distributions of Secondary Neutrons

MT=2	Taken from JENDL-1 /16/.
MT=51,52	Taken from JENDL-1 /16/.
MT=53-75	Isotropic in the center-of-mass system.
MT=16,17,18,91	Isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,17,91	Evaporation spectrum.
MT=18	Maxwellian fission spectrum estimated from Z**2/A systematics /30/.
MT=455	Taken from ENDF/B-IV.

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93-Np-237　　MAT number = 2931

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 93-Np-237 Kyushu U.+ Eval-Mar79 N.Wachi,Y.Kanda,Y.Kikuchi
                      Dist-Mar83 Rev1-Nov83
History
79-03 New evaluation was made by N.Wachi and Y.Kanda (Kyushu
      University), and Y.Kikuchi (JAERI).
83-11 Comment was added.

MF=1  General Information
  MT=451   Comments and dictionary
  MT=452   Number of neutrons per fission
              Experimental data of Frehaut + /1/.
  MT=455   Delayed neutron data
              Experimental data of Benedetti + /2/ and systematics
              by Tuttle /3/.

MF=2, MT=151  Resonance parameters
   Resolved resonances for SLBW formula : 1.0E-5 - 130 eV
           Res. energy, Gam-n, Gam-g:  Weston and Todd /4/.
           Gam-f                    :  Plattard + /5/.
           Average Gam-g = 40 milli-eV.
           A negative resonance added.
   Unresolved resonances   : 130 eV - 30 keV
        Parameters by Weston and Todd /4/ with slight modification
        Adopted parameters :
           S0=1.02E-4 , S1=1.888E-4 , D-obs=0.45 eV
           Gam-g=40 milli-eV.
        Gam-f values determined so that Sig-f = 0.009 b.

   Calculated 2200 m/s cross sections and resonance integrals:
                        2200 m/s value      Res.Int.
           total   :      208.5   b            -
           elastic :       27.52  b            -
           fission :      0.01921 b          6.26   b
           capture :      181.0   b          663    b

MF=3  Neutron Cross Sections
  MT=1,2,4,51-64,91,102,251    Sig-t,Sig-el,Sig-in,Sig-c,Mu-bar
        Calculated with optical and statistical models.
        The spherical optical potential parameters :
           V = 43.55      ,  Ws = 11.0  ,  Vso = 7.0   (MeV)
           r = rs = 1.32  ,  rso= 1.3                  (fm)
           a = b  = 0.47  ,  aso= 0.4                  (fm).
        Statistical model calculation with CASTHY code /6/.
           Competing processes : fission,(n,2n) and (n,3n).
           Level fluctuation considered.
           The gamma-ray strength function determined so that
           Sig-c = 0.742 b at 200 keV.
        The level scheme taken from compilation by Ellis /7/.
                    No          Energy(MeV)         Spin-Parity
                   g.s.           0.0                  5/2+
                    1             0.03320              7/2+
```

2 of Neptunium-237

2	0.05954	5/2-
3	0.07580	9/2+
4	0.10296	7/2-
5	0.13000	11/2+
6	0.15852	9/2-
7	0.2260	11/2-
8	0.26754	3/2-
9	0.281	1/2-
10	0.305	13/2-
11	0.327	7/2-
12	0.332	1/2+
13	0.357	5/2-
14	0.369	5/2+

Continuum levels assumed above 0.370 MeV.
The level density parameters of Gilbert and Cameron /8/.

MT=16,17 (n,2n),(n,3n)
Calculated with the evaporation model by Segev + /9/.

MT=18 fission
Evaluated from measured data.
Verified by calculating spectrum-averaged cross section.

MF=4 Angular Distributions of Secondary Neutrons
MT=2,51-64,91 Calculated with the optical model.
MT=16,17,18 Isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17,91 Evaporation spectrum.
MT=18 Estimated from Z**2/A systematics by Smith +/10/ by assuming E(Cf-252) = 2.13 MeV.

References
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9) M. Segev et al.: Annals of Nucl. Energy, 5, 239 (1978).
10) A.B. Smith et al.: ANL/NDM-50 (1979).

93-Np-239 MAT number = 2932

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 93-Np-239 Kyushu U.+ Eval-Mar76 Y.Kanda,JENDL-CG
                      Dist-Mar83 Rev1-Jan84
History
76-03 The evaluation for JENDL-1 was performed by Kanda (Kyushu
      Univ.) and JENDL-1 Compilation Group.  Details are given
      in Ref. /1/.
83-03 JENDL-1 data were adopted for JENDL-2 and extended to 20
      MeV.  MF=5 was revised.
84-01 Comment data were added.

MF=1  General Information
  MT=451  Descriptive data and dictionary
  MT=452  Number of neutrons per fission
     Taken from the Np-237 data of ENDF/B-IV.

MF=2  Resonance Parameters
  MT=151 No resonance parameters were given.

     2200-m/sec cross sections and calculated resonance integrals.
                      2200 m/sec          res. integ.
        elastic        10.50 b               -
        capture        37.00 b           445.    b
        fission         0.0  b             7.06 b
        total          47.50 b               -

MF=3  Neutron Cross Sections
  Below 4.0 eV.
  MT=1     Total
     Sum of partial cross sections.
  MT=2     Elastic scattering
     The constant cross section of 10.5 barns was assumed from
         Sig=4*3.14*(0.147*A**(1/3))**2.
  MT=18    Fission
     Assumed to be zero barns.
  MT=102  Capture
     The form of 1/v was assumed.  The 2200-m/sec cross section
     was adopted from the experimental data by Stoughton and
     Halperin /2/.
  Above 4.0 eV.
  MT=1     Total
     Calculated with optical and statistical model code CASTHY
     /3/.  Optical potential parameters were obtained by Ohta and
     Miyamoto /4/ by using the total cross section of Pu-239.
        V = 45.87-0.2*en, Wi= 0.06, Ws= 14.1, Vso= 7.3 (MeV)
        r = 1.27          , ri= 1.27, rs=1.302, rso= 1.27(fm)
        a0= 0.652         , ai=0.315, as= 0.98, aso=0.652(fm)
  MT=2  Elastic scattering
     Calculated with CASTHY /3/.
  MT=4,51-58,91   Inelastic scattering
     Calculated with CASTHY /3/.  The level scheme was adopted
     from Nucl. Data Sheets Vol.6.
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No.	Energy(MeV)	Spin-Parity
g.s.	0.0	5/2 +
1	0.03114	7/2 +
2	0.07112	9/2 +
3	0.07467	5/2 -
4	0.11766	11/2 +
5	0.1230	7/2 -
6	0.17305	9/2 -
7	0.2414	11/2 -
8	0.320	13/2 -

Levels above 430 keV were assumed to overlapping. In the calculation the capture, fission, (n,2n) and (n,3n) cross sections were considered as competing processes.

MT=16,17 (n,2n) and (n,3n)
Calculated with Pearlstein's method /5/.

MT=18 Fission
Estimated from the Np-237 fission cross section by normalizing with neutron separation energies.

MT=102 Capture
Below 100 keV, the cross section was calculated from
Sig = 435 / SQRT(En) barns.
Above 100 keV, tha shape of the experimental data for Np-237 by Nagle et al. /6/ was adopted and normalized to 1.4 barns at 100 keV.

MT=251 Mu-bar
Calculated with CASTHY /3/.

MF=4 Angular Distributions of Secondary Neutrons

MT=2	Calculated with CASTHY code /3/.
MT=51-58	Isotropic in the center-of-mass system.
MT=16,17,18,91	Isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,17,91	Evaporation spectrum.
MT=18	Maxwellian fission spectrum estimated from Z**2/A systematics /7/.

References

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94-Pu-236　　MAT number = 2941

94-Pu-236 FBEC　　Eval-Apr79 T.Hojuyama
Dist-Mar83 Rev1-Nov83

History
79-04 New evaluation was made by T. Hojuyama (FBEC) /1/ in the energy range from 1.0E-5 eV to 20 MeV.
83-11 Comment was added.

MF=1 General Information
MT=451 Comment and dictionary
MT=452 Number of neutrons per fission
Nu-p and Nu-d for thermal neutron based on Manero's semi-empirical formula /2/. Neutron-energy dependence of Nu besed on Howerton's evaluation /3/.

MF=2 Resonance Parameters
MT=151 Resolved resonance (one resonance)
Energy range from 1.0E-5 to 6 eV. Gam-f was so determined that Sig-f calculated from the unresolved resonance formula with the Gam-f may smoothly connect at 10 keV to Sig-f in the high energy region. Gam-g, S0, S1, <D> and R were estimated from systematics. E0 was so determined that the fission rate calculated with the resonance parameters in a thermal reactor may agree with exp. data /6/.

--Resonance Parameters--

E0	:	0.445 eV	/6/
Gam-n	:	0.526 milli-eV	(from S0 and <D>)
Gam-f	:	3.55 milli-eV	see above
Gam-g	:	41.5 milli-eV	/4/
R	:	9.46 fm	see above
<D>	:	6.3 eV	/4/
S0	:	1.25E-4	/4,5/
S1	:	2.22E-4	/5/

Calculated 2200-m/s cross sections and resonance integrals.

	2200 m/sec	Res. Integ.
elastic	3.376 b	-
fission	65.41 b	101 b
capture	764.6 b	1067 b
total	833.4 b	-

MF=3 Neutron Cross Sections
MT= 1 Total cross section
Obtained by optical model calculation. Optical potential parameters taken from Murata's evaluation /7/ except real potential.

--Optical Potential Parameters--

V = 39.5-0.05*En (MeV)
Ws = 6.5+0.15*En (MeV)
Vso = 7.0 (MeV)
r0 = rso= 1.32 ,rs = 1.38 (fm)
a = aso= 0.47 ,b = 0.47 (fm)

MT= 2 Elastic scattering cross section
Obtained by optical and statistical model calculations.

MT=4,51-54,91 Inelastic scattering cross sections
Obtained by optical and statistical model calculations.
Level scheme taken from N.D.S. /8/ except 4th level of which energy based on Lynn /9/.

No.	En(keV)	Spin-Parity
g.s.	0.0	0 +
1	44.6	2 +
2	145	4 +
3	305	6 +
4	523	8 +

Continuum levels assumed above 661 keV.

MT=16,17 (n,2n) and (n,3n) cross sections
Calculated with statistical model based on Pearlstein /10/.

MT=18,19,20,21 Fission cross sections
Below 10 keV:
Calculated from the unresolved resonance formula with the parameters given in the table of resonance parameters.
Above 10 keV:
Calculated from fission plateau cross sections /7,12/ and Hill-Wheeler type barrier penetration factor /11/.
Fission barrier parameters were taken from Weigmann /13/.

MT=102 Capture cross section
Calculated by optical and statistical model with Gam-g of 41.5 milli-eV and <D> of 6.3 eV.

MT=251 Mu-bar
Calculated with optical model.

MF=4 Angular Distribution of Secondary Neutrons

MT= 2	Based on optical and statistical model calculation.
MT=51-54	Isotropic in the center-of-mass system.
MT=16-21,91	Isotropic in the laboratory system.

MF=5 Energy Distribution of Secondary Neutrons

MT=16,17,91	Evaporation spectrum assumed
MT=18,19,20,21	Fission spectrum of Maxwellian form adopted. Theta taken from evaluation of Terrell/14/.

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94-Pu-238   MAT number = 2942

94-Pu-238 PNC   Eval-Mar79 T.Kawakita
Dist-Mar83 Rev1-Feb84

History
79-03 New evaluation was made by T.Kawakita (PNC).
84-02 Neutron widths of two low-energy resonances were corrected. The (n,2n) cross section was also corrected. Comment was added.

MF=1 General Information
MT=451 Descriptive data and dictionary
MT=452 Number of neutrons par fission
The thermal value of prompt neutrons was based on experimental data of Jaffey /1/ and Nu-d was taken from semi-empirical formula by Manero /2/. The energy dependent term was estimated from Howton's formula /3/.
(Nu-p and Nu-d are not given in JENDL-2.)

MF=2 Resonance Parameters
MT=151 Resolved resonance parameters for MLBW formula.
Energy range is from 1.0E-5 eV to 500 eV. Parameters were taken adopted from the following experimental data.
49 resonances above 10 eV : Silbert /4/
4 resonances below 10 eV : Young /5/

Calculated 2200-m/s cross sections and resonance integrals

	2200-m/s	Res. Integ.
elastic	27.60 b	-
fission	16.55 b	32.4 b
capture	548.8 b	156 b
total	592.9	-

MF=3 Neutron Cross Sections

Below 500 eV is the resonance region. Above 500 ev, the cross sections were evaluated as follows.

MT=1 Total
Sum of partial cross sections.
MT=2,4,51-78,91 Elastic and inelastic scattering
Calculated with optical and statistical models.

Optical potential parameters: Real well depth was obtained by mass fitting. Other parameters were taken from Murata's evaluation /6/.

V	= 41.0 - 0.05*En	(MeV)
Ws	= 6.5 + 0.15*En	(MeV)
Vso	= 7.0	(MeV)
a = b = aso	= 0.47	(fm)
r = rso	= 1.32	(fm)
rs	= 1.38	(fm)

Statistical model calculation with CASTHY code /7/.

The level scheme taken from Ref. /8/.

No.	Energy(kev)	Spin-Parity
g.s.	0.0	0 +
1	44.08	2 +
2	145.98	4 +
3	303.4	6 +
4	514.0	8 +
5	605.1	1 −
6	661.4	3 −
7	763.2	5 −
8	941.5	0 +
9	962.77	1 −
10	968.2	2 −
11	983.0	2 +
12	985.5	2 −
13	1028.55	2 +
14	1069.95	3 +
15	1082.57	4 −
16	1125.8	4 +
17	1174.5	2 +
18	1202.7	3 −
19	1228.6	0 +
20	1264.2	2 +
21	1310.3	2 +
22	1426.6	0 +
23	1447.3	1 −
24	1458.5	2 +
25	1560.0	1 −
26	1596.5	2 +
27	1621.4	1 −
28	1636.6	1 −

Continuum levels assumed above 1.65 MeV.
The level density parameters of Gilbert and Cameron /9/.
No competing process was considered.

MT=16,17 (n,2n) and (n,3n)
Calculation based on the Pearlstein's method /10/.

MT=18 Fission
Evaluated on the basis of measured data /4/, /11/ - /17/.

MT=102 Capture
In the low energy region, the cross section was calculated from the following average resonance parameters.
S0 = 1.27E-4, S1 = 2.26E-4, D-obs = 9.5 eV,
gamma width = 0.040 eV, fission width = 0.013 eV.

MT=251 Mu-bar
Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons

MT=2
Calculated with optical model.

MT=51-78
Isotropic in the center-of mass system.

MT=16,17,18,91
Isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17,91
Evaporation spectrum was assumed.
MT=18
Maxwellian type fission spectrum. Temperature was estimated from Z**2/A systematics by Smith et al. /18/.

References

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94-Pu-239 MAT number = 2943

94-Pu-239 NAIG+ Eval-Aug79 M.Kawai,T.Yoshida,Y.Kikuchi
Dist-Mar83 Rev1-Jan84

History
79-08 Evaluation was made by
M.Kawai(NAIG) for cross sections above resonance region and other quantities,
T.Yoshida(NAIG) for resonance parameters and background cross sections,
Y.Kikuchi(JAERI) for unresolved resonance parameters.
84-01 Small modification. Comment data were added.

MF=1 General Information
MT=451 Descriptive data and dictionary
MT=452 Number of neutrons per fission
Sum of nu-p (MT=456) and nu-d (MT=455).
MT=454 Fission product yields
ENDF/B-IV data were adopted.
MT=455 Delayed neutron data
Evaluated data by Manero and Konshin /1/ were adopted.
MT=456 Number of prompt neutrons per fission
Same as JENDL-1 /2/. Least-squares fit to experimental data (mainly Refs. /3-5/).

MF=2 Resonance Parameters
MT=151 Resolved and unresolved resonance parameters
Resolved resonances for MLBW formula : from 1.0 to 598 eV.
Parameters were evaluated by Yoshida /6/ modifying parameters recommended by Ribon /7/. Background cross sections were added so as to reproduce the measured fission cross section by Derrien et al. /8/ and capture cross section by Gwin et al. /9,10/.
Unresolved resonances : from 598 eV to 30 keV.
The energy dependent S0, S1 and fission width were determined by Kikuchi so as to reproduce the total, capture and fission cross sections evaluated by Kawai. Fixed parameters were R=9.054 fm, capture width=41.5 milli-eV.

2200-m/sec cross sections and calculated resonance integrals.

	2200 m/sec	res. integ.
elastic	8.000 b	-
capture	270.2 b	195 b
fission	741.7 b	302 b
total	1019.9 b	-

MF=3 Neutron Cross Sections
Below 1.0 eV.
The elastic and fission cross sections were taken from ENDF/B-IV. The capture cross section was also taken from ENDF/B-IV and small modification was made above 0.6 eV. The total cross section is sum of these three.
Between 1.0 eV and 30 keV.

Background cross sections for resonance parameters were given.

Above 598 eV.

Evaluated cross sections were replaced with unresolved resonance parameters and background cross sections in the energy region between 598 eV and 30 keV.

MT=1 Total

Calculated with optical and statistical model code CASTHY /16/. Sphrical optical potential parameters were obtained by fitting the experimental data for total cross sections of Refs. /11-15/.

$V = 40.72 - 0.05*En$ (MeV)
$Ws = 6.78 + 0.29*En$ (MeV)
$Vso = 7.0$ (MeV)
$r = rso = 1.32$ (fm)
$rs = 1.357$ (derivative Woods-Saxon type) (fm)
$a = aso = b = 0.47$ (fm)

MT=2 Elastic scattering

Calculated as (Total)-(Partial cross sections).

MT=4,51-78,91 Inelastic scattering

Calculated with CASTHY /16/. The fission, (n,2n), (n,3n) and (n,4n) were considered as competing processes. Level fluctuation and interference effects were also taken into account. Direct inelastic components were added on the basis of coupled channel calculation carried out out by Prince /17/. The level scheme shown below is taken from Ref. /18/.

No.	Energy(keV)	Spin-Parity
g.s.	0.0	1/2 +
1	7.86	3/2 +
2	57.273	5/2 +
3	75.701	7/2 +
4	163.75	9/2 +
5	194.	11/2 +
6	285.46	5/2 +
7	317.	13/2 +
8	330.13	7/2 +
9	360.	15/2 +
10	387.41	9/2 +
11	391.6	7/2 −
12	428.	(13/2 +)
13	435.	9/2 −
14	452.	(11/2 −)
15	462.	11/2 +
16	469.8	1/2 −
17	482.	(13/2 −)
18	488.	11/2 −
19	492.1	3/2 −
20	505.5	5/2 −
21	511.83	7/2 +
22	538.	(7/2 +)
23	555.	7/2 −
24	565.	9/2 +
25	583.	9/2 −
26	620.	15/2 −
27	634.	11/2 +
28	659.	11/2 −

Continuum levels were assumed above 670 keV. The values of spin in parenthesis were assumed from those of neighbouring nuclide. Level denbsity parameters were taken from Murata's evaluation /28/.

	a (1/MeV)	spin-cut off factor	E-pair (MeV)	CO	E-joint (MeV)
Pu-239	26.93	17.6156	0.61	4130.0	3.61
Pu-240	26.53	17.7964	1.64	5480.0	3.53

MT=16,17,37 (n,2n), (n,3n) and (n,4n)

Calculated with Perlstein's method /28/ by using the neutron emission cross sections which derived by subtracting the presently evaluated fission and capture cross sections from compound nucleus formation cross section obtained with CASTHY. The results agree with the experimental values by Mather et al. /27/.

MT=18 Fission

Evaluated on the basis of the following measured data.

Absorute measurements:

Kari and Cierjacks /19/, Cance and Grenier /20/, Gwin et al. /10/ and Gayther /21/.

Relative measurments to the U-235 fission cross section:

Carlson and Behrens /22/, Meadows /23/, Kari and Cierjacks /19/, Cance and Grenier /20/ and Fursov et al. /24/.

The relative data were converted into cross sections by multiplying the U-235 fission cross section in JENDL-2 /25/.

MT=102 Capture

The cross section in the energy range below 1 MeV was derived as a product of the evaluated fission cross section and alpha values. The alpha values are the same as JENDL-1 /2/. Above 1 MeV, results of statistical model calculation with CASTHY /16/ was applied.

Normalization parameters for CASTHY calculation:

Gamma-g = 43.0 milli eV,
D-obs = 2.36 eV,
Capture cross section = 284 mb at 100 keV.

MT=251 Mu-bar

Calculated with CASTHY /16/.

MF=4 Angular Distributions of Secondary Neutrons

MT=2	Calculated with CASTHY code /16/.
MT=51-78	Isotropic in the center-of-mass system.
MT=16,17,18,37,91	Isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,17,37,91	Evaporation spectrum.
MT=18	Maxwellian fission spectrum estimated from Z**2/A systematics /29/.
MT=455	Takenfrom ENDF/B-IV.

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94-Pu-240 MAT number = 2944

94-Pu-240 NAIG+ Eval-Mar79 T.Murata,A.Zukeran,Y.Kikuchi
Dist-Mar83 Rev1-Nov83

History
79-03 New evaluation was made by the following evaluaters.
A.Zukeran (Hitachi) Resolved resonance parameters
Y.Kikuchi (JAERI) Unresolved resonance parameters
T.Murata (NAIG) Other quantities
83-03 MF=5 was added.
83-11 Comment was added.

MF=1 General Information
MT=451 Comments and dictionary
MT=452 Number of neutrons per fission
Sum of MT=455(delayed neutrons) and MT=456(prompt neutrons).
MT=455 Delayed neutron data
Taken from ENDF/B-IV.
MT=456 Number of prompt neutrons
Linear least-squares fitting to the experimental data of Freaut et al. /1/ renormalized to Cf-252 nu-p=3.756.

MF=2 Resonance Parameters
MT=151 Resolved and unresolved resonance parameters
1) Resolved resonances for MLBW formula
Energy range : 1.0E-4 to 4 keV.
The first resonance at 1.056 eV was evaluated on the basis of Pattenden and Rainey /2/. The neutron and capture widths were based on the experimental data by Hockenbury et al. /3/ in the energy range from 20 to 500 eV, and Kolar and Boeckhoff /4/ from 500 eV to 4 keV. The average capture width of 29.5 milli-eV was assumed for the resonances whose J values were unknown. The sub-threshold fission widths were taken from the data by Auchampaugh and Weston /5/. A negative resonance was adopted from ENDF/B-IV. Details are given in Ref. /6/.
2) Unresolved resonances
Energy range : 4 to 40 keV.
Energy dependent parameters were determined to reproduce the presently evaluated cross sections in this energy region.

Calculated 2200-m/sec cross sections and res. integerals.

	2200-m/sec	res. integ.
elastic	1.509 b	--
fission	0.06761b	10.1 b
capture	288.5 b	8450. b
total	290.1 b	

MF=3 Neutron Cross Sections
Below 4 keV: Background cross sections are given.
Above 4 keV: Evaluated as follows. In the energy range from 4 to 40 keV, the cross sections are represented with the unresolved resonance parameters, and the back-

ground cross sections are given in MF=3.

MT=1 Total

Pptical model calculation with the following parameters, which were determined to reproduce the experimental data of Smith et al. /7/, strength functions and calculated cross sections from resoleved resonance parameters.

The spherical optical potential parameters

V = 40.6 - 0.05*e ,	Ws = 6.5 + 0.15*e	(MeV)
Vso= 7.0		(MeV)
r = rso =1.32 ,	rs = 1.38	(fm)
a = as = aso =0.47		(fm)

Optical and statistical model calculations were made with CASTHY code /8/.

MT=2 Elastic scattering

Obtained by subtracting the other cross sections from total cross section below 4 MeV. Above 4 MeV, optical model calculation.

MT=4 Total inelastic scattering

Sum of partial inelastic scattering cross sections (MT=51 to MT=91).

MT=51-79, 91 Partial inelastic scattering

CASTHY-code calculation for almost levels. For some levels, for which Smith's experimental data /7/ were available, renomalization was performed (for 1st, 2nd, 3rd, 5th and 9 to 11th levels).

Level scheme (taken mainly from Ref. /9/)

No.	Energy(MeV)	Spin-Parity
g.s.	0.0	0 +
1	0.0428	2 +
2	0.1417	4 +
3	0.2947	6 +
4	0.4976	8 +
5	0.5974	1 −
6	0.6489	3 −
7	0.7425	5 −
8	0.7514	10 +
9	0.8607	0 +
10	0.9003	2 +
11	0.9381	1 −
12	0.9589	2 −
13	0.9926	4 +
14	1.002	3 −
15	1.031	3 +
16	1.038	4 −
17	1.076	4 +
18	1.090	0 +
19	1.116	5 −
20	1.138	2 +
21	1.161	6 −
22	1.178	3 +
23	1.180	2 +
24	1.223	2 +
25	1.232	4 +

26	1.241	2 −
27	1.262	3 +
28	1.282	3 −
29	1.309	5 −

Levels above 1.309 MeV were assumed to be continuum. Level density parameters were determined to reproduce the resonance-level spacing and level-scheme staircase.

MT=16,17,37 (n,2n),(n,3n) and (n,4n)
Neutron emission cross section obtained by subtracting the elastic scattering (MT=2), fission (MT=18) and capture (MT=102) cross sections from the total (MT=1) were multiplied by branching ratio to each reaction channel calculated with Pearlstein's method /10/.

MT=18 Fission
Below 9 keV : Shape of fission cross section based on the experimental data of Byers et al. /11/ and the calculated cross section with resonance parameters of Migneco and Theobald /12/. Then normalized to the value of higher energy region.
Above 9 keV : Fission ratios to U-235 fission based on the experimental data of Behrens et al. /13/ and Wisshak and Kaeppeler /14/ were multiplied by U-235 fission cross section of JENDL-2 /15/.

MT=102 Capture
Below 0.35 MeV : Based on the experimental data of Hockenbury et al. /3/, Weston and Todd /16/ and the ratio data of Wisshak and Kaeppeler /17/ with the capture cross section of Au-197 /18/. As a guide line, the result of CASTHY calculation was normalized to the low energy region. direct and collective capture were included in high energy region using the value for U-238 given by Kitazawa et al. /19/.

MT=251 Mu-bar
The same as JENDL-1 /20/.

MF=4 Angular Distributions of Secondary Neutrons

MT=2	Taken from JENDL-1 /20/.
MT=16,17,18,37,91	Isotropic in the laboratory system.
MT=51-79	Isotropic in the center-of-mass sysyrem.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,17,37,91	Evaporation spectrum
MT=18	Fission spectrum. Temperature was estimated from Z**2/A systematics by Smith et al. /21/.
MT=455	Taken from ENDF/B-IV.

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94-Pu-241 MAT number = 2945

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94-Pu-241 JAERI       Eval-Oct79 Y.Kikuchi,N.Sekine
                      Dist-Dec79 Rev1-Nov83
History
79-10 New evaluation was made by Y.Kikuchi (JAERI) and N.Sekine
      (HEC).  Data of JENDL-1 /1/ were superseded.
79-12 Files 2, 3 and 4 were released as JENDL-2B /2/.
83-03 Files 1 and 5 were added.
83-11 Comment was added.

MF=1  General Information
  MT=451   Comment and dictionary
  MT=452   Number of neutrons per fission
              Sum of Nu-p (MT=456) and Nu-d (MT=455).
  MT=454   Fission yield data
              No evaluation done.  Data of ENDF/B-IV were adopted.
  MT=455   Delayed neutron data
              Data of Benedetti + /3/
  MT=456   Number of prompt neutrons per fission
              Data of Boldeman and Frehaut /4/ for thermal fission
              Nu-p(Cf-252 spontaneous fission) = 3.753  assumed.
              Energy dependence : Frehaut + /5/

MF=2,MT=151    Resonance Parameters
  Resolved resonances : 1 - 100 eV
        JENDL-1 data /1/ modified for better fit to experiments.
        A negative resonance addedd.
        Background cross section applied for fission and capture.

  Unresolved resonances : 100 eV - 30 keV
        Obtained by fitting evaluated Sig-f and Sig-c.
        Energy dependent parameters : So, S1 and Gam-f.
        Fixed parameters : R=9.8 fm , Gam-g = 0.040 eV,
                           D-obs = 0.85 eV

  2200-m/sec cross sections and calculated resonance integrals.
                      2200 m/sec     Res. Integ.
        elastic         10.23 b          -
        fission        1015.  b        590 b
        capture         363.0 b        187 b
        total          1388.2 b          -

MF=3  Neutron Cross Sections
  Point-wise data below 1 eV down to 1.0E-5 eV
        Sig-t : on the basis of the data of Smith + /6/
        Sig-f : on the basis of the data of Wagemans + /7/
        Sig-e : calculated from resonace parameters
        Sig-c : Sig-t - (Sig-f + Sig-e)
      2200 m/s values :
        Sig-t = 1388.2 b , Sig-f = 1015 b , Sig-c = 363 b.

  Background cross sections for resolved resonances ( 1 - 100 eV).
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No background cross sections for unresolved resonances.

Above 30 keV, smooth cross sections given as follows.

MT=1,2,4,51-61,91,251 : Sig-t,Sig-e,Sig-in,mu-bar
Calculated with optical and statistical models.
Optical potential parameters obtained from systematics /8/
V = 40.25 - 0.05*En , Ws = 6.5 , Vso = 7.0 (MeV)
r = rso = 1.32 , rs = 1.38 (fm)
a = b = aso = 0.47 (fm)
Statistical model calculation with CASTHY code /9/.
Competing processes : fission,(n,2n),(n,3n),(n,4n).
Level fluctuation considered.
The level scheme taken from Ref. /10/.

No	Energy(keV)	Spin-Parity
g.s.	0	5/2 +
1	41.8	7/2 +
2	94.0	9/2 +
3	161.5	1/2 +
4	170.8	3/2 +
5	223.1	5/2 +
6	230.0	9/2 +
7	242.7	7/2 +
8	300	11/2 +
9	335	9/2 +
10	368	13/2 +
11	445	11/2 -

Continuum levels assumed above 490 keV.
The level density parameters : Gilbert and Cameron /11/.

MT=16,17,37 (n,2n),(n,3n),(n,4n)
Calculated with evaporation model.

MT=18 Fission
Simultaneous evaluation with U-235,U-238,Pu-240,Pu-241 /8/
mainly based on the data of Carlson +/12/, Kaeppeler+/13/,
Fursov+/14/ and Szabo+/15,16/.

MT=102 Capture
Based on the data of Alpha by Weston+ /17/ up to 250 keV.
Calculated with the statistical model above 250 keV.
The gamm-ray strength function was determined so that
Sig-c =269 mb at 250 keV.

MF=4 Angular Distributions of Secondary Neutrons
MT=2 : Calculated with the optical model.
MT=51-61 : Isotropic in the center-of-mass system.
MT=16,17,18,37,91 : Isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17,18,37,91 : Evaporation spectrum.
MT=18 : Maxwellian fission spectrum.
Temperature estimated from Z**2/A values.
MT=455 : Beta-i from the data of Benedetti+ /3/.
ENDF/B-IV data for delayed neutron spectrum.

No background cross sections for unresolved resonances.

Above 30 keV, smooth cross sections given as follows.

MT=1,2,4,51-61,91,251 : Sig-t,Sig-e,Sig-in,mu-bar
Calculated with optical and statistical models.
Optical potential parameters obtained from systematics /8/
V = 40.25 - 0.05*En , Ws = 6.5 , Vso = 7.0 (MeV)
r = rso = 1.32 , rs = 1.38 (fm)
a = b = aso = 0.47 (fm)
Statistical model calculation with CASTHY code /9/.
Competing processes : fission,(n,2n),(n,3n),(n,4n).
Level fluctuation considered.
The level scheme taken from Ref. /10/.

No	Energy(keV)	Spin-Parity
g.s.	0	5/2 +
1	41.8	7/2 +
2	94.0	9/2 +
3	161.5	1/2 +
4	170.8	3/2 +
5	223.1	5/2 +
6	230.0	9/2 +
7	242.7	7/2 +
8	300	11/2 +
9	335	9/2 +
10	368	13/2 +
11	445	11/2 -

Continuum levels assumed above 490 keV.
The level density parameters : Gilbert and Cameron /11/.

MT=16,17,37 (n,2n),(n,3n),(n,4n)
Calculated with evaporation model.

MT=18 Fission
Simultaneous evaluation with U-235,U-238,Pu-240,Pu-241 /8/
mainly based on the data of Carlson +/12/, Kaeppeler+/13/,
Fursov+/14/ and Szabo+/15,16/.

MT=102 Capture
Based on the data of Alpha by Weston+ /17/ up to 250 keV.
Calculated with the statistical model above 250 keV.
The gamm-ray strength function was determined so that
Sig-c =269 mb at 250 keV.

MF=4 Angular Distributions of Secondary Neutrons
MT=2 : Calculated with the optical model.
MT=51-61 : Isotropic in the center-of-mass system.
MT=16,17,18,37,91 : Isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17,18,37,91 : Evaporation spectrum.
MT=18 : Maxwellian fission spectrum.
Temperature estimated from Z**2/A values.
MT=455 : Beta-i from the data of Benedetti+ /3/.
ENDF/B-IV data for delayed neutron spectrum.

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94-Pu-242 MAT number = 2946

94-Pu-242 NAIG Eval-Mar81 M.Kawai and T.Murata
Dist-Mar83 Rev1-Nov83

History
81-03 New evaluation was made by M. Kawai(NAIG) for resonance parameters /1/ and T. Murata(NAIG) for smooth cross sections.
83-03 MF=5 was added.
83-11 Q values and threshold energies and MF=4 were modified.

MF=1 General Information
MT=451 Descriptive data and dictionary
MT=452 Total number of neutrons per fission
Taken from ENDF/B-IV /2/.

MF=2 Resonance Parameters
MT=151
Resolved resonances for MLBW formula : 1.0E-5 eV - 1290 eV.
Res. energies : BNL-325 3rd edition /3/
Gam-n, Gam-g : Poortmans et al./4/,Auchampaugh et al./5/
Gam-f : Deduced from fission areas given by Berman et al. /6/ and Auchampaugh et al. /5/.
R-scat : 9.6 fm /3/
Average Gam-g : 24.2 milli-eV
Background cross section of 0.67 barns was added to elastic scattering cross section so as to reproduce the measured data of the elastic /7/ and total cross sections /8, 9/.

Calculated 2200-m/s cross sections and res. integrals

	2200-m/s	res. integ.
elastic	8.111 b	-
capture	18.42 b	1117 b
fission	0.1212b	6.35 b
total	26.65 b	-

MF=3 Neutron Cross Sections
MT=1 Total
* Below 6 keV : Experimental data of Young and Reeder /8/ were averaged over some keV intervals.
* Above 6 keV : The results of optical model calculation with the following parameters were adjusted in the energy region from 6 keV to 100 keV to connect smoothly with the total cross section below 6 keV.

V = 40.1 - 0.05*e , Ws = 6.5 + 0.15*e (MeV)
Vso= 7.0 (MeV)
r = rso = 1.32 , rs = 1.38 (fm)
a = as = aso = 0.47 (fm)

Optical and statistical model calculations were made with CASTHY code /10/.
MT=2 Elastic scattering
* Below inel. threshold : Obtained by subtracting the non-

elastic scattering from the total cross section.

* Above the threshold : Sum of the shape elastic scattering cross section calculated with optical model and the compound elastic scattering cross section obtained using the other cross sections and results of statistical model calculation.

MT=4 Total inelastic scattering

Obtained by subtracting the others from the total cross section.

MT=51-67,91 Partial and continuum inelastic scattering

The total inelastic scattering (MT=4) was multiplied by branching ratio to each level calculated with CASTHY code.

Level scheme (taken mainly from Ref. /11/)

No.	Energy (MeV)	Spin-Parity
g.s.	0.0	0 +
1	0.0445	2 +
2	0.1472	4 +
3	0.3059	6 +
4	0.5176	8 +
5	0.7787	10 +
6	0.7803	1 −
7	0.8323	3 −
8	0.865	1 −
9	0.927	5 −
10	0.956	0 +
11	0.995	2 +
12	1.019	3 −
13	1.064	4 −
14	1.087	12 +
15	1.102	2 +
16	1.122	5 −
17	1.152	2 −

Levels above 1.152 MeV were assumed to be continuum.

Level density parameters were determined to reproduce the resonance level spacing and level scheme staircase.

MT=16,17,37 (n,2n), (n,3n) and (n,4n)

Neutron emission cross section obtained by subtracting the elastic(MT=2), fission(MT=18) and capture(MT=102) from the total cross section(MT=1) were multiplied by branching ratio to reaction channel calculated with Pearlstein's method /12/.

MT=18 Fission

* Below 100 keV : Shape of fission cross section was determined on the basis of fission area data of Auchampaugh et al. /13/. Then normalized to the value of higher energy region.
* Above 100 keV : Fission ratios to U-235 fission cross section were obtained from the experimental data of Behrens et al. /14/ and multiplied by the U-235 fission cross section of JENDL-2 /15/.

MT=102 Capture

* Energy region from 6 keV to 210 keV : Determined from the experimental data of Hokenbury et al. /16/ and Wisshak and Kaeppeler /17/.
* Other energy region : Calculated results with CASTHY code

were normalized to the capture cross section in the region of 6 to 210 keV. Direct and collective captures were included in high energy region using the value for U-238 given by Kitazawa et al. /18/.

MT=251 Mu-bar

Calculated with optical model.

MF=4 Angular Distributions of Secondary Neutrons

MT=2 Taken from Pu-240 data /19/ calculated with optical model.

MT=51-67 Assumed to be isotropic in the center-of-mass system.

MT=16,17,18,37,91 Isotropic in the lab system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,17,37,91 Evalporation spectrum.

MT=18 Fission spectrum. Temperature was estimated Z**2/A systematics by Smith et al. /20/.

References

1) Nakagawa T. et al.: JAERI-M 9823, p.18 (1981).
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8) Young T.E. and Reeder S.D.: Nucl. Sci. Eng., 40, 389 (1970).
9) Young T.E. et al.: Nucl. Sci. Eng., 43, 341 (1971).
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11) Ellis Y.A. and Haese R.L.: Nucl. Data Sheets, 21, 615 (1977).
12) Pearlstein S.: Nucl. Sci. Eng., 23, 238 (1965).
13) Auchampaugh G.F. et al.: Nucl. Phys., A171, 31 (1971).
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15) Matsunobu H.: evaluation for JENDL-2 (1979).
16) Hockenbury R.W. et al.: 1975 Washington Conf., NBS-P-425, p.584 (1975).
17) Wisshak K. and Kaeppeler F.: Nucl. Sci. Eng., 66, 353 (1978), and Nucl. Sci. Eng., 69, 39 (1979).
18) Kitazawa H. et al.: Nucl. Phys., A307, 1 (1978).
19) Murata T.: evaluation for JENDL-1 (1976).
20) Smith A.B. et al.: ANL/NDM-50 (1979).

95-Am-241 MAT number = 2951

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 95-Am-241 JAERI        Eval-Mar82 Y.Kikuchi
JAERI-M82-096           Dist-Mar83 Rev1-Nov83
History
82-03 Complete reevaluation for JENDL-2 was made by Y.Kikuchi
      (JAERI). Details are given in Ref. /1/.
83-11 Comment was added.

MF=1  General Information
  MT=451   Comment and dictionary
  MT=452   Number of neutrons per fission
              Sum of Nu-p (MT=456) and Nu-d (MT=455).
  MT=454   Fission product yield data
              Taken from ENDF/B-IV, and renormalized to 2.0.
  MT=455   Delayed neutron data
              Estimated with semi-empirical formula by Tuttle /2/.
  MT=456   Number of prompt neutrons
              Experimental data of Jaffey and Lerner /3/.

MF=2,MT=151    Resonance parameters
  Resolved resonances for MLBW formula : 1.0E-5 - 150 eV
        Data of Derrien and Lucas /4/. Same as JENDL-1 /5/.
        5 negative resonances added.

  Unresolved resonances : 150 eV - 30 keV
        The evaluated Sig-t, Sig-c and Sig-f were fitted
        by adjusting S0, S1 and Gam-f.
        Fixed parameters: R=9.37 fm , Gam-g=43.77 MeV ,
                          Dobs=0.432 eV

  Calculated 2200-m/s cross sections and resonance integrals
                        2200 m/s value       Res. Int.
        elastic           11.26  b              -
        capture          600.4   b            1299  b
        fission            3.018 b            14.7  b
        total            614.7   b              -

MF=3  Neutron Cross Sections
  MT=1,2,4,51-66,91,251          Sig-t,Sig-el,Sig-in,Mu-bar
        Calculated with optical and statistical models.  Optical
        potential parameters were obtained by fitting the data of
        Phillips and Howe /6/ :
           V = 43.4 - 0.107*En                           (MeV)
           Ws= 6.95 - 0.339*En + 0.0531*En**2            (MeV)
           Wv= 0               , Vso = 7.0               (MeV)
           r = rso = 1.282     , rs = 1.29               (fm)
           a = aso = 0.60      , b  = 0.5                (fm)
        Statistical model calculation with CASTHY code /7/.
           Competing processes : fission,(n,2n),(n,3n),(n,4n).
           Level fluctuation considered.
        The level scheme taken from Ref. /8/
                    No          energy(keV)   spin-parity
```

g.s.	0	5/2 －
1	41.2	7/2 －
2	93.6	9/2 －
3	158.0	11/2 －
4	205.9	5/2 ＋
5	234.0	7/2 ＋
6	271.0	9/2 ＋
7	319.0	11/2 ＋
8	375.0	13/2 ＋
9	471.8	3/2 －
10	504.5	5/2 －
11	549.0	7/2 －
12	623.1	1/2 ＋
13	636.9	3/2 －
14	652.1	1/2 －
15	653.2	3/2 ＋
16	670.2	3/2 ＋

Continuum levels assumed above 732 keV.
The level density parameters : Gilbert and Cameron /9/.

MT=16,17,37 (n,2n),(n,3n),(n,4n)
Calculated with evaporation model.

MT=18 Fission
Evaluated on the basis of the following measured data :
Knitter and Budtz-Jorgensen /10/ : 150 eV － 10 keV
Wisshak and Kaeppeler /11/ : 10 － 300 keV
Behrens and Browne /12/ : 300 keV － 20 MeV
High sub-threshold cross-section values of Seeger + /13/
were abandoned.

MT=102 Capture
Evaluated on the basis of the measured data of Gayther and Thomas /14/ up to 350 keV.
Calculated with the statistical model above 350 keV.
The gamma-ray strength function was determined so that Sig-c = 830 mb at 350 keV.

MF=4 Angular Distributions of Secondary Neutrons
MT=2,51-66,91 Calculated with optical model.
MT=16,17,18,37 Isotropic in the lab system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17,37,91 Evaporation spectrum.
MT=18 Maxwellian fission spectrum. Temperature was estimated from Z**2/A values /14/.

References

1) Kikuchi Y. : JAERI-M82-096 (1982).
2) Tuttle R.J. : INDC(NDS)-107/G+Special , p.29 (1979).
3) Jaffey A.H. and Lerner J.L. : Nucl.Phys.,A145,1 (1970).
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5) Nakagawa T. and Igarasi S. : JAERI-M6636 (1976).
6) Phillips T.W. and Howe R.E. : Nucl.Sci.Eng.,69,375 (1979).
7) Igarasi S. : J.Nucl.Sci.Technol.,12,67 (1975).

8) Lederer C.M. and Shirley V.S. : Table of Isotopes , 7th Ed.
9) Gilbert A. and Cameron A.G.W. : Can.J.Phys.,43,1446 (1965).
10) Knitter H.H. and Budtz-Jorgensen C. : Atomkernenergie,33,205 (1979).
11) Wisshak K. and Kaeppeler F. : Nucl.Sci.Eng.,76,148 (1980).
12) Behrens J.W. and Browne J.C. : Nucl.Sci.Eng.,77,444 (1981).
13) Seeger P.A. et al. : Nucl.Phys.,A96,605 (1967).
14) Smith A.B. et al. : ANL/NDM-50 (1979).

95-Am-242 MAT number = 2952

95-Am-242 JAERI Eval-Mar80 T.Nakagawa,S.Igarasi
JAERI-M 8903 (1980) Dist-Mar83 Rev1-Nov83
History
80-03 New evaluation was made by T.Nakagawa and S.Igarasi (JAERI).
Details are given in Ref. /1/.
83-11 Comment was added.

MF=1 General Information
MT=451 Comment and dictionary
MT=452 Number of neutrons per fission
Sum of prompt and delayed neutrons.
MT=455 Delayed neutron data
Estimated from Tuttle's semi-empirical formula /2/.
MT=456 Number of prompt neutrons per fission
Semi-empirical formula by Howerton /3/
Nu-p= 3.268 + 0.172*E(MeV).

MF=2 Resonance Parameters
MT=151 No resonance parameters

2200m/s cross sections and calculated resonance integrals.

	2200 m/sec	Res. Integ.
capture	5500.0 b	391 b
fission	2100.0 b	1260 b
elastic	11.44 b	-
total	7611.44 b	-

MF=3 Neutron Cross Sections
MT=1,2,4,51-72,91,102,251 Sig-t,Sig-el,Sig-in,Sig-c,Mu-bar
Below 0.225 eV:
1/v form was assumed for fission and capture cross sections. Effective scattering radius of 9.54 fm was used for elastic scattering cross-section calculation.
Above 0.225 eV:
Optical and statistical models were used.
The spherical optical potential parameters (MeV, fm) :
V= 42.0 - 0.107*E , r= 1.282 , a= 0.6
Ws= 9.0 - 0.339*E + 0.0531*E**2 , r= 1.29 , a= 0.5
Vso= 7.0 , r= 1.282 , a= 0.6
Statistical model calculation with CASTHY code /4/.
Competing processes : fission,(n,2n) and (n,3n).
Level fluctuation considered. Gam-g = 0.05 eV and
D = 0.45 eV used for capture cross section calculation
The level scheme taken from the compilation by Ellis and Haese /5/.

No.	Energy(MeV)	Spin-Parity
g.s.	0.0	1 -
1	0.044	0 -
2	0.049	3 -
3	0.049	5 -
4	0.074	2 -

5	0.113	6	－
6	0.148	4	－
7	0.148	5	－
8	0.190	7	－
9	0.242	3	－
10	0.263	6	－
11	0.263	7	－
12	0.288	4	－
13	0.288	2	－
14	0.325	3	－
15	0.341	5	－
16	0.372	4	－
17	0.410	6	－
18	0.430	5	－
19	0.488	7	－
20	0.500	6	－
21	0.581	7	－
22	0.679	8	－

Overlapping levels are assumed above 0.681 MeV.
The level density parameters of Gilbert and Cameron /6/.

MT=16,17 (n,2n) and (n,3n) cross sections
Calculated with the evaporation model by Pearlstein /7/.

MT=18 Fission cross section
The empirical formula used for the Am-242m data was applied by shifting the energy origin to -49 keV.

MF=4 Angular Distributions of Secondary Neutrons

MT=2 Legendre coefficients are given by the optical and statistical model calculations.

MT=16,17,18,91 Isotropic distributions in the center-of-mass system.

MT=51-72 Isotropic distributions in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,17,91 Evaporation spectrum

MT=18 Fission spectrum estimated from Z**2/A systematics by Smith et al. /8/ by assuming E(Cf-252) = 2.13 MeV.

References

1) T. Nakagawa and S. Igarasi : JAERI-M 8903 (1980), in Japanese.
2) R.J. Tuttle : INDC(NDS)-107/G+Special, 29 (1979).
3) R.J. Howerton : Nucl. Sci. Eng., 62, 438 (1977).
4) S. Igarasi : J. Nucl. Sci. Technol., 12, 67(1975).
5) Y.A. Ellis and R.L. Haese : Nucl. Data Sheets 21, 615 (1977).
6) A. Gilbert and A.G.W. Cameron : Can. J. Phys., 43, 1446 (1965).
7) S. Pearlstein : Nucl. Sci. Eng., 23, 238 (1965).
8) A.B. Smith et al. : ANL/NDM-50 (1979).

95-Am-242m MAT number = 2953

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 95-Am-242mJAERI         Eval-Mar80 T.Nakagawa,S.Igarasi
JAERI-M 8903 (1980)      Dist-Mar83 Rev1-Feb84
History
80-03 New evaluation was mode by T.Nakagawa and S.Igarasi (JAERI).
      Details are given in Ref. /1/.
83-11 Comment was added.
84-02 Cross sections were corrected around 3.5 eV.

MF=1  General Information
  MT=451  Comment and dictionary
  MT=452  Number of neutrons per fission
           Sum of prompt and delayed neutrons.
  MT=455  Delayed neutron data
           Estimated from Tuttle's semi-empirical formula /2/.
  MT=456  Number of prompt neutrons per fission
           Based on the relative measurements /3,4/ to the U-235
           data, and on the empirical formula by Howerton /5/.
           The U-235 data of JENDL-2 were used.
             Nu-p= 3.268 + 0.172*E(MeV).

MF=2  Resonance Parameters
  MT=151  Resonance parameters : below 3.5 eV.  Single level B-W.
           Parameters by Bowman et al. /6/ were adopted.
             Average Gam-g = 0.05 eV , level spacing = 0.45 eV ,
             s-wave neutron strength function = 1.4E-4.

     Calculated 2200m/s cross sections and resonance integrals.
                         2200 m/sec   Res. Integ.
             capture      1342.  b      207 b
             fission      6620.  b     1530 b
             elastic         6.698 b      -
             total        7969.  b        -

MF=3  Neutron Cross Sections
  The resonance region:
    Null value is given for the total, elastic scattering, capture
    and fission cross sections.
  From 3.5 eV to 1.5 keV:
    The fission cross section was evaluated by fitting spline
    functions to the experimental data by Bowman et al. /6/ and
    Seeger et al. /7/.  The capture and elastic scattering cross
    sections were estimated by assuming that the cross sections
    have the same structure as that of the fission cross section.
    Calculations were made by using the radius parameters of 9.45
    fm, average fission and capture widths of 0.385 eV and 0.05 eV
    respectively.
  Above 1.5 keV:
  MT=1,2,4,51-73,91,102,251    Sig t,Sig-el,Sig-in,Sig-c,Mu-bar
          Calculated with optical and statistical models above
          1.5 keV.
           The spherical optical potential parameters (MeV, fm) :
```

V= 42.0 - 0.107*E , r= 1.282 , a= 0.6
Ws= 9.0 - 0.339*E + 0.0531*E**2 , r= 1.29 , a= 0.5
Vso= 7.0 , r= 1.282 , a= 0.6

Statistical model calculation with CASTHY code /8/.
Competing processes : fission,(n,2n) and (n,3n).
Level fluctuation considered. Gam-g = 0.05 eV and D = 0.45 eV used for capture cross section calculation.

The level scheme taken from the compilation by Ellis and Haese /9/, with shifted energy origin at -49 keV.

No.	Energy(MeV)	Spin-Parity
g.s.	-0.049	1 -
1	-0.05	0 -
2	0.0	3 -
3	0.0 (meta stable)	5 -
4	0.025	2 -
5	0.064	6 -
6	0.099	4 -
7	0.099	5 -
8	0.141	7 -
9	0.193	3 -
10	0.214	6 -
11	0.214	7 -
12	0.239	4 -
13	0.239	2 -
14	0.276	3 -
15	0.292	5 -
16	0.323	4 -
17	0.361	6 -
18	0.381	5 -
19	0.439	7 -
20	0.451	6 -
21	0.532	7 -
22	0.630	8 -

Overlapping levels are assumed above 0.632 MeV.
The level density parameters of Gilbert and Cameron /8/.

MT=16,17 (n,2n) and (n,3n) cross sections
Calculated with the evaporation model by Pearlstein /9/.

MT=18 Fission cross section
Smooth cross section above 1.5 keV was obtained by fitting a semi-empirical formula to the averaged experimental data.

MF=4 Angular Distributions of Secondary Neutrons
MT=2 Legendre coefficients are given by the optical and statistical model calculations.
MT=16,17,18,91 Isotropic distributions in the laboratory system.
MT=51-72 Isotropic distributions in the center-of-mass system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17,91 Evaporation spectrum
MT=18 Fission spectrum estimated from Z**2/A systematics by Smith et al. /10/ by assuming E(Cf-252) = 2.13 MeV.

References

1) T. Nakagawa and S. Igarasi : JAERI-M 8903 (1980), in Japanese.
2) R.J. Tuttle : INDC(NDS)-107/G+Special, 29 (1979).

3) A.H. Jaffey and J.L. Lerner : Nucl. Phys., A145, 1 (1970).
4) N.I. Kroshkin and Yu.S. Zamyatnin : Atom. Energ., 29, 95 (1970), Sov. Atom. Energy, 29, 790 (1970).
5) R.J. Howerton : Nucl. Sci. Eng. 62, 438 (1977).
6) C.D. Bowman et al. : Phys. Rev., 166, 1216 (1968).
7) P.A. Seeger et al. : Nucl. Phys., A96, 605 (1967).
8) S. Igarasi : J. Nucl. Sci. Technol., 12, 67 (1975).
9) Y.A. Ellis and R.L. Haese : Nucl. Data Sheets 21, 615 (1977).
10) A. Gilbert and A.G.W. Cameron : Can. J. Phys., 43, 1446 (1965).
11) S. Pearlstein : Nucl. Sci. Eng., 23, 238 (1965).
12) A.B. Smith et al. : ANL/NDM-50 (1979).

95-Am-243 MAT number = 2954

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95-Am-243 JAERI          Eval-Mar82 Y.Kikuchi
JAERI-M82-096            Dist-Mar83 Rev1-Nov83
History
77-03 New evaluation was made by S.Igarasi and T.Nakagawa (JAERI).
      Details are given in Ref. /1/.
82-03 Complete reevaluation for JENDL-2 was made by Y.Kikuchi
      (JAERI). Details are given in Ref. /2/.
83-11 Comment was added.

MF=1  General Information
  MT=451  Comment and dictionary
  MT=452  Number of neutrons per fission
            Sum of Nu-p (MT=456) and Nu-d (MT=455).
  MT=454  Fission product yield data
            Taken from ENDF/B-IV and renormalized to 2.0.
  MT=455  Delayed neutron data
            Estimated with semi-empirical formula by Tuttle /3/.
  MT=456  Number of prompt neutrons
            Estimated from systematics. Same as previous evalua-
            tion /1/.

MF=2,MT=151   Resonance parameters
  Resolved resonances for MLBW formula : 1.0E-5 - 215 eV.
        Based on the data of Simpson + /4/.  The results are the
        same as the previous evaluation /1/ except fission widths
        which were determined to reproduce the fission cross
        section of 0.225 barns at 0.0253 eV.  The neutron width of
        a negative resonance was adjusted to the thermal capture
        and total cross sections.

  Unresolved resonances : 215 eV - 30 keV
        Obtained from optical model calculation:
          S0=0.93E-4, S1=2.44E-4, R=9.34 fm
        Estimated from resolved resonances:
          Dobs=0.67 eV, Gam-g=0.039 eV, Gam-f=0.00012 eV

  Calculated 2200-m/s cross sections and resonance integrals
                      2200 m/s value      Res. Int.
        elastic          7.528 b             -
        capture          78.50 b           1820  b
        fission          0.2281 b          11.4  b
        total            86.26 b             -

MF=3  Neutron Cross Sections
  MT=1,2,4,51-59,91,102,251   Sig-t,Sig-el,Sig-in,Sig-c,Mu-bar
        Calculated with optical and statistical models.  Optical
        potential parameters were obtained /1/ by fitting the data
        of Phillips and Howe /5/ for Am-241:
          V = 43.4 - 0.107*En                         (MeV)
          Ws= 6.95 - 0.339*En + 0.0531*En**2          (MeV)
          Wv= 0              , Vso = 7.0              (MeV)
```

r = rso = 1.282 , rs = 1.29 (fm)
a = aso = 0.60 , b = 0.5 (fm)

Statistical model calculation with CASTHY code /6/.
Competing processes : fission, (n,2n), (n,3n), (n,4n).
Level fluctuation considered.

The level scheme taken from Ref. /7/

No	Energy (keV)	Spin-Parity
g.s.	0	5/2 -
1	42.2	7/2 -
2	84.0	5/2 +
3	96.4	9/2 -
4	109.3	7/2 +
5	143.5	9/2 +
6	189.3	11/2 +
7	267.0	3/2 -
8	298.0	5/2 -
9	344.0	7/2 -

Continuum levels assumed above 383 keV.

The level density parameters : Gilbert and Cameron /9/.
Gamma-ray strength function deduced from resonance parameters

MT=16,17,37 (n,2n), (n,3n), (n,4n)
Calculated with evaporation model.

MT=18 Fission
Evaluated on the basis of the measured data of Behrens and Browne /9/ above 200 keV. The curve was smoothly connected to the unresolved resonance region below 200 keV. High sub-threshold cross-section values of Seeger + /10/ were abandoned.

MF=4 Angular Distributions of Secondary Neutrons
MT=2,51-66,91 Calculated with optical model.
MT=16,17,18,37 Isotropic in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons
MT=16,17,37,91 Evaporation spectrum.
MT=18 Maxwellian fission spectrum. Temperature was estimated from the Z**2/A systematics of Smith + /11/.

References

1) Igarasi S. and Nakagawa T. : JAERI-M7174 (1977).
2) Kikuchi Y. : JAERI-M82-096 (1982).
3) Tuttle R.J. : INDC(NDS)-107/G+Special , p.29 (1979).
4) Simpson O.D. et al. : Nucl.Sci.Eng.,55,273(1974)
5) Phillips T.W. and Howe R.E. : Nucl.Sci.Eng.,69,375 (1979).
6) Igarasi S. : J.Nucl.Sci.Technol.,12,67 (1975).
7) Lederer C.M. and Shirley V.S. : Table of Isotopes , 7th Ed.
8) Gilbert A. and Cameron A.G.W. : Can.J.Phys.,43,1446 (1965).
9) Behrens J.W. and Browne J.C. : Nucl.Sci.Eng.,77,444 (1981).
10) Seeger P.A. et al. : Nucl.Phys.,A96,605 (1967).
11) Smith A.B. : ANL/NDM-50 (1979).

96-Cm-242 MAT number = 2961

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 96-Cm-242 JAERI        Eval-Mar79 S.Igarasi,T.Nakagawa
JAERI-M 8342 (1979)    Dist-Mar83 Rev1-Nov83
History
79-03 Evaluation was made by S.Igarasi and T.Nakagawa (JAERI) /1/.
83-11 Comment was added.

MF=1  General Information
  MT=451  Descriptive data
  MT=452  Number of neutrons per fission
           Based on the empirical formula by Howerton /2/
             Nu-bar=3.50 + 0.17*E(MeV)
  MT=455  Delayed neutron data
           Estimated from the systematics by Tuttle /3/.

MF=2  Resonance Parameters
  MT=151  Resonance parameters : Below 275 eV.  Multi-level B-W.
           Parameters by Artamonov et al. /4/ plus one negative
           level at -3.45 eV.  No fission width is given for all
           the resonances.  Fission cross section in this region
           is assumed to be 1/v normalized to 5.0 barns at 0.0253
           eV.
           Average Gam-g = 0.04 eV
           Effective scattering radius = 9.38 fm

      Calculated 2200m/s cross sections and resonance integrals.
                             2200 m/sec      Res. Integ.
             capture          15.92 b         116    b
             fission           5.00 b          11.1 b
             elastic          11.61 b           -
             total            32.53 b           -

MF=3  Neutron Cross Sections
  MT=1,2,4,51-53,91,102,251    Sig-t,Sig-el,Sig-in,Sig-c,Mu-bar
          Calculated with optical and statistical models.
          The spherical optical potential parameters (MeV, fm) :
           V   = 43.4 - 0.107*E ,                  r= 1.282, a= 0.6 ,
           Ws  = 6.95 - 0.339*E + 0.0531*E**2 ,  r= 1.29 , a= 0.5 ,
           Vso= 7.0 ,                              r= 1.282, a= 0.6
          This potential reproduces well the total cross section
          of Am-241 by Phillips and Howe /5/
          Statistical model calculation with CASTHY code /6/.
           Competing processes : fission,(n,2n) and (n,3n).
           Level fluctuation considered.  Gam-g = 0.036 eV and
           D = 16 eV used for capture cross section calculation.
          The level scheme taken from the compilation by Ellis
          and Haese /7/:
             No.      Energy(MeV)          Spin-Parity
             g.s.       0.0                   0 +
              1         0.0422                2 +
              2         0.138                 4 +
              3         0.284                 6 +
```

Overlapping levels are assumed above 0.35 MeV.
The level density parameters of Gilbert and Cameron /8/.

MT=16,17 (n,2n) and (n,3n) cross sections
Calculated with the evaporation model by Pearlstein /9/.

MT=18 Fission cross section
Determined from the evaluated fission cross section of Cm-244 /10/ and the empirical formula on the fission-cross-section systematics around 4 MeV by Behrens and Howerton /11/.

MF=4 Angular Distributions of Secondary Neutrons

MT=2 Calculated with the optical and statistical models. Legendre coefficients are given.

MT=51-53
Isotropic distributions in the center-of-mass system.

MT=16,17,18,91
Isotropic distributions in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,17,91 Evaporation spectrum.

MT=18 Estimated from Z**2/A systematics by Smith et al. /12/, assuming E(Cf-252) = 2.13 MeV.

References

1) S. Igarasi and T. Nakagawa: JAERI-M 8342 (1979), in Japanese.
2) R.J. Howerton : Nucl. Sci. Eng. 62, 438 (1977).
3) R.J. Tuttle: INDC(NDS)-107/G+Special, 29 (1979).
4) V.S. Artamonov et al. : Proc. of 4th All Union Conf. on Neutron Physics, Kiev (1977), Vol. 2, 257.
5) T.W. Phillips and R.E. Howe : Nucl. Sci. Eng. 69, 375 (1979).
6) S. Igarasi : J.Nucl.Sci.Technol. 12, 67 (1975).
7) Y.A. Ellis and R.L. Haese : Nucl. Data Sheets 21, 615 (1977).
8) A. Gilbert and A.G.W. Cameron : Can. J. Phys. 43, 1446 (1965).
9) S. Pearlstein : J. Nucl. Energy 27, 81 (1973).
10) S. Igarasi and T. Nakagawa : JAERI-M 7175 (1977).
11) J.W. Behrens and R.J. Howerton : Nucl. Sci. Eng. 65, 464 (1978).
12) A.B. Smith et al. : ANL/NDM-50 (1979).

96-Cm-243 MAT number = 2962

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96-Cm-243 JAERI        Eval-Mar81 T.Nakagawa,S.Igarasi
JAERI-M 9601 (1981)    Dist-Mar83 Rev1-Apr84
History
81-03 Evaluation was made by T.Nakagawa and S.Igarasi (JAERI) /1/.
83-11 Comment was added.
84-04 The capture and total cross sections were corrected in the
      energy range from 27 eV to 1 keV.

MF=1  General Information
  MT=451  Descriptive data
  MT=452  Number of prompt neutrons per fission
            Based on the experimental data at thermal energy by
            Jaffey and Lerner /2/, and Zhuravlev et al. /3/, and
            on the empirical formula by Howerton /4/.
              Nu-bar= 3.43 + 0.178*E(MeV)
  MT=455  Delayed neutron data
            Estimated from the systematics by Tuttle /5/.

MF=2  Resonance Parameters
  MT=151  Resonance parameters : Below 27 eV. Reich-Moore formula.
            Parameters by Berreth et al. /6/ plus one negative
            level at -0.7 eV.
             Average Gam-g = 0.04 eV, level spacing = 2.2 eV,
                     Gam-n = 0.00041 eV
             S-wave strength function = 2.20E-4
             Effective scattering radius = 9.81 fm

      Calculated 2200m/s cross sections and resonance integrals.
                          2200 m/sec     Res. Integ.
            capture        131.3  b        436 b
            fission        612.3  b       1750 b
            elastic          9.658 b         -
            total          753.3  b          -

MF=3  Neutron Cross Sections
    Null value is given for the total, elastic scattering, capture
    and fission cross sections in the resonance region.  The
    capture and elastic scattering cross sections from 27 eV to 1
    keV were estimated by assuming that the cross sections have
    the same structure as that of the fission cross section which
    was made by averaging the experimental data by Silbert /7/
    with Gaussian weight factor.  Calculations were made by using
    the radius parameter of 9.81 fm, average fission and capture
    widths of 0.37 eV and 0.04 eV, respectively.
  MT=1,2,4,51-64,91,102,251    Sig-t,Sig-el,Sig-in,Sig-c,Mu-bar
           Calculated with optical and statistical models above
           1 keV.
           The spherical optical potential parameters (MeV, fm) :
            V= 42.0 - 0.107*E ,                 r= 1.282, a= 0.6 ,
            Ws = 9.0 - 0.339*E + 0.0531*E**2 ,  r= 1.29 , a= 0.5 ,
            Vso = 7.0 ,                         r= 1.282, a= 0.6
```

Statistical model calculation with CASTHY code /8/.
Competing processes : fission,(n,2n),(n,3n) and (n,4n).
Level fluctuation considered. Gam-g = 0.04 eV and
D = 2.2 eV used for capture cross section calculation.
The level scheme taken from the compilation by Ellis /9/

No.	Energy(MeV)	Spin-Parity
g.s.	0.0	5/2 +
1	0.042	7/2 +
2	0.087	1/2 +
3	0.094	9/2 +
4	0.094	3/2 +
5	0.133	7/2 +
6	0.153	11/2 +
7	0.164	9/2 +
8	0.219	13/2 +
9	0.228	11/2 +
10	0.260	9/2 +
11	0.530	15/2 −
12	0.729	1/2 −
13	0.769	3/2 −
14	0.798	5/2 +

Overlapping levels are assumed above 0.82 MeV.
The level density parameters of Gilbert and Cameron /10/ were used.

MT=16,17,37 (n,2n),(n,3n) and (n,4n) cross sections
Calculated with the evaporation model by Pearlstein/11/.

MT=18 Fission cross section
Smooth cross section above 1 keV was obtained by fitting a semi-empirical formula to the averaged experimental data.

MF=4 Angular Distributions of Secondary Neutrons

MT=2,51-64,91
Legendre coefficients calculated with CASTHY /8/.

MT=16,17,18,37
Isotropic distributions in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,17,37,91 Evaporation Spectrum.

MT=18 Fission spectrum estimated from Z**2/A systematics by Smith et al. /12/ by assuming E(Cf-252) = 2.13 MeV.

References

1) T. Nakagawa and S. Igarasi: JAERI-M 9601 (1981).
2) A.H. Jaffey and J.L. Lerner : Nucl. Phys., A145, 1, (1970).
3) K.D. Zhuravlev et al. : Proc. 2nd Nat. Soviet Conf. on Neut. Phys., Vol.4, 57 (1974).
4) R.J. Howerton : Nucl. Sci. Eng., 62, 438 (1977).
5) R.J. Tuttle: INDC(NDS)-107/G+Special, 29 (1979).
6) J.R. Berreth et al. : Nucl. Sci. Eng., 49, 145 (1972).
7) M.G. Silbert : LA-6239 (1976).
8) S. Igarasi : J. Nucl. Sci. Technol., 12, 67 (1975).
9) Y.A. Ellis : Nucl. Data Sheets, 19, 103 (1976).
10) A. Gilbert and A.G.W. Cameron : Can. J. Phys., 43, 1446 (1965).
11) S. Pearlstein : J. Nucl. Energy 27, 81 (1973).

12) A.B. Smith et al. : ANL/NDM-50 (1979).

96-Cm-244 MAT number = 2963

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 96-Cm-244 JAERI        Eval-Mar77 S.Igarasi,T.Nakagawa
JAERI-M 7175 (1977)     Dist-Mar83 Rev1-Nov83
History
77-03 Evaluation was made by S.Igarasi and T.Nakagawa (JAERI) /1/.
83-11 Comment was added.

MF=1  General Information
  MT=451  Descriptive data
  MT=452  Number of neutrons per fission
            Determined from semi-empirical formula by Howerton /2/.
              Nu-bar=3.24 + 0.184*E(MeV)
  MT=455  Delayed neutron data
            Estimated from semi-empirical formula by Tuttle /3/.

MF=2  Resonance Parameters
  MT=151  Resonance parameters : Below 1 keV. Multi-level B-W.
            Above 20 eV, parameters by Moore and Keyworth /4/ were
            adopted assuming neutron width of 0.2 eV for 646.9,
            759.7, 914.0 and 971.5-eV levels, and below 20 eV,
            evaluation by Benjamin et al. /5/.  For fission and
            capture cross sections, background cross sections
            proportional to 1/v were added.

     Calculated 2200m/s cross sections and resonance integrals.
                              2200 m/sec      Res. Integ.
             capture           14.41  b        594    b
             fission            1.180 b         18.4  b
             elastic            6.650 b          -
             total             22.24  b          -

MF=3  Neutron Cross Sections
  MT=1,2,4,51-58,91,102,251    Sig-t,Sig-el,Sig-in,Sig-c,Mu-bar
          Calculated with optical and statistical models above
          1 keV.
          The spherical optical potential parameters (MeV, fm) :
           V= 40.5 + 0.5*E ,        r= 1.32 , a= 0.47
           Ws= 8.2 + 0.5*E**0.5 ,   r= 1.32 , a= 0.47
           Vso= 7.0 ,               r= 1.32 , a= 0.47
          Statistical model calculation with CASTHY code /6/.
           Competing processes : fission,(n,2n) and (n,3n).
           Level fluctuation considered.  Gam-g = 0.037 eV and
           D = 14 eV used for capture cross section calculation.
          The level scheme taken from the compilation by Schmorak
          /7/
             No.      Energy(MeV)          Spin-Parity
            g.s.        0.0                  0  +
              1         0.0429               2  +
              2         0.1423               4  +
              3         0.296                6  +
              4         0.502                8  +
              5         0.970                3  -
```

6	1.038	2	+
7	1.042	6	+
8	1.187	3	−

Overlapping levels are assumed above 1.2 MeV.
The level density parameters of Gilbert and Cameron /8/.

MT=16,17 (n,2n) and (n,3n) cross sections
Calculated with the evaporation model by Pearlstein /9/.

MT=18 Fission cross section
Smooth cross section above 1 keV was obtained by fitting a semi-empirical formula to the averaged experimental data.

MF=4 Angular Distributions of Secondary Neutrons

MT=2 Legendre coefficients are given by the optical and statistical model calculations.

MT=51-58 Isotropic distributions in the center-of-mass system.

MT=16,17,18,91
Isotropic distributions in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,17,91 Evaporation spectrum

MT=18 Fission spectrum estimated from Z**2/A systematics by Smith et al. /10/ by assuming E(Cf-252) = 2.13 MeV.

References

1) S. Igarasi and T. Nakagawa: JAERI-M 7175 (1977), in Japanese.
2) R.J. Howerton : Nucl. Sci. Eng., 62, 438 (1977).
3) R.J. Tuttle: INDC(NDS)-107/G+Special, 29 (1979).
4) M.S. Moore and G.A. Keyworth : Phys. Rev., C3, 1656 (1971).
5) R.W. Benjamin et al. : Nucl. Sci. Eng. 47, 203 (1972).
6) S. Igarasi : J. Nucl. Sci. Technol., 12, 67 (1975).
7) M.R. Schmorak : Nucl. Data Sheets, 17, 391 (1976).
8) A. Gilbert and A.G.W. Cameron : Can. J. Phys., 43, 1446 (1965).
9) S. Pearlstein : Nucl. Sci. Eng., 23, 238 (1965).
10) A.B. Smith et al. : ANL-NDM-50 (1979).

96-Cm-245   MAT number = 2964

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 96-Cm-245 JAERI         Eval-Mar78 S.Igarasi,T.Nakagawa
JAERI-M 7733 (1978)     Dist-Mar83 Rev1-Nov83
History
78-03 Evaluation was made by S.Igarasi and T.Nakagawa (JAERI) /1/.
83-11 Comment was added.

MF=1  General Information
  MT=451  Descriptive data
  MT=452  Number of neutrons per fission
           Based on the experimental data at thermal energy by
           Jaffey and Lerner /2/, Kroshkin and Zamyatnin /3/ and
           Zhuravlev et al. /4/.  Energy dependent term was
           derived from the neutron separation energy.
             Nu-bar = 3.83 + 0.18*E(MeV).
  MT=455  Delayed neutron data
           Estimated from the systematics proposed by Tuttle /5/.

MF=2  Resonance Parameters
  MT=151  Resonance parameters : Below 60 eV, Single-level B-W.
           Parameters by Moore and Keyworth /6/ were adopted above
           20 eV, and those by Browne et al. /7/ below 20 eV with
           a little modification of a negative resonance so that
           the thermal cross section could be in agreement with
           the experimental data.  The differences between Reich-
           Moore and single-level B-W formulas are treated as the
           background cross sections.
             Average Gam-g = 0.04 eV , Level spacing = 1.8 eV,
             S-wave neutron strength function = 1.0 E-4

     Calculated 2200m/s cross sections and resonance integrals.
                        2200 m/sec        Res. Integ.
             capture     346.4  b           108 b
             fission    2001.   b           800 b
             elastic      11.59 b            -
             total      2359.   b            -

MF=3  Neutron Cross Sections
  MT=1,2,4,51-66,91,102,251    Sig-t,Sig-el,Sig-in,Sig-c,Mu-bar
          Calculated with optical and statistical models above 60
          eV.
          The spherical optical potential parameters (MeV, fm) :
           V=  40.5 + 0.5*E ,          r= 1.32 , a= 0.47
           Ws=  8.2 + 0.5*E**0.5 ,  r= 1.32 , a= 0.47
           Vso= 7.0 ,                  r= 1.32 , a= 0.47
          Statistical model calculation with CASTHY code /8/.
           Competing processes : fission,(n,2n) and (n,3n).
           Level fluctuation considered.  Gam-g = 0.04 eV and
           D = 14 eV used for capture cross section calculation.
          The level scheme taken from the compilation by Ellis /9/
              No.      Energy(MeV)         Spin-Parity
             g.s.        0.0                 7/2 +
```

2 of Curium-245

1	0.05473	9/2 +
2	0.1214	11/2 +
3	0.1971	13/2 +
4	0.25285	5/2 +
5	0.29584	7/2 +
6	0.3505	9/2 +
7	0.35595	1/2 +
8	0.3615	3/2 +
9	0.38795	9/2 −
10	0.4170	11/2 +
11	0.4188	5/2 +
12	0.431	7/2 +
13	0.4428	11/2 −
14	0.498	13/2 +
15	0.5087	13/2 −
16	0.532	9/2 +

Overlapping levels are assumed above 0.55 MeV.
The level density parameters of Gilbert and Cameron /10/ were used.

MT=16,17 (n,2n) and (n,3n) cross sections
Calculated with the evaporation model by Pearlstein /11/

MT=18 Fission cross section
Smooth cross section above 60 eV was obtained by fitting a semi-empirical formula to the averaged experimental data.

MF=4 Angular Distributions of Secondary Neutrons

MT=2 Legendre coefficients are given by the optical and statistical model calculations.

MT=51-66 Isotropic distributions in the center-of-mass system.

MT=16,17,18,91
Isotropic distributions in the laboratory system.

MF=5 Energy Distributions of Secondary Neutrons

MT=16,17,91 Evaporation spectrum

MT=18 Fission spectrum estimated from $Z^{4/2}/A$ systematics by Smith et al./12/ by assuming E(Cf-252) = 2.13 MeV.

References

1) S. Igarasi and T. Nakagawa: JAERI-M 7733 (1978), in Japanese.
2) A.H. Jaffey and J.L. Lerner : Nucl. Phys., A145, 1 (1970).
3) N.I. Kroshkin and Yu.S. Zamyatnin : Atom. Energ., 29, 95 (1970), also Sov. Atom. Energy, 29, 790 (1970).
4) K.D. Zhuravlev et al. : Proc. Conf. on Neutron Physics, Kiev, Vol.4, 57 (1973).
5) R.J. Tuttle: Proc. Consultants' Meeting on Delayed Neutron Properties, 1973 Vienna, 29, also INDC(NDS)-107/G+Special (1979).
6) M.S. Moore and G.A. Keyworth : Phys. Rev., C3, 1656 (1971).
7) J.C. Browne et al. : Nucl. Sci. Eng., 65, 166 (1978).
8) S. Igarasi : J. Nucl. Sci. Technol., 12, 67 (1975).
9) Y.A. Ellis : Nucl. Data Sheets, 19, 143 (1976).
10) A. Gilbert and A.G.W. Cameron : Can. J. Phys., 43, 1446 (1965).
11) S. Pearlstein : Nucl. Sci. Eng., 23, 238 (1965).
12) A.B. Smith et al. : ANL/NDM-50 (1979).

Appendix 1

Thermal and Fast Neutron Cross Sections

The 2200-m/sec and 14-MeV cross sections, resonance integrals, and Maxwellian and fission spectrum average cross sections were calculated from JENDL-2 (Rev1) pointwise data files. Details of the calculation are described in the text. .

Nuclide	MAT	Reaction	Thermal cross sections			Fast cross sections	
			2200-m/s	Maxw.Avg.	Res.Integ	14-MeV	Fiss.Avg.
1-H - 1	2011	total	20.77 b	20.74 b		691.9 mb	3.926 b
		elastic	20.44 b	20.44 b		691.9 mb	3.926 b
		capture	331.9 mb	294.1 mb	149.0 mb	29.83 μb	39.27 μb
1-H - 2	2012	total	3.390 b	3.390 b		801.4 mb	2.537 b
		elastic	3.389 b	3.390 b		624.2 mb	2.532 b
		(n,2n)	Threshold energy =	3.339 MeV		177.1 mb	5.276 mb
		capture	550.0 μb	487.3 μb	286.2 μb	9.521 μb	7.076 μb
3-Li- 6	2031	total	937.0 b	830.5 b		1.247 b	1.908 b
		elastic	735.9 mb	736.2 mb		709.9 mb	1.404 b
		inelastic	Threshold energy =	1.718 MeV		434.6 mb	149.0 mb
		(n,2n'α)	Threshold energy =	4.318 MeV		69.00 mb	176.2 μb
		capture	28.00 mb	24.81 mb	12.60 mb	1.190 μb	4.257 μb
		(n,p)	Threshold energy =	3.192 MeV		7.200 mb	4.184 mb
		(n,α)	936.2 b	829.7 b	423.0 b	25.74 mb	350.3 mb
3-Li- 7	2032	total	1.094 b	1.091 b		1.470 b	1.846 b
		elastic	1.049 b	1.049 b		999.7 mb	1.643 b
		inelastic	Threshold energy =	0.546 MeV		404.8 mb	203.0 mb
		(n,2n)	Threshold energy =	8.300 MeV		22.00 mb	28.36 μb
		(n,2n'α)	Threshold energy =	10.000 MeV		33.00 mb	10.09 μb
		capture	45.40 mb	40.24 mb	20.42 mb	1.930 μb	6.903 μb
		(n,d)	Threshold energy =	8.880 MeV		10.00 mb	5.207 μb
4-Be- 9	2041	total	6.008 b	6.008 b		1.502 b	2.801 b
		elastic	6.000 b	6.000 b		961.7 mb	2.639 b
		(n,2n)	Threshold energy =	1.850 MeV		513.9 mb	125.4 mb
		capture	7.600 mb	6.735 mb	3.419 mb	323.0 nb	1.156 μb
		(n,p)	Threshold energy =	14.260 MeV			31.94 nb

Nuclide	MAT	Reaction	Thermal cross sections			Fast cross sections	
			2200-m/s	Maxw.Avg.	Res.Integ	14-MeV	Fiss.Avg.
4-Be- 9	2041	(n,d)	Threshold energy = 16.300 MeV				19.88 nb
		(n,t)	Threshold energy = 11.610 MeV			15.47 mb	2.722 μb
		(n,α)	Threshold energy = 0.670 MeV			10.81 mb	36.92 mb
5-B - 10	2051	total	3839. b	3403. b		1.450 b	2.611 b
		elastic	2.173 b	2.173 b		952.7 mb	2.101 b
		inelastic	Threshold energy = 0.789 MeV			285.4 mb	33.65 mb
		(n,2n)	Threshold energy = 9.285 MeV			26.44 μb	316.3 nb
		capture	502.9 mb	445.7 mb	226.2 mb	21.38 μb	76.47 μb
		(n,p)	565.9 μb	501.5 μb	64.39 mb	32.80 mb	8.222 mb
		(n,d)	Threshold energy = 4.800 MeV			29.97 mb	1.134 mb
		(n,α)	3836. b	3400. b	1722. b	60.22 mb	433.7 mb
		(n,t 2α)	565.9 μb	501.5 μb	234.1 mb	88.65 mb	32.63 mb
6-C - 12	2061	total	4.702 b	4.702 b		1.270 b	2.370 b
		elastic	4.699 b	4.699 b		737.8 mb	2.358 b
		inelastic	Threshold energy = 4.800 MeV			450.2 mb	10.86 mb
		capture	3.400 mb	3.013 mb	1.530 mb	144.5 nb	516.9 nb
		(n,α)	Threshold energy = 6.320 MeV			81.51 mb	1.206 mb
9-F - 19	2091	total	3.651 b	3.652 b		1.768 b	3.537 b
		elastic	3.641 b	3.641 b		848.9 mb	2.191 b
		inelastic	Threshold energy = 0.116 MeV			496.3 mb	1.327 b
		(n,2n)	Threshold energy = 10.990 MeV			42.94 mb	8.615 μb
		(n,n' α)	Threshold energy = 4.227 MeV			216.2 mb	2.009 mb
		(n,n' p)	Threshold energy = 8.418 MeV			72.80 mb	37.46 μb
		capture	9.600 mb	8.519 mb	19.59 mb	25.66 μb	213.4 μb
		(n,p)	Threshold energy = 4.251 MeV			14.66 mb	1.163 mb
		(n,d)	Threshold energy = 6.075 MeV			39.50 mb	317.7 μb
		(n,t)	Threshold energy = 7.957 MeV			15.00 mb	28.55 μb

Nuclide	MAT	Reaction	Thermal cross sections			Fast cross sections	
			2200-m/s	Maxw.Avg.	Res.Integ	14-MeV	Fiss.Avg.
9-F - 19	2091	(n,α)	Threshold energy =	1.603 MeV		21.34 mb	14.65 mb
11-Na- 23	2111	total	3.700 b	3.673 b		1.690 b	3.132 b
		elastic	3.170 b	3.189 b		918.0 mb	2.581 b
		inelastic	Threshold energy =	0.458 MeV		565.9 mb	549.2 mb
		(n,2n)	Threshold energy =	12.960 MeV		18.00 mb	2.144 μb
		capture	529.9 mb	469.0 mb	329.0 mb	213.9 μb	274.5 μb
		(n,p)	Threshold energy =	3.784 MeV		44.70 mb	1.205 mb
		(n,α)	Threshold energy =	4.035 MeV		142.9 mb	564.7 μb
13-Al- 27	2131	total	1.730 b	1.711 b		1.750 b	3.181 b
		elastic	1.500 b	1.500 b		925.5 mb	2.875 b
		inelastic	Threshold energy =	0.874 MeV		614.9 mb	301.9 mb
		(n,2n)	Threshold energy =	13.550 MeV		10.50 mb	4.861 μb
		capture	229.9 mb	203.7 mb	147.1 mb	427.2 μb	281.5 μb
		(n,p)	Threshold energy =	1.898 MeV		77.50 mb	3.775 mb
		(n,α)	Threshold energy =	3.247 MeV		120.9 mb	732.2 μb
14-Si- 0	2140	total	2.356 b	2.347 b		1.800 b	3.029 b
		elastic	2.200 b	2.200 b		622.8 mb	2.786 b
		inelastic	Threshold energy =	1.319 MeV		752.8 mb	228.5 mb
		(n,2n)	Threshold energy =	8.769 MeV		8.026 mb	2.652 μb
		capture	155.9 mb	138.2 mb	78.83 mb	559.0 μb	524.3 μb
		(n,p)	Threshold energy =	2.999 MeV		255.4 mb	9.626 mb
		(n,α)	Threshold energy =	0.034 MeV		160.1 mb	4.456 mb
20-Ca- 0	2200	total	3.396 b	3.357 b		2.268 b	2.906 b
		elastic	2.963 b	2.963 b		1.016 b	2.713 b
		inelastic	Threshold energy =	0.382 MeV		265.8 mb	59.32 mb
		(n,2n)	Threshold energy =	8.119 MeV		11.61 mb	3.097 μb

Nuclide	MAT	Reaction	Thermal cross sections			Fast cross sections	
			2200-m/s	Maxw.Avg.	Res.Integ	14-MeV	Fiss.Avg.
20-Ca- 0	2200	(n,n' α)	Threshold energy = 7.218 MeV			79.49 mb	14.92 μb
		(n,n' p)	Threshold energy = 8.540 MeV			542.8 mb	183.0 μb
		capture	430.6 mb	382.9 mb	226.1 mb	21.06 μb	2.130 mb
		(n,p)	Threshold energy = 0.543 MeV			204.4 mb	87.33 mb
		(n,α)	2.423 mb	2.172 mb	348.7 mb	138.4 mb	43.95 mb
		(n,2p)	Threshold energy = 8.317 MeV			9.694 mb	1.371 μb
20-Ca- 40	2201	total	3.423 b	3.385 b		2.263 b	3.525 b
		elastic	3.010 b	3.010 b		1.012 b	3.341 b
		inelastic	Threshold energy = 3.831 MeV			248.8 mb	45.73 mb
		(n,2n)	Threshold energy = 16.030 MeV				107.3 nb
		(n,n' α)	Threshold energy = 7.218 MeV			82.00 mb	15.39 μb
		(n,n' p)	Threshold energy = 8.540 MeV			559.9 mb	188.7 μb
		capture	409.9 mb	364.5 mb	215.8 mb	20.96 μb	2.132 mb
		(n,p)	Threshold energy = 0.543 MeV			209.9 mb	90.09 mb
		(n,α)	2.500 mb	2.241 mb	355.2 mb	140.0 mb	44.89 mb
		(n,2p)	Threshold energy = 8.317 MeV			10.00 mb	1.414 μb
20-Ca- 42	2202	total	1.910 b	1.839 b		2.352 b	3.757 b
		elastic	1.230 b	1.230 b		1.072 b	3.269 b
		inelastic	Threshold energy = 1.561 MeV			857.7 mb	423.5 mb
		(n,2n)	Threshold energy = 11.750 MeV			120.0 mb	20.48 μb
		capture	679.9 mb	604.8 mb	383.8 mb	57.79 μb	3.421 mb
		(n,α)	252.8-12 b	505.8-12 b	535.0 mb	301.9 mb	59.82 mb
20-Ca- 43	2203	total	9.197 b	8.515 b		2.397 b	3.745 b
		elastic	2.997 b	2.997 b		1.104 b	3.036 b
		inelastic	Threshold energy = 0.382 MeV			395.4 mb	664.1 mb
		(n,2n)	Threshold energy = 8.119 MeV			569.9 mb	513.3 μb
		capture	6.200 b	5.515 b	3.202 b	28.09 μb	4.971 mb

Nuclide	MAT	Reaction	Thermal cross sections			Fast cross sections	
			2200-m/s	Maxw.Avg.	Res.Integ	14-MeV	Fiss.Avg.
20-Ca- 43	2203	(n,p)	Threshold energy = 1.059 MeV			95.24 mb	336.7 μb
		(n,α)	0.0 b	0.0 b	369.9 mb	232.0 mb	34.69 mb
20-Ca- 44	2204	total	2.203 b	2.109 b		2.441 b	3.651 b
		elastic	1.323 b	1.323 b		1.136 b	3.114 b
		inelastic	Threshold energy = 1.184 MeV			846.0 mb	534.4 mb
		(n,2n)	Threshold energy = 11.390 MeV			400.0 mb	74.30 μb
		capture	879.8 mb	782.4 mb	428.7 mb	15.42 μb	1.591 mb
		(n,p)	Threshold energy = 4.988 MeV			34.52 mb	81.96 μb
		(n,α)	Threshold energy = 2.815 MeV			23.89 mb	58.07 μb
20-Ca- 46	2205	total	3.640 b	3.569 b		2.527 b	3.932 b
		elastic	2.900 b	2.900 b		1.202 b	3.487 b
		inelastic	Threshold energy = 1.377 MeV			664.7 mb	443.0 mb
		(n,2n)	Threshold energy = 10.630 MeV			650.0 mb	167.4 μb
		capture	739.9 mb	655.7 mb	339.0 mb	896.5 nb	172.1 μb
		(n,p)	Threshold energy = 7.088 MeV			6.600 mb	2.525 μb
		(n,α)	Threshold energy = 5.632 MeV			4.000 mb	66.88 μb
20-Ca- 48	2206	total	3.990 b	3.876 b		2.613 b	3.745 b
		elastic	2.900 b	2.900 b		1.269 b	3.654 b
		inelastic	Threshold energy = 3.912 MeV			443.7 mb	89.13 mb
		(n,2n)	Threshold energy = 10.150 MeV			900.0 mb	325.2 μb
		capture	1.090 b	967.2 mb	491.4 mb	1.349 μb	392.5 μb
		(n,p)	Threshold energy = 11.450 MeV			112.0 μb	41.15 nb
21-Sc- 45	2211	total	51.05 b	48.18 b		2.131 b	3.193 b
		elastic	25.03 b	25.03 b		1.129 b	2.479 b
		inelastic	Threshold energy = 0.013 MeV			641.7 mb	679.3 mb
		(n,2n)	Threshold energy = 11.580 MeV			245.0 mb	39.25 μb

Nuclide	MAT	Reaction	Thermal cross sections 2200-m/s	Maxw.Avg.	Res.Integ	Fast cross sections 14-MeV	Fiss.Avg.
21-Sc- 45	2211	capture	26.02 b	23.15 b	11.32 b	55.26 μb	5.916 mb
		(n,p)	0.0 b	0.0 b	168.3 mb	59.00 mb	25.64 mb
		(n,α)	Threshold energy = 0.406 MeV			56.00 mb	2.518 mb
23-V - 51	2231	total	9.705 b	9.264 b		2.288 b	3.956 b
		elastic	4.805 b	4.902 b		936.3 mb	3.144 b
		inelastic	Threshold energy = 0.326 MeV			735.8 mb	809.1 mb
		(n,2n)	Threshold energy = 11.270 MeV			544.9 mb	96.39 μb
		(n,n' α)	Threshold energy = 10.500 MeV			300.0 μb	107.5 nb
		(n,n' p)	Threshold energy = 8.211 MeV			13.00 mb	5.293 μb
		capture	4.900 b	4.361 b	2.534 b	26.80 μb	2.210 mb
		(n,p)	Threshold energy = 1.708 MeV			36.50 mb	514.5 μb
		(n,d)	Threshold energy = 5.941 MeV			4.500 mb	6.695 μb
		(n,t)	Threshold energy = 10.720 MeV			1.000 mb	324.5 nb
		(n,α)	0.0 b	0.0 b	10.89 mb	15.00 mb	175.2 μb
24-Cr- 0	2240	total	6.900 b	6.565 b		2.380 b	3.332 b
		elastic	3.830 b	3.830 b		1.206 b	2.888 b
		inelastic	Threshold energy = 0.575 MeV			695.9 mb	440.1 mb
		(n,2n)	Threshold energy = 8.092 MeV			324.4 mb	101.1 μb
		(n,n' p)	Threshold energy = 9.782 MeV			13.87 mb	5.768 μb
		capture	3.070 b	2.730 b	1.600 b	97.69 μb	3.141 mb
		(n,p)	Threshold energy = 0.257 MeV			106.3 mb	978.2 μb
		(n,α)	0.0 b	0.0 b	37.92 mb	33.22 mb	138.2 μb
24-Cr- 50	2241	total	24.48 b	22.74 b		2.310 b	3.272 b
		elastic	8.581 b	8.581 b		1.142 b	2.726 b
		inelastic	Threshold energy = 0.799 MeV			341.8 mb	535.6 mb
		(n,2n)	Threshold energy = 13.200 MeV			8.200 mb	1.805 μb
		(n,n' p)	Threshold energy = 9.782 MeV			285.9 mb	37.87 μb

Nuclide	MAT	Reaction	Thermal cross sections 2200-m/s	Maxw.Avg.	Res.Integ	Fast cross sections 14-MeV	Fiss.Avg.
24-Cr- 50	2241	capture	15.90 b	14.14 b	7.765 b	118.4 μb	7.836 mb
		(n,p)	Threshold energy = 0.262 MeV			437.9 mb	2.980 mb
		(n,α)	0.0 b	0.0 b	76.99 mb	94.00 mb	128.5 μb
24-Cr- 52	2242	total	2.983 b	2.901 b		2.369 b	3.377 b
		elastic	2.223 b	2.223 b		1.195 b	2.964 b
		inelastic	Threshold energy = 1.462 MeV			783.2 mb	409.2 mb
		(n,2n)	Threshold energy = 12.270 MeV			259.9 mb	31.72 μb
		(n,n' p)	Threshold energy = 10.710 MeV			1.700 mb	4.844 μb
		capture	759.8 mb	675.8 mb	492.9 mb	84.45 μb	2.888 mb
		(n,p)	Threshold energy = 3.258 MeV			99.60 mb	1.005 mb
		(n,α)	Threshold energy = 1.234 MeV			30.10 mb	149.5 μb
24-Cr- 53	2243	total	34.51 b	32.54 b		2.390 b	3.506 b
		elastic	16.31 b	16.31 b		1.220 b	2.877 b
		inelastic	Threshold energy = 0.575 MeV			224.5 mb	625.7 mb
		(n,2n)	Threshold energy = 8.092 MeV			869.9 mb	704.9 μb
		(n,n' p)	Threshold energy = 11.350 MeV			3.000 μb	646.0 nb
		capture	18.20 b	16.19 b	8.859 b	13.69 μb	2.220 mb
		(n,p)	Threshold energy = 2.691 MeV			36.70 mb	70.76 μb
		(n,α)	0.0 b	0.0 b	34.14 mb	38.50 mb	76.41 μb
24-Cr- 54	2244	total	2.274 b	2.235 b		2.420 b	3.367 b
		elastic	1.914 b	1.914 b		1.245 b	2.760 b
		inelastic	Threshold energy = 0.851 MeV			150.4 mb	605.6 mb
		(n,2n)	Threshold energy = 9.902 MeV			1.000 b	316.8 μb
		capture	359.9 mb	320.0 mb	193.1 mb	19.37 μb	1.831 mb
		(n,p)	Threshold energy = 6.336 MeV			13.20 mb	5.486 μb
		(n,α)	Threshold energy = 1.575 MeV			10.60 mb	4.953 μb

Nuclide	MAT	Reaction	Thermal cross sections			Fast cross sections	
			2200-m/s	Maxw.Avg.	Res.Integ	14-MeV	Fiss.Avg.
25-Mn- 55	2251	total	15.50 b	14.03 b		2.673 b	3.648 b
		elastic	2.184 b	2.184 b		1.401 b	2.806 b
		inelastic	Threshold energy = 0.128 MeV			415.5 mb	836.7 mb
		(n,2n)	Threshold energy = 10.420 MeV			770.9 mb	208.0 μb
		(n,n' α)	Threshold energy = 8.081 MeV			3.440 mb	2.752 μb
		(n,n' p)	Threshold energy = 8.216 MeV			9.510 mb	3.847 μb
		capture	13.32 b	11.84 b	14.63 b	664.9 μb	2.924 mb
		(n,p)	Threshold energy = 1.855 MeV			46.90 mb	1.325 mb
		(n,α)	Threshold energy = 0.636 MeV			24.60 mb	202.5 μb
26-Fe- 0	2260	total	14.95 b	14.69 b		2.520 b	3.180 b
		elastic	12.44 b	12.41 b		1.245 b	2.521 b
		inelastic	Threshold energy = 0.015 MeV			621.3 mb	649.3 mb
		(n,2n)	Threshold energy = 7.775 MeV			422.4 mb	106.6 μb
		capture	2.514 b	2.279 b	1.349 b	147.8 μb	3.452 mb
		(n,p)	0.0 b	0.0 b	119.5 mb	125.4 mb	5.313 mb
		(n,α)	0.0 b	0.0 b	95.97 mb	105.2 mb	1.273 mb
26-Fe- 54	2261	total	2.649 b	2.411 b		2.374 b	3.331 b
		elastic	492.8 mb	492.8 mb		1.198 b	2.775 b
		inelastic	Threshold energy = 1.435 MeV			704.2 mb	473.8 mb
		(n,2n)	Threshold energy = 13.870 MeV			3.230 mb	1.906 μb
		capture	2.156 b	1.918 b	1.328 b	452.1 μb	6.415 mb
		(n,p)	0.0 b	0.0 b	755.9 mb	359.9 mb	74.29 mb
		(n,α)	0.0 b	0.0 b	98.45 mb	108.0 mb	1.306 mb
26-Fe- 56	2262	total	15.27 b	14.96 b		2.485 b	3.191 b
		elastic	12.46 b	12.46 b		1.196 b	2.534 b
		inelastic	Threshold energy = 0.862 MeV			626.6 mb	650.8 mb
		(n,2n)	Threshold energy = 11.400 MeV			439.9 mb	75.44 μb

Nuclide	MAT	Reaction	Thermal cross sections			Fast cross sections	
			2200-m/s	Maxw.Avg.	Res.Integ	14-MeV	Fiss.Avg.
26-Fe- 56	2262	capture	2.813 b	2.502 b	1.444 b	129.9 μb	3.236 mb
		(n,p)	Threshold energy = 2.972 MeV			113.9 mb	1.079 mb
		(n,α)	0.0 b	0.0 b	98.45 mb	108.0 mb	1.306 mb
26-Fe- 57	2263	total	2.664 b	2.393 b		2.522 b	3.649 b
		elastic	202.1 mb	202.1 mb		1.377 b	2.484 b
		inelastic	Threshold energy = 0.015 MeV			274.0 mb	1.160 b
		(n,2n)	Threshold energy = 7.775 MeV			869.9 mb	1.707 mb
		capture	2.462 b	2.190 b	1.452 b	116.9 μb	4.215 mb
26-Fe- 58	2264	total	4.101 b	3.964 b		2.636 b	3.767 b
		elastic	2.821 b	2.821 b		1.267 b	3.150 b
		inelastic	Threshold energy = 0.825 MeV			361.5 mb	615.2 mb
		(n,2n)	Threshold energy = 10.210 MeV			976.9 mb	310.1 μb
		capture	1.280 b	1.139 b	1.828 b	40.24 μb	1.634 mb
		(n,p)	Threshold energy = 5.413 MeV			15.00 mb	5.584 μb
		(n,α)	Threshold energy = 1.414 MeV			15.00 mb	30.68 μb
27-Co- 59	2271	total	43.18 b	39.07 b		2.775 b	3.800 b
		elastic	6.001 b	6.001 b		1.573 b	3.391 b
		inelastic	Threshold energy = 1.118 MeV			486.2 mb	399.2 mb
		(n,2n)	Threshold energy = 10.630 MeV			639.9 mb	170.7 μb
		capture	37.18 b	33.07 b	75.65 b	79.08 μb	7.760 mb
		(n,p)	Threshold energy = 0.796 MeV			45.90 mb	1.321 mb
		(n,α)	0.0 b	0.0 b	19.79 mb	30.00 mb	164.8 μb
28-Ni- 0	2280	total	21.20 b	20.71 b		2.716 b	3.633 b
		elastic	16.77 b	16.77 b		1.386 b	3.115 b
		inelastic	Threshold energy = 0.069 MeV			390.7 mb	434.6 mb
		(n,2n)	Threshold energy = 7.950 MeV			162.0 mb	46.72 μb

Nuclide	MAT	Reaction	Thermal cross sections			Fast cross sections	
			2200-m/s	Maxw.Avg.	Res.Integ	14-MeV	Fiss.Avg.
28-Ni- 0	2280	(n,3n)	Threshold energy = 16.760 MeV				1.737 nb
		(n,n' α)	Threshold energy = 6.509 MeV			20.36 mb	5.132 μb
		(n,n' p)	Threshold energy = 8.313 MeV			341.7 mb	70.52 μb
		capture	4.429 b	3.939 b	2.221 b	97.08 μb	7.940 mb
		(n,p)	0.0 b	0.0 b	627.0 mb	307.8 mb	71.04 mb
		(n,α)	2.4-12 b	4.9-12 b	115.5 mb	106.8 mb	4.418 mb
28-Ni- 58	2281	total	30.62 b	30.12 b		2.662 b	3.889 b
		elastic	26.02 b	26.02 b		1.351 b	3.400 b
		inelastic	Threshold energy = 1.480 MeV			248.8 mb	370.2 mb
		(n,2n)	Threshold energy = 12.410 MeV			21.50 mb	2.752 μb
		(n,n' α)	Threshold energy = 6.509 MeV			30.00 mb	7.561 μb
		(n,n' p)	Threshold energy = 8.313 MeV			479.9 mb	100.2 μb
		capture	4.605 b	4.096 b	2.206 b	66.88 μb	8.743 mb
		(n,p)	0.0 b	0.0 b	870.8 mb	400.0 mb	103.3 mb
		(n,α)	3.5-12 b	7.0-12 b	149.5 mb	130.9 mb	6.113 mb
28-Ni- 60	2282	total	3.813 b	3.503 b		2.760 b	3.694 b
		elastic	1.013 b	1.013 b		1.398 b	3.135 b
		inelastic	Threshold energy = 1.355 MeV			737.8 mb	549.0 mb
		(n,2n)	Threshold energy = 11.580 MeV			370.5 mb	58.59 μb
		(n,n' p)	Threshold energy = 9.693 MeV			60.00 mb	9.007 μb
		capture	2.801 b	2.490 b	1.503 b	56.11 μb	5.030 mb
		(n,p)	Threshold energy = 2.075 MeV			130.9 mb	3.187 mb
		(n,α)	151.6-15 b	303.4-15 b	48.24 mb	63.00 mb	838.2 μb
28-Ni- 61	2283	total	12.12 b	11.84 b		2.814 b	3.814 b
		elastic	9.611 b	9.611 b		1.501 b	2.723 b
		inelastic	Threshold energy = 0.069 MeV			319.9 mb	1.078 b
		(n,2n)	Threshold energy = 7.950 MeV			843.4 mb	1.432 mb

Nuclide	MAT	Reaction	Thermal cross sections			Fast cross sections	
			2200-m/s	Maxw.Avg.	Res.Integ	14-MeV	Fiss.Avg.
28-Ni- 61	2283	(n,n' p)	Threshold energy = 10.020 MeV			7.400 mb	1.137 μb
		capture	2.506 b	2.229 b	2.438 b	29.40 μb	5.621 mb
		(n,p)	Threshold energy = 0.549 MeV			97.00 mb	1.507 mb
		(n,α)	758.7-15 b	1.5-12 b	62.91 mb	45.00 mb	3.851 mb
28-Ni- 62	2284	total	23.70 b	22.14 b		2.869 b	3.810 b
		elastic	9.505 b	9.505 b		1.475 b	3.211 b
		inelastic	Threshold energy = 1.192 MeV			578.8 mb	594.8 mb
		(n,2n)	Threshold energy = 10.770 MeV			771.2 mb	185.3 μb
		(n,n' p)	Threshold energy = 11.320 MeV			700.0 μb	1.047 μb
		capture	14.20 b	12.64 b	6.908 b	19.63 μb	3.526 mb
		(n,p)	Threshold energy = 4.532 MeV			23.00 mb	73.33 μb
		(n,α)	Threshold energy = 0.444 MeV			20.20 mb	73.38 μb
28-Ni- 64	2285	total	1.515 b	1.351 b		2.984 b	3.982 b
		elastic	34.64 mb	34.64 mb		1.546 b	3.513 b
		inelastic	Threshold energy = 1.367 MeV			312.7 mb	466.2 mb
		(n,2n)	Threshold energy = 9.809 MeV			1.115 b	524.7 μb
		(n,3n)	Threshold energy = 16.760 MeV				160.8 nb
		capture	1.480 b	1.317 b	819.3 mb	2.633 μb	2.731 mb
		(n,p)	Threshold energy = 6.627 MeV			4.500 mb	3.415 μb
		(n,α)	Threshold energy = 2.480 MeV			5.700 mb	6.911 μb
29-Cu- 0	2290	total	11.63 b	11.22 b		3.132 b	4.048 b
		elastic	7.859 b	7.858 b		1.623 b	3.385 b
		inelastic	Threshold energy = 0.680 MeV			812.8 mb	653.2 mb
		(n,2n)	Threshold energy = 10.060 MeV			650.4 mb	153.2 μb
		(n,n' α)	Threshold energy = 5.870 MeV			11.99 mb	3.501 μb
		capture	3.775 b	3.358 b	4.397 b	82.65 μb	9.872 mb
		(n,p)	Threshold energy = 1.376 MeV			6.489 mb	188.6 μb

Nuclide	MAT	Reaction	Thermal cross sections			Fast cross sections	
			2200-m/s	Maxw.Avg.	Res.Integ	14-MeV	Fiss.Avg.
29-Cu- 0	2290	(n,α)	0.0 b	0.0 b	23.17 mb	26.95 mb	379.3 μb
29-Cu- 63	2291	total	9.471 b	8.975 b		3.105 b	4.060 b
		elastic	4.979 b	4.979 b		1.602 b	3.374 b
		inelastic	Threshold energy = 0.680 MeV			917.2 mb	674.2 mb
		(n,2n)	Threshold energy = 11.030 MeV			529.9 mb	85.27 μb
		(n,n' α)	Threshold energy = 5.870 MeV			17.00 mb	4.937 μb
		capture	4.492 b	3.996 b	5.410 b	111.2 μb	11.28 mb
		(n,α)	0.0 b	0.0 b	33.53 mb	39.00 mb	548.9 μb
29-Cu- 65	2292	total	16.47 b	16.23 b		3.191 b	4.024 b
		elastic	14.30 b	14.30 b		1.670 b	3.409 b
		inelastic	Threshold energy = 0.783 MeV			579.2 mb	606.1 mb
		(n,2n)	Threshold energy = 10.060 MeV			919.9 mb	305.0 μb
		(n,n' α)	Threshold energy = 6.895 MeV			800.0 μb	288.0 nb
		capture	2.170 b	1.931 b	2.130 b	18.73 μb	6.711 mb
		(n,p)	Threshold energy = 1.376 MeV			21.00 mb	610.7 μb
41-Nb- 93	2411	total	7.477 b	7.350 b		4.190 b	5.668 b
		elastic	6.326 b	6.325 b		2.410 b	4.549 b
		inelastic	Threshold energy = 0.031 MeV			497.0 mb	1.082 b
		(n,2n)	Threshold energy = 8.928 MeV			1.250 b	1.174 mb
		(n,3n)	Threshold energy = 16.900 MeV				203.3 nb
		capture	1.152 b	1.024 b	9.590 b	6.177 μb	31.38 mb
		(n,p)	0.0 b	0.0 b	27.16 mb	25.00 mb	1.173 mb
		(n,α)	0.0 b	0.0 b	6.521 mb	8.850 mb	271.8 μb
42-Mo- 0	2420	total	8.037 b	7.753 b		4.192 b	5.683 b
		elastic	5.486 b	5.485 b		2.433 b	4.619 b
		inelastic	Threshold energy = 0.206 MeV			585.6 mb	1.022 b

Nuclide	MAT	Reaction	Thermal cross sections			Fast cross sections	
			2200-m/s	Maxw.Avg.	Res.Integ	14-MeV	Fiss.Avg.
42-Mo- 0	2420	(n,2n)	Threshold energy = 6.892 MeV			1.136 b	1.655 mb
		(n,3n)	Threshold energy = 14.360 MeV				169.7 nb
		capture	2.551 b	2.268 b	25.42 b	87.27 μb	37.54 mb
		(n,p)	0.0 b	0.0 b	29.52 mb	25.65 mb	1.877 mb
		(n,α)	0.0 b	0.0 b	8.136 mb	11.36 mb	217.6 μb
42-Mo- 92	2421	total	5.566 b	5.564 b		4.190 b	5.663 b
		elastic	5.545 b	5.545 b		2.550 b	5.095 b
		inelastic	Threshold energy = 1.526 MeV			1.491 b	523.7 mb
		(n,2n)	Threshold energy = 12.820 MeV			64.30 mb	21.48 μb
		capture	20.75 mb	18.46 mb	980.7 mb	191.9 μb	32.67 mb
		(n,p)	0.0 b	0.0 b	110.6 mb	61.40 mb	10.99 mb
		(n,α)	0.0 b	0.0 b	16.36 mb	26.90 mb	355.1 μb
42-Mo- 94	2422	total	6.011 b	6.010 b		4.190 b	5.664 b
		elastic	5.998 b	5.998 b		2.413 b	4.755 b
		inelastic	Threshold energy = 0.880 MeV			717.0 mb	864.2 mb
		(n,2n)	Threshold energy = 9.785 MeV			1.010 b	561.4 μb
		(n,3n)	Threshold energy = 17.940 MeV				4.599 nb
		capture	13.11 mb	11.66 mb	1.425 b	177.3 μb	42.20 mb
		(n,p)	Threshold energy = 1.276 MeV			35.10 mb	541.0 μb
		(n,α)	0.0 b	0.0 b	8.588 mb	15.50 mb	374.7 μb
42-Mo- 95	2423	total	19.58 b	18.02 b		4.190 b	5.667 b
		elastic	5.586 b	5.584 b		2.385 b	4.354 b
		inelastic	Threshold energy = 0.206 MeV			326.9 mb	1.258 b
		(n,2n)	Threshold energy = 7.450 MeV			1.440 b	2.529 mb
		(n,3n)	Threshold energy = 17.230 MeV				88.92 nb
		capture	13.99 b	12.44 b	118.6 b	8.643 μb	49.47 mb
		(n,p)	Threshold energy = 0.145 MeV			26.80 mb	403.5 μb

Nuclide	MAT	Reaction	Thermal cross sections			Fast cross sections	
			2200-m/s	Maxw.Avg.	Res.Integ	14-MeV	Fiss.Avg.
42-Mo- 95	2423	(n,α)	0.0 b	0.0 b	9.620 mb	11.90 mb	163.2 μb
42-Mo- 96	2424	total	5.322 b	5.257 b		4.191 b	5.665 b
		elastic	4.727 b	4.727 b		2.413 b	4.646 b
		inelastic	Threshold energy = 0.787 MeV			487.7 mb	979.5 mb
		(n,2n)	Threshold energy = 9.251 MeV			1.260 b	930.9 μb
		(n,3n)	Threshold energy = 16.700 MeV				59.47 nb
		capture	595.3 mb	529.7 mb	17.59 b	56.81 μb	36.65 mb
		(n,p)	Threshold energy = 2.430 MeV			20.50 mb	86.89 μb
		(n,α)	0.0 b	0.0 b	9.511 mb	9.170 mb	483.7 μb
42-Mo- 97	2425	total	7.953 b	7.720 b		4.191 b	5.668 b
		elastic	5.853 b	5.853 b		2.418 b	4.341 b
		inelastic	Threshold energy = 0.486 MeV			310.5 mb	1.271 b
		(n,2n)	Threshold energy = 6.892 MeV			1.440 b	4.180 mb
		(n,3n)	Threshold energy = 16.140 MeV				324.4 nb
		capture	2.100 b	1.867 b	17.25 b	7.816 μb	48.67 mb
		(n,p)	Threshold energy = 1.162 MeV			15.90 mb	63.31 μb
		(n,α)	0.0 b	0.0 b	3.959 mb	7.100 mb	52.35 μb
42-Mo- 98	2426	total	5.772 b	5.757 b		4.191 b	5.663 b
		elastic	5.642 b	5.642 b		2.415 b	4.589 b
		inelastic	Threshold energy = 0.743 MeV			338.0 mb	1.040 b
		(n,2n)	Threshold energy = 8.732 MeV			1.420 b	1.840 mb
		(n,3n)	Threshold energy = 15.620 MeV				414.9 nb
		capture	129.9 mb	115.5 mb	6.558 b	83.71 μb	31.71 mb
		(n,p)	Threshold energy = 3.842 MeV			12.30 mb	11.61 μb
		(n,α)	0.0 b	0.0 b	4.496 mb	5.530 mb	68.56 μb
42-Mo-100	2427	total	5.499 b	5.477 b		4.191 b	5.666 b

Nuclide	MAT	Reaction	Thermal cross sections 2200-m/s	Maxw.Avg.	Res.Integ	Fast cross sections 14-MeV	Fiss.Avg.
42-Mo-100	2427	elastic	5.300 b	5.300 b		2.429 b	4.449 b
		inelastic	Threshold energy = 0.541 MeV			444.4 mb	1.187 b
		(n,2n)	Threshold energy = 8.375 MeV			1.310 b	2.249 mb
		(n,3n)	Threshold energy = 14.360 MeV				167.2 nb
		capture	199.0 mb	176.9 mb	3.922 b	95.09 μb	26.52 mb
		(n,p)	Threshold energy = 5.501 MeV			7.500 mb	5.042 μb
		(n,α)	0.0 b	0.0 b	2.491 mb	3.400 mb	6.478 μb
72-Hf-174	2721	total	397.9 b	353.4 b		5.673 b	6.991 b
		elastic	8.000 b	8.000 b		3.249 b	4.988 b
		inelastic	Threshold energy = 0.092 MeV			1.333 b	1.633 b
		(n,2n)	Threshold energy = 8.682 MeV			1.089 b	284.2 μb
		(n,3n)	Threshold energy = 15.730 MeV				35.69 nb
		capture	389.9 b	345.3 b	491.7 b	44.90 μb	365.7 mb
		(n,p)	0.0 b	0.0 b	2.177 mb	2.446 mb	12.39 μb
		(n,α)	0.0 b	0.0 b	335.3 μb	327.7 μb	4.761 μb
72-Hf-176	2722	total	46.00 b	41.68 b		5.672 b	6.987 b
		elastic	8.000 b	8.000 b		3.222 b	5.038 b
		inelastic	Threshold energy = 0.089 MeV			521.3 mb	1.635 b
		(n,2n)	Threshold energy = 8.137 MeV			1.928 b	2.426 mb
		(n,3n)	Threshold energy = 14.970 MeV				842.2 nb
		capture	38.00 b	33.61 b	359.8 b	11.98 μb	307.7 mb
		(n,p)	Threshold energy = 0.406 MeV			1.183 mb	2.653 μb
		(n,α)	0.0 b	0.0 b	75.74 μb	69.40 μb	1.102 μb
72-Hf-177	2723	total	358.9 b	331.8 b		5.678 b	6.984 b
		elastic	7.000 b	6.991 b		3.253 b	4.806 b
		inelastic	Threshold energy = 0.114 MeV			306.6 mb	1.821 b
		(n,2n)	Threshold energy = 6.420 MeV			2.118 b	7.847 mb

Nuclide	MAT	Reaction	Thermal cross sections			Fast cross sections	
			2200-m/s	Maxw.Avg.	Res.Integ	14-MeV	Fiss.Avg.
72-Hf-177	2723	(n,3n)	Threshold energy =	14.560 MeV			2.252 μb
		capture	351.9 b	324.7 b	6948. b	2.318 μb	344.3 mb
		(n,p)	0.0 b	0.0 b	732.3 μb	769.0 μb	2.463 μb
		(n,α)	0.0 b	0.0 b	59.45 μb	57.00 μb	1.062 μb
72-Hf-178	2724	total	91.00 b	78.88 b		5.667 b	6.988 b
		elastic	5.000 b	4.999 b		3.199 b	5.106 b
		inelastic	Threshold energy =	0.094 MeV		448.4 mb	1.803 b
		(n,2n)	Threshold energy =	7.670 MeV		2.019 b	3.315 mb
		(n,3n)	Threshold energy =	14.090 MeV			3.539 μb
		capture	86.00 b	73.59 b	1916. b	757.7 nb	72.12 mb
		(n,p)	Threshold energy =	1.359 MeV		605.0 μb	584.8 nb
		(n,α)	0.0 b	0.0 b	20.92 μb	19.80 μb	94.08 nb
72-Hf-179	2725	total	51.00 b	45.92 b		5.672 b	6.985 b
		elastic	6.000 b	6.000 b		3.220 b	4.929 b
		inelastic	Threshold energy =	0.123 MeV		368.0 mb	1.925 b
		(n,2n)	Threshold energy =	6.134 MeV		2.084 b	7.487 mb
		(n,3n)	Threshold energy =	13.800 MeV		0.0 b	4.035 μb
		capture	45.00 b	39.86 b	516.7 b	235.6 nb	119.5 mb
		(n,p)	Threshold energy =	0.573 MeV		51.00 μb	64.34 nb
		(n,α)	0.0 b	0.0 b	7.419 μb	6.400 μb	61.45 nb
72-Hf-180	2726	total	32.00 b	31.07 b		5.667 b	6.986 b
		elastic	19.40 b	19.85 b		3.161 b	5.132 b
		inelastic	Threshold energy =	0.094 MeV		219.8 mb	1.811 b
		(n,2n)	Threshold energy =	7.430 MeV		2.286 b	5.379 mb
		(n,3n)	Threshold energy =	13.560 MeV		0.0 b	5.813 μb
		capture	12.60 b	11.16 b	34.59 b	803.0 nb	34.72 mb
		(n,p)	Threshold energy =	2.329 MeV		54.70 μb	28.75 nb

Nuclide	MAT	Reaction	Thermal cross sections 2200-m/s	Maxw.Avg.	Res.Integ	Fast cross sections 14-MeV	Fiss.Avg.
72-Hf-180	2726	(n,α)	0.0 b	0.0 b	21.83 μb	19.40 μb	39.01 nb
73-Ta-181	2731	total	27.32 b	25.03 b		5.370 b	6.992 b
		elastic	6.110 b	6.101 b		3.012 b	4.944 b
		inelastic	Threshold energy =	0.006 MeV		102.3 mb	1.949 b
		(n,2n)	Threshold energy =	7.683 MeV		2.252 b	6.467 mb
		capture	21.21 b	18.93 b	743.4 b	209.4 nb	91.22 mb
		(n,p)	Threshold energy =	0.242 MeV		4.128 mb	454.7 nb
82-Pb- 0	2820	total	11.59 b	11.58 b		5.419 b	6.346 b
		elastic	11.42 b	11.42 b		2.915 b	5.658 b
		inelastic	Threshold energy =	0.573 MeV		580.1 mb	684.6 mb
		(n,2n)	Threshold energy =	6.772 MeV		1.921 b	1.476 mb
		(n,3n)	Threshold energy =	14.180 MeV			578.5 nb
		(n,n' α)	0.0 b	0.0 b	4.252 mb	254.9 μb	128.7 nb
		(n,n' p)	Threshold energy =	6.670 MeV		32.43 μb	30.29 nb
		capture	171.6 mb	152.5 mb	147.6 mb	577.0 μb	1.741 mb
		(n,p)	0.0 b	0.0 b	891.9 μb	969.7 μb	417.4 nb
		(n,α)	0.0 b	0.0 b	3.089 mb	1.154 mb	411.4 nb
82-Pb-204	2821	total	12.00 b	11.95 b		5.337 b	6.496 b
		elastic	11.34 b	11.34 b		2.861 b	5.397 b
		inelastic	Threshold energy =	0.904 MeV		452.5 mb	1.078 b
		(n,2n)	Threshold energy =	8.436 MeV		2.023 b	1.199 mb
		(n,3n)	Threshold energy =	15.390 MeV			88.08 nb
		(n,n' α)	0.0 b	0.0 b	59.59 μb	4.900 μb	2.136 nb
		(n,n' p)	Threshold energy =	6.670 MeV		35.00 μb	8.024 nb
		capture	660.9 mb	587.8 mb	2.688 b	9.140 μb	19.81 mb
		(n,p)	0.0 b	0.0 b	188.7 μb	289.9 μb	576.0 nb
		(n,α)	0.0 b	0.0 b	155.6 μb	158.9 μb	225.0 nb

Nuclide	MAT	Reaction	Thermal cross sections			Fast cross sections	
			2200-m/s	Maxw.Avg.	Res.Integ	14-MeV	Fiss.Avg.
82-Pb-206	2822	total	11.37 b	11.37 b		5.348 b	6.421 b
		elastic	11.34 b	11.34 b		2.855 b	5.329 b
		inelastic	Threshold energy =	0.807 MeV		634.2 mb	1.089 b
		(n,2n)	Threshold energy =	8.129 MeV		1.855 b	1.378 mb
		(n,3n)	Threshold energy =	14.890 MeV			201.4 nb
		(n,n' α)	0.0 b	0.0 b	2.720 mb	82.00 μb	68.56 nb
		(n,n' p)	Threshold energy =	7.283 MeV		2.700 μb	11.04 nb
		capture	28.00 mb	24.90 mb	96.09 mb	1.550 μb	1.539 mb
		(n,p)	Threshold energy =	0.747 MeV		2.050 mb	1.020 μb
		(n,α)	0.0 b	0.0 b	3.766 mb	2.030 mb	813.4 nb
82-Pb-207	2823	total	12.04 b	11.98 b		5.354 b	6.366 b
		elastic	11.34 b	11.34 b		2.852 b	5.253 b
		inelastic	Threshold energy =	0.573 MeV		667.7 mb	1.110 b
		(n,2n)	Threshold energy =	6.772 MeV		1.832 b	2.059 mb
		(n,3n)	Threshold energy =	14.900 MeV			1.556 μb
		(n,n' α)	0.0 b	0.0 b	963.9 μb	68.10 μb	31.79 nb
		(n,n' p)	Threshold energy =	7.520 MeV		105.9 μb	49.65 nb
		capture	702.9 mb	625.0 mb	374.7 mb	786.7 nb	1.079 mb
		(n,p)	Threshold energy =	0.643 MeV		1.380 mb	578.2 nb
		(n,α)	0.0 b	0.0 b	586.0 μb	434.9 μb	166.2 nb
82-Pb-208	2824	total	11.49 b	11.49 b		5.360 b	6.269 b
		elastic	11.49 b	11.49 b		2.850 b	5.957 b
		inelastic	Threshold energy =	2.627 MeV		521.8 mb	308.7 mb
		(n,2n)	Threshold energy =	7.404 MeV		1.986 b	1.283 mb
		(n,3n)	Threshold energy =	14.180 MeV			353.2 nb
		(n,n' α)	0.0 b	0.0 b	6.455 mb	419.9 μb	200.4 nb
		(n,n' p)	Threshold energy =	8.046 MeV		15.00 μb	31.57 nb
		capture	479.8 μb	426.9 μb	7.833 mb	1.100 mb	1.694 mb

Nuclide	MAT	Reaction	Thermal cross sections 2200-m/s	Maxw.Avg.	Res.Integ	Fast cross sections 14-MeV	Fiss.Avg.
82-Pb-208	2824	(n,p)	Threshold energy = 4.229 MeV			317.9 μb	68.52 nb
		(n,α)	0.0 b	0.0 b	3.911 mb	1.080 mb	335.0 nb
90-Th-228	2901	total	133.0 b	120.0 b		5.628 b	7.562 b
		elastic	12.81 b	12.78 b		3.169 b	5.432 b
		inelastic	Threshold energy = 0.058 MeV			4.136 mb	1.936 b
		(n,2n)	Threshold energy = 7.151 MeV			1.637 b	7.688 mb
		(n,3n)	Threshold energy = 12.630 MeV			268.9 mb	42.53 μb
		fission	300.0 mb	266.8 mb	1.024 b	548.9 mb	105.8 mb
		capture	119.8 b	107.0 b	1169. b	240.3-12 b	79.47 mb
90-Th-230	2902	total	32.32 b	30.13 b		5.644 b	7.601 b
		elastic	9.774 b	9.750 b		3.167 b	5.436 b
		inelastic	Threshold energy = 0.054 MeV			10.45 mb	1.887 b
		(n,2n)	Threshold energy = 6.821 MeV			1.340 b	10.66 mb
		(n,3n)	Threshold energy = 12.090 MeV			528.9 mb	68.64 μb
		fission	0.0 b	0.0 b	1.120 b	596.9 mb	178.5 mb
		capture	22.55 b	20.38 b	1040. b	16.16 nb	87.42 mb
90-Th-232	2903	total	19.42 b	18.58 b		5.740 b	7.561 b
		elastic	12.16 b	12.15 b		3.266 b	5.257 b
		inelastic	Threshold energy = 0.050 MeV			142.9 mb	2.125 b
		(n,2n)	Threshold energy = 6.465 MeV			1.181 b	14.46 mb
		(n,3n)	Threshold energy = 11.610 MeV			800.0 mb	113.6 μb
		fission	0.0 b	0.0 b	636.2 mb	350.0 mb	78.45 mb
		capture	7.258 b	6.427 b	79.93 b	0.0 b	85.74 mb
90-Th-233	2904	total	1478. b	1312. b		5.670 b	7.614 b
		elastic	13.00 b	13.00 b		3.167 b	5.296 b
		inelastic	Threshold energy = 0.017 MeV			15.80 mb	2.054 b

Nuclide	MAT	Reaction	Thermal cross sections			Fast cross sections	
			2200-m/s	Maxw.Avg.	Res.Integ	14-MeV	Fiss.Avg.
90-Th-233	2904	(n,2n)	Threshold energy = 4.807 MeV			1.160 b	66.75 mb
		(n,3n)	Threshold energy = 11.270 MeV			916.9 mb	150.7 μb
		fission	15.00 b	13.34 b	11.08 b	409.9 mb	109.8 mb
		capture	1450. b	1285. b	642.7 b	6.071 nb	86.89 mb
90-Th-234	2905	total	14.75 b	14.59 b		5.680 b	7.646 b
		elastic	13.00 b	13.00 b		3.168 b	5.497 b
		inelastic	Threshold energy = 0.048 MeV			39.56 mb	1.989 b
		(n,2n)	Threshold energy = 6.219 MeV			1.040 b	21.69 mb
		(n,3n)	Threshold energy = 11.030 MeV			1.282 b	228.7 μb
		fission	0.0 b	0.0 b	260.2 mb	150.0 mb	36.89 mb
		capture	1.750 b	1.551 b	93.68 b	154.0 nb	100.9 mb
91-Pa-233	2911	total	53.82 b	48.01 b		5.669 b	7.596 b
		elastic	11.02 b	11.02 b		3.000 b	4.978 b
		inelastic	Threshold energy = 0.007 MeV			103.7 mb	1.499 b
		(n,2n)	Threshold energy = 6.545 MeV			369.5 mb	5.773 mb
		(n,3n)	Threshold energy = 12.130 MeV			418.3 mb	52.40 μb
		fission	0.0 b	0.0 b	4.682 b	1.770 b	990.7 mb
		capture	42.80 b	36.97 b	779.2 b	7.400 mb	122.1 mb
92-U -233	2921	total	587.8 b	525.0 b		5.770 b	7.686 b
		elastic	12.70 b	12.73 b		3.278 b	4.806 b
		inelastic	Threshold energy = 0.041 MeV			11.30 μb	904.5 mb
		(n,2n)	Threshold energy = 5.779 MeV			134.9 mb	4.152 mb
		(n,3n)	Threshold energy = 13.060 MeV			37.30 mb	6.033 μb
		fission	529.8 b	470.7 b	771.4 b	2.320 b	1.888 b
		capture	45.30 b	41.43 b	138.6 b	367.9 nb	82.30 mb
92-U -234	2922	total	110.1 b	98.40 b		5.742 b	7.455 b

Nuclide	MAT	Reaction	Thermal cross sections 2200-m/s	Maxw.Avg.	Res.Integ	Fast cross sections 14-MeV	Fiss.Avg.
92-U -234	2922	elastic	14.72 b	14.58 b		3.066 b	5.085 b
		inelastic	Threshold energy =	0.044 MeV		393.8 mb	1.062 b
		(n,2n)	Threshold energy =	6.870 MeV		220.9 mb	1.957 mb
		(n,3n)	Threshold energy =	12.640 MeV		127.8 mb	14.39 μb
		fission	6.367 mb	5.684 mb	6.438 b	1.934 b	1.199 b
		capture	95.44 b	83.82 b	608.9 b	2.722 μb	105.8 mb
92-U -235	2923	total	696.9 b	607.2 b		5.855 b	7.642 b
		elastic	17.00 b	16.76 b		3.057 b	4.598 b
		inelastic	Threshold energy =	0.000 MeV		514.0 mb	1.651 b
		(n,2n)	Threshold energy =	5.321 MeV		191.2 mb	12.78 mb
		(n,3n)	Threshold energy =	12.190 MeV		41.70 mb	7.062 μb
		fission	583.9 b	503.2 b	278.7 b	2.051 b	1.248 b
		(n,4n)	Threshold energy =	17.970 MeV			8.449 nb
		capture	96.00 b	84.95 b	153.3 b	3.146 μb	130.9 mb
92-U -236	2924	total	13.67 b	13.09 b		5.826 b	7.752 b
		elastic	8.337 b	8.331 b		3.110 b	5.450 b
		inelastic	Threshold energy =	0.045 MeV		1.144 mb	1.555 b
		(n,2n)	Threshold energy =	6.574 MeV		423.9 mb	8.475 mb
		(n,3n)	Threshold energy =	11.890 MeV		660.9 mb	95.74 μb
		fission	42.96 mb	38.36 mb	7.611 b	1.630 b	595.8 mb
		capture	5.295 b	4.717 b	347.0 b	791.4-12 b	141.5 mb
92-U -238	2925	total	11.57 b	11.28 b		5.799 b	7.792 b
		elastic	8.873 b	8.870 b		2.950 b	5.294 b
		inelastic	Threshold energy =	0.045 MeV		318.9 mb	2.101 b
		(n,2n)	Threshold energy =	6.170 MeV		909.9 mb	15.36 mb
		(n,3n)	Threshold energy =	11.320 MeV		500.0 mb	82.80 μb
		fission	3.220 μb	2.868 μb	2.053 b	1.117 b	314.6 mb

Nuclide	MAT	Reaction	Thermal cross sections			Fast cross sections	
			2200-m/s	Maxw.Avg.	Res.Integ	14-MeV	Fiss.Avg.
92-U -238	2925	capture	2.700 b	2.407 b	279.0 b	3.395 mb	66.72 mb
93-Np-237	2931	total	208.4 b	185.3 b		5.539 b	7.797 b
		elastic	27.52 b	27.19 b		2.787 b	5.006 b
		inelastic	Threshold energy = 0.033 MeV			105.6 mb	1.321 b
		(n,2n)	Threshold energy = 6.657 MeV			446.2 mb	3.301 mb
		(n,3n)	Threshold energy = 12.370 MeV			72.03 mb	11.70 μb
		fission	19.21 mb	16.68 mb	6.257 b	2.128 b	1.293 b
		capture	180.9 b	158.0 b	662.5 b	228.5 nb	173.3 mb
93-Np-239	2932	total	47.50 b	43.42 b		5.523 b	7.808 b
		elastic	10.50 b	10.50 b		2.640 b	4.696 b
		inelastic	Threshold energy = 0.031 MeV			73.67 mb	1.453 b
		(n,2n)	Threshold energy = 6.253 MeV			142.9 mb	3.666 mb
		(n,3n)	Threshold energy = 11.750 MeV			246.2 mb	36.09 μb
		fission	0.0 b	0.0 b	7.062 b	2.420 b	1.458 b
		capture	37.00 b	32.79 b	444.9 b	10.00 μb	194.1 mb
94-Pu-236	2941	total	833.3 b	804.7 b		6.515 b	8.451 b
		elastic	3.376 b	3.011 b		3.426 b	5.801 b
		inelastic	Threshold energy = 0.045 MeV			93.93 μb	418.1 mb
		(n,2n)	Threshold energy = 7.393 MeV			17.37 mb	317.4 μb
		(n,3n)	Threshold energy = 13.660 MeV			703.9 μb	278.8 nb
		fission	65.41 b	63.19 b	100.7 b	3.071 b	2.080 b
		capture	764.5 b	738.5 b	1067. b	4.023 μb	149.7 mb
94-Pu-238	2942	total	592.8 b	508.2 b		10.15 b	10.79 b
		elastic	27.60 b	27.05 b		3.556 b	6.300 b
		inelastic	Threshold energy = 0.044 MeV			3.168 b	2.154 b
		(n,2n)	Threshold energy = 7.028 MeV			419.0 mb	2.830 mb

Nuclide	MAT	Reaction	Thermal cross sections			Fast cross sections	
			2200-m/s	Maxw.Avg.	Res.Integ	14-MeV	Fiss.Avg.
94-Pu-238	2942	(n,3n)	Threshold energy = 12.930 MeV			155.4 mb	20.84 μb
		fission	16.55 b	14.10 b	32.42 b	2.722 b	2.011 b
		capture	548.7 b	466.9 b	156.3 b	132.8 mb	318.7 mb
94-Pu-239	2943	total	1020. b	973.0 b		5.872 b	7.709 b
		elastic	8.000 b	7.816 b		2.633 b	4.429 b
		inelastic	Threshold energy = 0.008 MeV			402.6 mb	1.392 b
		(n,2n)	Threshold energy = 5.671 MeV			346.9 mb	10.63 mb
		(n,3n)	Threshold energy = 12.700 MeV			180.9 mb	21.77 μb
		fission	741.7 b	694.1 b	301.5 b	2.308 b	1.818 b
		(n,4n)	Threshold energy = 18.600 MeV				45.92 nb
		capture	270.2 b	270.9 b	195.2 b	1.349 nb	60.75 mb
94-Pu-240	2944	total	290.0 b	264.8 b		5.888 b	7.844 b
		elastic	1.509 b	1.389 b		3.202 b	4.964 b
		inelastic	Threshold energy = 0.043 MeV			7.274 mb	1.420 b
		(n,2n)	Threshold energy = 6.561 MeV			427.1 mb	3.920 mb
		(n,3n)	Threshold energy = 12.230 MeV			129.7 mb	18.36 μb
		fission	67.61 mb	61.45 mb	10.09 b	2.121 b	1.363 b
		(n,4n)	Threshold energy = 19.260 MeV				5.617 nb
		capture	288.4 b	263.3 b	8453. b	800.0 μb	92.71 mb
94-Pu-241	2945	total	1388. b	1286. b		5.801 b	7.842 b
		elastic	10.23 b	9.935 b		3.291 b	5.167 b
		inelastic	Threshold energy = 0.042 MeV			221.6 μb	879.2 mb
		(n,2n)	Threshold energy = 5.262 MeV			178.0 mb	22.66 mb
		(n,3n)	Threshold energy = 11.820 MeV			149.5 mb	22.55 μb
		fission	1015. b	947.6 b	590.3 b	2.182 b	1.624 b
		(n,4n)	Threshold energy = 17.500 MeV				19.72 nb
		capture	362.9 b	327.8 b	186.8 b	7.722 nb	149.0 mb

Nuclide	MAT	Reaction	Thermal cross sections			Fast cross sections	
			2200-m/s	Maxw.Avg.	Res.Integ	14-MeV	Fiss.Avg.
94-Pu-242	2946	total	26.65 b	24.74 b		5.918 b	7.849 b
		elastic	8.111 b	8.091 b		3.161 b	5.339 b
		inelastic	Threshold energy =	0.045 MeV		8.378 mb	1.280 b
		(n,2n)	Threshold energy =	6.336 MeV		454.0 mb	6.669 mb
		(n,3n)	Threshold energy =	11.600 MeV		303.0 mb	44.58 μb
		fission	121.2 mb	107.8 mb	6.348 b	1.991 b	1.135 b
		(n,4n)	Threshold energy =	18.160 MeV			116.7 nb
		capture	18.42 b	16.54 b	1117. b	800.0 μb	87.72 mb
95-Am-241	2951	total	614.6 b	547.5 b		5.742 b	7.779 b
		elastic	11.26 b	10.83 b		2.722 b	4.788 b
		inelastic	Threshold energy =	0.041 MeV		42.21 μb	1.179 b
		(n,2n)	Threshold energy =	6.610 MeV		262.3 mb	620.3 μb
		(n,3n)	Threshold energy =	12.650 MeV		46.74 mb	10.02 μb
		fission	3.018 b	2.721 b	14.69 b	2.711 b	1.510 b
		(n,4n)	Threshold energy =	19.780 MeV			17.0-15 b
		capture	600.3 b	533.9 b	1299. b	263.5-12 b	297.9 mb
95-Am-242	2952	total	7611. b	6747. b		5.906 b	7.758 b
		elastic	11.44 b	11.44 b		2.807 b	4.561 b
		inelastic	Threshold energy =	0.044 MeV		402.2 mb	1.228 b
		(n,2n)	Threshold energy =	5.515 MeV		130.8 mb	4.387 mb
		(n,3n)	Threshold energy =	12.120 MeV		138.9 mb	17.94 μb
		fission	2100. b	1861. b	1258. b	2.427 b	1.756 b
		capture	5500. b	4872. b	390.4 b	4.487 μb	206.6 mb
95-Am-242M	2953	total	7969. b	7809. b		5.913 b	7.761 b
		elastic	6.698 b	7.429 b		2.807 b	4.527 b
		inelastic	0.0 b	0.0 b	4.597 b	442.2 mb	1.256 b
		(n,2n)	Threshold energy =	5.515 MeV		130.8 mb	4.387 mb

Nuclide	MAT	Reaction	Thermal cross sections			Fast cross sections	
			2200-m/s	Maxw.Avg.	Res.Integ	14-MeV	Fiss.Avg.
95-Am-242M	2953	(n,3n)	Threshold energy = 12.120 MeV			138.9 mb	17.94 μb
		fission	6620. b	6480. b	1528. b	2.395 b	1.866 b
		capture	1342. b	1321. b	206.8 b	723.0 nb	106.3 mb
95-Am-243	2954	total	86.26 b	78.37 b		5.759 b	7.853 b
		elastic	7.528 b	7.476 b		2.728 b	4.798 b
		inelastic	Threshold energy = 0.042 MeV			42.36 μb	1.577 b
		(n,2n)	Threshold energy = 6.391 MeV			360.4 mb	3.728 mb
		(n,3n)	Threshold energy = 11.950 MeV			221.0 mb	33.16 μb
		fission	228.0 mb	205.2 mb	11.37 b	2.450 b	1.274 b
		(n,4n)	Threshold energy = 18.570 MeV			.	2.068 nb
		capture	78.50 b	70.68 b	1818. b	97.9-12 b	194.5 mb
96-Cm-242	2961	total	32.53 b	30.11 b		5.750 b	7.818 b
		elastic	11.61 b	11.60 b		2.725 b	4.954 b
		inelastic	Threshold energy = 0.042 MeV			318.0 μb	975.4 mb
		(n,2n)	Threshold energy = 6.997 MeV			111.5 mb	1.754 mb
		(n,3n)	Threshold energy = 13.090 MeV			6.359 mb	4.379 μb
		fission	5.000 b	4.448 b	11.09 b	2.907 b	1.798 b
		capture	15.92 b	14.07 b	116.2 b	3.061 nb	86.97 mb
96-Cm-243	2962	total	753.3 b	670.1 b		5.917 b	7.778 b
		elastic	9.658 b	9.571 b		2.809 b	4.562 b
		inelastic	Threshold energy = 0.042 MeV			26.47 mb	786.8 mb
		(n,2n)	Threshold energy = 5.719 MeV			472.4 mb	15.37 mb
		(n,3n)	Threshold energy = 12.710 MeV			73.62 mb	17.69 μb
		fission	612.3 b	545.6 b	1751. b	2.536 b	2.379 b
		(n,4n)	Threshold energy = 18.830 MeV				1.251 nb
		capture	131.3 b	115.0 b	404.4 b	17.23 nb	34.35 mb

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Nuclide	MAT	Reaction	Thermal cross sections			Fast cross sections	
			2200-m/s	Maxw.Avg.	Res.Integ	14-MeV	Fiss.Avg.
96-Cm-244	2963	total	22.24 b	20.51 b		6.026 b	7.625 b
		elastic	6.650 b	6.641 b		3.273 b	5.115 b
		inelastic	Threshold energy = 0.043 MeV			17.51 mb	832.0 mb
		(n,2n)	Threshold energy = 6.828 MeV			60.34 mb	576.3 μb
		(n,3n)	Threshold energy = 12.550 MeV			39.29 mb	4.776 μb
		fission	1.180 b	1.049 b	18.39 b	2.636 b	1.553 b
		capture	14.41 b	12.82 b	593.5 b	271.4 nb	122.1 mb
96-Cm-245	2964	total	2359. b	1980. b		6.060 b	7.643 b
		elastic	11.59 b	11.50 b		3.295 b	4.817 b
		inelastic	Threshold energy = 0.055 MeV			220.2 mb	890.7 mb
		(n,2n)	Threshold energy = 5.533 MeV			176.8 mb	3.080 mb
		(n,3n)	Threshold energy = 12.370 MeV			70.66 mb	9.299 μb
		fission	2001. b	1680. b	799.4 b	2.297 b	1.887 b
		capture	346.3 b	288.3 b	107.7 b	444.3 nb	45.16 mb

Appendix 2

Average cross sections

CROSS SECTION

MATERIAL =2011

H -1

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	2.1473+ 1	2.0437+ 1							1.0238+ 0				6.7365- 1
1.0000- 2 ~ 1.5000- 2	2.0919+ 1	2.0437+ 1							4.7473- 1				6.7365- 1
1.5000- 2 ~ 2.0000- 2	2.0847+ 1	2.0437+ 1							4.0022- 1				6.7365- 1
2.0000- 2 ~ 3.0000- 2	2.0776+ 1	2.0437+ 1							3.3568- 1				6.7365- 1
3.0000- 2 ~ 4.0000- 2	2.0730+ 1	2.0437+ 1							2.8299- 1				6.7365- 1
4.0000- 2 ~ 5.0000- 2	2.0700+ 1	2.0437+ 1							2.4931- 1				6.7365- 1
5.0000- 2 ~ 6.0000- 2	2.0676+ 1	2.0437+ 1							2.2538- 1				6.7365- 1
6.0000- 2 ~ 8.0000- 2	2.0647+ 1	2.0437+ 1							2.0009- 1				6.7365- 1
8.0000- 2 ~ 1.0000- 1	2.0617+ 1	2.0437+ 1							1.7628- 1				6.7365- 1
1.0000- 1 ~ 1.5000- 1	2.0593+ 1	2.0437+ 1							1.5010- 1				6.7365- 1
1.5000- 1 ~ 2.0000- 1	2.0576+ 1	2.0437+ 1							1.2654- 1				6.7365- 1
2.0000- 1 ~ 3.0000- 1	2.0559+ 1	2.0437+ 1							1.0613- 1				6.7365- 1
3.0000- 1 ~ 4.0000- 1	2.0542+ 1	2.0437+ 1							8.9471- 2				6.7365- 1
4.0000- 1 ~ 5.0000- 1	2.0529+ 1	2.0437+ 1							7.8824- 2				6.7365- 1
5.0000- 1 ~ 6.0000- 1	2.0519+ 1	2.0437+ 1							7.1259- 2				6.7365- 1
6.0000- 1 ~ 8.0000- 1	2.0507+ 1	2.0437+ 1							6.3262- 2				6.7365- 1
8.0000- 1 ~ 1.0000+ 0	2.0495+ 1	2.0437+ 1							5.5733- 2				6.7365- 1
1.0000+ 0 ~ 1.5000+ 0	2.0486+ 1	2.0437+ 1							4.7457- 2				6.7365- 1
1.5000+ 0 ~ 2.0000+ 0	2.0480+ 1	2.0436+ 1							4.0307- 2				6.7365- 1
2.0000+ 0 ~ 3.0000+ 0	2.0475+ 1	2.0436+ 1							3.3555- 2				6.7365- 1
3.0000+ 0 ~ 4.0000+ 0	2.0469+ 1	2.0436+ 1							2.8288- 2				6.7365- 1
4.0000+ 0 ~ 5.0000+ 0	2.0465+ 1	2.0436+ 1							2.4921- 2				6.7365- 1
5.0000+ 0 ~ 6.0000+ 0	2.0462+ 1	2.0436+ 1							2.2529- 2				6.7365- 1
6.0000+ 0 ~ 8.0000+ 0	2.0458+ 1	2.0436+ 1							2.0001- 2				6.7365- 1
8.0000+ 0 ~ 1.0000+ 1	2.0454+ 1	2.0436+ 1							1.7621- 2				6.7365- 1
1.0000+ 1 ~ 1.5000+ 1	2.0450+ 1	2.0435+ 1							1.5004- 2				6.7365- 1
1.5000+ 1 ~ 2.0000+ 1	2.0447+ 1	2.0434+ 1							1.2649- 2				6.7365- 1
2.0000+ 1 ~ 3.0000+ 1	2.0444+ 1	2.0432+ 1							1.0609- 2				6.7365- 1
3.0000+ 1 ~ 4.0000+ 1	2.0441+ 1	2.0431+ 1							8.9435- 3				6.7365- 1
4.0000+ 1 ~ 5.0000+ 1	2.0439+ 1	2.0430+ 1							7.8792- 3				6.7365- 1
5.0000+ 1 ~ 6.0000+ 1	2.0436+ 1	2.0429+ 1							7.1230- 3				6.7365- 1
6.0000+ 1 ~ 8.0000+ 1	2.0433+ 1	2.0427+ 1							6.3237- 3				6.7365- 1
8.0000+ 1 ~ 1.0000+ 2	2.0430+ 1	2.0424+ 1							5.5711- 3				6.7365- 1
1.0000+ 2 ~ 1.5000+ 2	2.0421+ 1	2.0416+ 1							4.7414- 3				6.7365- 1
1.5000+ 2 ~ 2.0000+ 2	2.0409+ 1	2.0405+ 1							3.9937- 3				6.7365- 1
2.0000+ 2 ~ 3.0000+ 2	2.0397+ 1	2.0393+ 1							3.3468- 3				6.7365- 1
3.0000+ 2 ~ 4.0000+ 2	2.0386+ 1	2.0382+ 1							2.8190- 3				6.7365- 1
4.0000+ 2 ~ 5.0000+ 2	2.0376+ 1	2.0373+ 1							2.4820- 3				6.7365- 1
5.0000+ 2 ~ 6.0000+ 2	2.0363+ 1	2.0360+ 1							2.2427- 3				6.7365- 1
6.0000+ 2 ~ 8.0000+ 2	2.0340+ 1	2.0337+ 1							1.9898- 3				6.7365- 1
8.0000+ 2 ~ 1.0000+ 3	2.0315+ 1	2.0319+ 1							1.7519- 3				6.7365- 1
1.0000+ 3 ~ 1.5000+ 3	2.0234+ 1	2.0233+ 1							1.4989- 3				6.7365- 1
1.5000+ 3 ~ 2.0000+ 3	2.0124+ 1	2.0123+ 1							1.2740- 3				6.7365- 1
2.0000+ 3 ~ 3.0000+ 3	2.0011+ 1	2.0009+ 1							1.0700- 3				6.7365- 1
3.0000+ 3 ~ 4.0000+ 3	1.9902+ 1	1.9901+ 1							8.9647- 4				6.7365- 1
4.0000+ 3 ~ 5.0000+ 3	1.9821+ 1	1.9821+ 1							7.8245- 4				6.7365- 1
5.0000+ 3 ~ 6.0000+ 3	1.9704+ 1	1.9704+ 1							7.0013- 4				6.7365- 1
6.0000+ 3 ~ 8.0000+ 3	1.9495+ 1	1.9494+ 1							6.1189- 4				6.7365- 1
8.0000+ 3 ~ 1.0000+ 4	1.9275+ 1	1.9275+ 1							5.2843- 4				6.7365- 1
1.0000+ 4 ~ 1.5000+ 4	1.8762+ 1	1.8762+ 1							4.3597- 4				6.7365- 1
1.5000+ 4 ~ 2.0000+ 4	1.8118+ 1	1.8117+ 1							3.5335- 4				6.7365- 1
2.0000+ 4 ~ 3.0000+ 4	1.7472+ 1	1.7472+ 1							2.8250- 4				6.7365- 1
3.0000+ 4 ~ 4.0000+ 4	1.6648+ 1	1.6648+ 1							2.2445- 4				6.7365- 1
4.0000+ 4 ~ 5.0000+ 4	1.5859+ 1	1.5859+ 1							1.9012- 4				6.7365- 1
5.0000+ 4 ~ 6.0000+ 4	1.5166+ 1	1.5166+ 1							1.6543- 4				6.7365- 1
6.0000+ 4 ~ 8.0000+ 4	1.4246+ 1	1.4246+ 1							1.3997- 4				6.7365- 1
8.0000+ 4 ~ 1.0000+ 5	1.3211+ 1	1.3211+ 1							1.1669- 4				6.7365- 1
1.0000+ 5 ~ 1.5000+ 5	1.1721+ 1	1.1721+ 1							9.1664- 5				6.7347- 1
1.5000+ 5 ~ 2.0000+ 5	1.0223+ 1	1.0223+ 1							7.0473- 5				6.7341- 1
2.0000+ 5 ~ 3.0000+ 5	8.7165+ 0	8.7165+ 0							5.4665- 5				6.7333- 1
3.0000+ 5 ~ 4.0000+ 5	7.3795+ 0	7.3794+ 0							4.4522- 5				6.7322- 1
4.0000+ 5 ~ 5.0000+ 5	6.4873+ 0	6.4872+ 0							3.9563- 5				6.7311- 1
5.0000+ 5 ~ 6.0000+ 5	5.8493+ 0	5.8491+ 0							3.7405- 5				6.7300- 1
6.0000+ 5 ~ 8.0000+ 5	5.1617+ 0	5.1617+ 0							3.5672- 5				6.7284- 1
8.0000+ 5 ~ 1.0000+ 6	4.5138+ 0	4.5138+ 0							3.4648- 5				6.7264- 1
1.0000+ 6 ~ 1.5000+ 6	3.7925+ 0	3.7925+ 0							3.4419- 5				6.7232- 1
1.5000+ 6 ~ 2.0000+ 6	3.1453+ 0	3.1453+ 0							3.4281- 5				6.7188- 1
2.0000+ 6 ~ 3.0000+ 6	2.5707+ 0	2.5707+ 0							3.4956- 5				6.7128- 1
3.0000+ 6 ~ 4.0000+ 6	2.0849+ 0	2.0849+ 0							3.5970- 5				6.7054- 1
4.0000+ 6 ~ 5.0000+ 6	1.7625+ 0	1.7624+ 0							3.6340- 5				6.6982- 1
5.0000+ 6 ~ 6.0000+ 6	1.5271+ 0	1.5271+ 0							3.6100- 5				6.6915- 1
6.0000+ 6 ~ 8.0000+ 6	1.2736+ 0	1.2736+ 0							3.5044- 5				6.6825- 1
8.0000+ 6 ~ 1.0000+ 7	1.0348+ 0	1.0348+ 0							3.3297- 5				6.6712- 1
1.0000+ 7 ~ 1.5000+ 7	7.7807- 1	7.7804- 1							3.0737- 5				6.6505- 1
1.5000+ 7 ~ 2.0000+ 7	5.5776- 1	5.5774- 1							2.7342- 5				6.6293- 1

CROSS SECTION

MATERIAL =2012

H -2

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	3.3900+ 0	3.3883+ 0							1.6960- 3				3.3347- 1
1.0000- 2 ~ 1.5000- 2	3.3900+ 0	3.3892+ 0							7.8646- 4				3.3347- 1
1.5000- 2 ~ 2.0000- 2	3.3900+ 0	3.3893+ 0							6.6301- 4				3.3347- 1
2.0000- 2 ~ 3.0000- 2	3.3900+ 0	3.3894+ 0							5.5610- 4				3.3347- 1
3.0000- 2 ~ 4.0000- 2	3.3900+ 0	3.3895+ 0							4.6882- 4				3.3347- 1
4.0000- 2 ~ 5.0000- 2	3.3900+ 0	3.3896+ 0							4.1304- 4				3.3347- 1
5.0000- 2 ~ 6.0000- 2	3.3900+ 0	3.3896+ 0							3.7340- 4				3.3347- 1
6.0000- 2 ~ 8.0000- 2	3.3900+ 0	3.3897+ 0							3.3161- 4				3.3347- 1
8.0000- 2 ~ 1.0000- 1	3.3900+ 0	3.3897+ 0							2.9206- 4				3.3347- 1
1.0000- 1 ~ 1.5000- 1	3.3900+ 0	3.3897+ 0							2.4870- 4				3.3347- 1
1.5000- 1 ~ 2.0000- 1	3.3900+ 0	3.3898+ 0							2.0966- 4				3.3347- 1
2.0000- 1 ~ 3.0000- 1	3.3900+ 0	3.3898+ 0							1.7586- 4				3.3347- 1
3.0000- 1 ~ 4.0000- 1	3.3900+ 0	3.3898+ 0							1.4826- 4				3.3347- 1
4.0000- 1 ~ 5.0000- 1	3.3900+ 0	3.3899+ 0							1.3062- 4				3.3347- 1
5.0000- 1 ~ 6.0000- 1	3.3900+ 0	3.3899+ 0							1.1809- 4				3.3347- 1
6.0000- 1 ~ 8.0000- 1	3.3900+ 0	3.3899+ 0							1.0484- 4				3.3347- 1
8.0000- 1 ~ 1.0000+ 0	3.3900+ 0	3.3899+ 0							9.2364- 5				3.3347- 1
1.0000+ 0 ~ 1.5000+ 0	3.3900+ 0	3.3899+ 0							7.8653- 5				3.3347- 1
1.5000+ 0 ~ 2.0000+ 0	3.3900+ 0	3.3899+ 0							6.6310- 5				3.3347- 1
2.0000+ 0 ~ 3.0000+ 0	3.3900+ 0	3.3899+ 0							5.5621- 5				3.3347- 1
3.0000+ 0 ~ 4.0000+ 0	3.3900+ 0	3.3899+ 0							4.6895- 5				3.3347- 1
4.0000+ 0 ~ 5.0000+ 0	3.3900+ 0	3.3900+ 0							4.1319- 5				3.3347- 1
5.0000+ 0 ~ 6.0000+ 0	3.3900+ 0	3.3900+ 0							3.7357- 5				3.3347- 1
6.0000+ 0 ~ 8.0000+ 0	3.3900+ 0	3.3900+ 0							3.3169- 5				3.3347- 1
8.0000+ 0 ~ 1.0000+ 1	3.3900+ 0	3.3900+ 0							2.9225- 5				3.3346- 1
1.0000+ 1 ~ 1.5000+ 1	3.3900+ 0	3.3900+ 0							2.4894- 5				3.3346- 1
1.5000+ 1 ~ 2.0000+ 1	3.3900+ 0	3.3900+ 0							2.0996- 5				3.3346- 1
2.0000+ 1 ~ 3.0000+ 1	3.3900+ 0	3.3900+ 0							1.7618- 5				3.3345- 1
3.0000+ 1 ~ 4.0000+ 1	3.3900+ 0	3.3900+ 0							1.4866- 5				3.3344- 1
4.0000+ 1 ~ 5.0000+ 1	3.3900+ 0	3.3900+ 0							1.3110- 5				3.3344- 1
5.0000+ 1 ~ 6.0000+ 1	3.3900+ 0	3.3900+ 0							1.1862- 5				3.3343- 1
6.0000+ 1 ~ 8.0000+ 1	3.3900+ 0	3.3900+ 0							1.0541- 5				3.3342- 1
8.0000+ 1 ~ 1.0000+ 2	3.3900+ 0	3.3900+ 0							9.2966- 6				3.3340- 1
1.0000+ 2 ~ 1.5000+ 2	3.3899+ 0	3.3899+ 0							7.9365- 6				3.3337- 1
1.5000+ 2 ~ 2.0000+ 2	3.3891+ 0	3.3891+ 0							6.7139- 6				3.3333- 1
2.0000+ 2 ~ 3.0000+ 2	3.3880+ 0	3.3880+ 0							5.6595- 6				3.3327- 1
3.0000+ 2 ~ 4.0000+ 2	3.3870+ 0	3.3870+ 0							4.8040- 6				3.3319- 1
4.0000+ 2 ~ 5.0000+ 2	3.3862+ 0	3.3862+ 0							4.2614- 6				3.3311- 1
5.0000+ 2 ~ 6.0000+ 2	3.3856+ 0	3.3856+ 0							3.8787- 6				3.3303- 1
6.0000+ 2 ~ 8.0000+ 2	3.3849+ 0	3.3849+ 0							3.4780- 6				3.3291- 1
8.0000+ 2 ~ 1.0000+ 3	3.3841+ 0	3.3841+ 0							3.1053- 6				3.3275- 1
1.0000+ 3 ~ 1.5000+ 3	3.3832+ 0	3.3832+ 0							2.7070- 6				3.3247- 1
1.5000+ 3 ~ 2.0000+ 3	3.3821+ 0	3.3821+ 0							2.3555- 6				3.3207- 1
2.0000+ 3 ~ 3.0000+ 3	3.3811+ 0	3.3811+ 0							2.0667- 6				3.3147- 1
3.0000+ 3 ~ 4.0000+ 3	3.3800+ 0	3.3800+ 0							1.8468- 6				3.3067- 1
4.0000+ 3 ~ 5.0000+ 3	3.3793+ 0	3.3793+ 0							1.7201- 6				3.2987- 1
5.0000+ 3 ~ 6.0000+ 3	3.3787+ 0	3.3787+ 0							1.6380- 6				3.2908- 1
6.0000+ 3 ~ 8.0000+ 3	3.3780+ 0	3.3780+ 0							1.5634- 6				3.2788- 1
8.0000+ 3 ~ 1.0000+ 4	3.3761+ 0	3.3761+ 0							1.5074- 6				3.2630- 1
1.0000+ 4 ~ 1.5000+ 4	3.3706+ 0	3.3706+ 0							1.4781- 6				3.2353- 1
1.5000+ 4 ~ 2.0000+ 4	3.3640+ 0	3.3640+ 0							1.4785- 6				3.1960- 1
2.0000+ 4 ~ 3.0000+ 4	3.3529+ 0	3.3529+ 0							1.5279- 6				3.1377- 1
3.0000+ 4 ~ 4.0000+ 4	3.3396+ 0	3.3396+ 0							1.6182- 6				3.0609- 1
4.0000+ 4 ~ 5.0000+ 4	3.3125+ 0	3.3125+ 0							1.7167- 6				2.9864- 1
5.0000+ 4 ~ 6.0000+ 4	3.2789+ 0	3.2789+ 0							1.8136- 6				2.9111- 1
6.0000+ 4 ~ 8.0000+ 4	3.2414+ 0	3.2414+ 0							1.9538- 6				2.8022- 1
8.0000+ 4 ~ 1.0000+ 5	3.2091+ 0	3.2091+ 0							2.1301- 6				2.6614- 1
1.0000+ 5 ~ 1.5000+ 5	3.1506+ 0	3.1506+ 0							2.4111- 6				2.4322- 1
1.5000+ 5 ~ 2.0000+ 5	3.0927+ 0	3.0927+ 0							2.7618- 6				2.1292- 1
2.0000+ 5 ~ 3.0000+ 5	3.0370+ 0	3.0370+ 0							3.2112- 6				1.7462- 1
3.0000+ 5 ~ 4.0000+ 5	2.9999+ 0	2.9999+ 0							3.7242- 6				1.3498- 1
4.0000+ 5 ~ 5.0000+ 5	2.9849+ 0	2.9849+ 0							4.1659- 6				1.0829- 1
5.0000+ 5 ~ 6.0000+ 5	2.9765+ 0	2.9765+ 0							4.5566- 6				9.1069- 2
6.0000+ 5 ~ 8.0000+ 5	2.9501+ 0	2.9501+ 0							5.0693- 6				8.0504- 2
8.0000+ 5 ~ 1.0000+ 6	2.9065+ 0	2.9065+ 0							5.6627- 6				8.3119- 2
1.0000+ 6 ~ 1.5000+ 6	2.8167+ 0	2.8158+ 0							6.5001- 6				1.1281- 1
1.5000+ 6 ~ 2.0000+ 6	2.6427+ 0	2.6427+ 0							7.4550- 6				1.6109- 1
2.0000+ 6 ~ 3.0000+ 6	2.3511+ 0	2.3511+ 0							8.4826- 6				2.2390- 1
3.0000+ 6 ~ 4.0000+ 6	1.9922+ 0	1.9887+ 0		3.4662- 3					9.4185- 6				2.8111- 1
4.0000+ 6 ~ 5.0000+ 6	1.7273+ 0	1.7041+ 0		2.3164- 2					9.9939- 6				3.1721- 1
5.0000+ 6 ~ 6.0000+ 6	1.5391+ 0	1.4906+ 0		4.8402- 2					1.0342- 5				3.4593- 1
6.0000+ 6 ~ 8.0000+ 6	1.3328+ 0	1.2505+ 0		8.2275- 2					1.0545- 5				3.8381- 1
8.0000+ 6 ~ 1.0000+ 7	1.1351+ 0	1.0146+ 0		1.2038- 1					1.0480- 5				4.2692- 1
1.0000+ 7 ~ 1.5000+ 7	8.8960- 1	7.2607- 1		1.6347- 1					9.8523- 6				4.8293- 1
1.5000+ 7 ~ 2.0000+ 7	6.8472- 1	5.0446- 1		1.8022- 1					8.6423- 6				5.4368- 1

CROSS SECTION

LI-6

MATERIAL =2031

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	2.8882+ 3	7.3600- 1							8.6944- 2			2.8873+ 3	1.1179- 1
1.0000- 2 ~ 1.5000- 2	1.3396+ 3	7.3699- 1							4.0038- 2			1.3388+ 3	1.1179- 1
1.5000- 2 ~ 2.0000- 2	1.1295+ 3	7.3598- 1							3.3753- 2			1.1287+ 3	1.1179- 1
2.0000- 2 ~ 3.0000- 2	9.4745+ 2	7.3598- 1							2.8311- 2			9.4668+ 2	1.1179- 1
3.0000- 2 ~ 4.0000- 2	7.9887+ 2	7.3597- 1							2.3867- 2			7.9807+ 2	1.1179- 1
4.0000- 2 ~ 5.0000- 2	7.0390+ 2	7.3596- 1							2.1027- 2			7.0310+ 2	1.1179- 1
5.0000- 2 ~ 6.0000- 2	6.3642+ 2	7.3596- 1							1.9010- 2			6.3562+ 2	1.1179- 1
6.0000- 2 ~ 8.0000- 2	5.6507+ 2	7.3596- 1							1.6877- 2			5.6429+ 2	1.1179- 1
8.0000- 2 ~ 1.0000- 1	4.9790+ 2	7.3595- 1							1.4869- 2			4.9714+ 2	1.1179- 1
1.0000- 1 ~ 1.5000- 1	4.2413+ 2	7.3797- 1							1.2661- 2			4.2332+ 2	1.1179- 1
1.5000- 1 ~ 2.0000- 1	3.5774+ 2	7.4117- 1							1.0674- 2			3.5687+ 2	1.1179- 1
2.0000- 1 ~ 3.0000- 1	3.0022+ 2	7.4451- 1							8.9527- 3			2.9933+ 2	1.1179- 1
3.0000- 1 ~ 4.0000- 1	2.5322+ 2	7.4774- 1							7.5475- 3			2.5234+ 2	1.1179- 1
4.0000- 1 ~ 5.0000- 1	2.2318+ 2	7.5015- 1							6.6495- 3			2.2232+ 2	1.1179- 1
5.0000- 1 ~ 6.0000- 1	2.0182+ 2	7.5208- 1							6.0114- 3			2.0098+ 2	1.1179- 1
6.0000- 1 ~ 8.0000- 1	1.7924+ 2	7.5437- 1							5.3369- 3			1.7843+ 2	1.1179- 1
8.0000- 1 ~ 1.0000+ 0	1.5798+ 2	7.5680- 1							4.7019- 3			1.5720+ 2	1.1179- 1
1.0000+ 0 ~ 1.5000+ 0	1.3467+ 2	7.5799- 1							4.0038- 3			1.3386+ 2	1.1179- 1
1.5000+ 0 ~ 2.0000+ 0	1.1372+ 2	7.5825- 1							3.3753- 3			1.1284+ 2	1.1179- 1
2.0000+ 0 ~ 3.0000+ 0	9.5538+ 1	7.5851- 1							2.8311- 3			9.4645+ 1	1.1179- 1
3.0000+ 0 ~ 4.0000+ 0	8.0672+ 1	7.5877- 1							2.3867- 3			7.9788+ 1	1.1179- 1
4.0000+ 0 ~ 5.0000+ 0	7.1158+ 1	7.5896- 1							2.1027- 3			7.0293+ 1	1.1179- 1
5.0000+ 0 ~ 6.0000+ 0	6.4390+ 1	7.5911- 1							1.9010- 3			6.3547+ 1	1.1179- 1
6.0000+ 0 ~ 8.0000+ 0	5.7228+ 1	7.5928- 1							1.6877- 3			5.6415+ 1	1.1179- 1
8.0000+ 0 ~ 1.0000+ 1	5.0479+ 1	7.5947- 1							1.4869- 3			4.9702+ 1	1.1178- 1
1.0000+ 1 ~ 1.5000+ 1	4.3137+ 1	7.5946- 1							1.2661- 3			4.2320+ 1	1.1178- 1
1.5000+ 1 ~ 2.0000+ 1	3.6547+ 1	7.5931- 1							1.0674- 3			3.5676+ 1	1.1178- 1
2.0000+ 1 ~ 3.0000+ 1	3.0809+ 1	7.5915- 1							8.9527- 4			2.9921+ 1	1.1177- 1
3.0000+ 1 ~ 4.0000+ 1	2.6103+ 1	7.5900- 1							7.5475- 4			2.5223+ 1	1.1176- 1
4.0000+ 1 ~ 5.0000+ 1	2.3082+ 1	7.5889- 1							6.6495- 4			2.2221+ 1	1.1175- 1
5.0000+ 1 ~ 6.0000+ 1	2.0928+ 1	7.5880- 1							6.0114- 4			2.0088+ 1	1.1174- 1
6.0000+ 1 ~ 8.0000+ 1	1.8643+ 1	7.5869- 1							5.3369- 4			1.7833+ 1	1.1173- 1
8.0000+ 1 ~ 1.0000+ 2	1.6486+ 1	7.5858- 1							4.7019- 4			1.5711+ 1	1.1171- 1
1.0000+ 2 ~ 1.5000+ 2	1.4160+ 1	7.5834- 1							4.0038- 4			1.3377+ 1	1.1168- 1
1.5000+ 2 ~ 2.0000+ 2	1.2077+ 1	7.5804- 1							3.3753- 4			1.1276+ 1	1.1164- 1
2.0000+ 2 ~ 3.0000+ 2	1.0250+ 1	7.5772- 1							2.8311- 4			9.4575+ 0	1.1157- 1
3.0000+ 2 ~ 4.0000+ 2	8.7424+ 0	7.5742- 1							2.3867- 4			7.9724+ 0	1.1148- 1
4.0000+ 2 ~ 5.0000+ 2	7.7892+ 0	7.5712- 1							2.1027- 4			7.0237+ 0	1.1139- 1
5.0000+ 2 ~ 6.0000+ 2	7.1235+ 0	7.5681- 1							1.9010- 4			6.3500+ 0	1.1130- 1
6.0000+ 2 ~ 8.0000+ 2	6.4100+ 0	7.5644- 1							1.6877- 4			5.6377+ 0	1.1117- 1
8.0000+ 2 ~ 1.0000+ 3	5.7296+ 0	7.5605- 1							1.4869- 4			4.9671+ 0	1.1099- 1
1.0000+ 3 ~ 1.5000+ 3	4.9935+ 0	7.5539- 1							1.2661- 4			4.2308+ 0	1.1072- 1
1.5000+ 3 ~ 2.0000+ 3	4.3281+ 0	7.5461- 1							1.0674- 4			3.5682+ 0	1.1037- 1
2.0000+ 3 ~ 3.0000+ 3	3.7559+ 0	7.5361- 1							8.9527- 5			2.9956+ 0	1.0984- 1
3.0000+ 3 ~ 4.0000+ 3	3.2858+ 0	7.5253- 1							7.5475- 5			2.5285+ 0	1.0913- 1
4.0000+ 3 ~ 5.0000+ 3	2.9849+ 0	7.5161- 1							6.6495- 5			2.2306+ 0	1.0842- 1
5.0000+ 3 ~ 6.0000+ 3	2.7739+ 0	7.5077- 1							6.0114- 5			2.0197+ 0	1.0771- 1
6.0000+ 3 ~ 8.0000+ 3	2.5486+ 0	7.4971- 1							5.3369- 5			1.7971+ 0	1.0665- 1
8.0000+ 3 ~ 1.0000+ 4	2.3389+ 0	7.4847- 1							4.7019- 5			1.5886+ 0	1.0524- 1
1.0000+ 4 ~ 1.5000+ 4	2.1096+ 0	7.4678- 1							4.0038- 5			1.3613+ 0	1.0276- 1
1.5000+ 4 ~ 2.0000+ 4	1.9045+ 0	7.4502- 1							3.3753- 5			1.1588+ 0	9.9224- 2
2.0000+ 4 ~ 3.0000+ 4	1.7316+ 0	7.4364- 1							2.8311- 5			9.8760- 1	9.3079- 2
3.0000+ 4 ~ 4.0000+ 4	1.5972+ 0	7.4377- 1							2.3867- 5			8.5324- 1	8.4325- 2
4.0000+ 4 ~ 5.0000+ 4	1.5195+ 0	7.4636- 1							2.1027- 5			7.7311- 1	7.4667- 2
5.0000+ 4 ~ 6.0000+ 4	1.4745+ 0	7.5213- 1							1.9010- 5			7.2218- 1	6.4104- 2
6.0000+ 4 ~ 8.0000+ 4	1.4467+ 0	7.6792- 1							1.6877- 5			6.7875- 1	4.5510- 2
8.0000+ 4 ~ 1.0000+ 5	1.4659+ 0	8.0706- 1							1.4869- 5			6.5881- 1	1.8617- 2
1.0000+ 5 ~ 1.5000+ 5	1.7279+ 0	9.9634- 1							1.2661- 5			7.3150- 1	5.7983- 2
1.5000+ 5 ~ 2.0000+ 5	3.2743+ 0	2.0435+ 0							1.0674- 5			1.2306+ 0	1.0174- 1
2.0000+ 5 ~ 3.0000+ 5	8.7944+ 0	6.2337+ 0							8.9527- 6			2.5607+ 0	1.8226- 1
3.0000+ 5 ~ 4.0000+ 5	3.8841+ 0	2.9801+ 0							7.5475- 6			9.0392- 1	2.9645- 1
4.0000+ 5 ~ 5.0000+ 5	2.2536+ 0	1.7673+ 0							6.6495- 6			4.8615- 1	2.3966- 1
5.0000+ 5 ~ 6.0000+ 5	1.7723+ 0	1.3978+ 0							6.0114- 6			3.7445- 1	2.6047- 1
6.0000+ 5 ~ 8.0000+ 5	1.5066+ 0	1.1885+ 0							5.3369- 6			3.1806- 1	2.7837- 1
8.0000+ 5 ~ 1.0000+ 6	1.3581+ 0	1.0674+ 0							4.7019- 6			2.9064- 1	3.0117- 1
1.0000+ 6 ~ 1.5000+ 6	1.2698+ 0	9.9281- 1							4.0038- 6			2.7674- 1	2.3932- 1
1.5000+ 6 ~ 2.0000+ 6	1.2979+ 0	1.0294+ 0	6.1920- 3						3.3753- 6			2.6190- 1	1.9864- 1
2.0000+ 6 ~ 3.0000+ 6	1.6408+ 0	1.2861+ 0	1.4165- 1						2.8311- 6			2.1243- 1	1.8925- 1
3.0000+ 6 ~ 4.0000+ 6	2.0670+ 0	1.3974+ 0	5.0376- 1						2.3867- 6	1.3010- 2		1.5266- 1	2.8973- 1
4.0000+ 6 ~ 5.0000+ 6	2.1255+ 0	1.3496+ 0	6.3622- 1						2.1027- 6	3.1403- 2		1.0817- 1	4.4744- 1
5.0000+ 6 ~ 6.0000+ 6	2.0717+ 0	1.3097+ 0	6.5463- 1						1.9010- 6	2.5440- 2		8.1976- 2	5.3061- 1
6.0000+ 6 ~ 8.0000+ 6	1.8994+ 0	1.1759+ 0	6.5169- 1						1.6877- 6	1.7318- 2		5.2062- 2	6.3174- 1
8.0000+ 6 ~ 1.0000+ 7	1.7080+ 0	1.0286+ 0	6.0997- 1						1.4869- 6	1.2325- 2		3.6005- 2	6.9203- 1
1.0000+ 7 ~ 1.5000+ 7	1.3792+ 0	7.9967- 1	4.8396- 1						1.2661- 6	8.5650- 3		2.9248- 2	7.5589- 1
1.5000+ 7 ~ 2.0000+ 7	1.0599+ 0	5.8317- 1	3.7172- 1						1.0674- 6	5.0600- 3		1.6290- 2	8.3851- 1

CROSS SECTION

MATERIAL =2032 L1-7

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.1920+ 0	1.0489+ 0							1.4000- 1				9.5667- 2
1.0000- 2 ~ 1.5000- 2	1.1189+ 0	1.0489+ 0							6.4918- 2				9.5667- 2
1.5000- 2 ~ 2.0000- 2	1.1071+ 0	1.0489+ 0							5.4728- 2				9.5667- 2
2.0000- 2 ~ 3.0000- 2	1.0957+ 0	1.0489+ 0							4.5903- 2				9.5667- 2
3.0000- 2 ~ 4.0000- 2	1.0890+ 0	1.0489+ 0							3.8699- 2				9.5667- 2
4.0000- 2 ~ 5.0000- 2	1.0849+ 0	1.0489+ 0							3.4094- 2				9.5667- 2
5.0000- 2 ~ 6.0000- 2	1.0815+ 0	1.0489+ 0							3.0823- 2				9.5667- 2
6.0000- 2 ~ 8.0000- 2	1.0777+ 0	1.0489+ 0							2.7364- 2				9.5667- 2
8.0000- 2 ~ 1.0000- 1	1.0735+ 0	1.0489+ 0							2.4108- 2				9.5667- 2
1.0000- 1 ~ 1.5000- 1	1.0703+ 0	1.0489+ 0							2.0529- 2				9.5667- 2
1.5000- 1 ~ 2.0000- 1	1.0680+ 0	1.0489+ 0							1.7307- 2				9.5667- 2
2.0000- 1 ~ 3.0000- 1	1.0656+ 0	1.0489+ 0							1.4516- 2				9.5667- 2
3.0000- 1 ~ 4.0000- 1	1.0633+ 0	1.0489+ 0							1.2238- 2				9.5667- 2
4.0000- 1 ~ 5.0000- 1	1.0616+ 0	1.0489+ 0							1.0782- 2				9.5667- 2
5.0000- 1 ~ 6.0000- 1	1.0602+ 0	1.0489+ 0							9.7470- 3				9.5667- 2
6.0000- 1 ~ 8.0000- 1	1.0586+ 0	1.0489+ 0							8.6533- 3				9.5667- 2
8.0000- 1 ~ 1.0000+ 0	1.0569+ 0	1.0489+ 0							7.6237- 3				9.5667- 2
1.0000+ 0 ~ 1.5000+ 0	1.0557+ 0	1.0489+ 0							6.4918- 3				9.5667- 2
1.5000+ 0 ~ 2.0000+ 0	1.0550+ 0	1.0489+ 0							5.4728- 3				9.5667- 2
2.0000+ 0 ~ 3.0000+ 0	1.0542+ 0	1.0489+ 0							4.5904- 3				9.5667- 2
3.0000+ 0 ~ 4.0000+ 0	1.0535+ 0	1.0489+ 0							3.8699- 3				9.5667- 2
4.0000+ 0 ~ 5.0000+ 0	1.0529+ 0	1.0489+ 0							3.4094- 3				9.5667- 2
5.0000+ 0 ~ 6.0000+ 0	1.0525+ 0	1.0489+ 0							3.0823- 3				9.5667- 2
6.0000+ 0 ~ 8.0000+ 0	1.0520+ 0	1.0489+ 0							2.7364- 3				9.5667- 2
8.0000+ 0 ~ 1.0000+ 1	1.0514+ 0	1.0489+ 0							2.4108- 3				9.5667- 2
1.0000+ 1 ~ 1.5000+ 1	1.0511+ 0	1.0489+ 0							2.0529- 3				9.5667- 2
1.5000+ 1 ~ 2.0000+ 1	1.0508+ 0	1.0489+ 0							1.7307- 3				9.5667- 2
2.0000+ 1 ~ 3.0000+ 1	1.0506+ 0	1.0489+ 0							1.4516- 3				9.5667- 2
3.0000+ 1 ~ 4.0000+ 1	1.0504+ 0	1.0489+ 0							1.2238- 3				9.5667- 2
4.0000+ 1 ~ 5.0000+ 1	1.0502+ 0	1.0489+ 0							1.0782- 3				9.5667- 2
5.0000+ 1 ~ 6.0000+ 1	1.0501+ 0	1.0489+ 0							9.7470- 4				9.5667- 2
6.0000+ 1 ~ 8.0000+ 1	1.0499+ 0	1.0489+ 0							8.6533- 4				9.5667- 2
8.0000+ 1 ~ 1.0000+ 2	1.0497+ 0	1.0489+ 0							7.6237- 4				9.5667- 2
1.0000+ 2 ~ 1.5000+ 2	1.0496+ 0	1.0489+ 0							6.4918- 4				9.5667- 2
1.5000+ 2 ~ 2.0000+ 2	1.0495+ 0	1.0489+ 0							5.4728- 4				9.5667- 2
2.0000+ 2 ~ 3.0000+ 2	1.0495+ 0	1.0489+ 0							4.5904- 4				9.5667- 2
3.0000+ 2 ~ 4.0000+ 2	1.0494+ 0	1.0489+ 0							3.8699- 4				9.5667- 2
4.0000+ 2 ~ 5.0000+ 2	1.0493+ 0	1.0489+ 0							3.4094- 4				9.5667- 2
5.0000+ 2 ~ 6.0000+ 2	1.0493+ 0	1.0489+ 0							3.0823- 4				9.5667- 2
6.0000+ 2 ~ 8.0000+ 2	1.0492+ 0	1.0489+ 0							2.7364- 4				9.5667- 2
8.0000+ 2 ~ 1.0000+ 3	1.0492+ 0	1.0489+ 0							2.4108- 4				9.5667- 2
1.0000+ 3 ~ 1.5000+ 3	1.0492+ 0	1.0489+ 0							2.0529- 4				9.5667- 2
1.5000+ 3 ~ 2.0000+ 3	1.0491+ 0	1.0489+ 0							1.7307- 4				9.5667- 2
2.0000+ 3 ~ 3.0000+ 3	1.0491+ 0	1.0489+ 0							1.4516- 4				9.5667- 2
3.0000+ 3 ~ 4.0000+ 3	1.0491+ 0	1.0489+ 0							1.2238- 4				9.5667- 2
4.0000+ 3 ~ 5.0000+ 3	1.0490+ 0	1.0489+ 0							1.0782- 4				9.5667- 2
5.0000+ 3 ~ 6.0000+ 3	1.0490+ 0	1.0489+ 0							9.7470- 5				9.5667- 2
6.0000+ 3 ~ 8.0000+ 3	1.0490+ 0	1.0489+ 0							8.6533- 5				9.5667- 2
8.0000+ 3 ~ 1.0000+ 4	1.0490+ 0	1.0489+ 0							7.6237- 5				9.5667- 2
1.0000+ 4 ~ 1.5000+ 4	1.0489+ 0	1.0489+ 0							6.4918- 5				9.5667- 2
1.5000+ 4 ~ 2.0000+ 4	1.0489+ 0	1.0489+ 0							5.4728- 5				9.5667- 2
2.0000+ 4 ~ 3.0000+ 4	1.0489+ 0	1.0489+ 0							4.5904- 5				9.5667- 2
3.0000+ 4 ~ 4.0000+ 4	1.0489+ 0	1.0489+ 0							3.8699- 5				9.5667- 2
4.0000+ 4 ~ 5.0000+ 4	1.0489+ 0	1.0489+ 0							3.4094- 5				1.3139- 1
5.0000+ 4 ~ 6.0000+ 4	1.0489+ 0	1.0489+ 0							3.0823- 5				1.6985- 1
6.0000+ 4 ~ 8.0000+ 4	1.0489+ 0	1.0489+ 0							2.7364- 5				1.8148- 1
8.0000+ 4 ~ 1.0000+ 5	1.0489+ 0	1.0489+ 0							2.4108- 5				2.0567- 1
1.0000+ 5 ~ 1.5000+ 5	9.9803- 1	9.9801- 1							2.0529- 5				2.4559- 1
1.5000+ 5 ~ 2.0000+ 5	1.1404+ 0	1.1404+ 0							1.7307- 5				3.7762- 1
2.0000+ 5 ~ 3.0000+ 5	5.7978+ 0	5.7978+ 0							1.4516- 5				2.9473- 1
3.0000+ 5 ~ 4.0000+ 5	1.8510+ 0	1.8510+ 0							1.2238- 5				-2.9151 2
4.0000+ 5 ~ 5.0000+ 5	1.1437+ 0	1.1437+ 0							1.0782- 5				-5.8690 2
5.0000+ 5 ~ 6.0000+ 5	1.0289+ 0	1.0227+ 0	6.1653- 3						9.7470- 6				-3.8157 2
6.0000+ 5 ~ 8.0000+ 5	1.1096+ 0	1.0442+ 0	6.6380- 2						8.6533- 6				3.7021- 2
8.0000+ 5 ~ 1.0000+ 6	1.3956+ 0	1.2452+ 0	1.5036- 1						7.6237- 6				1.1512- 1
1.0000+ 6 ~ 1.5000+ 6	1.6805+ 0	1.4528+ 0	2.2787- 1						6.4918- 6				1.7883- 1
1.5000+ 6 ~ 2.0000+ 6	1.6930+ 0	1.4632+ 0	2.2985- 1						5.4728- 6				2.0997- 1
2.0000+ 6 ~ 3.0000+ 6	1.9044+ 0	1.6747+ 0	2.2968- 1						4.5904- 6				2.3055- 1
3.0000+ 6 ~ 4.0000+ 6	2.1861+ 0	1.9045+ 0	2.8155- 1						3.8699- 6				2.1617- 1
4.0000+ 6 ~ 5.0000+ 6	2.5289+ 0	2.1975+ 0	3.3133- 1						3.4094- 6				2.5747- 1
5.0000+ 6 ~ 6.0000+ 6	2.2357+ 0	1.7156+ 0	5.2010- 1						3.0823- 6				3.8556- 1
6.0000+ 6 ~ 8.0000+ 6	2.0045+ 0	1.4231+ 0	5.8141- 1						2.7364- 6				5.2297- 1
8.0000+ 6 ~ 1.0000+ 7	1.7813+ 0	1.2394+ 0	5.3887- 1	2.7507- 3					2.4108- 6		2.5000- 4		5.9297- 1
1.0000+ 7 ~ 1.5000+ 7	1.5541+ 0	1.0734+ 0	4.3643- 1	1.9028- 2					2.0529- 6		6.4703- 3		6.8835- 1
1.5000+ 7 ~ 2.0000+ 7	1.3114+ 0	8.7135- 1	3.6755- 1	2.1380- 2					1.7307- 6		1.1155- 2		7.7836- 1

CROSS SECTION

MATERIAL =2041

BE-9

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	6.0287+ 0	6.0000+ 0							2.3436- 2				7.4415- 2
1.0000- 2 ~ 1.5000- 2	6.0143+ 0	6.0000+ 0							1.0867- 2				7.4415- 2
1.5000- 2 ~ 2.0000- 2	6.0111+ 0	6.0000+ 0							9.1616- 3				7.4415- 2
2.0000- 2 ~ 3.0000- 2	6.0080+ 0	6.0000+ 0							7.6843- 3				7.4415- 2
3.0000- 2 ~ 4.0000- 2	6.0067+ 0	6.0000+ 0							6.4782- 3				7.4415- 2
4.0000- 2 ~ 5.0000- 2	6.0060+ 0	6.0000+ 0							5.7074- 3				7.4415- 2
5.0000- 2 ~ 6.0000- 2	6.0055+ 0	6.0000+ 0							5.1597- 3				7.4415- 2
6.0000- 2 ~ 8.0000- 2	6.0048+ 0	6.0000+ 0							4.5808- 3				7.4415- 2
8.0000- 2 ~ 1.0000- 1	6.0041+ 0	6.0000+ 0							4.0357- 3				7.4415- 2
1.0000- 1 ~ 1.5000- 1	6.0036+ 0	6.0000+ 0							3.4365- 3				7.4415- 2
1.5000- 1 ~ 2.0000- 1	6.0032+ 0	6.0000+ 0							2.8971- 3				7.4415- 2
2.0000- 1 ~ 3.0000- 1	6.0028+ 0	6.0000+ 0							2.4300- 3				7.4415- 2
3.0000- 1 ~ 4.0000- 1	6.0024+ 0	6.0000+ 0							2.0486- 3				7.4415- 2
4.0000- 1 ~ 5.0000- 1	6.0021+ 0	6.0000+ 0							1.8048- 3				7.4415- 2
5.0000- 1 ~ 6.0000- 1	6.0019+ 0	6.0000+ 0							1.6316- 3				7.4415- 2
6.0000- 1 ~ 8.0000- 1	6.0016+ 0	6.0000+ 0							1.4486- 3				7.4415- 2
8.0000- 1 ~ 1.0000+ 0	6.0013+ 0	6.0000+ 0							1.2762- 3				7.4415- 2
1.0000+ 0 ~ 1.5000+ 0	6.0011+ 0	6.0000+ 0							1.0867- 3				7.4415- 2
1.5000+ 0 ~ 2.0000+ 0	6.0010+ 0	6.0000+ 0							9.1616- 4				7.4415- 2
2.0000+ 0 ~ 3.0000+ 0	6.0009+ 0	6.0000+ 0							7.6843- 4				7.4415- 2
3.0000+ 0 ~ 4.0000+ 0	6.0008+ 0	6.0000+ 0							6.4782- 4				7.4415- 2
4.0000+ 0 ~ 5.0000+ 0	6.0007+ 0	6.0000+ 0							5.7074- 4				7.4415- 2
5.0000+ 0 ~ 6.0000+ 0	6.0006+ 0	6.0000+ 0							5.1597- 4				7.4415- 2
6.0000+ 0 ~ 8.0000+ 0	6.0005+ 0	6.0000+ 0							4.5808- 4				7.4415- 2
8.0000+ 0 ~ 1.0000+ 1	6.0004+ 0	6.0000+ 0							4.0357- 4				7.4415- 2
1.0000+ 1 ~ 1.5000+ 1	6.0004+ 0	6.0000+ 0							3.4365- 4				7.4415- 2
1.5000+ 1 ~ 2.0000+ 1	6.0003+ 0	6.0000+ 0							2.8971- 4				7.4415- 2
2.0000+ 1 ~ 3.0000+ 1	6.0003+ 0	6.0000+ 0							2.4300- 4				7.4415- 2
3.0000+ 1 ~ 4.0000+ 1	6.0002+ 0	6.0000+ 0							2.0486- 4				7.4415- 2
4.0000+ 1 ~ 5.0000+ 1	6.0002+ 0	6.0000+ 0							1.8048- 4				7.4415- 2
5.0000+ 1 ~ 6.0000+ 1	6.0002+ 0	6.0000+ 0							1.6316- 4				7.4415- 2
6.0000+ 1 ~ 8.0000+ 1	6.0002+ 0	6.0000+ 0							1.4486- 4				7.4415- 2
8.0000+ 1 ~ 1.0000+ 2	6.0001+ 0	6.0000+ 0							1.2762- 4				7.4415- 2
1.0000+ 2 ~ 1.5000+ 2	6.0001+ 0	6.0000+ 0							1.0867- 4				7.4415- 2
1.5000+ 2 ~ 2.0000+ 2	6.0001+ 0	6.0000+ 0							9.1616- 5				7.4415- 2
2.0000+ 2 ~ 3.0000+ 2	6.0001+ 0	6.0000+ 0							7.6843- 5				7.4415- 2
3.0000+ 2 ~ 4.0000+ 2	6.0001+ 0	6.0000+ 0							6.4782- 6				7.4415- 2
4.0000+ 2 ~ 5.0000+ 2	6.0001+ 0	6.0000+ 0							5.7074- 5				7.4415- 2
5.0000+ 2 ~ 6.0000+ 2	6.0001+ 0	6.0000+ 0							5.1597- 5				7.4415- 2
6.0000+ 2 ~ 8.0000+ 2	6.0000+ 0	6.0000+ 0							4.5808- 5				7.4415- 2
8.0000+ 2 ~ 1.0000+ 3	6.0000+ 0	6.0000+ 0							4.0357- 5				7.4415- 2
1.0000+ 3 ~ 1.5000+ 3	5.9906+ 0	5.9905+ 0							3.4365- 5				7.4415- 2
1.5000+ 3 ~ 2.0000+ 3	5.9757+ 0	5.9757+ 0							2.8971- 5				7.4415- 2
2.0000+ 3 ~ 3.0000+ 3	5.9603+ 0	5.9603+ 0							2.4300- 5				7.4415- 2
3.0000+ 3 ~ 4.0000+ 3	5.9455+ 0	5.9455+ 0							2.0486- 5				7.4415- 2
4.0000+ 3 ~ 5.0000+ 3	5.9346+ 0	5.9346+ 0							1.8048- 5				7.4415- 2
5.0000+ 3 ~ 6.0000+ 3	5.9259+ 0	5.9258+ 0							1.6316- 5				7.4415- 2
6.0000+ 3 ~ 8.0000+ 3	5.9155+ 0	5.9155+ 0							1.4486- 5				7.4415- 2
8.0000+ 3 ~ 1.0000+ 4	5.9046+ 0	5.9046+ 0							1.2762- 5				7.4415- 2
1.0000+ 4 ~ 1.5000+ 4	5.8369+ 0	5.8369+ 0							1.0867- 5				7.4415- 2
1.5000+ 4 ~ 2.0000+ 4	5.7390+ 0	5.7390+ 0							9.1616- 6				7.4415- 2
2.0000+ 4 ~ 3.0000+ 4	5.6278+ 0	5.6278+ 0							7.6843- 6				7.4415- 2
3.0000+ 4 ~ 4.0000+ 4	5.5160+ 0	5.5160+ 0							6.4782- 6				7.4415- 2
4.0000+ 4 ~ 5.0000+ 4	5.4343+ 0	5.4343+ 0							5.7074- 6				7.9809- 2
5.0000+ 4 ~ 6.0000+ 4	5.3667+ 0	5.3667+ 0							5.1597- 6				8.6264- 2
6.0000+ 4 ~ 8.0000+ 4	5.2828+ 0	5.2828+ 0							4.5808- 6				8.7559- 2
8.0000+ 4 ~ 1.0000+ 5	5.1956+ 0	5.1956+ 0							4.0357- 6				7.7499- 2
1.0000+ 5 ~ 1.5000+ 5	4.9820+ 0	4.9820+ 0							3.4366- 6				8.1885- 2
1.5000+ 5 ~ 2.0000+ 5	4.6656+ 0	4.6656+ 0							2.8971- 6				9.5855- 2
2.0000+ 5 ~ 3.0000+ 5	4.2445+ 0	4.2445+ 0							2.4300- 6				1.0617- 1
3.0000+ 5 ~ 4.0000+ 5	3.8140+ 0	3.8140+ 0							2.0486- 6				1.0316- 1
4.0000+ 5 ~ 5.0000+ 5	3.4986+ 0	3.4986+ 0							1.8048- 6				1.0728- 1
5.0000+ 5 ~ 6.0000+ 5	3.5526+ 0	3.5526+ 0							1.6316- 6				1.0957- 1
6.0000+ 5 ~ 8.0000+ 5	4.1172+ 0	4.1171+ 0							1.4486- 6			1.2812- 4	1.1922- 1
8.0000+ 5 ~ 1.0000+ 6	3.5291+ 0	3.5284+ 0							1.2762- 6			6.9702- 4	2.2345- 1
1.0000+ 6 ~ 1.5000+ 6	2.8599+ 0	2.8546+ 0							1.0867- 6			5.0750- 3	2.8739- 1
1.5000+ 6 ~ 2.0000+ 6	1.7916+ 0	1.7621+ 0		2.9600- 4					9.1616- 7			2.8878- 2	2.3120- 1
2.0000+ 6 ~ 3.0000+ 6	2.6907+ 0	2.5031+ 0		1.0851- 1					7.6843- 7			7.8620- 2	2.4401- 1
3.0000+ 6 ~ 4.0000+ 6	2.3502+ 0	1.7976+ 0		4.4845- 1					6.4782- 7			1.0240- 1	4.2474- 1
4.0000+ 6 ~ 5.0000+ 6	1.9092+ 0	1.3026+ 0		6.2903- 1					5.7074- 7			7.7348- 2	4.9738- 1
5.0000+ 6 ~ 6.0000+ 6	1.8537+ 0	1.2370+ 0		6.6100- 1					5.1597- 7			5.5750- 2	5.6142- 1
6.0000+ 6 ~ 8.0000+ 6	1.7692+ 0	1.1598+ 0		5.7162- 1					4.5808- 7			3.7770- 2	6.3551- 1
8.0000+ 6 ~ 1.0000+ 7	1.7005+ 0	1.1054+ 0		5.6600- 1					4.0357- 7			2.9159- 2	6.8491- 1
1.0000+ 7 ~ 1.5000+ 7	1.5601+ 0	1.0059+ 0		5.3026- 1					3.4366- 7	4.4057- 5		1.6535- 2	7.4318- 1
1.5000+ 7 ~ 2.0000+ 7	1.3837+ 0	8.7774- 1		4.6504- 1					2.8971- 7	1.5595- 3	3.4545- 3	7.3051- 3	8.2478- 1

CROSS SECTION

MATERIAL =2051

B -10

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.1835+ 4	2.1729+ 0							1.5510+ 0	1.7449- 3		1.1891+ 4	6.7613- 2
1.0000- 2 ~ 1.5000- 2	5.4891+ 3	2.1729+ 0							7.1918- 1	8.0928- 4		5.4869+ 3	6.7613- 2
1.5000- 2 ~ 2.0000- 2	4.6278+ 3	2.1729+ 0							6.0630- 1	6.8228- 4		4.6248+ 3	6.7613- 2
2.0000- 2 ~ 3.0000- 2	3.8817+ 3	2.1729+ 0							5.0853- 1	5.7227- 4		3.8790+ 3	6.7613- 2
3.0000- 2 ~ 4.0000- 2	3.2728+ 3	2.1729+ 0							4.2872- 1	4.8244- 4		3.2701+ 3	6.7613- 2
4.0000- 2 ~ 5.0000- 2	2.8836+ 3	2.1728+ 0							3.7771- 1	4.2503- 4		2.8809+ 3	6.7613- 2
5.0000- 2 ~ 6.0000- 2	2.6070+ 3	2.1728+ 0							3.4146- 1	3.8424- 4		2.6044+ 3	6.7613- 2
6.0000- 2 ~ 8.0000- 2	2.3147+ 3	2.1728+ 0							3.0315- 1	3.4112- 4		2.3121+ 3	6.7613- 2
8.0000- 2 ~ 1.0000- 1	2.0394+ 3	2.1728+ 0							2.6708- 1	3.0053- 4		2.0369+ 3	6.7613- 2
1.0000- 1 ~ 1.5000- 1	1.7370+ 3	2.1727+ 0							2.2743- 1	2.6590- 4		1.7344+ 3	6.7613- 2
1.5000- 1 ~ 2.0000- 1	1.4648+ 3	2.1727+ 0							1.9173- 1	2.1573- 4		1.4621+ 3	6.7613- 2
2.0000- 1 ~ 3.0000- 1	1.2290+ 3	2.1726+ 0							1.6081- 1	1.8094- 4		1.2263+ 3	6.7613- 2
3.0000- 1 ~ 4.0000- 1	1.0365+ 3	2.1725+ 0							1.3557- 1	1.5253- 4		1.0338+ 3	6.7613- 2
4.0000- 1 ~ 5.0000- 1	9.1337+ 2	2.1725+ 0							1.1944- 1	1.3438- 4		9.1077+ 2	6.7613- 2
5.0000- 1 ~ 6.0000- 1	8.2588+ 2	2.1725+ 0							1.0798- 1	1.2148- 4		8.2336+ 2	6.7613- 2
6.0000- 1 ~ 8.0000- 1	7.3337+ 2	2.1724+ 0							9.5864- 2	1.0785- 4		7.3095+ 2	6.7613- 2
8.0000- 1 ~ 1.0000+ 0	6.4627+ 2	2.1724+ 0							8.4458- 2	9.5016- 5		6.4396+ 2	6.7613- 2
1.0000+ 0 ~ 1.5000+ 0	5.5058+ 2	2.1722+ 0							7.1918- 2	8.0971- 5		5.4831+ 2	6.7613- 2
1.5000+ 0 ~ 2.0000+ 0	4.6445+ 2	2.1720+ 0							6.0630- 2	6.8349- 5		4.6220+ 2	6.7613- 2
2.0000+ 0 ~ 3.0000+ 0	3.8985+ 2	2.1719+ 0							5.0854- 2	5.7403- 5		3.8762+ 2	6.7613- 2
3.0000+ 0 ~ 4.0000+ 0	3.2895+ 2	2.1717+ 0							4.2872- 2	4.8454- 5		3.2673+ 2	6.7613- 2
4.0000+ 0 ~ 5.0000+ 0	2.9003+ 2	2.1715+ 0							3.7771- 2	4.2730- 5		2.8782+ 2	6.7613- 2
5.0000+ 0 ~ 6.0000+ 0	2.6238+ 2	2.1714+ 0							3.4146- 2	3.8658- 5		2.6017+ 2	6.7613- 2
6.0000+ 0 ~ 8.0000+ 0	2.3314+ 2	2.1713+ 0							3.0315- 2	3.4351- 5		2.3094+ 2	6.7613- 2
8.0000+ 0 ~ 1.0000+ 1	2.0563+ 2	2.1712+ 0							2.6708- 2	3.0292- 5		2.0343+ 2	6.7613- 2
1.0000+ 1 ~ 1.5000+ 1	1.7539+ 2	2.1708+ 0							2.2743- 2	2.5826- 5		1.7318+ 2	6.7613- 2
1.5000+ 1 ~ 2.0000+ 1	1.4815+ 2	2.1704+ 0							1.9173- 2	2.1799- 5		1.4595+ 2	6.7613- 2
2.0000+ 1 ~ 3.0000+ 1	1.2456+ 2	2.1700+ 0							1.6081- 2	1.8308- 5		1.2237+ 2	6.7613- 2
3.0000+ 1 ~ 4.0000+ 1	1.0530+ 2	2.1695+ 0							1.3557- 2	1.5454- 5		1.0311+ 2	6.7613- 2
4.0000+ 1 ~ 5.0000+ 1	9.2992+ 1	2.1692+ 0							1.1944- 2	1.3628- 5		9.0809+ 1	6.7613- 2
5.0000+ 1 ~ 6.0000+ 1	8.4247+ 1	2.1689+ 0							1.0798- 2	1.2330- 5		8.2066+ 1	6.7613- 2
6.0000+ 1 ~ 8.0000+ 1	7.5002+ 1	2.1685+ 0							9.5864- 3	1.0966- 5		7.2823+ 1	6.7613- 2
8.0000+ 1 ~ 1.0000+ 2	6.6301+ 1	2.1680+ 0							8.4458- 3	9.6615- 6		6.4124+ 1	6.7613- 2
1.0000+ 2 ~ 1.5000+ 2	5.6755+ 1	2.1673+ 0							7.1918- 3	8.2368- 6		5.4557+ 1	6.7612- 2
1.5000+ 2 ~ 2.0000+ 2	4.8138+ 1	2.1665+ 0							6.0630- 3	6.9528- 6		4.5948+ 1	6.7608- 2
2.0000+ 2 ~ 3.0000+ 2	4.0671+ 1	2.1656+ 0							5.0854- 3	5.8393- 6		3.8494+ 1	6.7603- 2
3.0000+ 2 ~ 4.0000+ 2	3.4680+ 1	2.1647+ 0							4.2872- 3	4.9290- 6		3.2407+ 1	6.7597- 2
4.0000+ 2 ~ 5.0000+ 2	3.0689+ 1	2.1641+ 0							3.7771- 3	4.3467- 6		2.8518+ 1	6.7590- 2
5.0000+ 2 ~ 6.0000+ 2	2.7924+ 1	2.1636+ 0							3.4146- 3	3.9325- 6		2.5756+ 1	6.7584- 2
6.0000+ 2 ~ 8.0000+ 2	2.5000+ 1	2.1632+ 0							3.0315- 3	3.4943- 6		2.2833+ 1	6.7574- 2
8.0000+ 2 ~ 1.0000+ 3	2.2250+ 1	2.1628+ 0							2.6708- 3	3.0815- 6		2.0084+ 1	6.7561- 2
1.0000+ 3 ~ 1.5000+ 3	1.9236+ 1	2.1627+ 0							2.2743- 3	2.8016- 6		1.7064+ 1	6.7539- 2
1.5000+ 3 ~ 2.0000+ 3	1.6516+ 1	2.1632+ 0							1.9173- 3	2.6239- 6		1.4347+ 1	6.7506- 2
2.0000+ 3 ~ 3.0000+ 3	1.4170+ 1	2.1650+ 0							1.6081- 3	2.4517- 6		1.1997+ 1	6.7458- 2
3.0000+ 3 ~ 4.0000+ 3	1.2252+ 1	2.1681+ 0							1.3557- 3	2.2962- 6		1.0079+ 1	6.7393- 2
4.0000+ 3 ~ 5.0000+ 3	1.1031+ 1	2.1719+ 0							1.1944- 3	2.1871- 6		8.8559+ 0	6.7328- 2
5.0000+ 3 ~ 6.0000+ 3	1.0167+ 1	2.1763+ 0							1.0798- 3	2.1039- 6		7.9880+ 0	6.7264- 2
6.0000+ 3 ~ 8.0000+ 3	9.2572+ 0	2.1834+ 0							9.5864- 4	2.0094- 6		7.0722+ 0	6.7167- 2
8.0000+ 3 ~ 1.0000+ 4	8.4075+ 0	2.1938+ 0							8.4458- 4	1.9139- 6		6.2125+ 0	6.7037- 2
1.0000+ 4 ~ 1.5000+ 4	7.4942+ 0	2.2146+ 0							7.1918- 4	1.7986- 6		5.2726+ 0	6.6811- 2
1.5000+ 4 ~ 2.0000+ 4	6.6805+ 0	2.2444+ 0							6.0630- 4	1.6845- 6		4.4324+ 0	6.6487- 2
2.0000+ 4 ~ 3.0000+ 4	6.0093+ 0	2.2923+ 0							5.0854- 4	1.5739- 6		3.7148+ 0	6.6002- 2
3.0000+ 4 ~ 4.0000+ 4	5.5018+ 0	2.3594+ 0							4.2872- 4	1.4741- 6		3.1411+ 0	6.5355- 2
4.0000+ 4 ~ 5.0000+ 4	5.2153+ 0	2.4291+ 0							3.7771- 4	1.4041- 6		2.7865+ 0	6.4708- 2
5.0000+ 4 ~ 6.0000+ 4	5.0451+ 0	2.5012+ 0							3.4146- 4	1.4653- 6		2.5423+ 0	6.4061- 2
6.0000+ 4 ~ 8.0000+ 4	4.9079+ 0	2.6101+ 0							3.0315- 4	1.8159- 6		2.2966+ 0	6.3090- 2
8.0000+ 4 ~ 1.0000+ 5	4.8364+ 0	2.7570+ 0							2.6708- 4	2.2853- 6		2.0786+ 0	6.1796- 2
1.0000+ 5 ~ 1.5000+ 5	4.8419+ 0	3.0105+ 0							2.2743- 4	3.8850- 6		1.8309+ 0	5.9531- 2
1.5000+ 5 ~ 2.0000+ 5	4.8758+ 0	3.3406+ 0							1.9173- 4	6.6150- 6		1.5347+ 0	5.9594- 2
2.0000+ 5 ~ 3.0000+ 5	4.8837+ 0	3.6812+ 0							1.6081- 4	1.6910- 5		1.2022+ 0	6.5110- 2
3.0000+ 5 ~ 4.0000+ 5	4.7729+ 0	3.8328+ 0							1.3557- 4	3.4770- 5		9.9992- 1	8.3004- 2
4.0000+ 5 ~ 5.0000+ 5	4.5444+ 0	3.7142+ 0							1.1944- 4	7.0025- 5		8.2994- 1	1.0975- 1
5.0000+ 5 ~ 6.0000+ 5	4.1021+ 0	3.4400+ 0							1.0798- 4	1.2267- 4		6.6167- 1	1.1947- 1
6.0000+ 5 ~ 8.0000+ 5	3.4443+ 0	3.0488+ 0	2.8674- 7						9.5864- 5	2.7550- 4		3.9491- 1	1.1144- 1
8.0000+ 5 ~ 1.0000+ 6	2.8911+ 0	2.6531+ 0	1.0521- 4						8.4458- 5	6.7750- 4		2.3655- 1	1.1081- 1
1.0000+ 6 ~ 1.5000+ 6	2.3092+ 0	2.0904+ 0	1.7589- 3						7.1918- 5	2.9916- 3		2.1079- 1	1.3419- 1
1.5000+ 6 ~ 2.0000+ 6	2.0815+ 0	1.5886+ 0	3.0020- 2						6.0630- 5	7.9843- 3		4.3456- 1	2.2575- 1
2.0000+ 6 ~ 3.0000+ 6	2.1252+ 0	1.7078+ 0	4.3784- 2						5.0854- 5	1.1436- 2		3.3193- 1	1.7143- 1
3.0000+ 6 ~ 4.0000+ 6	1.7536+ 0	1.3833+ 0	6.1653- 2						4.2872- 5	1.4226- 2		2.3611- 1	2.8679- 1
4.0000+ 6 ~ 5.0000+ 6	1.7485+ 0	1.2352+ 0	1.0685- 1						3.7771- 5	2.3165- 2	6.3000- 5	2.3849- 1	3.9469- 1
5.0000+ 6 ~ 6.0000+ 6	1.4941+ 0	9.4844- 1	1.2820- 1						3.4146- 5	2.8452- 2	9.8393- 3	1.6270- 1	4.6445- 1
6.0000+ 6 ~ 8.0000+ 6	1.5400+ 0	1.0334+ 0	1.8880- 1						3.0315- 5	3.2062- 2	3.3122- 2	1.1073- 1	4.9634- 1
8.0000+ 6 ~ 1.0000+ 7	1.4636+ 0	9.5123- 1	2.4696- 1	7.1680- 7					2.6708- 5	4.7431- 2	3.7464- 2	6.5070- 2	5.3350- 1
1.0000+ 7 ~ 1.5000+ 7	1.4607+ 0	9.4715- 1	2.8729- 1	1.8028- 5					2.2743- 5	3.7795- 2	3.2611- 2	5.9087- 2	6.3713- 1
1.5000+ 7 ~ 2.0000+ 7	1.4650+ 0	9.8878- 1	2.7935- 1	3.0016- 2					1.9172- 5	2.1134- 2	2.3445- 2	5.2384- 2	7.5385- 1

CROSS SECTION

MATERIAL =2061 C -12

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 6 ~ 1.0000- 2	4.7132+ 0	4.6990+ 0							1.0484- 2				5.6336- 2
1.0000- 2 ~ 1.5000- 2	4.7053+ 0	4.6990+ 0							4.8617- 3				5.6336- 2
1.5000- 2 ~ 2.0000- 2	4.7038+ 0	4.6990+ 0							4.0986- 3				5.6336- 2
2.0000- 2 ~ 3.0000- 2	4.7025+ 0	4.6990+ 0							3.4377- 3				5.6336- 2
3.0000- 2 ~ 4.0000- 2	4.7020+ 0	4.6990+ 0							2.8982- 3				5.6336- 2
4.0000- 2 ~ 5.0000- 2	4.7017+ 0	4.6990+ 0							2.5533- 3				5.6336- 2
5.0000- 2 ~ 6.0000- 2	4.7015+ 0	4.6990+ 0							2.3083- 3				5.6336- 2
6.0000- 2 ~ 8.0000- 2	4.7011+ 0	4.6990+ 0							2.0493- 3				5.6336- 2
8.0000- 2 ~ 1.0000- 1	4.7008+ 0	4.6990+ 0							1.8055- 3				5.6336- 2
1.0000- 1 ~ 1.5000- 1	4.7006+ 0	4.6990+ 0							1.5374- 3				5.6336- 2
1.5000- 1 ~ 2.0000- 1	4.7004+ 0	4.6990+ 0							1.2961- 3				5.6336- 2
2.0000- 1 ~ 3.0000- 1	4.7002+ 0	4.6990+ 0							1.0871- 3				5.6336- 2
3.0000- 1 ~ 4.0000- 1	4.7001+ 0	4.6990+ 0							9.1648- 4				5.6336- 2
4.0000- 1 ~ 5.0000- 1	4.7000+ 0	4.6990+ 0							8.0743- 4				5.6336- 2
5.0000- 1 ~ 6.0000- 1	4.6998+ 0	4.6990+ 0							7.2995- 4				5.6336- 2
6.0000- 1 ~ 8.0000- 1	4.6997+ 0	4.6990+ 0							6.4805- 4				5.6336- 2
8.0000- 1 ~ 1.0000+ 0	4.6996+ 0	4.6990+ 0							5.7094- 4				5.6336- 2
1.0000+ 0 ~ 1.5000+ 0	4.6995+ 0	4.6990+ 0							4.8617- 4				5.6336- 2
1.5000+ 0 ~ 2.0000+ 0	4.6994+ 0	4.6990+ 0							4.0986- 4				5.6336- 2
2.0000+ 0 ~ 3.0000+ 0	4.6994+ 0	4.6990+ 0							3.4377- 4				5.6337- 2
3.0000+ 0 ~ 4.0000+ 0	4.6993+ 0	4.6990+ 0							2.8982- 4				5.6337- 2
4.0000+ 0 ~ 5.0000+ 0	4.6993+ 0	4.6990+ 0							2.5533- 4				5.6337- 2
5.0000+ 0 ~ 6.0000+ 0	4.6992+ 0	4.6990+ 0							2.3083- 4				5.6337- 2
6.0000+ 0 ~ 8.0000+ 0	4.6992+ 0	4.6990+ 0							2.0493- 4				5.6337- 2
8.0000+ 0 ~ 1.0000+ 1	4.6992+ 0	4.6990+ 0							1.8055- 4				5.6338- 2
1.0000+ 1 ~ 1.5000+ 1	4.6991+ 0	4.6989+ 0							1.5374- 4				5.6338- 2
1.5000+ 1 ~ 2.0000+ 1	4.6991+ 0	4.6989+ 0							1.2961- 4				5.6339- 2
2.0000+ 1 ~ 3.0000+ 1	4.6990+ 0	4.6989+ 0							1.0871- 4				5.6340- 2
3.0000+ 1 ~ 4.0000+ 1	4.6990+ 0	4.6989+ 0							9.1648- 5				5.6341- 2
4.0000+ 1 ~ 5.0000+ 1	4.6989+ 0	4.6989+ 0							8.0743- 5				5.6343- 2
5.0000+ 1 ~ 6.0000+ 1	4.6989+ 0	4.6988+ 0							7.2995- 5				5.6344- 2
6.0000+ 1 ~ 8.0000+ 1	4.6988+ 0	4.6988+ 0							6.4805- 5				5.6346- 2
8.0000+ 1 ~ 1.0000+ 2	4.6988+ 0	4.6987+ 0							5.7094- 5				5.6349- 2
1.0000+ 2 ~ 1.5000+ 2	4.6986+ 0	4.6986+ 0							4.8617- 5				5.6354- 2
1.5000+ 2 ~ 2.0000+ 2	4.6985+ 0	4.6985+ 0							4.0986- 5				5.6361- 2
2.0000+ 2 ~ 3.0000+ 2	4.6982+ 0	4.6982+ 0							3.4377- 5				5.6372- 2
3.0000+ 2 ~ 4.0000+ 2	4.6979+ 0	4.6979+ 0							2.8982- 5				5.6386- 2
4.0000+ 2 ~ 5.0000+ 2	4.6976+ 0	4.6976+ 0							2.5533- 5				5.6400- 2
5.0000+ 2 ~ 6.0000+ 2	4.6973+ 0	4.6973+ 0							2.3083- 5				5.6414- 2
6.0000+ 2 ~ 8.0000+ 2	4.6969+ 0	4.6968+ 0							2.0493- 5				5.6435- 2
8.0000+ 2 ~ 1.0000+ 3	4.6962+ 0	4.6962+ 0							1.8055- 5				5.6464- 2
1.0000+ 3 ~ 1.5000+ 3	4.6951+ 0	4.6951+ 0							1.5374- 5				5.6513- 2
1.5000+ 3 ~ 2.0000+ 3	4.6936+ 0	4.6936+ 0							1.2961- 5				5.6584- 2
2.0000+ 3 ~ 3.0000+ 3	4.6913+ 0	4.6912+ 0							1.0871- 5				5.6690- 2
3.0000+ 3 ~ 4.0000+ 3	4.6882+ 0	4.6882+ 0							9.1648- 6				5.6832- 2
4.0000+ 3 ~ 5.0000+ 3	4.6852+ 0	4.6852+ 0							8.0743- 6				5.6973- 2
5.0000+ 3 ~ 6.0000+ 3	4.6822+ 0	4.6821+ 0							7.2995- 6				5.7115- 2
6.0000+ 3 ~ 8.0000+ 3	4.6776+ 0	4.6776+ 0							6.4805- 6				5.7327- 2
8.0000+ 3 ~ 1.0000+ 4	4.6715+ 0	4.6715+ 0							5.7094- 6				5.7611- 2
1.0000+ 4 ~ 1.5000+ 4	4.6604+ 0	4.6604+ 0							4.8617- 6				5.8033- 2
1.5000+ 4 ~ 2.0000+ 4	4.6454+ 0	4.6454+ 0							4.0986- 6				5.8596- 2
2.0000+ 4 ~ 3.0000+ 4	4.6221+ 0	4.6221+ 0							3.4377- 6				5.9439- 2
3.0000+ 4 ~ 4.0000+ 4	4.5925+ 0	4.5925+ 0							2.8982- 6				6.0563- 2
4.0000+ 4 ~ 5.0000+ 4	4.5629+ 0	4.5629+ 0							2.5533- 6				6.1686- 2
5.0000+ 4 ~ 6.0000+ 4	4.5334+ 0	4.5334+ 0							2.3083- 6				6.2812- 2
6.0000+ 4 ~ 8.0000+ 4	4.4896+ 0	4.4896+ 0							2.0493- 6				6.4499- 2
8.0000+ 4 ~ 1.0000+ 5	4.4318+ 0	4.4318+ 0							1.8055- 6				6.6748- 2
1.0000+ 5 ~ 1.5000+ 5	4.3284+ 0	4.3284+ 0							1.5374- 6				7.0683- 2
1.5000+ 5 ~ 2.0000+ 5	4.1926+ 0	4.1926+ 0							1.2961- 6				7.6306- 2
2.0000+ 5 ~ 3.0000+ 5	3.9977+ 0	3.9977+ 0							1.0871- 6				8.4739- 2
3.0000+ 5 ~ 4.0000+ 5	3.7497+ 0	3.7497+ 0							9.1648- 7				9.5371- 2
4.0000+ 5 ~ 5.0000+ 5	3.5254+ 0	3.5254+ 0							8.0743- 7				1.0233- 1
5.0000+ 5 ~ 6.0000+ 5	3.3188+ 0	3.3188+ 0							7.2995- 7				1.0868- 1
6.0000+ 5 ~ 8.0000+ 5	3.0422+ 0	3.0422+ 0							6.4805- 7				1.1728- 1
8.0000+ 5 ~ 1.0000+ 6	2.7251+ 0	2.7251+ 0							5.7094- 7				1.2360- 1
1.0000+ 6 ~ 1.5000+ 6	2.3024+ 0	2.3024+ 0							4.8617- 7				1.2637- 1
1.5000+ 6 ~ 2.0000+ 6	1.8631+ 0	1.8631+ 0							4.0986- 7				1.0508- 1
2.0000+ 6 ~ 3.0000+ 6	1.8556+ 0	1.8556+ 0							3.4377- 7				3.4380- 2
3.0000+ 6 ~ 4.0000+ 6	2.1971+ 0	2.1971+ 0							2.8982- 7				4.1444- 2
4.0000+ 6 ~ 5.0000+ 6	1.6673+ 0	1.6626+ 0	4.6660- 3						2.5533- 7				3.2114- 1
5.0000+ 6 ~ 6.0000+ 6	1.1423+ 0	1.0175+ 0	1.2475- 1						2.3083- 7				2.7232- 1
6.0000+ 6 ~ 8.0000+ 6	1.3290+ 0	1.0383+ 0	2.6043- 1						2.0493- 7			3.0258- 2	3.5603- 1
8.0000+ 6 ~ 1.0000+ 7	1.2521+ 0	7.6319- 1	3.1710- 1						1.8055- 7			1.7185- 1	4.3445- 1
1.0000+ 7 ~ 1.5000+ 7	1.3172+ 0	7.7269- 1	4.5128- 1						1.5374- 7			9.3220- 2	5.8170- 1
1.5000+ 7 ~ 2.0000+ 7	1.3700+ 0	8.4110- 1	4.4800- 1						1.2959- 7			8.0896- 2	5.6727- 1

CROSS SECTION

MATERIAL =2091 F -19

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	3.6716+ 0	3.6410+ 0							2.9644- 2				3.5396- 2
1.0000- 2 ~ 1.5000- 2	3.6550+ 0	3.6410+ 0							1.3742- 2				3.5395- 2
1.5000- 2 ~ 2.0000- 2	3.6531+ 0	3.6410+ 0							1.1592- 2				3.5395- 2
2.0000- 2 ~ 3.0000- 2	3.6510+ 0	3.6410+ 0							9.7174- 3				3.5395- 2
3.0000- 2 ~ 4.0000- 2	3.6506+ 0	3.6410+ 0							8.1969- 3				3.5395- 2
4.0000- 2 ~ 5.0000- 2	3.6506+ 0	3.6410+ 0							7.2200- 3				3.5395- 2
5.0000- 2 ~ 6.0000- 2	3.6506+ 0	3.6410+ 0							6.5229- 3				3.5395- 2
6.0000- 2 ~ 8.0000- 2	3.6506+ 0	3.6410+ 0							5.7869- 3				3.5396- 2
8.0000- 2 ~ 1.0000- 1	3.6506+ 0	3.6410+ 0							5.1054- 3				3.5395- 2
1.0000- 1 ~ 1.5000- 1	3.6506+ 0	3.6410+ 0							4.3471- 3				3.5395- 2
1.5000- 1 ~ 2.0000- 1	3.6506+ 0	3.6410+ 0							3.6646- 3				3.5395- 2
2.0000- 1 ~ 3.0000- 1	3.6506+ 0	3.6410+ 0							3.0722- 3				3.5395- 2
3.0000- 1 ~ 4.0000- 1	3.6506+ 0	3.6410+ 0							2.5916- 3				3.5395- 2
4.0000- 1 ~ 5.0000- 1	3.6506+ 0	3.6410+ 0							2.2820- 3				3.5395- 2
5.0000- 1 ~ 6.0000- 1	3.6506+ 0	3.6410+ 0							2.0644- 3				3.5395- 2
6.0000- 1 ~ 8.0000- 1	3.6506+ 0	3.6410+ 0							1.8325- 3				3.5395- 2
8.0000- 1 ~ 1.0000+ 0	3.6506+ 0	3.6410+ 0							1.6137- 3				3.5395- 2
1.0000+ 0 ~ 1.5000+ 0	3.6506+ 0	3.6410+ 0							1.3751- 3				3.5395- 2
1.5000+ 0 ~ 2.0000+ 0	3.6506+ 0	3.6410+ 0							1.1587- 3				3.5395- 2
2.0000+ 0 ~ 3.0000+ 0	3.6506+ 0	3.6410+ 0							9.7262- 4				3.5395- 2
3.0000+ 0 ~ 4.0000+ 0	3.6506+ 0	3.6410+ 0							8.1962- 4				3.5395- 2
4.0000+ 0 ~ 5.0000+ 0	3.6506+ 0	3.6410+ 0							7.2281- 4				3.5395- 2
5.0000+ 0 ~ 6.0000+ 0	3.6506+ 0	3.6410+ 0							6.5333- 4				3.5395- 2
6.0000+ 0 ~ 8.0000+ 0	3.6506+ 0	3.6410+ 0							5.7993- 4				3.5395- 2
8.0000+ 0 ~ 1.0000+ 1	3.6506+ 0	3.6410+ 0							5.1153- 4				3.5395- 2
1.0000+ 1 ~ 1.5000+ 1	3.6506+ 0	3.6410+ 0							4.3558- 4				3.5395- 2
1.5000+ 1 ~ 2.0000+ 1	3.6506+ 0	3.6410+ 0							3.6770- 4				3.5395- 2
2.0000+ 1 ~ 3.0000+ 1	3.6506+ 0	3.6410+ 0							3.0870- 4				3.5395- 2
3.0000+ 1 ~ 4.0000+ 1	3.6506+ 0	3.6410+ 0							2.6083- 4				3.5394- 2
4.0000+ 1 ~ 5.0000+ 1	3.6506+ 0	3.6410+ 0							2.3018- 4				3.5394- 2
5.0000+ 1 ~ 6.0000+ 1	3.6506+ 0	3.6410+ 0							2.0835- 4				3.5394- 2
6.0000+ 1 ~ 8.0000+ 1	3.6506+ 0	3.6410+ 0							1.8560- 4				3.5394- 2
8.0000+ 1 ~ 1.0000+ 2	3.6506+ 0	3.6410+ 0							1.6408- 4				3.5394- 2
1.0000+ 2 ~ 1.5000+ 2	3.6506+ 0	3.6410+ 0							1.4057- 4				3.5393- 2
1.5000+ 2 ~ 2.0000+ 2	3.6506+ 0	3.6410+ 0							1.1958- 4				3.5392- 2
2.0000+ 2 ~ 3.0000+ 2	3.6506+ 0	3.6410+ 0							1.0162- 4				3.5390- 2
3.0000+ 2 ~ 4.0000+ 2	3.6506+ 0	3.6410+ 0							8.7213- 5				3.5388- 2
4.0000+ 2 ~ 5.0000+ 2	3.6506+ 0	3.6410+ 0							7.8159- 5				3.5386- 2
5.0000+ 2 ~ 6.0000+ 2	3.6506+ 0	3.6410+ 0							7.1968- 5				3.5385- 2
6.0000+ 2 ~ 8.0000+ 2	3.6505+ 0	3.6410+ 0							6.5518- 5				3.5384- 2
8.0000+ 2 ~ 1.0000+ 3	3.6505+ 0	3.6410+ 0							5.9698- 5				3.5383- 2
1.0000+ 3 ~ 1.5000+ 3	3.6505+ 0	3.6410+ 0							5.3871- 5				3.5377- 2
1.5000+ 3 ~ 2.0000+ 3	3.6505+ 0	3.6410+ 0							4.9251- 5				3.5370- 2
2.0000+ 3 ~ 3.0000+ 3	3.6504+ 0	3.6411+ 0							4.6402- 5				3.5362- 2
3.0000+ 3 ~ 4.0000+ 3	3.6504+ 0	3.6411+ 0							4.5495- 5				3.5354- 2
4.0000+ 3 ~ 5.0000+ 3	3.6504+ 0	3.6412+ 0							4.6333- 5				3.5349- 2
5.0000+ 3 ~ 6.0000+ 3	3.6504+ 0	3.6414+ 0							4.8231- 5				3.5353- 2
6.0000+ 3 ~ 8.0000+ 3	3.6506+ 0	3.6417+ 0							5.2696- 5				3.5371- 2
8.0000+ 3 ~ 1.0000+ 4	3.6511+ 0	3.6423+ 0							6.1192- 5				3.5390- 2
1.0000+ 4 ~ 1.5000+ 4	3.6535+ 0	3.6450+ 0							8.7759- 5				3.5516- 2
1.5000+ 4 ~ 2.0000+ 4	3.6667+ 0	3.6586+ 0							1.8667- 4				3.5698- 2
2.0000+ 4 ~ 3.0000+ 4	1.0196+ 1	1.0162+ 1							2.7404- 2				3.6128- 2
3.0000+ 4 ~ 4.0000+ 4	3.8891+ 0	3.8823+ 0							5.9991- 4				3.7038- 2
4.0000+ 4 ~ 5.0000+ 4	1.1593+ 1	1.1580+ 1							8.2663- 3				3.8043- 2
5.0000+ 4 ~ 6.0000+ 4	6.2139+ 0	6.2073+ 0							2.3219- 3				3.9543- 2
6.0000+ 4 ~ 8.0000+ 4	4.3177+ 0	4.3143+ 0							4.7900- 4				4.2275- 2
8.0000+ 4 ~ 1.0000+ 5	1.3208+ 1	1.3202+ 1							4.6244- 3				4.5161- 2
1.0000+ 5 ~ 1.5000+ 5	7.9351+ 0	7.7153+ 0	2.1832- 1						1.4468- 3				5.4161- 2
1.5000+ 5 ~ 2.0000+ 5	4.0493+ 0	3.1489+ 0	9.0000- 1						4.0547- 4				6.6365- 2
2.0000+ 5 ~ 3.0000+ 5	7.5050+ 0	4.3680+ 0	3.1363+ 0						6.4974- 4				8.8128- 2
3.0000+ 5 ~ 4.0000+ 5	8.3427+ 0	5.4047+ 0	2.9375+ 0						4.6411- 4				1.2042- 1
4.0000+ 5 ~ 5.0000+ 5	6.4656+ 0	3.4608+ 0	3.0045+ 0						2.4437- 4				1.5344- 1
5.0000+ 5 ~ 6.0000+ 5	4.9390+ 0	2.5712+ 0	2.3675+ 0						3.3132- 4				1.8520- 1
6.0000+ 5 ~ 8.0000+ 5	3.9496+ 0	2.1031+ 0	1.8462+ 0						2.8518- 4				2.2832- 1
8.0000+ 5 ~ 1.0000+ 6	3.9049+ 0	2.6046+ 0	1.3001+ 0						1.1117- 4				2.7723- 1
1.0000+ 6 ~ 1.5000+ 6	3.4621+ 0	2.3721+ 0	1.0799+ 0						1.1580- 4				3.3998- 1
1.5000+ 6 ~ 2.0000+ 6	3.1620+ 0	2.0676+ 0	1.0943+ 0						6.9036- 5				4.1584- 1
2.0000+ 6 ~ 3.0000+ 6	2.6545+ 0	1.5461+ 0	1.1094+ 0						6.1025- 5			0.0000+ 0	4.9075- 1
3.0000+ 6 ~ 4.0000+ 6	2.0060+ 0	9.4735- 1	1.0399+ 0						5.1446- 5			1.8687- 2	5.5426- 1
4.0000+ 6 ~ 5.0000+ 6	1.9266+ 0	9.3247- 1	9.0228- 1				7.4096- 4		4.5326- 5	9.6228- 4		9.0068- 2	6.4031- 1
5.0000+ 6 ~ 6.0000+ 6	1.8283+ 0	7.7939- 1	8.6869- 1				8.6500- 3		4.0976- 5	9.2353- 3		1.6243- 1	6.5641- 1
6.0000+ 6 ~ 8.0000+ 6	1.7075+ 0	6.5029- 1	8.3047- 1				5.0775- 2		3.6378- 5	3.3483- 2	7.6344- 3	1.3475- 1	6.9485- 1
8.0000+ 6 ~ 1.0000+ 7	1.7055+ 0	6.7999- 1	7.3432- 1				1.3906- 1	1.2582- 3	3.2049- 5	3.7658- 2	3.5180- 2	7.4539- 2	7.4996- 1
1.0000+ 7 ~ 1.5000+ 7	1.7429+ 0	7.9331- 1	5.7369- 1	2.1334- 2			2.0471- 1	4.8090- 2	2.7291- 5	2.0282- 2	3.9480- 2	2.7472- 2	8.2678- 1
1.5000+ 7 ~ 2.0000+ 7	1.7962+ 0	9.4427- 1	3.7340- 1	7.7834- 2			2.2194- 1	9.2655- 2	2.3007- 5	1.2723- 2	3.9500- 2	1.8889- 2	8.8843- 1

CROSS SECTION

MATERIAL =2111 NA-23

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	4.8450+ 0	3.1997+ 0							1.6309+ 0				2.9238- 2
1.0000- 2 ~ 1.5000- 2	3.9678+ 0	3.1949+ 0							7.5645- 1				2.9238- 2
1.5000- 2 ~ 2.0000- 2	3.8302+ 0	3.1848+ 0							6.3828- 1				2.9238- 2
2.0000- 2 ~ 3.0000- 2	3.7167+ 0	3.1739+ 0							5.3576- 1				2.9238- 2
3.0000- 2 ~ 4.0000- 2	3.6554+ 0	3.1757+ 0							4.5154- 1				2.9238- 2
4.0000- 2 ~ 5.0000- 2	3.6094+ 0	3.1816+ 0							3.9766- 1				2.9238- 2
5.0000- 2 ~ 6.0000- 2	3.5635+ 0	3.1876+ 0							3.5938- 1				2.9238- 2
6.0000- 2 ~ 8.0000- 2	3.5194+ 0	3.1963+ 0							3.1893- 1				2.9238- 2
8.0000- 2 ~ 1.0000- 1	3.4929+ 0	3.2081+ 0							2.8087- 1				2.9238- 2
1.0000- 1 ~ 1.5000- 1	3.4841+ 0	3.2113+ 0							2.3912- 1				2.9238- 2
1.6000- 1 ~ 2.0000- 1	3.4323+ 0	3.2068+ 0							2.0158- 1				2.9238- 2
2.0000- 1 ~ 3.0000- 1	3.3847+ 0	3.1976+ 0							1.6908- 1				2.9238- 2
3.0000- 1 ~ 4.0000- 1	3.3317+ 0	3.1868+ 0							1.4263- 1				2.9238- 2
4.0000- 1 ~ 5.0000- 1	3.3044+ 0	3.1758+ 0							1.2557- 1				2.9238- 2
5.0000- 1 ~ 6.0000- 1	3.2794+ 0	3.1650+ 0							1.1352- 1				2.9238- 2
6.0000- 1 ~ 8.0000- 1	3.2522+ 0	3.1486+ 0							1.0078- 1				2.9238- 2
8.0000- 1 ~ 1.0000+ 0	3.2174+ 0	3.1268+ 0							8.6788- 2				2.9238- 2
1.0000+ 0 ~ 1.5000+ 0	3.1925+ 0	3.1145+ 0							7.5617- 2				2.9238- 2
1.5000+ 0 ~ 2.0000+ 0	3.1775+ 0	3.1118+ 0							6.3765- 2				2.9238- 2
2.0000+ 0 ~ 3.0000+ 0	3.1687+ 0	3.1112+ 0							5.4044- 2				2.9238- 2
3.0000+ 0 ~ 4.0000+ 0	3.1663+ 0	3.1125+ 0							4.6336- 2				2.9238- 2
4.0000+ 0 ~ 5.0000+ 0	3.1637+ 0	3.1138+ 0							4.1336- 2				2.9238- 2
5.0000+ 0 ~ 6.0000+ 0	3.1613+ 0	3.1152+ 0							3.7743- 2				2.9238- 2
6.0000+ 0 ~ 8.0000+ 0	3.1575+ 0	3.1172+ 0							3.3900- 2				2.9238- 2
8.0000+ 0 ~ 1.0000+ 1	3.1525+ 0	3.1199+ 0							3.0242- 2				2.9238- 2
1.0000+ 1 ~ 1.5000+ 1	3.1492+ 0	3.1209+ 0							2.6159- 2				2.9238- 2
1.5000+ 1 ~ 2.0000+ 1	3.1475+ 0	3.1202+ 0							2.2429- 2				2.9238- 2
2.0000+ 1 ~ 3.0000+ 1	3.1450+ 0	3.1193+ 0							1.9139- 2				2.9238- 2
3.0000+ 1 ~ 4.0000+ 1	3.1417+ 0	3.1180+ 0							1.6410- 2				2.9238- 2
4.0000+ 1 ~ 5.0000+ 1	3.1383+ 0	3.1168+ 0							1.4639- 2				2.9238- 2
5.0000+ 1 ~ 6.0000+ 1	3.1350+ 0	3.1155+ 0							1.3367- 2				2.9238- 2
6.0000+ 1 ~ 8.0000+ 1	3.1300+ 0	3.1136+ 0							1.2006- 2				2.9238- 2
8.0000+ 1 ~ 1.0000+ 2	3.1233+ 0	3.1111+ 0							1.0711- 2				2.9238- 2
1.0000+ 2 ~ 1.5000+ 2	3.1175+ 0	3.1078+ 0							9.3828- 3				2.9238- 2
1.5000+ 2 ~ 2.0000+ 2	3.1126+ 0	3.1041+ 0							8.2120- 3				2.9238- 2
2.0000+ 2 ~ 3.0000+ 2	3.1083+ 0	3.1008+ 0							7.4072- 3				2.9238- 2
3.0000+ 2 ~ 4.0000+ 2	3.1050+ 0	3.0979+ 0							6.8626- 3				2.9238- 2
4.0000+ 2 ~ 5.0000+ 2	3.1016+ 0	3.0950+ 0							6.4675- 3				2.9238- 2
5.0000+ 2 ~ 6.0000+ 2	3.1184+ 0	3.1121+ 0							6.2982- 3				2.9238- 2
6.0000+ 2 ~ 8.0000+ 2	3.1724+ 0	3.1660+ 0							6.3853- 3				2.9238- 2
8.0000+ 2 ~ 1.0000+ 3	3.3587+ 0	3.3519+ 0							6.8360- 3				2.9238- 2
1.0000+ 3 ~ 1.5000+ 3	4.3144+ 0	4.3058+ 0							8.7276- 3				2.9238- 2
1.5000+ 3 ~ 2.0000+ 3	8.8003+ 0	8.7845+ 0							1.5728- 2				2.9238- 2
2.0000+ 3 ~ 3.0000+ 3	1.4304+ 2	1.4289+ 2							1.4447- 1				2.9238- 2
3.0000+ 3 ~ 4.0000+ 3	7.4475+ 1	7.4426+ 1							4.9426- 2				2.9238- 2
4.0000+ 3 ~ 5.0000+ 3	1.5799+ 1	1.5795+ 1							4.6405- 3				2.9238- 2
5.0000+ 3 ~ 6.0000+ 3	9.7440+ 0	9.7424+ 0							1.5508- 3				2.9238- 2
6.0000+ 3 ~ 8.0000+ 3	7.1639+ 0	7.1619+ 0							2.0453- 3				2.9238- 2
8.0000+ 3 ~ 1.0000+ 4	5.8649+ 0	5.8646+ 0							2.2977- 4				2.9238- 2
1.0000+ 4 ~ 1.5000+ 4	5.0717+ 0	5.0716+ 0							8.8129- 5				2.9238- 2
1.5000+ 4 ~ 2.0000+ 4	4.6083+ 0	4.6082+ 0							3.6823- 5				2.9238- 2
2.0000+ 4 ~ 3.0000+ 4	4.3346+ 0	4.3345+ 0							2.5502- 5				2.9238- 2
3.0000+ 4 ~ 4.0000+ 4	4.1703+ 0	4.1667+ 0							3.6199- 3				2.9238- 2
4.0000+ 4 ~ 5.0000+ 4	4.2327+ 0	4.2323+ 0							3.2756- 4				2.9238- 2
5.0000+ 4 ~ 6.0000+ 4	9.5210+ 0	9.5137+ 0							7.2203- 3				2.9238- 2
6.0000+ 4 ~ 8.0000+ 4	4.0176+ 0	4.0175+ 0							8.7783- 5				2.9238- 2
8.0000+ 4 ~ 1.0000+ 5	3.8525+ 0	3.8525+ 0							1.6886- 5				2.9238- 2
1.0000+ 5 ~ 1.5000+ 5	3.6974+ 0	3.8957+ 0							1.7288- 3				3.0368- 2
1.5000+ 5 ~ 2.0000+ 5	3.5175+ 0	3.5167+ 0							7.9088- 4				4.9328- 2
2.0000+ 5 ~ 3.0000+ 5	4.1221+ 0	4.1214+ 0							7.4162- 4				8.3219- 2
3.0000+ 5 ~ 4.0000+ 5	3.5135+ 0	3.5131+ 0							4.2304- 4				1.9666- 2
4.0000+ 5 ~ 5.0000+ 5	3.3886+ 0	3.3821+ 0	6.2610- 3						2.6035- 4				8.9423- 2
5.0000+ 5 ~ 6.0000+ 5	3.4671+ 0	3.3293+ 0	1.3750- 1						3.2068- 4				-2.7107 2
6.0000+ 5 ~ 8.0000+ 5	6.0133+ 0	5.6448+ 0	3.6825- 1						3.2243- 4				1.5415- 1
8.0000+ 5 ~ 1.0000+ 6	4.1755+ 0	3.7891+ 0	3.8612- 1						2.2163- 4				2.8898- 1
1.0000+ 6 ~ 1.5000+ 6	3.2021+ 0	2.6202+ 0	5.8170- 1						1.9620- 4				2.4707- 1
1.5000+ 6 ~ 2.0000+ 6	2.5945+ 0	1.9938+ 0	6.0050- 1						2.0446- 4				3.2904- 1
2.0000+ 6 ~ 3.0000+ 6	2.7368+ 0	2.0336+ 0	7.0287- 1						1.9743- 4				4.6783- 1
3.0000+ 6 ~ 4.0000+ 6	2.1409+ 0	1.3192+ 0	8.2150- 1						1.7186- 4	2.2920- 5			4.7969- 1
4.0000+ 6 ~ 5.0000+ 6	1.9613+ 0	1.0848+ 0	8.7500- 1						1.5397- 4	8.6359- 4		5.6629- 4	4.8751- 1
5.0000+ 6 ~ 6.0000+ 6	1.8585+ 0	9.5206- 1	8.9499- 1						1.6123- 4	9.5540- 3		1.7828- 3	5.2100- 1
6.0000+ 6 ~ 8.0000+ 6	1.6688+ 0	7.0894- 1	9.1975- 1						1.6761- 4	2.9661- 2		1.0299- 2	5.6321- 1
8.0000+ 6 ~ 1.0000+ 7	1.5294+ 0	5.6398- 1	8.6425- 1						1.7832- 4	5.4694- 2		4.6250- 2	5.7394- 1
1.0000+ 7 ~ 1.5000+ 7	1.6653+ 0	8.1927- 1	6.5200- 1	7.4803- 3					2.0382- 4	6.1046- 2		1.2530- 1	6.4615- 1
1.5000+ 7 ~ 2.0000+ 7	1.6900+ 0	9.8878- 1	5.0000- 1	3.9000- 2					2.2000- 4	3.5000- 2		1.2700- 1	6.9339- 1

CROSS SECTION

MATERIAL =2131

AL-27

ENERGY	TOTAL	ELASTIC	INELR	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,R)	MU-BAR
1.0000- 5 ~ 1.0000- 2	2.2183+ 0	1.6000+ 0							7.0926- 1				2.4511- 2
1.0000- 2 ~ 1.5000- 2	1.8355+ 0	1.5000+ 0							3.2888- 1				2.4431- 2
1.5000- 2 ~ 2.0000- 2	1.7872+ 0	1.5000+ 0							2.7726- 1				2.4408- 2
2.0000- 2 ~ 3.0000- 2	1.7378+ 0	1.5000+ 0							2.3255- 1				2.4385- 2
3.0000- 2 ~ 4.0000- 2	1.7082+ 0	1.5000+ 0							1.9605- 1				2.4362- 2
4.0000- 2 ~ 5.0000- 2	1.6858+ 0	1.5000+ 0							1.7273- 1				2.4345- 2
5.0000- 2 ~ 6.0000- 2	1.6633+ 0	1.5000+ 0							1.5615- 1				2.4332- 2
6.0000- 2 ~ 8.0000- 2	1.6404+ 0	1.6000+ 0							1.3863- 1				2.4316- 2
8.0000- 2 ~ 1.0000- 1	1.6238+ 0	1.5000+ 0							1.2213- 1				2.4299- 2
1.0000- 1 ~ 1.5000- 1	1.6100+ 0	1.5000+ 0							1.0400- 1				2.4278- 2
1.5000- 1 ~ 2.0000- 1	1.5985+ 0	1.5000+ 0							8.7677- 2				2.4255- 2
2.0000- 1 ~ 3.0000- 1	1.5813+ 0	1.5000+ 0							7.3540- 2				2.4232- 2
3.0000- 1 ~ 4.0000- 1	1.5630+ 0	1.5000+ 0							6.1997- 2				2.4209- 2
4.0000- 1 ~ 5.0000- 1	1.5559+ 0	1.5000+ 0							5.4620- 2				2.4192- 2
5.0000- 1 ~ 6.0000- 1	1.5498+ 0	1.5000+ 0							4.9379- 2				2.4179- 2
6.0000- 1 ~ 8.0000- 1	1.5451+ 0	1.5000+ 0							4.3838- 2				2.4163- 2
8.0000- 1 ~ 1.0000+ 0	1.5394+ 0	1.5000+ 0							3.8622- 2				2.4146- 2
1.0000+ 0 ~ 1.5000+ 0	1.5359+ 0	1.5000+ 0							3.2888- 2				2.4124- 2
1.5000+ 0 ~ 2.0000+ 0	1.5345+ 0	1.5000+ 0							2.7726- 2				2.4102- 2
2.0000+ 0 ~ 3.0000+ 0	1.5324+ 0	1.5000+ 0							2.3255- 2				2.4078- 2
3.0000+ 0 ~ 4.0000+ 0	1.5296+ 0	1.5000+ 0							1.9605- 2				2.4056- 2
4.0000+ 0 ~ 5.0000+ 0	1.5268+ 0	1.5000+ 0							1.7272- 2				2.4039- 2
5.0000+ 0 ~ 6.0000+ 0	1.5241+ 0	1.5000+ 0							1.5615- 2				2.4025- 2
6.0000+ 0 ~ 8.0000+ 0	1.5199+ 0	1.5000+ 0							1.3863- 2				2.4009- 2
8.0000+ 0 ~ 1.0000+ 1	1.5143+ 0	1.5000+ 0							1.2213- 2				2.3993- 2
1.0000+ 1 ~ 1.5000+ 1	1.5113+ 0	1.5000+ 0							1.0400- 2				2.3971- 2
1.5000+ 1 ~ 2.0000+ 1	1.5109+ 0	1.5000+ 0							8.7677- 3				2.3948- 2
2.0000+ 1 ~ 3.0000+ 1	1.5103+ 0	1.5000+ 0							7.3540- 3				2.3925- 2
3.0000+ 1 ~ 4.0000+ 1	1.5094+ 0	1.5000+ 0							6.1997- 3				2.3902- 2
4.0000+ 1 ~ 5.0000+ 1	1.5085+ 0	1.5000+ 0							5.4620- 3				2.3886- 2
5.0000+ 1 ~ 6.0000+ 1	1.5076+ 0	1.5000+ 0							4.9379- 3				2.3872- 2
6.0000+ 1 ~ 8.0000+ 1	1.5063+ 0	1.5000+ 0							4.3838- 3				2.3856- 2
8.0000+ 1 ~ 1.0000+ 2	1.5045+ 0	1.5000+ 0							3.8622- 3				2.3839- 2
1.0000+ 2 ~ 1.5000+ 2	1.5035+ 0	1.5000+ 0							3.3300- 3				2.3818- 2
1.5000+ 2 ~ 2.0000+ 2	1.5033+ 0	1.5000+ 0							2.8650- 3				2.3795- 2
2.0000+ 2 ~ 3.0000+ 2	1.5030+ 0	1.5000+ 0							2.4535- 3				2.3772- 2
3.0000+ 2 ~ 4.0000+ 2	1.5025+ 0	1.6000+ 0							2.1109- 3				2.3749- 2
4.0000+ 2 ~ 5.0000+ 2	1.5020+ 0	1.5000+ 0							1.8880- 3				2.3732- 2
5.0000+ 2 ~ 6.0000+ 2	1.5018+ 0	1.5000+ 0							1.7626- 3				2.3719- 2
6.0000+ 2 ~ 8.0000+ 2	1.5017+ 0	1.5000+ 0							1.6708- 3				2.3703- 2
8.0000+ 2 ~ 1.0000+ 3	1.5016+ 0	1.5000+ 0							1.6096- 3				2.3686- 2
1.0000+ 3 ~ 1.5000+ 3	1.5016+ 0	1.5000+ 0							1.6266- 3				2.3665- 2
1.5000+ 3 ~ 2.0000+ 3	1.5017+ 0	1.5000+ 0							1.7275- 3				2.3642- 2
2.0000+ 3 ~ 3.0000+ 3	1.5020+ 0	1.5000+ 0							2.0141- 3				2.3618- 2
3.0000+ 3 ~ 4.0000+ 3	1.4916+ 0	1.4890+ 0							2.6034- 3				2.3596- 2
4.0000+ 3 ~ 5.0000+ 3	1.4402+ 0	1.4368+ 0							3.4050- 3				2.3579- 2
5.0000+ 3 ~ 6.0000+ 3	3.1961+ 0	3.0350+ 0							1.6106- 1				2.3566- 2
6.0000+ 3 ~ 8.0000+ 3	1.3486+ 0	1.3426+ 0							6.0105- 3				2.3550- 2
8.0000+ 3 ~ 1.0000+ 4	1.2764+ 0	1.2730+ 0							3.3218- 3				2.3533- 2
1.0000+ 4 ~ 1.5000+ 4	1.2299+ 0	1.2272+ 0							2.7262- 3				2.3045- 2
1.5000+ 4 ~ 2.0000+ 4	8.8157- 1	8.7881- 1							2.7574- 3				2.2291- 2
2.0000+ 4 ~ 3.0000+ 4	6.8316- 1	6.7920- 1							3.9617- 3				2.1225- 2
3.0000+ 4 ~ 4.0000+ 4	1.4913+ 1	1.4899+ 1							1.4978- 2				1.9849- 2
4.0000+ 4 ~ 5.0000+ 4	4.2527+ 0	4.2500+ 0							2.7269- 3				1.8658- 2
5.0000+ 4 ~ 6.0000+ 4	2.2727+ 0	2.2716+ 0							1.1522- 3				1.7657- 2
6.0000+ 4 ~ 8.0000+ 4	2.0890+ 0	2.0878+ 0							1.2119- 3				1.6398- 2
8.0000+ 4 ~ 1.0000+ 5	1.1678+ 1	1.1675+ 1							2.9093- 3				1.5193- 2
1.0000+ 5 ~ 1.5000+ 5	5.2225+ 0	5.2202+ 0							2.2631- 3				1.4697- 2
1.5000+ 5 ~ 2.0000+ 5	6.3412+ 0	6.3400+ 0							1.1828- 3				1.6066- 2
2.0000+ 5 ~ 3.0000+ 5	4.1469+ 0	4.1451+ 0							7.6753- 4				2.2918- 2
3.0000+ 5 ~ 4.0000+ 5	3.7577+ 0	3.7569+ 0							8.2463- 4				3.8647- 2
4.0000+ 5 ~ 5.0000+ 5	4.4142+ 0	4.4136+ 0							6.2578- 4				5.8358- 2
5.0000+ 5 ~ 6.0000+ 5	3.9937+ 0	3.9933+ 0							3.7014- 4				8.0662- 2
6.0000+ 5 ~ 8.0000+ 5	3.8512+ 0	3.8509+ 0							3.0349- 4				1.1561- 1
8.0000+ 5 ~ 1.0000+ 6	3.4169+ 0	3.4078+ 0	8.8822- 3						1.8898- 4				1.6014- 1
1.0000+ 6 ~ 1.5000+ 6	3.1517+ 0	3.0417+ 0	1.0992- 1						1.2425- 4				2.2848- 1
1.5000+ 6 ~ 2.0000+ 6	2.8608+ 0	2.6150+ 0	2.4568- 1						1.3787- 4				3.0186- 1
2.0000+ 6 ~ 3.0000+ 6	2.9672+ 0	2.5004+ 0	4.6656- 1						1.0902- 4	2.4250- 4			3.6406- 1
3.0000+ 6 ~ 4.0000+ 6	2.5409+ 0	1.8404+ 0	6.9597- 1						6.5044- 5	4.5175- 3			3.9696- 1
4.0000+ 6 ~ 5.0000+ 6	2.1767+ 0	1.3486+ 0	8.1360- 1						4.9519- 5	1.4526- 2		2.5000- 5	3.9113- 1
5.0000+ 6 ~ 6.0000+ 6	2.0250+ 0	1.1159+ 0	8.7465- 1						6.7176- 5	3.3600- 2		8.5000- 4	3.9640- 1
6.0000+ 6 ~ 8.0000+ 6	1.8750+ 0	9.4733- 1	8.5455- 1						1.0880- 4	5.5625- 2		1.7262- 2	4.1297- 1
8.0000+ 6 ~ 1.0000+ 7	1.7000+ 0	8.0231- 1	7.4796- 1						1.7863- 4	8.0625- 2		6.8800- 2	4.5866- 1
1.0000+ 7 ~ 1.5000+ 7	1.7350+ 0	8.9029- 1	6.3707- 1	8.7447- 3					3.4576- 4	8.3550- 2		1.1495- 1	5.8190- 1
1.5000+ 7 ~ 2.0000+ 7	1.7710+ 0	1.0291+ 0	3.6315- 1	2.5879- 1					6.3980- 4	4.8700- 2		7.0535- 2	7.2992- 1

CROSS SECTION SI-0

MATERIAL =2140

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	2.6917+ 0	2.2021+ 0							4.8112- 1				2.3974- 2
1.0000- 2 ~ 1.5000- 2	2.4279+ 0	2.2000+ 0							2.2307- 1				2.3981- 2
1.5000- 2 ~ 2.0000- 2	2.3958+ 0	2.2000+ 0							1.8806- 1				2.3983- 2
2.0000- 2 ~ 3.0000- 2	2.3619+ 0	2.2000+ 0							1.5773- 1				2.3985- 2
3.0000- 2 ~ 4.0000- 2	2.3446+ 0	2.2000+ 0							1.3297- 1				2.3987- 2
4.0000- 2 ~ 5.0000- 2	2.3329+ 0	2.2000+ 0							1.1714- 1				2.3989- 2
5.0000- 2 ~ 6.0000- 2	2.3211+ 0	2.2000+ 0							1.0590- 1				2.3990- 2
6.0000- 2 ~ 8.0000- 2	2.3036+ 0	2.2000+ 0							9.4013- 2				2.3991- 2
8.0000- 2 ~ 1.0000- 1	2.2841+ 0	2.2000+ 0							8.2824- 2				2.3993- 2
1.0000- 1 ~ 1.5000- 1	2.2719+ 0	2.2000+ 0							7.0524- 2				2.3995- 2
1.5000- 1 ~ 2.0000- 1	2.2608+ 0	2.2000+ 0							5.9451- 2				2.3997- 2
2.0000- 1 ~ 3.0000- 1	2.2509+ 0	2.2000+ 0							4.9863- 2				2.3999- 2
3.0000- 1 ~ 4.0000- 1	2.2434+ 0	2.2000+ 0							4.2034- 2				2.4001- 2
4.0000- 1 ~ 5.0000- 1	2.2380+ 0	2.2000+ 0							3.7031- 2				2.4002- 2
5.0000- 1 ~ 6.0000- 1	2.2339+ 0	2.2000+ 0							3.3477- 2				2.4004- 2
6.0000- 1 ~ 8.0000- 1	2.2309+ 0	2.2000+ 0							2.9719- 2				2.4005- 2
8.0000- 1 ~ 1.0000+ 0	2.2268+ 0	2.2000+ 0							2.6182- 2				2.4007- 2
1.0000+ 0 ~ 1.5000+ 0	2.2248+ 0	2.2000+ 0							2.2295- 2				2.4008- 2
1.5000+ 0 ~ 2.0000+ 0	2.2248+ 0	2.2000+ 0							1.8797- 2				2.4010- 2
2.0000+ 0 ~ 3.0000+ 0	2.2248+ 0	2.2000+ 0							1.5767- 2				2.4012- 2
3.0000+ 0 ~ 4.0000+ 0	2.2247+ 0	2.2000+ 0							1.3293- 2				2.4014- 2
4.0000+ 0 ~ 5.0000+ 0	2.2247+ 0	2.2000+ 0							1.1711- 2				2.4016- 2
5.0000+ 0 ~ 6.0000+ 0	2.2247+ 0	2.2000+ 0							1.0588- 2				2.4017- 2
6.0000+ 0 ~ 8.0000+ 0	2.2247+ 0	2.2000+ 0							9.4002- 3				2.4018- 2
8.0000+ 0 ~ 1.0000+ 1	2.2246+ 0	2.2000+ 0							8.2820- 3				2.4020- 2
1.0000+ 1 ~ 1.5000+ 1	2.2245+ 0	2.2000+ 0							7.0527- 3				2.4022- 2
1.5000+ 1 ~ 2.0000+ 1	2.2244+ 0	2.2000+ 0							5.9460- 3				2.4024- 2
2.0000+ 1 ~ 3.0000+ 1	2.2242+ 0	2.2000+ 0							4.9875- 3				2.4026- 2
3.0000+ 1 ~ 4.0000+ 1	2.2240+ 0	2.2000+ 0							4.2048- 3				2.4028- 2
4.0000+ 1 ~ 5.0000+ 1	2.2237+ 0	2.2000+ 0							3.7047- 3				2.4029- 2
5.0000+ 1 ~ 6.0000+ 1	2.2235+ 0	2.2000+ 0							3.3493- 3				2.4031- 2
6.0000+ 1 ~ 8.0000+ 1	2.2231+ 0	2.2000+ 0							2.9735- 3				2.4032- 2
8.0000+ 1 ~ 1.0000+ 2	2.2227+ 0	2.2000+ 0							2.6198- 3				2.4033- 2
1.0000+ 2 ~ 1.5000+ 2	2.2218+ 0	2.2000+ 0							2.2310- 3				2.4040- 2
1.5000+ 2 ~ 2.0000+ 2	2.2206+ 0	2.2000+ 0							1.8809- 3				2.4051- 2
2.0000+ 2 ~ 3.0000+ 2	2.2188+ 0	2.2000+ 0							1.5777- 3				2.4061- 2
3.0000+ 2 ~ 4.0000+ 2	2.2164+ 0	2.2000+ 0							1.3301- 3				2.4071- 2
4.0000+ 2 ~ 5.0000+ 2	2.2140+ 0	2.2000+ 0							1.1719- 3				2.4079- 2
5.0000+ 2 ~ 6.0000+ 2	2.2116+ 0	2.2000+ 0							1.0595- 3				2.4085- 2
6.0000+ 2 ~ 8.0000+ 2	2.2080+ 0	2.2000+ 0							9.4062- 4				2.4092- 2
8.0000+ 2 ~ 1.0000+ 3	2.2032+ 0	2.2000+ 0							8.2873- 4				2.4099- 2
1.0000+ 3 ~ 1.5000+ 3	2.1820+ 0	2.1812+ 0							7.3530- 4				2.4201- 2
1.5000+ 3 ~ 2.0000+ 3	2.1444+ 0	2.1437+ 0							6.6266- 4				2.4357- 2
2.0000+ 3 ~ 3.0000+ 3	2.0880+ 0	2.0873+ 0							5.9511- 4				2.4519- 2
3.0000+ 3 ~ 4.0000+ 3	2.0128+ 0	2.0114+ 0							7.1398- 4				2.4674- 2
4.0000+ 3 ~ 5.0000+ 3	1.9376+ 0	1.9277+ 0							6.3140- 3				2.4790- 2
5.0000+ 3 ~ 6.0000+ 3	1.8800+ 0	1.8708+ 0							4.6931- 3				2.5028- 2
6.0000+ 3 ~ 8.0000+ 3	1.8200+ 0	1.8193+ 0							4.0217- 4				2.5507- 2
8.0000+ 3 ~ 1.0000+ 4	1.7400+ 0	1.7397+ 0							3.1418- 4				2.6013- 2
1.0000+ 4 ~ 1.5000+ 4	1.6625+ 0	1.6622+ 0							2.6958- 4				2.8350- 2
1.5000+ 4 ~ 2.0000+ 4	1.5875+ 0	1.5872+ 0							2.4600- 4				3.1884- 2
2.0000+ 4 ~ 3.0000+ 4	1.6000+ 0	1.5986+ 0							9.7486- 4				3.5737- 2
3.0000+ 4 ~ 4.0000+ 4	1.5250+ 0	1.5202+ 0							4.5581- 3				3.9302- 2
4.0000+ 4 ~ 5.0000+ 4	1.4250+ 0	1.4236+ 0							1.4032- 3			0.0000+ 0	4.1946- 2
5.0000+ 4 ~ 6.0000+ 4	1.6500+ 0	1.6483+ 0							1.4757- 3			0.0000+ 0	4.6361- 2
6.0000+ 4 ~ 8.0000+ 4	1.9375+ 0	1.9307+ 0							5.7554- 3			0.0000+ 0	5.4741- 2
8.0000+ 4 ~ 1.0000+ 5	1.3250+ 0	1.3246+ 0							3.6620- 4			0.0000+ 0	6.3596- 2
1.0000+ 5 ~ 1.5000+ 5	6.8700- 1	6.8663- 1							3.7078- 4			0.0000+ 0	8.6573- 2
1.5000+ 5 ~ 2.0000+ 5	5.6765+ 0	5.6760+ 0							4.6611- 4			0.0000+ 0	1.1674- 1
2.0000+ 5 ~ 3.0000+ 5	6.6800+ 0	6.6797+ 0							3.0523- 4			0.0000+ 0	1.4808- 1
3.0000+ 5 ~ 4.0000+ 5	3.6470+ 0	3.6465+ 0							4.7430- 4			0.0000+ 0	1.7817- 1
4.0000+ 5 ~ 5.0000+ 5	3.0810+ 0	3.0808+ 0							2.4535- 4			0.0000+ 0	2.0068- 1
5.0000+ 5 ~ 6.0000+ 5	4.1468+ 0	4.1458+ 0							1.0488- 3			0.0000+ 0	2.2054- 1
6.0000+ 5 ~ 8.0000+ 5	2.7104+ 0	2.7098+ 0							6.6020- 4			0.0000+ 0	2.4672- 1
8.0000+ 5 ~ 1.0000+ 6	4.6561+ 0	4.6550+ 0							1.1000- 3			0.0000+ 0	2.7438- 1
1.0000+ 6 ~ 1.5000+ 6	2.8352+ 0	2.8336+ 0	1.1665- 3						5.0747- 4			0.0000+ 0	3.0238- 1
1.5000+ 6 ~ 2.0000+ 6	3.4090+ 0	3.3624+ 0	4.6282- 2						3.5269- 4			0.0000+ 0	3.3305- 1
2.0000+ 6 ~ 3.0000+ 6	2.6449+ 0	2.2017+ 0	4.4274- 1						3.7971- 4			3.8198- 5	4.0589- 1
3.0000+ 6 ~ 4.0000+ 6	2.1301+ 0	1.5127+ 0	6.1662- 1						4.0966- 4	1.1494- 9		3.2389- 4	4.6022- 1
4.0000+ 6 ~ 5.0000+ 6	2.3834+ 0	1.6890+ 0	6.8680- 1						4.3348- 4	4.5664- 3		2.5498- 3	4.9365- 1
5.0000+ 6 ~ 6.0000+ 6	2.1090+ 0	1.2947+ 0	7.5431- 1						4.5345- 4	5.1154- 2		8.3782- 3	5.3682- 1
6.0000+ 6 ~ 8.0000+ 6	1.9084+ 0	8.2431- 1	6.2817- 1						4.7644- 4	3.1581- 1		1.3964- 1	6.3871- 1
8.0000+ 6 ~ 1.0000+ 7	1.8262+ 0	6.0792- 1	5.1512- 1	9.5632- 5					5.0626- 4	3.9421- 1		3.0838- 1	7.4739- 1
1.0000+ 7 ~ 1.5000+ 7	1.7825+ 0	5.6966- 1	6.9748- 1	4.4327- 3					5.4466- 4	2.9666- 1		2.1376- 1	7.7569- 1
1.5000+ 7 ~ 2.0000+ 7	1.8000+ 0	6.4827- 1	8.2929- 1	1.0317- 2					5.7000- 4	1.8907- 1		1.2248- 1	7.7898- 1

CROSS SECTION

MATERIAL =2200

CA-0

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	4.3060+ 0	2.9631+ 0							1.3327+ 0			4.7866- 4	1.6902- 2
1.0000- 2 ~ 1.5000- 2	3.5930+ 0	2.9631+ 0							6.1876- 1			1.1969- 3	1.6918- 2
1.5000- 2 ~ 2.0000- 2	3.5043+ 0	2.9631+ 0							5.2027- 1			1.6760- 3	1.6922- 2
2.0000- 2 ~ 3.0000- 2	3.4103+ 0	2.9631+ 0							4.3737- 1			2.2889- 3	1.6927- 2
3.0000- 2 ~ 4.0000- 2	3.3505+ 0	2.9631+ 0							3.6794- 1			2.4235- 3	1.6931- 2
4.0000- 2 ~ 5.0000- 2	3.3045+ 0	2.9631+ 0							3.2474- 1			2.4235- 3	1.6934- 2
5.0000- 2 ~ 6.0000- 2	3.2614+ 0	2.9631+ 0							2.9319- 1			2.4235- 3	1.6937- 2
6.0000- 2 ~ 8.0000- 2	3.2269+ 0	2.9631+ 0							2.6049- 1			2.4236- 3	1.6940- 2
8.0000- 2 ~ 1.0000- 1	3.1963+ 0	2.9631+ 0							2.2958- 1			2.4235- 3	1.6943- 2
1.0000- 1 ~ 1.5000- 1	3.1639+ 0	2.9631+ 0							1.9517- 1			2.4235- 3	1.6947- 2
1.5000- 1 ~ 2.0000- 1	3.1333+ 0	2.9631+ 0							1.6475- 1			2.4235- 3	1.6952- 2
2.0000- 1 ~ 3.0000- 1	3.1058+ 0	2.9631+ 0							1.3798- 1			2.4235- 3	1.6958- 2
3.0000- 1 ~ 4.0000- 1	3.0853+ 0	2.9631+ 0							1.1658- 1			2.4235- 3	1.6961- 2
4.0000- 1 ~ 5.0000- 1	3.0704+ 0	2.9631+ 0							1.0255- 1			2.4235- 3	1.6964- 2
5.0000- 1 ~ 6.0000- 1	3.0591+ 0	2.9631+ 0							9.2706- 2			2.4235- 3	1.6966- 2
6.0000- 1 ~ 8.0000- 1	3.0506+ 0	2.9631+ 0							8.2454- 2			2.4235- 3	1.6970- 2
8.0000- 1 ~ 1.0000+ 0	3.0395+ 0	2.9631+ 0							7.2468- 2			2.4235- 3	1.6973- 2
1.0000+ 0 ~ 1.5000+ 0	3.0324+ 0	2.9631+ 0							6.1815- 2			2.4235- 3	1.6977- 2
1.5000+ 0 ~ 2.0000+ 0	3.0295+ 0	2.9631+ 0							5.2068- 2			2.4235- 3	1.6981- 2
2.0000+ 0 ~ 3.0000+ 0	3.0253+ 0	2.9631+ 0							4.3725- 2			2.4235- 3	1.6986- 2
3.0000+ 0 ~ 4.0000+ 0	3.0200+ 0	2.9631+ 0							3.6819- 2			2.4235- 3	1.6990- 2
4.0000+ 0 ~ 5.0000+ 0	3.0148+ 0	2.9631+ 0							3.2485- 2			2.4235- 3	1.6993- 2
5.0000+ 0 ~ 6.0000+ 0	3.0098+ 0	2.9631+ 0							2.9354- 2			2.4235- 3	1.6996- 2
6.0000+ 0 ~ 8.0000+ 0	3.0022+ 0	2.9631+ 0							2.6035- 2			2.4235- 3	1.6999- 2
8.0000+ 0 ~ 1.0000+ 1	2.9922+ 0	2.9631+ 0							2.2912- 2			2.4235- 3	1.7002- 2
1.0000+ 1 ~ 1.5000+ 1	2.9867+ 0	2.9631+ 0							1.9519- 2			2.4235- 3	1.7006- 2
1.5000+ 1 ~ 2.0000+ 1	2.9857+ 0	2.9631+ 0							1.6487- 2			2.4236- 3	1.7011- 2
2.0000+ 1 ~ 3.0000+ 1	2.9844+ 0	2.9630+ 0							1.3816- 2			2.4236- 3	1.7015- 2
3.0000+ 1 ~ 4.0000+ 1	2.9827+ 0	2.9630+ 0							1.1658- 2			2.4236- 3	1.7020- 2
4.0000+ 1 ~ 5.0000+ 1	2.9810+ 0	2.9630+ 0							1.0268- 2			2.4237- 3	1.7023- 2
5.0000+ 1 ~ 6.0000+ 1	2.9794+ 0	2.9629+ 0							9.2718- 3			2.4237- 3	1.7025- 2
6.0000+ 1 ~ 8.0000+ 1	2.9769+ 0	2.9629+ 0							8.2440- 3			2.4238- 3	1.7028- 2
8.0000+ 1 ~ 1.0000+ 2	2.9737+ 0	2.9629+ 0							7.2536- 3			2.4238- 3	1.7032- 2
1.0000+ 2 ~ 1.5000+ 2	2.9719+ 0	2.9628+ 0							6.2180- 3			2.4240- 3	1.7036- 2
1.5000+ 2 ~ 2.0000+ 2	2.9714+ 0	2.9626+ 0							5.3170- 3			2.4241- 3	1.7040- 2
2.0000+ 2 ~ 3.0000+ 2	2.9708+ 0	2.9624+ 0							4.5082- 3			2.4244- 3	1.7045- 2
3.0000+ 2 ~ 4.0000+ 2	2.9701+ 0	2.9621+ 0							3.8531- 3			2.4248- 3	1.7049- 2
4.0000+ 2 ~ 5.0000+ 2	2.9693+ 0	2.9619+ 0							3.4195- 3			2.4252- 3	1.7052- 2
5.0000+ 2 ~ 6.0000+ 2	2.9685+ 0	2.9616+ 0							3.1151- 3			2.4255- 3	1.7055- 2
6.0000+ 2 ~ 8.0000+ 2	2.9674+ 0	2.9612+ 0							2.7928- 3			2.4261- 3	1.7058- 2
8.0000+ 2 ~ 1.0000+ 3	2.9659+ 0	2.9606+ 0							2.4773- 3			2.4268- 3	1.7061- 2
1.0000+ 3 ~ 1.5000+ 3	2.9666+ 0	2.9620+ 0							2.1382- 3			2.4281- 3	1.7065- 2
1.5000+ 3 ~ 2.0000+ 3	2.9646+ 0	2.9603+ 0							1.8244- 3			2.4300- 3	1.7070- 2
2.0000+ 3 ~ 3.0000+ 3	2.9244+ 0	2.9203+ 0							1.5782- 3			2.4327- 3	1.7236- 2
3.0000+ 3 ~ 4.0000+ 3	2.8417+ 0	2.8375+ 0							1.7330- 3			2.4364- 3	1.7494- 2
4.0000+ 3 ~ 5.0000+ 3	2.8074+ 0	2.8032+ 0							1.7345- 3			2.4401- 3	1.7686- 2
5.0000+ 3 ~ 6.0000+ 3	2.7224+ 0	2.7183+ 0							1.6197- 3			2.4438- 3	1.7988- 2
6.0000+ 3 ~ 8.0000+ 3	2.5445+ 0	2.5409+ 0							1.0965- 3			2.4494- 3	1.8547- 2
8.0000+ 3 ~ 1.0000+ 4	2.4172+ 0	2.4125+ 0							2.3112- 3			2.4568- 3	1.9138- 2
1.0000+ 4 ~ 1.5000+ 4	2.2021+ 0	2.1747+ 0							2.4938- 2			2.4697- 3	2.0704- 2
1.5000+ 4 ~ 2.0000+ 4	1.8620+ 0	1.8581+ 0							1.3468- 3			2.4882- 3	2.2768- 2
2.0000+ 4 ~ 3.0000+ 4	1.7694+ 0	1.7534+ 0							1.3462- 2			2.5160- 3	2.6235- 2
3.0000+ 4 ~ 4.0000+ 4	1.5656+ 0	1.5624+ 0							6.5422- 4			2.5530- 3	3.1334- 2
4.0000+ 4 ~ 5.0000+ 4	1.3995+ 0	1.3872+ 0							9.7732- 3			2.5900- 3	3.6761- 2
5.0000+ 4 ~ 6.0000+ 4	1.4813+ 0	1.4764+ 0							2.2037- 3			2.6270- 3	4.2865- 2
6.0000+ 4 ~ 8.0000+ 4	1.1019+ 0	1.0988+ 0							4.9604- 4			2.6825- 3	5.1586- 2
8.0000+ 4 ~ 1.0000+ 5	1.1659+ 0	1.1611+ 0							2.0570- 3			2.7565- 3	6.2449- 2
1.0000+ 5 ~ 1.5000+ 5	2.6126+ 0	2.6073+ 0							2.4896- 3			2.8860- 3	8.3682- 2
1.5000+ 5 ~ 2.0000+ 5	1.6590+ 0	1.6516+ 0							4.3857- 3			3.0710- 3	1.0847- 1
2.0000+ 5 ~ 3.0000+ 5	4.8204+ 0	4.8135+ 0							3.5611- 3			3.3485- 3	1.3944- 1
3.0000+ 5 ~ 4.0000+ 5	2.4623+ 0	2.4573+ 0	5.1120- 6						1.2894- 3			3.7185- 3	1.7238- 1
4.0000+ 5 ~ 5.0000+ 5	1.5141+ 0	1.5090+ 0	1.8977- 4						8.0900- 4			4.0885- 3	1.9887- 1
5.0000+ 5 ~ 6.0000+ 5	1.9886+ 0	1.9817+ 0	3.4796- 4						2.0376- 3	1.6762- 5		4.4585- 3	2.1320- 1
6.0000+ 5 ~ 8.0000+ 5	2.3445+ 0	2.3369+ 0	4.4345- 4						2.0170- 3	1.5949- 4		5.0135- 3	2.2825- 1
8.0000+ 5 ~ 1.0000+ 6	2.3557+ 0	2.3471+ 0	5.5298- 4						1.9956- 3	3.6197- 4		5.7534- 3	2.4416- 1
1.0000+ 6 ~ 1.5000+ 6	2.4019+ 0	2.3888+ 0	3.3455- 3						2.0668- 3	7.1637- 4		7.0552- 3	2.7027- 1
1.5000+ 6 ~ 2.0000+ 6	3.0006+ 0	2.9632+ 0	1.6120- 2						2.1719- 3	1.0179- 2		8.9186- 3	3.0064- 1
2.0000+ 6 ~ 3.0000+ 6	3.4727+ 0	3.3215+ 0	2.6858- 2						2.4833- 3	8.8216- 2		3.3637- 2	3.6951- 1
3.0000+ 6 ~ 4.0000+ 6	3.5651+ 0	3.1700+ 0	4.2125- 2						2.8360- 3	2.2296- 1		1.2709- 1	4.8037- 1
4.0000+ 6 ~ 5.0000+ 6	3.5336+ 0	2.6187+ 0	3.6707- 1						1.2318- 3	3.7080- 1		1.8582- 1	5.8309- 1
5.0000+ 6 ~ 6.0000+ 6	3.3796+ 0	2.2316+ 0	4.9795- 1						6.7863- 4	4.5077- 1		1.9823- 1	6.6601- 1
6.0000+ 6 ~ 8.0000+ 6	3.0387+ 0	1.7993+ 0	5.1625- 1				5.3260- 6		4.9799- 4	5.1866- 1		2.0331- 1	7.1923- 1
8.0000+ 6 ~ 1.0000+ 7	2.7088+ 0	1.4302+ 0	5.0963- 1	6.3468- 5			6.2093- 5	3.5382- 3	4.1902- 4	5.7696- 1		1.8779- 1	7.3377- 1
1.0000+ 7 ~ 1.5000+ 7	2.3575+ 0	1.1036+ 0	3.8839- 1	6.0175- 3			3.6769- 2	3.1318- 1	7.9886- 5	3.5158- 1		1.5291- 1	7.2065- 1
1.5000+ 7 ~ 2.0000+ 7	2.1409+ 0	9.6446- 1	1.7934- 1	3.3645- 2			2.3295- 1	5.8827- 1	7.1193- 6	4.6602- 2		4.9846- 2	7.1751- 1

CROSS SECTION

MATERIAL =2201

CA-40

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	4.2904+ 0	3.0100+ 0							1.2687+ 0			4.9377- 4	1.6902- 2
1.0000- 2 ~ 1.5000- 2	3.6098+ 0	3.0100+ 0							5.8906- 1			1.2347- 3	1.6918- 2
1.5000- 2 ~ 2.0000- 2	3.5254+ 0	3.0100+ 0							4.9529- 1			1.7289- 3	1.6922- 2
2.0000- 2 ~ 3.0000- 2	3.4360+ 0	3.0100+ 0							4.1637- 1			2.3612- 3	1.6927- 2
3.0000- 2 ~ 4.0000- 2	3.3790+ 0	3.0100+ 0							3.5028- 1			2.5000- 3	1.6931- 2
4.0000- 2 ~ 5.0000- 2	3.3352+ 0	3.0100+ 0							3.0915- 1			2.5000- 3	1.6934- 2
5.0000- 2 ~ 6.0000- 2	3.2942+ 0	3.0100+ 0							2.7912- 1			2.5000- 3	1.6937- 2
6.0000- 2 ~ 8.0000- 2	3.2633+ 0	3.0100+ 0							2.4798- 1			2.5000- 3	1.6940- 2
8.0000- 2 ~ 1.0000- 1	3.2322+ 0	3.0100+ 0							2.1856- 1			2.5000- 3	1.6943- 2
1.0000- 1 ~ 1.5000- 1	3.2013+ 0	3.0100+ 0							1.8580- 1			2.5000- 3	1.6947- 2
1.5000- 1 ~ 2.0000- 1	3.1722+ 0	3.0100+ 0							1.5584- 1			2.5000- 3	1.6952- 2
2.0000- 1 ~ 3.0000- 1	3.1461+ 0	3.0100+ 0							1.3136- 1			2.5000- 3	1.6956- 2
3.0000- 1 ~ 4.0000- 1	3.1266+ 0	3.0100+ 0							1.1098- 1			2.5000- 3	1.6961- 2
4.0000- 1 ~ 5.0000- 1	3.1124+ 0	3.0100+ 0							9.7622- 2			2.5000- 3	1.6964- 2
5.0000- 1 ~ 6.0000- 1	3.1016+ 0	3.0100+ 0							8.8254- 2			2.5000- 3	1.6966- 2
6.0000- 1 ~ 8.0000- 1	3.0935+ 0	3.0100+ 0							7.8494- 2			2.5000- 3	1.6970- 2
8.0000- 1 ~ 1.0000+ 0	3.0830+ 0	3.0100+ 0							6.8988- 2			2.5000- 3	1.6973- 2
1.0000+ 0 ~ 1.5000+ 0	3.0762+ 0	3.0100+ 0							5.8847- 2			2.5000- 3	1.6977- 2
1.5000+ 0 ~ 2.0000+ 0	3.0734+ 0	3.0100+ 0							4.9568- 2			2.5000- 3	1.6981- 2
2.0000+ 0 ~ 3.0000+ 0	3.0694+ 0	3.0100+ 0							4.1625- 2			2.5000- 3	1.6986- 2
3.0000+ 0 ~ 4.0000+ 0	3.0644+ 0	3.0100+ 0							3.5051- 2			2.5000- 3	1.6990- 2
4.0000+ 0 ~ 5.0000+ 0	3.0595+ 0	3.0100+ 0							3.0925- 2			2.5000- 3	1.6993- 2
5.0000+ 0 ~ 6.0000+ 0	3.0546+ 0	3.0100+ 0							2.7944- 2			2.5000- 3	1.6996- 2
6.0000+ 0 ~ 8.0000+ 0	3.0474+ 0	3.0100+ 0							2.4785- 2			2.5000- 3	1.6999- 2
8.0000+ 0 ~ 1.0000+ 1	3.0379+ 0	3.0100+ 0							2.1812- 2			2.5000- 3	1.7002- 2
1.0000+ 1 ~ 1.5000+ 1	3.0326+ 0	3.0100+ 0							1.8582- 2			2.5000- 3	1.7006- 2
1.5000+ 1 ~ 2.0000+ 1	3.0317+ 0	3.0100+ 0							1.5695- 2			2.5001- 3	1.7011- 2
2.0000+ 1 ~ 3.0000+ 1	3.0304+ 0	3.0100+ 0							1.3153- 2			2.5001- 3	1.7015- 2
3.0000+ 1 ~ 4.0000+ 1	3.0288+ 0	3.0099+ 0							1.1098- 2			2.5001- 3	1.7020- 2
4.0000+ 1 ~ 5.0000+ 1	3.0273+ 0	3.0099+ 0							9.7749- 3			2.5002- 3	1.7023- 2
5.0000+ 1 ~ 6.0000+ 1	3.0257+ 0	3.0099+ 0							8.8264- 3			2.5002- 3	1.7026- 2
6.0000+ 1 ~ 8.0000+ 1	3.0234+ 0	3.0098+ 0							7.8479- 3			2.5003- 3	1.7028- 2
8.0000+ 1 ~ 1.0000+ 2	3.0203+ 0	3.0098+ 0							6.9050- 3			2.5003- 3	1.7032- 2
1.0000+ 2 ~ 1.5000+ 2	3.0186+ 0	3.0097+ 0							5.9228- 3			2.5005- 3	1.7036- 2
1.5000+ 2 ~ 2.0000+ 2	3.0183+ 0	3.0096+ 0							5.0896- 3			2.5007- 3	1.7040- 2
2.0000+ 2 ~ 3.0000+ 2	3.0179+ 0	3.0094+ 0							4.3030- 3			2.5009- 3	1.7045- 2
3.0000+ 2 ~ 4.0000+ 2	3.0174+ 0	3.0091+ 0							3.6814- 3			2.5013- 3	1.7049- 2
4.0000+ 2 ~ 5.0000+ 2	3.0168+ 0	3.0089+ 0							3.2695- 3			2.5017- 3	1.7052- 2
5.0000+ 2 ~ 6.0000+ 2	3.0163+ 0	3.0086+ 0							2.9802- 3			2.5021- 3	1.7055- 2
6.0000+ 2 ~ 8.0000+ 2	3.0155+ 0	3.0082+ 0							2.6736- 3			2.5026- 3	1.7058- 2
8.0000+ 2 ~ 1.0000+ 3	3.0145+ 0	3.0077+ 0							2.3746- 3			2.5034- 3	1.7061- 2
1.0000+ 3 ~ 1.5000+ 3	3.0127+ 0	3.0068+ 0							2.0500- 3			2.5047- 3	1.7065- 2
1.5000+ 3 ~ 2.0000+ 3	3.0102+ 0	3.0054+ 0							1.7496- 3			2.5066- 3	1.7070- 2
2.0000+ 3 ~ 3.0000+ 3	2.9686+ 0	2.9645+ 0							1.5149- 3			2.5094- 3	1.7236- 2
3.0000+ 3 ~ 4.0000+ 3	2.8807+ 0	2.8766+ 0							1.3748- 3			2.5131- 3	1.7494- 2
4.0000+ 3 ~ 5.0000+ 3	2.7938+ 0	2.7899+ 0							1.1431- 3			2.5169- 3	1.7686- 2
5.0000+ 3 ~ 6.0000+ 3	2.7058+ 0	2.7020+ 0							1.0298- 3			2.5206- 3	1.7988- 2
6.0000+ 3 ~ 8.0000+ 3	2.5800+ 0	2.5764+ 0							9.5430- 4			2.5262- 3	1.8547- 2
8.0000+ 3 ~ 1.0000+ 4	2.4021+ 0	2.3987+ 0							8.2721- 4			2.5337- 3	1.9138- 2
1.0000+ 4 ~ 1.5000+ 4	2.2162+ 0	2.1883+ 0							2.5302- 2			2.5469- 3	2.0704- 2
1.5000+ 4 ~ 2.0000+ 4	1.8587+ 0	1.8554+ 0							7.0309- 4			2.5656- 3	2.2768- 2
2.0000+ 4 ~ 3.0000+ 4	1.7654+ 0	1.7493+ 0							1.3420- 2			2.5937- 3	2.6235- 2
3.0000+ 4 ~ 4.0000+ 4	1.5061+ 0	1.5029+ 0							4.4774- 4			2.6312- 3	3.1334- 2
4.0000+ 4 ~ 5.0000+ 4	1.3747+ 0	1.3622+ 0							9.7880- 3			2.6687- 3	3.6761- 2
5.0000+ 4 ~ 6.0000+ 4	1.2072+ 0	1.2026+ 0							1.9185- 3			2.7062- 3	4.2865- 2
6.0000+ 4 ~ 8.0000+ 4	1.0787+ 0	1.0756+ 0							3.4343- 4			2.7625- 3	5.1586- 2
8.0000+ 4 ~ 1.0000+ 5	1.1315+ 0	1.1267+ 0							1.9930- 3			2.8375- 3	6.2449- 2
1.0000+ 5 ~ 1.5000+ 5	2.4466+ 0	2.4413+ 0							2.3728- 3			2.9687- 3	8.3682- 2
1.5000+ 5 ~ 2.0000+ 5	1.5757+ 0	1.5681+ 0							4.4133- 3			3.1562- 3	1.0847- 1
2.0000+ 5 ~ 3.0000+ 5	4.8915+ 0	4.8844+ 0							3.6357- 3			3.4375- 3	1.3944- 1
3.0000+ 5 ~ 4.0000+ 5	2.4386+ 0	2.4334+ 0							1.2986- 3			3.8125- 3	1.7238- 1
4.0000+ 5 ~ 5.0000+ 5	3.3930+ 0	3.3877+ 0							7.2863- 4			4.1875- 3	1.9687- 1
5.0000+ 5 ~ 6.0000+ 5	3.3051+ 0	3.2985+ 0							2.0047- 3	1.7291- 5		4.5625- 3	2.1320- 1
6.0000+ 5 ~ 8.0000+ 5	3.3391+ 0	3.3317+ 0							1.9829- 3	1.6453- 4		5.1250- 3	2.2825- 1
8.0000+ 5 ~ 1.0000+ 6	3.3754+ 0	3.3671+ 0							1.9600- 3	3.7340- 4		5.8750- 3	2.4416- 1
1.0000+ 6 ~ 1.5000+ 6	3.5309+ 0	3.5209+ 0							2.0375- 3	7.3892- 4		7.1875- 3	2.7027- 1
1.5000+ 6 ~ 2.0000+ 6	3.7705+ 0	3.7485+ 0							2.1810- 3	1.0500- 2		9.0625- 3	3.0064- 1
2.0000+ 6 ~ 3.0000+ 6	3.7897+ 0	3.6603+ 0							2.5222- 3	9.1000- 2		3.4250- 2	3.6951- 1
3.0000+ 6 ~ 4.0000+ 6	3.7470+ 0	3.3709+ 0	1.1936- 2						2.8976- 3	2.3000- 1		1.3000- 1	4.6037- 1
4.0000+ 6 ~ 5.0000+ 6	3.6288+ 0	2.7163+ 0	3.3364- 1						1.2486- 3	3.8250- 1		1.9000- 1	5.8309- 1
5.0000+ 6 ~ 6.0000+ 6	3.3766+ 0	2.2329+ 0	4.7434- 1						6.8351- 4	4.6500- 1		2.0250- 1	6.6601- 1
6.0000+ 6 ~ 8.0000+ 6	3.0321+ 0	1.7972+ 0	4.9134- 1				5.4942- 6		5.0326- 4	5.3500- 1		2.0750- 1	7.1923- 1
8.0000+ 6 ~ 1.0000+ 7	2.7018+ 0	1.4261+ 0	4.8515- 1				6.4053- 5	3.6499- 3	4.2709- 4	5.9500- 1		1.9125- 1	7.3377- 1
1.0000+ 7 ~ 1.5000+ 7	2.3523+ 0	1.0971+ 0	3.6869- 1				3.7929- 2	3.2306- 1	8.0765- 5	3.6200- 1		1.5499- 1	7.2065- 1
1.5000+ 7 ~ 2.0000+ 7	2.1379+ 0	9.6198- 1	1.6906- 1	1.6204- 2			2.4020- 1	6.0684- 1	7.0856- 6	4.5174- 2		4.8547- 2	7.1751- 1

CROSS SECTION

MATERIAL =2202 CA-42

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	3.3373+ 0	1.2304+ 0							2.1042+ 0			4.9950-11	1.6082- 2
1.0000- 2 ~ 1.5000- 2	2.2095+ 0	1.2304+ 0							9.7696- 1			1.2490-10	1.6093- 2
1.5000- 2 ~ 2.0000- 2	2.0575+ 0	1.2304+ 0							8.2146- 1			1.7490-10	1.6096- 2
2.0000- 2 ~ 3.0000- 2	1.9233+ 0	1.2304+ 0							6.9150- 1			2.4990-10	1.6100- 2
3.0000- 2 ~ 4.0000- 2	1.8190+ 0	1.2304+ 0							5.8212- 1			3.4990-10	1.6103- 2
4.0000- 2 ~ 5.0000- 2	1.7443+ 0	1.2304+ 0							5.1169- 1			4.4990-10	1.6105- 2
5.0000- 2 ~ 6.0000- 2	1.6943+ 0	1.2304+ 0							4.6235- 1			5.4990-10	1.6107- 2
6.0000- 2 ~ 8.0000- 2	1.6462+ 0	1.2304+ 0							4.1137- 1			6.9990-10	1.6109- 2
8.0000- 2 ~ 1.0000- 1	1.5947+ 0	1.2304+ 0							3.6209- 1			8.9990-10	1.6112- 2
1.0000- 1 ~ 1.5000- 1	1.5435+ 0	1.2304+ 0							3.0922- 1			1.2499- 9	1.6115- 2
1.5000- 1 ~ 2.0000- 1	1.4952+ 0	1.2304+ 0							2.5989- 1			1.7499- 9	1.6118- 2
2.0000- 1 ~ 3.0000- 1	1.4519+ 0	1.2304+ 0							2.1817- 1			2.4999- 9	1.6121- 2
3.0000- 1 ~ 4.0000- 1	1.4194+ 0	1.2304+ 0							1.8372- 1			3.4999- 9	1.6124- 2
4.0000- 1 ~ 5.0000- 1	1.3960+ 0	1.2304+ 0							1.6200- 1			4.4999- 9	1.6127- 2
5.0000- 1 ~ 6.0000- 1	1.3782+ 0	1.2304+ 0							1.4663- 1			5.4999- 9	1.6128- 2
6.0000- 1 ~ 8.0000- 1	1.3647+ 0	1.2304+ 0							1.2997- 1			6.9999- 9	1.6131- 2
8.0000- 1 ~ 1.0000+ 0	1.3472+ 0	1.2304+ 0							1.1438- 1			8.9999- 9	1.6133- 2
1.0000+ 0 ~ 1.5000+ 0	1.3308+ 0	1.2304+ 0							9.7454- 2			1.2500- 8	1.6136- 2
1.5000+ 0 ~ 2.0000+ 0	1.3157+ 0	1.2304+ 0							8.2302- 2			1.7500- 8	1.6139- 2
2.0000+ 0 ~ 3.0000+ 0	1.2999+ 0	1.2304+ 0							6.6982- 2			2.5000- 8	1.6143- 2
3.0000+ 0 ~ 4.0000+ 0	1.2890+ 0	1.2304+ 0							5.6207- 2			3.5000- 8	1.6146- 2
4.0000+ 0 ~ 5.0000+ 0	1.2826+ 0	1.2303+ 0							5.1263- 2			4.5000- 8	1.6148- 2
5.0000+ 0 ~ 6.0000+ 0	1.2769+ 0	1.2303+ 0							4.6289- 2			5.5000- 8	1.6150- 2
6.0000+ 0 ~ 8.0000+ 0	1.2724+ 0	1.2303+ 0							4.1162- 2			7.0000- 8	1.6152- 2
8.0000+ 0 ~ 1.0000+ 1	1.2671+ 0	1.2303+ 0							3.6209- 2			9.0000- 8	1.6155- 2
1.0000+ 1 ~ 1.5000+ 1	1.2635+ 0	1.2303+ 0							3.0824- 2			1.2500- 7	1.6158- 2
1.5000+ 1 ~ 2.0000+ 1	1.2618+ 0	1.2302+ 0							2.6043- 2			1.7500- 7	1.6161- 2
2.0000+ 1 ~ 3.0000+ 1	1.2592+ 0	1.2302+ 0							2.1809- 2			2.5000- 7	1.6164- 2
3.0000+ 1 ~ 4.0000+ 1	1.2561+ 0	1.2301+ 0							1.8416- 2			3.5000- 7	1.6167- 2
4.0000+ 1 ~ 5.0000+ 1	1.2529+ 0	1.2300+ 0							1.6194- 2			4.5000- 7	1.6170- 2
5.0000+ 1 ~ 6.0000+ 1	1.2499+ 0	1.2299+ 0							1.4651- 2			5.5000- 7	1.6172- 2
6.0000+ 1 ~ 8.0000+ 1	1.2463+ 0	1.2297+ 0							1.3023- 2			7.0000- 7	1.6174- 2
8.0000+ 1 ~ 1.0000+ 2	1.2412+ 0	1.2296+ 0							1.1452- 2			9.0000- 7	1.6176- 2
1.0000+ 2 ~ 1.5000+ 2	1.2393+ 0	1.2292+ 0							9.7672- 3			1.2500- 6	1.6179- 2
1.5000+ 2 ~ 2.0000+ 2	1.2371+ 0	1.2288+ 0							8.2264- 3			1.7500- 6	1.6182- 2
2.0000+ 2 ~ 3.0000+ 2	1.2352+ 0	1.2281+ 0							6.9087- 3			2.5000- 6	1.6186- 2
3.0000+ 2 ~ 4.0000+ 2	1.2331+ 0	1.2272+ 0							6.8189- 3			3.5000- 6	1.6189- 2
4.0000+ 2 ~ 5.0000+ 2	1.2316+ 0	1.2262+ 0							5.1342- 3			4.5000- 6	1.6191- 2
5.0000+ 2 ~ 6.0000+ 2	1.2300+ 0	1.2253+ 0							4.6428- 3			5.5000- 6	1.6193- 2
6.0000+ 2 ~ 8.0000+ 2	1.2281+ 0	1.2239+ 0							4.1185- 3			7.0000- 6	1.6195- 2
8.0000+ 2 ~ 1.0000+ 3	1.2258+ 0	1.2220+ 0							3.6350- 3			9.0000- 6	1.6198- 2
1.0000+ 3 ~ 1.5000+ 3	1.2219+ 0	1.2187+ 0							3.0962- 3			1.2500- 5	1.6201- 2
1.5000+ 3 ~ 2.0000+ 3	1.2166+ 0	1.2139+ 0							2.6154- 3			1.7500- 5	1.6204- 2
2.0000+ 3 ~ 3.0000+ 3	1.2086+ 0	1.2064+ 0							2.1983- 3			2.5000- 5	1.6325- 2
3.0000+ 3 ~ 4.0000+ 3	1.1979+ 0	1.1959+ 0							1.8615- 3			3.5000- 5	1.6514- 2
4.0000+ 3 ~ 5.0000+ 3	1.1866+ 0	1.1848+ 0							1.6486- 3			4.5000- 5	1.6654- 2
5.0000+ 3 ~ 6.0000+ 3	1.1744+ 0	1.1728+ 0							1.4995- 3			5.5000- 5	1.6876- 2
6.0000+ 3 ~ 8.0000+ 3	1.1520+ 0	1.1505+ 0							1.3680- 3			7.0000- 5	1.7289- 2
8.0000+ 3 ~ 1.0000+ 4	2.0476+ 0	1.8404+ 0							2.0719- 1			9.0000- 5	1.7725- 2
1.0000+ 4 ~ 1.5000+ 4	1.1129+ 0	1.1116+ 0							1.0648- 3			1.2500- 4	1.8898- 2
1.5000+ 4 ~ 2.0000+ 4	1.0183+ 0	1.0169+ 0							9.1128- 4			1.7500- 4	2.0450- 2
2.0000+ 4 ~ 3.0000+ 4	1.3032+ 0	1.2846+ 0							1.7992- 2			2.5000- 4	2.3096- 2
3.0000+ 4 ~ 4.0000+ 4	1.0651+ 1	1.0629+ 1							2.1075- 2			3.5000- 4	2.7043- 2
4.0000+ 4 ~ 5.0000+ 4	2.7103+ 0	2.7003+ 0							8.9925- 3			4.5000- 4	3.1308- 2
5.0000+ 4 ~ 6.0000+ 4	1.3930+ 0	1.3863+ 0							5.6192- 3			5.5000- 4	3.6202- 2
6.0000+ 4 ~ 8.0000+ 4	1.2865+ 0	1.2778+ 0							7.4047- 3			7.0000- 4	4.3265- 2
8.0000+ 4 ~ 1.0000+ 5	1.3121+ 0	1.3052+ 0							5.5233- 3			9.0000- 4	5.2170- 2
1.0000+ 5 ~ 1.5000+ 5	1.4062+ 1	1.4053+ 1							6.8784- 3			1.2500- 3	7.0177- 2
1.5000+ 5 ~ 2.0000+ 5	4.9615+ 0	4.9560+ 0							3.3905- 3			1.7500- 3	9.1366- 2
2.0000+ 5 ~ 3.0000+ 5	4.0478+ 0	4.0430+ 0							1.9208- 3			2.5000- 3	1.1834- 1
3.0000+ 5 ~ 4.0000+ 5	2.5572+ 0	2.5532+ 0							4.1069- 4			3.5000- 3	1.4728- 1
4.0000+ 5 ~ 5.0000+ 5	3.3894+ 0	3.3798+ 0							4.8389- 3			4.5000- 3	1.6881- 1
5.0000+ 5 ~ 6.0000+ 5	3.2952+ 0	3.2847+ 0							4.8995- 3			5.5000- 3	1.8342- 1
6.0000+ 5 ~ 8.0000+ 5	3.3323+ 0	3.3200+ 0							4.9428- 3			7.0000- 3	1.9792- 1
8.0000+ 5 ~ 1.0000+ 6	3.3720+ 0	3.3578+ 0							4.9890- 3			9.0000- 3	2.1201- 1
1.0000+ 6 ~ 1.5000+ 6	3.5659+ 0	3.5479+ 0							5.3947- 3			1.2500- 2	2.3719- 1
1.5000+ 6 ~ 2.0000+ 6	3.8488+ 0	3.5043+ 0	3.2094- 1						3.9287- 3			1.7500- 2	3.0252- 1
2.0000+ 6 ~ 3.0000+ 6	3.9897+ 0	3.0806+ 0	8.4576- 1						2.2638- 3			6.0000- 2	4.4626- 1
3.0000+ 6 ~ 4.0000+ 6	3.8760+ 0	2.6984+ 0	1.0257+ 0						1.4033- 3			1.5000- 1	5.9103- 1
4.0000+ 6 ~ 5.0000+ 6	3.6529+ 0	2.3783+ 0	1.0413+ 0						1.1410- 3			2.2500- 1	6.7060- 1
5.0000+ 6 ~ 6.0000+ 6	3.4444+ 0	2.1083+ 0	1.0700+ 0						9.3360- 4			2.6000- 1	7.2326- 1
6.0000+ 6 ~ 8.0000+ 6	3.1506+ 0	1.7903+ 0	1.0698+ 0						6.0543- 4			2.8750- 1	7.5995- 1
8.0000+ 6 ~ 1.0000+ 7	2.8204+ 0	1.4738+ 0	1.0378+ 0						3.1020- 4			3.0750- 1	7.6699- 1
1.0000+ 7 ~ 1.5000+ 7	2.4604+ 0	1.1644+ 0	9.3448- 1	5.5482- 2					1.0775- 4			3.0617- 1	7.3955- 1
1.5000+ 7 ~ 2.0000+ 7	2.2022+ 0	9.9565- 1	5.9871- 1	3.4200- 1					2.1334- 5			2.6533- 1	7.2476- 1

CROSS SECTION

MATERIAL =2203 CA-43

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	NU-BAR
1.0000- 5 ~ 1.0000- 2	2.2182+ 1	2.9979+ 0							1.9165+ 1			0.0000+ 0	1.5709- 2
1.0000- 2 ~ 1.5000- 2	1.1905+ 1	2.9979+ 0							8.9076+ 0			0.0000+ 0	1.5713- 2
1.5000- 2 ~ 2.0000- 2	1.0487+ 1	2.9973+ 0							7.4897+ 0			0.0000+ 0	1.5716- 2
2.0000- 2 ~ 3.0000- 2	9.2993+ 0	2.9973+ 0							6.2988+ 0			0.0000+ 0	1.5718- 2
3.0000- 2 ~ 4.0000- 2	8.2984+ 0	2.9973+ 0							5.2960+ 0			0.0000+ 0	1.5721- 2
4.0000- 2 ~ 5.0000- 2	7.6841+ 0	2.9973+ 0							4.6846+ 0			0.0000+ 0	1.5723- 2
5.0000- 2 ~ 6.0000- 2	7.2241+ 0	2.9973+ 0							4.2234+ 0			0.0000+ 0	1.5726- 2
6.0000- 2 ~ 8.0000- 2	6.7469+ 0	2.9973+ 0							3.7448+ 0			0.0000+ 0	1.5727- 2
8.0000- 2 ~ 1.0000- 1	6.3045+ 0	2.9973+ 0							3.3125+ 0			0.0000+ 0	1.5729- 2
1.0000- 1 ~ 1.5000- 1	5.8123+ 0	2.9979+ 0							2.8110+ 0			0.0000+ 0	1.5732- 2
1.5000- 1 ~ 2.0000- 1	5.3805+ 0	2.9973+ 0							2.3692+ 0			0.0000+ 0	1.5735- 2
2.0000- 1 ~ 3.0000- 1	4.9864+ 0	2.9973+ 0							1.9880+ 0			0.0000+ 0	1.5738- 2
3.0000- 1 ~ 4.0000- 1	4.6833+ 0	2.9973+ 0							1.6780+ 0			0.0000+ 0	1.5741- 2
4.0000- 1 ~ 5.0000- 1	4.4774+ 0	2.9973+ 0							1.4771+ 0			0.0000+ 0	1.5743- 2
5.0000- 1 ~ 6.0000- 1	4.3375+ 0	2.9973+ 0							1.3340+ 0			0.0000+ 0	1.5744- 2
6.0000- 1 ~ 8.0000- 1	4.1892+ 0	2.9973+ 0							1.1873+ 0			0.0000+ 0	1.5746- 2
8.0000- 1 ~ 1.0000+ 0	4.0440+ 0	2.9973+ 0							1.0433+ 0			0.0000+ 0	1.5749- 2
1.0000+ 0 ~ 1.5000+ 0	3.8954+ 0	2.9973+ 0							8.8969- 1			0.0000+ 0	1.5751- 2
1.5000+ 0 ~ 2.0000+ 0	3.7493+ 0	2.9973+ 0							7.5010- 1			0.0000+ 0	1.5754- 2
2.0000+ 0 ~ 3.0000+ 0	3.6311+ 0	2.9973+ 0							6.2931- 1			0.0000+ 0	1.5757- 2
3.0000+ 0 ~ 4.0000+ 0	3.5319+ 0	2.9973+ 0							5.3038- 1			0.0000+ 0	1.5760- 2
4.0000+ 0 ~ 5.0000+ 0	3.4735+ 0	2.9972+ 0							4.6651- 1			0.0000+ 0	1.5762- 2
5.0000+ 0 ~ 6.0000+ 0	3.4217+ 0	2.9972+ 0							4.2360- 1			0.0000+ 0	1.5764- 2
6.0000+ 0 ~ 8.0000+ 0	3.3810+ 0	2.9972+ 0							3.7504- 1			0.0000+ 0	1.5766- 2
8.0000+ 0 ~ 1.0000+ 1	3.3329+ 0	2.9972+ 0							3.2987- 1			0.0000+ 0	1.5768- 2
1.0000+ 1 ~ 1.5000+ 1	3.2868+ 0	2.9971+ 0							2.8155- 1			0.0000+ 0	1.5770- 2
1.5000+ 1 ~ 2.0000+ 1	3.2431+ 0	2.9970+ 0							2.3693- 1			0.0000+ 0	1.5773- 2
2.0000+ 1 ~ 3.0000+ 1	3.1976+ 0	2.9969+ 0							1.9926- 1			0.0000+ 0	1.5776- 2
3.0000+ 1 ~ 4.0000+ 1	3.1658+ 0	2.9967+ 0							1.6759- 1			0.0000+ 0	1.5779- 2
4.0000+ 1 ~ 5.0000+ 1	3.1473+ 0	2.9965+ 0							1.4827- 1			0.0000+ 0	1.5781- 2
5.0000+ 1 ~ 6.0000+ 1	3.1307+ 0	2.9964+ 0							1.3366- 1			0.0000+ 0	1.5783- 2
6.0000+ 1 ~ 8.0000+ 1	3.1176+ 0	2.9961+ 0							1.1858- 1			0.0000+ 0	1.5785- 2
8.0000+ 1 ~ 1.0000+ 2	3.1021+ 0	2.9958+ 0							1.0473- 1			0.0000+ 0	1.5787- 2
1.0000+ 2 ~ 1.5000+ 2	3.0919+ 0	2.9952+ 0							8.8858- 2			0.0000+ 0	1.5790- 2
1.5000+ 2 ~ 2.0000+ 2	3.0872+ 0	2.9944+ 0							7.4854- 2			0.0000+ 0	1.5792- 2
2.0000+ 2 ~ 3.0000+ 2	3.0808+ 0	2.9934+ 0							6.2448- 2			0.0000+ 0	1.5795- 2
3.0000+ 2 ~ 4.0000+ 2	3.0729+ 0	2.9923+ 0							5.2660- 2			0.0000+ 0	1.5798- 2
4.0000+ 2 ~ 5.0000+ 2	3.0654+ 0	2.9914+ 0							4.6263- 2			0.0000+ 0	1.5800- 2
5.0000+ 2 ~ 6.0000+ 2	3.0583+ 0	2.9909+ 0							4.1776- 2			0.0000+ 0	1.5802- 2
6.0000+ 2 ~ 8.0000+ 2	3.0468+ 0	2.9910+ 0							3.7236- 2			0.0000+ 0	1.5804- 2
8.0000+ 2 ~ 1.0000+ 3	3.0376+ 0	2.9926+ 0							3.2837- 2			0.0000+ 0	1.5806- 2
1.0000+ 3 ~ 1.5000+ 3	3.0326+ 0	3.0029+ 0							2.8230- 2			0.0000+ 0	1.5809- 2
1.5000+ 3 ~ 2.0000+ 3	3.0624+ 0	3.0379+ 0							2.4289- 2			0.0000+ 0	1.5812- 2
2.0000+ 3 ~ 3.0000+ 3	3.2487+ 0	3.2263+ 0							2.1964- 2			0.0000+ 0	1.5920- 2
3.0000+ 3 ~ 4.0000+ 3	5.5679+ 0	5.3208+ 0							2.4661- 1			0.0000+ 0	1.6088- 2
4.0000+ 3 ~ 5.0000+ 3	4.2981+ 1	4.2561+ 1							4.1980- 1			0.0000+ 0	1.6213- 2
5.0000+ 3 ~ 6.0000+ 3	4.3477+ 1	4.3057+ 1							4.2029- 1			0.0000+ 0	1.6410- 2
6.0000+ 3 ~ 8.0000+ 3	2.4103+ 0	2.3177+ 0							9.2573- 2			0.0000+ 0	1.6776- 2
8.0000+ 3 ~ 1.0000+ 4	3.2008+ 1	3.1909+ 1							9.9325- 2			0.0000+ 0	1.7163- 2
1.0000+ 4 ~ 1.5000+ 4	1.1322+ 1	1.1229+ 1							9.3735- 2			0.0000+ 0	1.8205- 2
1.5000+ 4 ~ 2.0000+ 4	7.6053+ 0	7.5710+ 0							3.4284- 2			0.0000+ 0	1.9582- 2
2.0000+ 4 ~ 3.0000+ 4	1.1473+ 1	1.1417+ 1							5.5938- 2			0.0000+ 0	2.1935- 2
3.0000+ 4 ~ 4.0000+ 4	8.7731+ 0	8.7270+ 0							4.5997- 2			0.0000+ 0	2.6454- 2
4.0000+ 4 ~ 5.0000+ 4	7.7936+ 0	7.7556+ 0							3.8040- 2			0.0000+ 0	2.9272- 2
5.0000+ 4 ~ 6.0000+ 4	7.1102+ 0	7.0773+ 0							3.2857- 2			0.0000+ 0	3.3675- 2
6.0000+ 4 ~ 8.0000+ 4	6.3932+ 0	6.3654+ 0							2.7745- 2			0.0000+ 0	4.0045- 2
8.0000+ 4 ~ 1.0000+ 5	5.7232+ 0	5.7000+ 0							2.3200- 2			0.0000+ 0	4.8110- 2
1.0000+ 5 ~ 1.5000+ 5	5.0319+ 0	5.0132+ 0							1.8649- 2			0.0000+ 0	6.4604- 2
1.5000+ 5 ~ 2.0000+ 5	4.4106+ 0	4.3958+ 0							1.4817- 2			0.0000+ 0	8.4068- 2
2.0000+ 5 ~ 3.0000+ 5	3.9310+ 0	3.9190+ 0							1.1913- 2			0.0000+ 0	1.0919- 1
3.0000+ 5 ~ 4.0000+ 5	3.5656+ 0	3.5518+ 0	3.7867- 3						9.7185- 3			0.0000+ 0	1.3649- 1
4.0000+ 5 ~ 5.0000+ 5	3.3786+ 0	3.2270+ 0	1.4057- 1						7.4471- 3			0.0000+ 0	1.6286- 1
5.0000+ 5 ~ 6.0000+ 5	3.2937+ 0	3.0297+ 0	2.5774- 1						6.0652- 3			0.0000+ 0	1.8388- 1
6.0000+ 5 ~ 8.0000+ 5	3.3054+ 0	2.9720+ 0	3.2848- 1						5.3184- 3			0.0000+ 0	2.0368- 1
8.0000+ 5 ~ 1.0000+ 6	3.3743+ 0	2.9604+ 0	4.0962- 1						4.6761- 3			0.0000+ 0	2.2371- 1
1.0000+ 6 ~ 1.5000+ 6	3.5863+ 0	3.0430+ 0	5.3504- 1						4.2730- 3	4.8938- 5		5.0000- 3	2.8059- 1
1.5000+ 6 ~ 2.0000+ 6	3.8712+ 0	3.1484+ 0	7.0459- 1						4.1606- 3	1.7399- 4		1.5000- 2	3.2909- 1
2.0000+ 6 ~ 3.0000+ 6	3.9213+ 0	2.9547+ 0	9.1300- 1						3.3705- 3	3.6288- 4		3.5000- 2	4.5497- 1
3.0000+ 6 ~ 4.0000+ 6	3.8429+ 0	2.6302+ 0	1.1230+ 0						2.4405- 3	6.1475- 4		7.5000- 2	5.9705- 1
4.0000+ 6 ~ 5.0000+ 6	3.6996+ 0	2.3566+ 0	1.2052+ 0						1.7423- 3	8.6661- 4		1.3000- 1	6.8376- 1
5.0000+ 6 ~ 6.0000+ 6	3.4919+ 0	2.1101+ 0	1.2009+ 0						1.2022- 3	1.1165- 3		1.7500- 1	7.3501- 1
6.0000+ 6 ~ 8.0000+ 6	3.2027+ 0	1.8197+ 0	1.1692+ 0						7.2141- 4	1.4963- 3		2.1000- 1	7.6821- 1
8.0000+ 6 ~ 1.0000+ 7	2.8762+ 0	1.5183+ 0	1.0668+ 0	4.7013- 2					3.4164- 4	3.9370- 3		2.3750- 1	7.7393- 1
1.0000+ 7 ~ 1.5000+ 7	2.5221+ 0	1.2017+ 0	5.9773- 1	4.1900- 1					7.7342- 5	6.6475- 2		2.3633- 1	7.4746- 1
1.5000+ 7 ~ 2.0000+ 7	2.2323+ 0	1.0142+ 0	2.0609- 1	5.9900- 1					8.2033- 6	2.0861- 1		2.0467- 1	7.2845- 1

CROSS SECTION

MATERIAL =2204 CR-44

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	4.0465+ 0	1.3234+ 0							2.7231+ 0				1.5341- 2
1.0000- 2 ~ 1.5000- 2	2.5904+ 0	1.3234+ 0							1.2642+ 0				1.5350- 2
1.5000- 2 ~ 2.0000- 2	2.3938+ 0	1.3234+ 0							1.0629+ 0				1.5352- 2
2.0000- 2 ~ 3.0000- 2	2.2177+ 0	1.3234+ 0							8.9369- 1				1.5355- 2
3.0000- 2 ~ 4.0000- 2	2.0757+ 0	1.3234+ 0							7.5165- 1				1.5357- 2
4.0000- 2 ~ 5.0000- 2	1.9885+ 0	1.3234+ 0							6.6390- 1				1.5359- 2
5.0000- 2 ~ 6.0000- 2	1.9238+ 0	1.3234+ 0							5.9934- 1				1.5360- 2
6.0000- 2 ~ 8.0000- 2	1.8616+ 0	1.3234+ 0							5.3186- 1				1.5362- 2
8.0000- 2 ~ 1.0000- 1	1.7949+ 0	1.3234+ 0							4.6940- 1				1.5364- 2
1.0000- 1 ~ 1.5000- 1	1.7287+ 0	1.3234+ 0							3.9887- 1				1.5366- 2
1.5000- 1 ~ 2.0000- 1	1.6663+ 0	1.3234+ 0							3.3663- 1				1.5369- 2
2.0000- 1 ~ 3.0000- 1	1.6101+ 0	1.3234+ 0							2.8200- 1				1.5371- 2
3.0000- 1 ~ 4.0000- 1	1.5682+ 0	1.3234+ 0							2.3821- 1				1.5374- 2
4.0000- 1 ~ 5.0000- 1	1.5378+ 0	1.3234+ 0							2.0965- 1				1.5375- 2
5.0000- 1 ~ 6.0000- 1	1.5147+ 0	1.3234+ 0							1.8932- 1				1.5377- 2
6.0000- 1 ~ 8.0000- 1	1.4973+ 0	1.3234+ 0							1.6852- 1				1.5379- 2
8.0000- 1 ~ 1.0000+ 0	1.4746+ 0	1.3234+ 0							1.4816- 1				1.5380- 2
1.0000+ 0 ~ 1.5000+ 0	1.4534+ 0	1.3234+ 0							1.2634- 1				1.5383- 2
1.5000+ 0 ~ 2.0000+ 0	1.4339+ 0	1.3234+ 0							1.0638- 1				1.5385- 2
2.0000+ 0 ~ 3.0000+ 0	1.4134+ 0	1.3234+ 0							8.9373- 2				1.5388- 2
3.0000+ 0 ~ 4.0000+ 0	1.3993+ 0	1.3234+ 0							7.5227- 2				1.5390- 2
4.0000+ 0 ~ 5.0000+ 0	1.3910+ 0	1.3234+ 0							6.6309- 2				1.5392- 2
5.0000+ 0 ~ 6.0000+ 0	1.3836+ 0	1.3233+ 0							6.0086- 2				1.5393- 2
6.0000+ 0 ~ 8.0000+ 0	1.3778+ 0	1.3233+ 0							5.3197- 2				1.5395- 2
8.0000+ 0 ~ 1.0000+ 1	1.3710+ 0	1.3233+ 0							4.6812- 2				1.5397- 2
1.0000+ 1 ~ 1.5000+ 1	1.3656+ 0	1.3233+ 0							3.9904- 2				1.5399- 2
1.5000+ 1 ~ 2.0000+ 1	1.3617+ 0	1.3233+ 0							3.3659- 2				1.5402- 2
2.0000+ 1 ~ 3.0000+ 1	1.3560+ 0	1.3232+ 0							2.8257- 2				1.5404- 2
3.0000+ 1 ~ 4.0000+ 1	1.3486+ 0	1.3231+ 0							2.3797- 2				1.5407- 2
4.0000+ 1 ~ 5.0000+ 1	1.3443+ 0	1.3230+ 0							2.1002- 2				1.5409- 2
5.0000+ 1 ~ 6.0000+ 1	1.3424+ 0	1.3230+ 0							1.8960- 2				1.5410- 2
6.0000+ 1 ~ 8.0000+ 1	1.3398+ 0	1.3229+ 0							1.6828- 2				1.5412- 2
8.0000+ 1 ~ 1.0000+ 2	1.3379+ 0	1.3227+ 0							1.4851- 2				1.5414- 2
1.0000+ 2 ~ 1.5000+ 2	1.3352+ 0	1.3224+ 0							1.2621- 2				1.5416- 2
1.5000+ 2 ~ 2.0000+ 2	1.3330+ 0	1.3220+ 0							1.0665- 2				1.5418- 2
2.0000+ 2 ~ 3.0000+ 2	1.3305+ 0	1.3214+ 0							8.9257- 3				1.5421- 2
3.0000+ 2 ~ 4.0000+ 2	1.3284+ 0	1.3206+ 0							7.5434- 3				1.5423- 2
4.0000+ 2 ~ 5.0000+ 2	1.3266+ 0	1.3198+ 0							6.6336- 3				1.5425- 2
5.0000+ 2 ~ 6.0000+ 2	1.3252+ 0	1.3191+ 0							5.9940- 3				1.5427- 2
6.0000+ 2 ~ 8.0000+ 2	1.3234+ 0	1.3179+ 0							5.3368- 3				1.5428- 2
8.0000+ 2 ~ 1.0000+ 3	1.3210+ 0	1.3163+ 0							4.6939- 3				1.5430- 2
1.0000+ 3 ~ 1.5000+ 3	1.3175+ 0	1.3134+ 0							4.0051- 3				1.5432- 2
1.5000+ 3 ~ 2.0000+ 3	1.3128+ 0	1.3093+ 0							3.3732- 3				1.5435- 2
2.0000+ 3 ~ 3.0000+ 3	1.3060+ 0	1.3031+ 0							2.8380- 3				1.5529- 2
3.0000+ 3 ~ 4.0000+ 3	1.2969+ 0	1.2945+ 0							2.3927- 3				1.5675- 2
4.0000+ 3 ~ 5.0000+ 3	1.2878+ 0	1.2856+ 0							2.1128- 3				1.5783- 2
5.0000+ 3 ~ 6.0000+ 3	1.2783+ 0	1.2763+ 0							1.9207- 3				1.5956- 2
6.0000+ 3 ~ 8.0000+ 3	1.2633+ 0	1.2615+ 0							1.7058- 3				1.6276- 2
8.0000+ 3 ~ 1.0000+ 4	1.2412+ 0	1.2397+ 0							1.5119- 3				1.6615- 2
1.0000+ 4 ~ 1.5000+ 4	1.1954+ 0	1.1828+ 0							1.2472- 2				1.7532- 2
1.5000+ 4 ~ 2.0000+ 4	1.7784+ 0	1.7492+ 0							2.9200- 2				1.8745- 2
2.0000+ 4 ~ 3.0000+ 4	1.3490+ 0	1.3365+ 0							1.2359- 2				2.0827- 2
3.0000+ 4 ~ 4.0000+ 4	9.0246- 1	9.0117- 1							9.5439- 4				2.3951- 2
4.0000+ 4 ~ 5.0000+ 4	1.5827+ 0	1.5741+ 0							8.2807- 3				2.7352- 2
5.0000+ 4 ~ 6.0000+ 4	1.3709+ 1	1.3696+ 1							1.2520- 2				3.1293- 2
6.0000+ 4 ~ 8.0000+ 4	1.5984+ 0	1.5943+ 0							3.6554- 3				3.7009- 2
8.0000+ 4 ~ 1.0000+ 5	2.2529+ 0	2.2497+ 0							2.7045- 3				4.4267- 2
1.0000+ 5 ~ 1.5000+ 5	6.4797+ 0	6.4736+ 0							5.5721- 3				5.9242- 2
1.5000+ 5 ~ 2.0000+ 5	4.2000+ 0	4.1965+ 0							3.0634- 3				7.6948- 2
2.0000+ 5 ~ 3.0000+ 5	1.9820+ 0	1.9814+ 0							3.5142- 4				9.9766- 2
3.0000+ 5 ~ 4.0000+ 5	3.3644+ 0	3.3636+ 0							6.7145- 4				1.2439- 1
4.0000+ 5 ~ 5.0000+ 5	3.4438+ 0	3.4410+ 0							2.7642- 3				1.4270- 1
5.0000+ 5 ~ 6.0000+ 5	3.3968+ 0	3.3942+ 0							2.5787- 3				1.5573- 1
6.0000+ 5 ~ 8.0000+ 5	3.4159+ 0	3.4132+ 0							2.6352- 3				1.6908- 1
8.0000+ 5 ~ 1.0000+ 6	3.4361+ 0	3.4334+ 0							2.6961- 3				1.8319- 1
1.0000+ 6 ~ 1.5000+ 6	3.8106+ 0	3.4824+ 0	1.2548- 1						2.4000- 3				2.2359- 1
1.5000+ 6 ~ 2.0000+ 6	3.8835+ 0	3.2563+ 0	6.2563- 1						1.2227- 3				3.1891- 1
2.0000+ 6 ~ 3.0000+ 6	3.9683+ 0	3.0041+ 0	9.6290- 1						8.6929- 4			1.2314- 6	4.5343- 1
3.0000+ 6 ~ 4.0000+ 6	3.7590+ 0	2.6882+ 0	1.0695+ 0						6.3829- 4			4.9125- 5	5.9586- 1
4.0000+ 6 ~ 5.0000+ 6	3.5706+ 0	2.3965+ 0	1.1646+ 0						5.0688- 4	9.3112- 9		1.2080- 4	6.7795- 1
5.0000+ 6 ~ 6.0000+ 6	3.4849+ 0	2.1632+ 0	1.3237+ 0						3.8001- 4	7.0803- 5		1.9248- 4	7.3163- 1
6.0000+ 6 ~ 8.0000+ 6	3.2581+ 0	1.8660+ 0	1.3878+ 0						2.3647- 4	1.4100- 3		5.8208- 4	7.6922- 1
8.0000+ 6 ~ 1.0000+ 7	2.9416+ 0	1.5666+ 0	1.3619+ 0						1.1603- 4	7.8250- 3		4.0250- 3	7.7910- 1
1.0000+ 7 ~ 1.5000+ 7	2.5524+ 0	1.2402+ 0	1.0771+ 0	1.9308- 1					3.5189- 5	2.7409- 2		1.7381- 2	7.5483- 1
1.5000+ 7 ~ 2.0000+ 7	2.2674+ 0	1.0338+ 0	5.0519- 1	6.3300- 1					4.7138- 6	6.4431- 2		3.1169- 2	7.3213- 1

CROSS SECTION

MATERIAL =2205 CA-48

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	5.1990+ 0	2.9000+ 0							2.2819+ 0				1.4647- 2
1.0000- 2 ~ 1.5000- 2	3.9857+ 0	2.9000+ 0							1.0581+ 0				1.4650- 2
1.5000- 2 ~ 2.0000- 2	3.8005+ 0	2.9000+ 0							8.9206- 1				1.4650- 2
2.0000- 2 ~ 3.0000- 2	3.6567+ 0	2.9000+ 0							7.4821- 1				1.4651- 2
3.0000- 2 ~ 4.0000- 2	3.5631+ 0	2.9000+ 0							6.3077- 1				1.4652- 2
4.0000- 2 ~ 5.0000- 2	3.4838+ 0	2.9000+ 0							5.5572- 1				1.4653- 2
5.0000- 2 ~ 6.0000- 2	3.4087+ 0	2.9000+ 0							5.0239- 1				1.4653- 2
6.0000- 2 ~ 8.0000- 2	3.3628+ 0	2.9000+ 0							4.4602- 1				1.4664- 2
8.0000- 2 ~ 1.0000- 1	3.2966+ 0	2.9000+ 0							3.9295- 1				1.4654- 2
1.0000- 1 ~ 1.5000- 1	3.2411+ 0	2.9000+ 0							3.3461- 1				1.4655- 2
1.5000- 1 ~ 2.0000- 1	3.1886+ 0	2.9000+ 0							2.8209- 1				1.4656- 2
2.0000- 1 ~ 3.0000- 1	3.1413+ 0	2.9000+ 0							2.3660- 1				1.4657- 2
3.0000- 1 ~ 4.0000- 1	3.1061+ 0	2.9000+ 0							1.9946- 1				1.4657- 2
4.0000- 1 ~ 5.0000- 1	3.0805+ 0	2.9000+ 0							1.7673- 1				1.4658- 2
5.0000- 1 ~ 6.0000- 1	3.0609+ 0	2.9000+ 0							1.5887- 1				1.4658- 2
6.0000- 1 ~ 8.0000- 1	3.0464+ 0	2.9000+ 0							1.4104- 1				1.4659- 2
8.0000- 1 ~ 1.0000+ 0	3.0273+ 0	2.9000+ 0							1.2426- 1				1.4660- 2
1.0000+ 0 ~ 1.5000+ 0	3.0155+ 0	2.9000+ 0							1.0580- 1				1.4660- 2
1.5000+ 0 ~ 2.0000+ 0	3.0110+ 0	2.9000+ 0							8.9190- 2				1.4661- 2
2.0000+ 0 ~ 3.0000+ 0	3.0043+ 0	2.9000+ 0							7.4803- 2				1.4662- 2
3.0000+ 0 ~ 4.0000+ 0	2.9953+ 0	2.9000+ 0							6.3057- 2				1.4663- 2
4.0000+ 0 ~ 5.0000+ 0	2.9864+ 0	2.9000+ 0							5.5551- 2				1.4663- 2
5.0000+ 0 ~ 6.0000+ 0	2.9775+ 0	2.9000+ 0							5.0218- 2				1.4664- 2
6.0000+ 0 ~ 8.0000+ 0	2.9640+ 0	2.9000+ 0							4.4581- 2				1.4664- 2
8.0000+ 0 ~ 1.0000+ 1	2.9461+ 0	2.9000+ 0							3.9274- 2				1.4665- 2
1.0000+ 1 ~ 1.5000+ 1	2.9365+ 0	2.9000+ 0							3.3444- 2				1.4666- 2
1.5000+ 1 ~ 2.0000+ 1	2.9351+ 0	2.9000+ 0							2.8197- 2				1.4666- 2
2.0000+ 1 ~ 3.0000+ 1	2.9330+ 0	2.9000+ 0							2.3652- 2				1.4667- 2
3.0000+ 1 ~ 4.0000+ 1	2.9301+ 0	2.9000+ 0							1.9941- 2				1.4668- 2
4.0000+ 1 ~ 5.0000+ 1	2.9273+ 0	2.9000+ 0							1.7570- 2				1.4669- 2
5.0000+ 1 ~ 6.0000+ 1	2.9245+ 0	2.9000+ 0							1.5884- 2				1.4669- 2
6.0000+ 1 ~ 8.0000+ 1	2.9202+ 0	2.9000+ 0							1.4103- 2				1.4670- 2
8.0000+ 1 ~ 1.0000+ 2	2.9146+ 0	2.9000+ 0							1.2426- 2				1.4670- 2
1.0000+ 2 ~ 1.5000+ 2	2.9115+ 0	2.9000+ 0							1.0580- 2				1.4671- 2
1.5000+ 2 ~ 2.0000+ 2	2.9111+ 0	2.9000+ 0							8.9190- 3				1.4672- 2
2.0000+ 2 ~ 3.0000+ 2	2.9104+ 0	2.9000+ 0							7.4803- 3				1.4673- 2
3.0000+ 2 ~ 4.0000+ 2	2.9096+ 0	2.9000+ 0							6.3067- 3				1.4673- 2
4.0000+ 2 ~ 5.0000+ 2	2.9086+ 0	2.9000+ 0							5.5551- 3				1.4674- 2
5.0000+ 2 ~ 6.0000+ 2	2.9077+ 0	2.9000+ 0							5.0218- 3				1.4674- 2
6.0000+ 2 ~ 8.0000+ 2	2.9064+ 0	2.9000+ 0							4.4581- 3				1.4675- 2
8.0000+ 2 ~ 1.0000+ 3	2.9046+ 0	2.9000+ 0							3.9274- 3				1.4676- 2
1.0000+ 3 ~ 1.5000+ 3	6.7953+ 1	6.7945+ 1							8.5878- 3				1.4732- 2
1.5000+ 3 ~ 2.0000+ 3	5.7101+ 1	5.7095+ 1							6.4462- 3				1.4820- 2
2.0000+ 3 ~ 3.0000+ 3	4.7736+ 1	4.7731+ 1							4.8068- 3				1.4912- 2
3.0000+ 3 ~ 4.0000+ 3	4.0112+ 1	4.0109+ 1							3.6081- 3				1.5001- 2
4.0000+ 3 ~ 5.0000+ 3	3.5255+ 1	3.5252+ 1							2.9173- 3				1.5068- 2
5.0000+ 3 ~ 6.0000+ 3	3.1795+ 1	3.1793+ 1							2.4446- 3				1.5203- 2
6.0000+ 3 ~ 8.0000+ 3	2.8129+ 1	2.8127+ 1							1.9645- 3				1.5481- 2
8.0000+ 3 ~ 1.0000+ 4	2.4689+ 1	2.4688+ 1							1.5546- 3				1.5774- 2
1.0000+ 4 ~ 1.5000+ 4	2.0910+ 1	2.0909+ 1							1.3887- 3				1.6566- 2
1.5000+ 4 ~ 2.0000+ 4	1.7519+ 1	1.7517+ 1							1.3624- 3				1.7610- 2
2.0000+ 4 ~ 3.0000+ 4	1.4595+ 1	1.4594+ 1							1.1826- 3				1.9402- 2
3.0000+ 4 ~ 4.0000+ 4	1.2218+ 1	1.2217+ 1							9.4229- 4				2.2088- 2
4.0000+ 4 ~ 5.0000+ 4	1.0708+ 1	1.0707+ 1							7.8303- 4				2.5010- 2
5.0000+ 4 ~ 6.0000+ 4	9.6436+ 0	9.6429+ 0							6.6927- 4				2.8395- 2
6.0000+ 4 ~ 8.0000+ 4	8.5262+ 0	8.5256+ 0							5.5307- 4				3.3306- 2
8.0000+ 4 ~ 1.0000+ 5	7.4831+ 0	7.4826+ 0							4.4989- 4				3.9543- 2
1.0000+ 5 ~ 1.5000+ 5	6.3753+ 0	6.3749+ 0							3.8629- 4				5.2409- 2
1.5000+ 5 ~ 2.0000+ 5	5.3908+ 0	5.3905+ 0							3.4995- 4				6.7619- 2
2.0000+ 5 ~ 3.0000+ 5	4.6564+ 0	4.6561+ 0							3.0255- 4				8.6994- 2
3.0000+ 5 ~ 4.0000+ 5	4.1095+ 0	4.1093+ 0							2.5546- 4				1.0779- 1
4.0000+ 5 ~ 5.0000+ 5	3.7456+ 0	3.7453+ 0							2.2532- 4				1.2326- 1
5.0000+ 5 ~ 6.0000+ 5	3.5944+ 0	3.5942+ 0							2.1671- 4				1.3493- 1
6.0000+ 5 ~ 8.0000+ 5	3.5801+ 0	3.5799+ 0							2.2499- 4				1.4791- 1
8.0000+ 5 ~ 1.0000+ 6	3.5652+ 0	3.5649+ 0							2.3407- 4				1.6162- 1
1.0000+ 6 ~ 1.5000+ 6	3.7129+ 0	3.6698+ 0	2.1977- 2						2.3639- 4				1.9587- 1
1.5000+ 6 ~ 2.0000+ 6	3.9291+ 0	3.4388+ 0	4.8367- 1						1.3277- 4				2.9471- 1
2.0000+ 6 ~ 3.0000+ 6	3.9437+ 0	3.1313+ 0	8.1120- 1						9.4936- 5				4.2689- 1
3.0000+ 6 ~ 4.0000+ 6	3.7711+ 0	2.8721+ 0	8.9843- 1						9.5301- 5				5.5603- 1
4.0000+ 6 ~ 5.0000+ 6	3.6185+ 0	2.5962+ 0	1.0197+ 0						8.2498- 5				6.3902- 1
5.0000+ 6 ~ 6.0000+ 6	3.5651+ 0	2.2977+ 0	1.2602+ 0						5.3447- 5				7.0887- 1
6.0000+ 6 ~ 8.0000+ 6	3.3694+ 0	1.9693+ 0	1.3947+ 0						2.4746- 5	2.1169- 5		2.5000- 3	7.6623- 1
8.0000+ 6 ~ 1.0000+ 7	3.0699+ 0	1.6635+ 0	1.4009+ 0						9.5664- 6	1.9463- 4		4.0000- 3	7.8889- 1
1.0000+ 7 ~ 1.5000+ 7	2.6745+ 0	1.3182+ 0	9.9248- 1	3.5743- 1					2.4467- 6	2.9693- 3		4.0000- 3	7.6846- 1
1.5000+ 7 ~ 2.0000+ 7	2.3329+ 0	1.0759+ 0	3.3674- 1	8.9000- 1					2.2722- 7	2.7130- 2		4.0000- 3	7.3943- 1

CROSS SECTION

MATERIAL =2206 CA-48

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	6.2847+ 0	2.9000+ 0							3.3662+ 0				1.4059- 2
1.0000- 2 ~ 1.5000- 2	4.4697+ 0	2.9000+ 0							1.5603+ 0				1.4067- 2
1.5000- 2 ~ 2.0000- 2	4.2264+ 0	2.9000+ 0							1.3161+ 0				1.4069- 2
2.0000- 2 ~ 3.0000- 2	4.0108+ 0	2.9000+ 0							1.1037+ 0				1.4071- 2
3.0000- 2 ~ 4.0000- 2	3.8443+ 0	2.9000+ 0							9.3010- 1				1.4073- 2
4.0000- 2 ~ 5.0000- 2	3.7240+ 0	2.9000+ 0							8.2017- 1				1.4075- 2
5.0000- 2 ~ 6.0000- 2	3.6438+ 0	2.9000+ 0							7.4128- 1				1.4076- 2
6.0000- 2 ~ 8.0000- 2	3.5670+ 0	2.9000+ 0							6.6765- 1				1.4077- 2
8.0000- 2 ~ 1.0000- 1	3.4843+ 0	2.9000+ 0							5.7924- 1				1.4079- 2
1.0000- 1 ~ 1.5000- 1	3.4024+ 0	2.9000+ 0							4.9362- 1				1.4081- 2
1.5000- 1 ~ 2.0000- 1	3.3251+ 0	2.9000+ 0							4.1631- 1				1.4083- 2
2.0000- 1 ~ 3.0000- 1	3.2555+ 0	2.9000+ 0							3.4900- 1				1.4085- 2
3.0000- 1 ~ 4.0000- 1	3.2037+ 0	2.9000+ 0							2.9406- 1				1.4087- 2
4.0000- 1 ~ 5.0000- 1	3.1669+ 0	2.9000+ 0							2.5935- 1				1.4089- 2
5.0000- 1 ~ 6.0000- 1	3.1371+ 0	2.9000+ 0							2.3430- 1				1.4090- 2
6.0000- 1 ~ 8.0000- 1	3.1157+ 0	2.9000+ 0							2.0799- 1				1.4091- 2
8.0000- 1 ~ 1.0000+ 0	3.0875+ 0	2.9000+ 0							1.8333- 1				1.4093- 2
1.0000+ 0 ~ 1.5000+ 0	3.0679+ 0	2.9000+ 0							1.5600- 1				1.4095- 2
1.5000+ 0 ~ 2.0000+ 0	3.0568+ 0	2.9000+ 0							1.3165- 1				1.4097- 2
2.0000+ 0 ~ 3.0000+ 0	3.0402+ 0	2.9000+ 0							1.1029- 1				1.4099- 2
3.0000+ 0 ~ 4.0000+ 0	3.0181+ 0	2.9000+ 0							9.3072- 2				1.4101- 2
4.0000+ 0 ~ 5.0000+ 0	2.9960+ 0	2.9000+ 0							8.1918- 2				1.4103- 2
5.0000+ 0 ~ 6.0000+ 0	2.9761+ 0	2.9000+ 0							7.4038- 2				1.4104- 2
6.0000+ 0 ~ 8.0000+ 0	2.9675+ 0	2.9000+ 0							6.5800- 2				1.4106- 2
8.0000+ 0 ~ 1.0000+ 1	2.9591+ 0	2.9000+ 0							5.7903- 2				1.4107- 2
1.0000+ 1 ~ 1.5000+ 1	2.9538+ 0	2.9000+ 0							4.9339- 2				1.4109- 2
1.5000+ 1 ~ 2.0000+ 1	2.9517+ 0	2.9000+ 0							4.1585- 2				1.4111- 2
2.0000+ 1 ~ 3.0000+ 1	2.9486+ 0	2.9000+ 0							3.4895- 2				1.4113- 2
3.0000+ 1 ~ 4.0000+ 1	2.9444+ 0	2.9000+ 0							2.9411- 2				1.4115- 2
4.0000+ 1 ~ 5.0000+ 1	2.9402+ 0	2.9000+ 0							2.5914- 2				1.4117- 2
5.0000+ 1 ~ 6.0000+ 1	2.9361+ 0	2.9000+ 0							2.3446- 2				1.4118- 2
6.0000+ 1 ~ 8.0000+ 1	2.9298+ 0	2.9000+ 0							2.0800- 2				1.4120- 2
8.0000+ 1 ~ 1.0000+ 2	2.9215+ 0	2.9000+ 0							1.8316- 2				1.4121- 2
1.0000+ 2 ~ 1.5000+ 2	2.9170+ 0	2.9000+ 0							1.5605- 2				1.4123- 2
1.5000+ 2 ~ 2.0000+ 2	2.9164+ 0	2.9000+ 0							1.3156- 2				1.4125- 2
2.0000+ 2 ~ 3.0000+ 2	2.9154+ 0	2.9000+ 0							1.1038- 2				1.4127- 2
3.0000+ 2 ~ 4.0000+ 2	2.9140+ 0	2.9000+ 0							9.3024- 3				1.4130- 2
4.0000+ 2 ~ 5.0000+ 2	2.9127+ 0	2.9000+ 0							8.2014- 3				1.4131- 2
5.0000+ 2 ~ 6.0000+ 2	2.9114+ 0	2.9000+ 0							7.4078- 3				1.4132- 2
6.0000+ 2 ~ 8.0000+ 2	2.9094+ 0	2.9000+ 0							6.5775- 3				1.4134- 2
8.0000+ 2 ~ 1.0000+ 3	2.9068+ 0	2.9000+ 0							5.7990- 3				1.4135- 2
1.0000+ 3 ~ 1.5000+ 3	2.9055+ 0	2.9000+ 0							4.9328- 3				1.4137- 2
1.5000+ 3 ~ 2.0000+ 3	2.9055+ 0	2.9000+ 0							4.1631- 3				1.4139- 2
2.0000+ 3 ~ 3.0000+ 3	2.9055+ 0	2.9000+ 0							3.4879- 3				1.4219- 2
3.0000+ 3 ~ 4.0000+ 3	2.9054+ 0	2.9000+ 0							2.9436- 3				1.4342- 2
4.0000+ 3 ~ 5.0000+ 3	2.9054+ 0	2.9000+ 0							2.5908- 3				1.4433- 2
5.0000+ 3 ~ 6.0000+ 3	2.9054+ 0	2.9000+ 0							2.3416- 3				1.4677- 2
6.0000+ 3 ~ 8.0000+ 3	2.9054+ 0	2.9000+ 0							2.0813- 3				1.4844- 2
8.0000+ 3 ~ 1.0000+ 4	2.9054+ 0	2.9000+ 0							1.8319- 3				1.5126- 2
1.0000+ 4 ~ 1.5000+ 4	2.9053+ 0	2.9000+ 0							1.5605- 3				1.5880- 2
1.5000+ 4 ~ 2.0000+ 4	2.9053+ 0	2.9000+ 0							1.3153- 3				1.6877- 2
2.0000+ 4 ~ 3.0000+ 4	2.9052+ 0	2.9001+ 0							1.1034- 3				1.8572- 2
3.0000+ 4 ~ 4.0000+ 4	2.9052+ 0	2.9001+ 0							9.3000- 4				2.1102- 2
4.0000+ 4 ~ 5.0000+ 4	2.9051+ 0	2.9002+ 0							8.1914- 4				2.3839- 2
5.0000+ 4 ~ 6.0000+ 4	2.9051+ 0	2.9003+ 0							7.4129- 4				2.6991- 2
6.0000+ 4 ~ 8.0000+ 4	2.9051+ 0	2.9005+ 0							6.5776- 4				3.1550- 2
8.0000+ 4 ~ 1.0000+ 5	2.9051+ 0	2.9008+ 0							5.8038- 4				3.7316- 2
1.0000+ 5 ~ 1.5000+ 5	2.9052+ 0	2.9014+ 0							4.9357- 4				5.0527- 2
1.5000+ 5 ~ 2.0000+ 5	2.9054+ 0	2.9022+ 0							4.1560- 4				6.6670- 2
2.0000+ 5 ~ 3.0000+ 5	2.9684+ 0	2.9661+ 0							3.5621- 4				8.3457- 2
3.0000+ 5 ~ 4.0000+ 5	3.6477+ 0	3.6467+ 0							3.7222- 4				9.9600- 2
4.0000+ 5 ~ 5.0000+ 5	3.9963+ 0	3.9960+ 0							2.6418- 4				1.1181- 1
5.0000+ 5 ~ 6.0000+ 5	3.8392+ 0	3.8389+ 0							2.5456- 4				1.2207- 1
6.0000+ 5 ~ 8.0000+ 5	3.7769+ 0	3.7767+ 0							2.6343- 4				1.3472- 1
8.0000+ 5 ~ 1.0000+ 6	3.7163+ 0	3.7160+ 0							2.7312- 4				1.4808- 1
1.0000+ 6 ~ 1.5000+ 6	3.7847+ 0	3.7844+ 0							3.0667- 4				1.9229- 1
1.5000+ 6 ~ 2.0000+ 6	3.9376+ 0	3.9373+ 0							3.5808- 4				2.5279- 1
2.0000+ 6 ~ 3.0000+ 6	3.8928+ 0	3.8923+ 0							4.8198- 4				3.3153- 1
3.0000+ 6 ~ 4.0000+ 6	3.7277+ 0	3.7169+ 0	9.9842- 3						6.7959- 4				4.1812- 1
4.0000+ 6 ~ 5.0000+ 6	3.6519+ 0	3.1669+ 0	4.8254- 1						4.8482- 4				5.2824- 1
5.0000+ 6 ~ 6.0000+ 6	3.6423+ 0	2.6369+ 0	1.0027+ 0						2.1577- 4				6.3449- 1
6.0000+ 6 ~ 8.0000+ 6	3.4880+ 0	2.2076+ 0	1.2769+ 0						1.4714- 4				7.2232- 1
8.0000+ 6 ~ 1.0000+ 7	3.1957+ 0	1.7701+ 0	1.4237+ 0						2.7855- 5				7.9288- 1
1.0000+ 7 ~ 1.5000+ 7	2.8057+ 0	1.3967+ 0	8.4886- 1	5.5884- 1					4.6572- 6	5.5407- 5			7.8002- 1
1.5000+ 7 ~ 2.0000+ 7	2.4015+ 0	1.1213+ 0	3.9265- 1	8.8500- 1					5.5729- 7	3.7556- 3			7.4670- 1

CROSS SECTION

SC-45

MATERIAL =2211

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.0556+ 2	2.5093+ 1							8.0524+ 1	0.0000+ 0			1.4958- 2
1.0000- 2 ~ 1.5000- 2	6.2417+ 1	2.5032+ 1							3.7386+ 1	0.0000+ 0			1.4958- 2
1.5000- 2 ~ 2.0000- 2	5.6465+ 1	2.5032+ 1							3.1439+ 1	0.0000+ 0			1.4958- 2
2.0000- 2 ~ 3.0000- 2	5.1472+ 1	2.5031+ 1							2.6442+ 1	0.0000+ 0			1.4958- 2
3.0000- 2 ~ 4.0000- 2	4.7261+ 1	2.5030+ 1							2.2232+ 1	0.0000+ 0			1.4958- 2
4.0000- 2 ~ 5.0000- 2	4.4702+ 1	2.5028+ 1							1.9674+ 1	0.0000+ 0			1.4958- 2
5.0000- 2 ~ 6.0000- 2	4.2750+ 1	2.5027+ 1							1.7723+ 1	0.0000+ 0			1.4958- 2
6.0000- 2 ~ 8.0000- 2	4.0749+ 1	2.5026+ 1							1.5724+ 1	0.0000+ 0			1.4958- 2
8.0000- 2 ~ 1.0000- 1	3.8913+ 1	2.5023+ 1							1.3891+ 1	0.0000+ 0			1.4958- 2
1.0000- 1 ~ 1.5000- 1	3.6816+ 1	2.5019+ 1							1.1797+ 1	0.0000+ 0			1.4958- 2
1.5000- 1 ~ 2.0000- 1	3.4941+ 1	2.5012+ 1							9.9285+ 0	0.0000+ 0			1.4958- 2
2.0000- 1 ~ 3.0000- 1	3.3344+ 1	2.5003+ 1							8.3403+ 0	0.0000+ 0			1.4958- 2
3.0000- 1 ~ 4.0000- 1	3.2010+ 1	2.4991+ 1							7.0186+ 0	0.0000+ 0			1.4958- 2
4.0000- 1 ~ 5.0000- 1	3.1171+ 1	2.4979+ 1							6.1920+ 0	0.0000+ 0			1.4958- 2
5.0000- 1 ~ 6.0000- 1	3.0554+ 1	2.4967+ 1							5.5874+ 0	0.0000+ 0			1.4958- 2
6.0000- 1 ~ 8.0000- 1	2.9907+ 1	2.4949+ 1							4.9588+ 0	0.0000+ 0			1.4958- 2
8.0000- 1 ~ 1.0000+ 0	2.9292+ 1	2.4924+ 1							4.3677+ 0	0.0000+ 0			1.4958- 2
1.0000+ 0 ~ 1.5000+ 0	2.8590+ 1	2.4882+ 1							3.7078+ 0	0.0000+ 0			1.4958- 2
1.5000+ 0 ~ 2.0000+ 0	2.7946+ 1	2.4822+ 1							3.1238+ 0	0.0000+ 0			1.4958- 2
2.0000+ 0 ~ 3.0000+ 0	2.7338+ 1	2.4732+ 1							2.6067+ 0	0.0000+ 0			1.4958- 2
3.0000+ 0 ~ 4.0000+ 0	2.6802+ 1	2.4613+ 1							2.1896+ 0	0.0000+ 0			1.4958- 2
4.0000+ 0 ~ 5.0000+ 0	2.6410+ 1	2.4495+ 1							1.9156+ 0	0.0000+ 0			1.4958- 2
5.0000+ 0 ~ 6.0000+ 0	2.6101+ 1	2.4377+ 1							1.7238+ 0	0.0000+ 0			1.4958- 2
6.0000+ 0 ~ 8.0000+ 0	2.5725+ 1	2.4203+ 1							1.5215+ 0	0.0000+ 0			1.4958- 2
8.0000+ 0 ~ 1.0000+ 1	2.5298+ 1	2.3974+ 1							1.3245+ 0	0.0000+ 0			1.4958- 2
1.0000+ 1 ~ 1.5000+ 1	2.4693+ 1	2.3582+ 1							1.1108+ 0	0.0000+ 0			1.4958- 2
1.5000+ 1 ~ 2.0000+ 1	2.3951+ 1	2.3038+ 1							9.1264- 1	0.0000+ 0			1.4958- 2
2.0000+ 1 ~ 3.0000+ 1	2.3003+ 1	2.2263+ 1							7.4016- 1	0.0000+ 0			1.4958- 2
3.0000+ 1 ~ 4.0000+ 1	2.1882+ 1	2.1288+ 1							5.9472- 1	0.0000+ 0			1.4958- 2
4.0000+ 1 ~ 5.0000+ 1	2.0877+ 1	2.0377+ 1							4.9997- 1	0.0000+ 0			1.4958- 2
5.0000+ 1 ~ 6.0000+ 1	1.9959+ 1	1.9527+ 1							4.3227- 1	0.0000+ 0			1.4958- 2
6.0000+ 1 ~ 8.0000+ 1	1.8725+ 1	1.8364+ 1							3.6153- 1	0.0000+ 0			1.4958- 2
8.0000+ 1 ~ 1.0000+ 2	1.7250+ 1	1.6957+ 1							2.9312- 1	0.0000+ 0			1.4958- 2
1.0000+ 2 ~ 1.5000+ 2	1.6121+ 1	1.4901+ 1							2.1994- 1	0.0000+ 0			1.4960- 2
1.5000+ 2 ~ 2.0000+ 2	1.2682+ 1	1.2526+ 1							1.5604- 1	0.0000+ 0			1.4963- 2
2.0000+ 2 ~ 3.0000+ 2	1.0033+ 1	9.9281+ 0							1.0498- 1	0.0000+ 0			1.4966- 2
3.0000+ 2 ~ 4.0000+ 2	7.6651+ 0	7.4966+ 0							6.8664- 2	0.0000+ 0			1.4969- 2
4.0000+ 2 ~ 5.0000+ 2	6.0584+ 0	5.8079+ 0							2.5053- 1	0.0000+ 0			1.4971- 2
5.0000+ 2 ~ 6.0000+ 2	4.6384+ 0	4.6014+ 0							3.6955- 2	0.0000+ 0			1.4973- 2
6.0000+ 2 ~ 8.0000+ 2	3.3636+ 0	3.3375+ 0							2.6061- 2	0.0000+ 0			1.4975- 2
8.0000+ 2 ~ 1.0000+ 3	2.2246+ 0	2.2064+ 0							1.8199- 2	0.0000+ 0			1.4977- 2
1.0000+ 3 ~ 1.5000+ 3	1.1681+ 0	1.1165+ 0							5.1628- 2	0.0000+ 0			1.5034- 2
1.5000+ 3 ~ 2.0000+ 3	3.8494- 1	3.7567- 1							9.2790- 3	0.0000+ 0			1.5122- 2
2.0000+ 3 ~ 3.0000+ 3	1.2240+ 0	1.1854+ 0							3.8581- 2	0.0000+ 0			1.5213- 2
3.0000+ 3 ~ 4.0000+ 3	5.6232+ 1	5.5809+ 1							4.2260- 1	0.0000+ 0			1.5300- 2
4.0000+ 3 ~ 5.0000+ 3	1.4693+ 2	1.4675+ 2							1.7828- 1	0.0000+ 0			1.5365- 2
5.0000+ 3 ~ 6.0000+ 3	1.1316+ 1	1.1294+ 1							2.1463- 2	0.0000+ 0			1.5417- 2
6.0000+ 3 ~ 8.0000+ 3	2.3547+ 1	2.3462+ 1							8.4598- 2	0.0000+ 0			1.5479- 2
8.0000+ 3 ~ 1.0000+ 4	4.5139+ 1	4.5009+ 1							1.3091- 1	0.0000+ 0			1.5544- 2
1.0000+ 4 ~ 1.5000+ 4	1.7689+ 1	1.7513+ 1	1.2750- 3						1.7410- 1	0.0000+ 0			1.5658- 2
1.5000+ 4 ~ 2.0000+ 4	5.6089+ 0	5.5366+ 0	1.0129- 2						6.2191- 2	0.0000+ 0			1.6606- 2
2.0000+ 4 ~ 3.0000+ 4	1.1801+ 1	1.1715+ 1	2.1353- 2						6.4621- 2	0.0000+ 0			1.7471- 2
3.0000+ 4 ~ 4.0000+ 4	8.4717+ 0	8.3881+ 0	3.1304- 2						5.2381- 2	0.0000+ 0			1.9456- 2
4.0000+ 4 ~ 5.0000+ 4	6.5275+ 0	6.4359+ 0	3.7917- 2						5.3767- 2	0.0000+ 0			2.2008- 2
5.0000+ 4 ~ 6.0000+ 4	6.8371+ 0	6.7508+ 0	4.3188- 2						4.3338- 2	0.0000+ 0			2.4041- 2
6.0000+ 4 ~ 8.0000+ 4	1.0450+ 1	1.0363+ 1	4.9447- 2						3.7865- 2	0.0000+ 0			2.6456- 2
8.0000+ 4 ~ 1.0000+ 5	1.1336+ 1	1.1246+ 1	5.6060- 2						3.3758- 2	0.0000+ 0			2.9008- 2
1.0000+ 5 ~ 1.5000+ 5	5.0732+ 0	4.9703+ 0	6.6700- 2						2.7966- 2	0.0000+ 0			3.8420- 2
1.5000+ 5 ~ 2.0000+ 5	4.2544+ 0	4.1392+ 0	7.8993- 2						2.2170- 2	0.0000+ 0			5.1497- 2
2.0000+ 5 ~ 3.0000+ 5	3.5493+ 0	3.4288+ 0	8.1775- 2						1.7469- 2	0.0000+ 0			6.5095- 2
3.0000+ 5 ~ 4.0000+ 5	2.9781+ 0	2.8566+ 0	1.0431- 1						1.3849- 2	0.0000+ 0			7.8237- 2
4.0000+ 5 ~ 5.0000+ 5	2.6883+ 0	2.5500+ 0	1.2593- 1						1.1640- 2	0.0000+ 0		7.4523- 5	9.1291- 2
5.0000+ 5 ~ 6.0000+ 5	2.5431+ 0	2.3772+ 0	1.5480- 1						1.0201- 2	2.0000- 4		2.4255- 4	1.0376- 1
6.0000+ 5 ~ 8.0000+ 5	2.4761+ 0	2.2215+ 0	2.4388- 1						8.5763- 3	8.0000- 4		4.9503- 4	1.2093- 1
8.0000+ 5 ~ 1.0000+ 6	2.5086+ 0	2.1334+ 0	3.6557- 1						7.1636- 3	1.6000- 3		8.3168- 4	1.4166- 1
1.0000+ 6 ~ 1.5000+ 6	2.7573+ 0	2.1557+ 0	5.9019- 1						5.1873- 3	5.5000- 3		1.3750- 3	1.8505- 1
1.5000+ 6 ~ 2.0000+ 6	3.1499+ 0	2.2604+ 0	8.7216- 1						3.0769- 3	1.2500- 2		2.1250- 3	2.7222- 1
2.0000+ 6 ~ 3.0000+ 6	3.4172+ 0	2.3601+ 0	1.0183+ 0						2.2018- 3	3.3000- 2		3.2500- 3	4.1818- 1
3.0000+ 6 ~ 4.0000+ 6	3.4878+ 0	2.3668+ 0	1.0518+ 0						1.5964- 3	6.2500- 2		4.5000- 3	5.5846- 1
4.0000+ 6 ~ 5.0000+ 6	3.3848+ 0	2.2845+ 0	1.0088+ 0						1.2086- 3	8.4000- 2		6.0000- 3	6.4440- 1
5.0000+ 6 ~ 6.0000+ 6	3.2199+ 0	2.1596+ 0	9.5178- 1						9.1398- 4	1.0000- 1		7.5000- 3	6.9186- 1
6.0000+ 6 ~ 8.0000+ 6	2.9447+ 0	1.9326+ 0	8.8850- 1						6.0243- 4	1.1300- 1		9.7500- 3	7.2944- 1
8.0000+ 6 ~ 1.0000+ 7	2.6225+ 0	1.6296+ 0	8.6944- 1						3.3940- 4	1.0825- 1		1.4500- 2	7.2968- 1
1.0000+ 7 ~ 1.5000+ 7	2.2529+ 0	1.2517+ 0	7.6983- 1	1.1564- 1					1.1729- 4	7.4800- 2		4.0600- 2	6.8140- 1
1.5000+ 7 ~ 2.0000+ 7	1.8995+ 0	9.7252- 1	4.0903- 1	4.6400- 1					1.7771- 5	2.2210- 2		3.1740- 2	6.2109- 1

CROSS SECTION

MATERIAL =2231

V -51

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.9968+ 1	4.8045+ 0							1.5162+ 1			0.0000+ 0	1.3204- 2
1.0000- 2 ~ 1.5000- 2	1.1842+ 1	4.8045+ 0							7.0399+ 0			0.0000+ 0	1.3205- 2
1.5000- 2 ~ 2.0000- 2	1.0723+ 1	4.8046+ 0							6.9192+ 0			0.0000+ 0	1.3205- 2
2.0000- 2 ~ 3.0000- 2	9.7902+ 0	4.8089+ 0							4.9810+ 0			0.0000+ 0	1.3205- 2
3.0000- 2 ~ 4.0000- 2	9.0345+ 0	4.8422+ 0							4.1904+ 0			0.0000+ 0	1.3206- 2
4.0000- 2 ~ 5.0000- 2	8.5832+ 0	4.8811+ 0							3.7037+ 0			0.0000+ 0	1.3206- 2
5.0000- 2 ~ 6.0000- 2	8.2667+ 0	4.9199+ 0							3.3416+ 0			0.0000+ 0	1.3206- 2
6.0000- 2 ~ 8.0000- 2	7.9426+ 0	4.9782+ 0							2.9638+ 0			0.0000+ 0	1.3206- 2
8.0000- 2 ~ 1.0000- 1	7.6675+ 0	5.0558+ 0							2.6128+ 0			0.0000+ 0	1.3206- 2
1.0000- 1 ~ 1.5000- 1	7.3284+ 0	5.0975+ 0							2.2256+ 0			0.0000+ 0	1.3207- 2
1.5000- 1 ~ 2.0000- 1	6.9770+ 0	5.1031+ 0							1.8718+ 0			0.0000+ 0	1.3207- 2
2.0000- 1 ~ 3.0000- 1	6.6870+ 0	5.1116+ 0							1.5721+ 0			0.0000+ 0	1.3207- 2
3.0000- 1 ~ 4.0000- 1	6.4500+ 0	5.1228+ 0							1.3237+ 0			0.0000+ 0	1.3207- 2
4.0000- 1 ~ 5.0000- 1	6.3098+ 0	5.1341+ 0							1.1699+ 0			0.0000+ 0	1.3208- 2
5.0000- 1 ~ 6.0000- 1	6.2021+ 0	5.1463+ 0							1.0552+ 0			0.0000+ 0	1.3208- 2
6.0000- 1 ~ 8.0000- 1	6.1048+ 0	5.1622+ 0							9.3596- 1			0.0000+ 0	1.3208- 2
8.0000- 1 ~ 1.0000+ 0	6.0157+ 0	5.1847+ 0							8.2771- 1			0.0000+ 0	1.3208- 2
1.0000+ 0 ~ 1.5000+ 0	5.8967+ 0	5.1880+ 0							7.0261- 1			0.0000+ 0	1.3208- 2
1.5000+ 0 ~ 2.0000+ 0	5.7720+ 0	5.1721+ 0							5.9386- 1			0.0000+ 0	1.3209- 2
2.0000+ 0 ~ 3.0000+ 0	5.6465+ 0	5.1482+ 0							4.9698- 1			0.0000+ 0	1.3209- 2
3.0000+ 0 ~ 4.0000+ 0	5.5373+ 0	5.1164+ 0							4.2012- 1			0.0000+ 0	1.3209- 2
4.0000+ 0 ~ 5.0000+ 0	5.4561+ 0	5.0845+ 0							3.6948- 1			0.0000+ 0	1.3209- 2
5.0000+ 0 ~ 6.0000+ 0	5.3870+ 0	5.0527+ 0							3.3378- 1			0.0000+ 0	1.3209- 2
6.0000+ 0 ~ 8.0000+ 0	5.3041+ 0	5.0049+ 0							2.9732- 1			0.0000+ 0	1.3210- 2
8.0000+ 0 ~ 1.0000+ 1	5.2039+ 0	4.9412+ 0							2.6154- 1			0.0000+ 0	1.3210- 2
1.0000+ 1 ~ 1.5000+ 1	5.1325+ 0	4.9075+ 0							2.2315- 1			0.0000+ 0	1.3210- 2
1.5000+ 1 ~ 2.0000+ 1	5.0940+ 0	4.9038+ 0							1.8810- 1			0.0000+ 0	1.3210- 2
2.0000+ 1 ~ 3.0000+ 1	5.0569+ 0	4.8984+ 0							1.5824- 1			0.0000+ 0	1.3211- 2
3.0000+ 1 ~ 4.0000+ 1	5.0250+ 0	4.8911+ 0							1.3354- 1			0.0000+ 0	1.3211- 2
4.0000+ 1 ~ 5.0000+ 1	5.0025+ 0	4.8840+ 0							1.1783- 1			0.0000+ 0	1.3211- 2
5.0000+ 1 ~ 6.0000+ 1	4.9842+ 0	4.8769+ 0							1.0725- 1			0.0000+ 0	1.3211- 2
6.0000+ 1 ~ 8.0000+ 1	4.9622+ 0	4.8664+ 0							9.5200- 2			0.0000+ 0	1.3211- 2
8.0000+ 1 ~ 1.0000+ 2	4.9373+ 0	4.8527+ 0							8.4191- 2			0.0000+ 0	1.3212- 2
1.0000+ 2 ~ 1.5000+ 2	4.9466+ 0	4.8767+ 0							6.9191- 2			0.0000+ 0	1.3212- 2
1.5000+ 2 ~ 2.0000+ 2	4.9947+ 0	4.9395+ 0							5.5025- 2			0.0000+ 0	1.3212- 2
2.0000+ 2 ~ 3.0000+ 2	5.0830+ 0	5.0379+ 0							4.5000- 2			0.0000+ 0	1.3212- 2
3.0000+ 2 ~ 4.0000+ 2	5.2136+ 0	5.1757+ 0							3.7680- 2			0.0000+ 0	1.3213- 2
4.0000+ 2 ~ 5.0000+ 2	5.3577+ 0	5.3238+ 0							3.3683- 2			0.0000+ 0	1.3213- 2
5.0000+ 2 ~ 6.0000+ 2	5.5115+ 0	5.4804+ 0							3.1013- 2			0.0000+ 0	1.3213- 2
6.0000+ 2 ~ 8.0000+ 2	5.7660+ 0	5.7372+ 0							2.8674- 2			0.0000+ 0	1.3213- 2
8.0000+ 2 ~ 1.0000+ 3	6.1545+ 0	6.1273+ 0							2.7112- 2			0.0000+ 0	1.3213- 2
1.0000+ 3 ~ 1.5000+ 3	7.1114+ 0	7.0848+ 0							2.6647- 2			0.0000+ 0	1.3250- 2
1.5000+ 3 ~ 2.0000+ 3	9.0169+ 0	8.9880+ 0							2.8942- 2			0.0000+ 0	1.3308- 2
2.0000+ 3 ~ 3.0000+ 3	1.4627+ 1	1.4584+ 1							4.2200- 2			0.0000+ 0	1.3368- 2
3.0000+ 3 ~ 4.0000+ 3	6.6757+ 1	6.6562+ 1							1.9501- 1			0.0000+ 0	1.3425- 2
4.0000+ 3 ~ 5.0000+ 3	2.0199+ 2	2.0150+ 2							4.9451- 1			0.0000+ 0	1.3468- 2
5.0000+ 3 ~ 6.0000+ 3	7.7333+ 1	7.7236+ 1							9.7257- 2			0.0000+ 0	1.3502- 2
6.0000+ 3 ~ 8.0000+ 3	1.2256+ 2	1.2231+ 2							2.4925- 1			0.0000+ 0	1.3543- 2
8.0000+ 3 ~ 1.0000+ 4	2.6010+ 1	2.5959+ 1							5.0729- 2			0.0000+ 0	1.3586- 2
1.0000+ 4 ~ 1.5000+ 4	7.9034+ 1	7.8998+ 1							3.6519- 2			0.0000+ 0	1.3896- 2
1.5000+ 4 ~ 2.0000+ 4	3.8091+ 1	3.8030+ 1							6.0710- 2			0.0000+ 0	1.4354- 2
2.0000+ 4 ~ 3.0000+ 4	1.8094+ 1	1.8073+ 1							2.0430- 2			0.0000+ 0	1.4830- 2
3.0000+ 4 ~ 4.0000+ 4	5.8717+ 0	5.8611+ 0							1.0607- 2			0.0000+ 0	1.5823- 2
4.0000+ 4 ~ 5.0000+ 4	5.2564+ 0	5.2305+ 0							2.5922- 2			0.0000+ 0	1.6524- 2
5.0000+ 4 ~ 6.0000+ 4	4.3400+ 0	4.3302+ 0							9.8221- 3			0.0000+ 0	1.7574- 2
6.0000+ 4 ~ 8.0000+ 4	1.3051+ 1	1.3045+ 1							5.6667- 3			0.0000+ 0	1.9272- 2
8.0000+ 4 ~ 1.0000+ 5	6.5284+ 0	6.5215+ 0							6.9012- 3			0.0000+ 0	2.1066- 2
1.0000+ 5 ~ 1.5000+ 5	7.0930+ 0	7.0850+ 0							7.9950- 3			0.0000+ 0	2.4346- 2
1.5000+ 5 ~ 2.0000+ 5	7.7647+ 0	7.7561+ 0							8.5933- 3			0.0000+ 0	2.8740- 2
2.0000+ 5 ~ 3.0000+ 5	5.6384+ 0	5.6333+ 0							5.0736- 3			0.0000+ 0	3.4214- 2
3.0000+ 5 ~ 4.0000+ 5	4.5955+ 0	4.4446+ 0	1.4679- 1						4.2304- 3			0.0000+ 0	4.0891- 2
4.0000+ 5 ~ 5.0000+ 5	3.7095+ 0	3.3112+ 0	3.9487- 1						3.5093- 3			0.0000+ 0	4.7497- 2
5.0000+ 5 ~ 6.0000+ 5	3.0942+ 0	2.6790+ 0	4.1251- 1						2.5686- 3			0.0000+ 0	5.1668- 2
6.0000+ 5 ~ 8.0000+ 5	3.0479+ 0	2.6965+ 0	4.4903- 1						2.4101- 3			0.0000+ 0	6.0050- 2
8.0000+ 5 ~ 1.0000+ 6	3.1808+ 0	2.6555+ 0	5.2307- 1						2.2897- 3			0.0000+ 0	7.9991- 2
1.0000+ 6 ~ 1.5000+ 6	3.5345+ 0	2.6460+ 0	8.8875- 1						2.1890- 3			0.0000+ 0	1.4808- 1
1.5000+ 6 ~ 2.0000+ 6	3.8616+ 0	2.9315+ 0	9.2820- 1						1.8013- 3	5.8400- 5		0.0000+ 0	2.6950- 1
2.0000+ 6 ~ 3.0000+ 6	3.9913+ 0	2.8583+ 0	1.1314+ 0						1.2367- 3	2.6667- 4		1.1837- 4	4.3678- 1
3.0000+ 6 ~ 4.0000+ 6	3.9293+ 0	2.7524+ 0	1.1750+ 0						1.0086- 3	4.8333- 4		4.0672- 4	5.8226- 1
4.0000+ 6 ~ 5.0000+ 6	3.7552+ 0	2.5158+ 0	1.2367+ 0						5.5142- 4	1.3250- 3		6.9641- 4	6.7639- 1
5.0000+ 6 ~ 6.0000+ 6	3.5590+ 0	2.2721+ 0	1.2823+ 0						3.2869- 4	3.0750- 3	2.7629- 7	9.8610- 4	7.2888- 1
6.0000+ 6 ~ 8.0000+ 6	3.2703+ 0	1.9508+ 0	1.3096+ 0						2.0219- 4	7.8125- 3	1.6746- 4	1.4206- 3	7.7162- 1
8.0000+ 6 ~ 1.0000+ 7	2.9228+ 0	1.5615+ 0	1.3409+ 0					4.4725- 4	1.2449- 4	1.6250- 2	4.8373- 4	2.3026- 3	7.9795- 1
1.0000+ 7 ~ 1.5000+ 7	2.4578+ 0	1.1078+ 0	1.0393+ 0	2.5793- 1			1.8503- 4	6.7000- 3	5.4372- 5	3.1760- 2	2.7242- 3	1.0500- 2	7.9784- 1
1.5000+ 7 ~ 2.0000+ 7	2.1433+ 0	8.1752- 1	4.2266- 1	7.8110- 1			3.0700- 3	5.2000- 2	5.1809- 6	2.9475- 2	1.5120- 2	1.8800- 2	8.0448- 1

CROSS SECTION

CR-0

MATERIAL =2240

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.9336+ 1	3.8301+ 0							9.4999+ 0			0.0000+ 0	1.2826- 2
1.0000- 2 ~ 1.5000- 2	8.2428+ 0	3.8301+ 0							4.4077+ 0			0.0000+ 0	1.2927- 2
1.5000- 2 ~ 2.0000- 2	7.5438+ 0	3.8301+ 0							3.7083+ 0			0.0000+ 0	1.2927- 2
2.0000- 2 ~ 3.0000- 2	6.9532+ 0	3.8301+ 0							3.1183+ 0			0.0000+ 0	1.2927- 2
3.0000- 2 ~ 4.0000- 2	6.4558+ 0	3.8301+ 0							2.6221+ 0			0.0000+ 0	1.2927- 2
4.0000- 2 ~ 5.0000- 2	6.1477+ 0	3.8301+ 0							2.3186+ 0			0.0000+ 0	1.2926- 2
5.0000- 2 ~ 6.0000- 2	5.9285+ 0	3.8301+ 0							2.0913+ 0			0.0000+ 0	1.2926- 2
6.0000- 2 ~ 8.0000- 2	5.6936+ 0	3.8301+ 0							1.8644+ 0			0.0000+ 0	1.2926- 2
8.0000- 2 ~ 1.0000- 1	5.4764+ 0	3.8301+ 0							1.6395+ 0			0.0000+ 0	1.2926- 2
1.0000- 1 ~ 1.5000- 1	5.2295+ 0	3.8301+ 0							1.3918+ 0			0.0000+ 0	1.2926- 2
1.5000- 1 ~ 2.0000- 1	5.0058+ 0	3.8302+ 0							1.1736+ 0			0.0000+ 0	1.2926- 2
2.0000- 1 ~ 3.0000- 1	4.8187+ 0	3.8302+ 0							9.8426- 1			0.0000+ 0	1.2925- 2
3.0000- 1 ~ 4.0000- 1	4.6645+ 0	3.8303+ 0							8.3106- 1			0.0000+ 0	1.2926- 2
4.0000- 1 ~ 5.0000- 1	4.5692+ 0	3.8303+ 0							7.3129- 1			0.0000+ 0	1.2925- 2
5.0000- 1 ~ 6.0000- 1	4.4930+ 0	3.8304+ 0							6.6049- 1			0.0000+ 0	1.2925- 2
6.0000- 1 ~ 8.0000- 1	4.4253+ 0	3.8305+ 0							5.8797- 1			0.0000+ 0	1.2924- 2
8.0000- 1 ~ 1.0000+ 0	4.3522+ 0	3.8306+ 0							5.1697- 1			0.0000+ 0	1.2924- 2
1.0000+ 0 ~ 1.5000+ 0	4.2773+ 0	3.8308+ 0							4.4078- 1			0.0000+ 0	1.2935- 2
1.5000+ 0 ~ 2.0000+ 0	4.2068+ 0	3.8310+ 0							3.7136- 1			0.0000+ 0	1.2928- 2
2.0000+ 0 ~ 3.0000+ 0	4.1442+ 0	3.8315+ 0							3.1182- 1			0.0000+ 0	1.2935- 2
3.0000+ 0 ~ 4.0000+ 0	4.0966+ 0	3.8320+ 0							2.6265- 1			0.0000+ 0	1.2930- 2
4.0000+ 0 ~ 5.0000+ 0	4.0651+ 0	3.8326+ 0							2.3121- 1			0.0000+ 0	1.2937- 2
5.0000+ 0 ~ 6.0000+ 0	4.0442+ 0	3.8331+ 0							2.1002- 1			0.0000+ 0	1.2927- 2
6.0000+ 0 ~ 8.0000+ 0	4.0222+ 0	3.8340+ 0							1.8584- 1			0.0000+ 0	1.2936- 2
8.0000+ 0 ~ 1.0000+ 1	3.9994+ 0	3.8351+ 0							1.6364- 1			0.0000+ 0	1.2931- 2
1.0000+ 1 ~ 1.5000+ 1	3.9788+ 0	3.8370+ 0							1.3980- 1			0.0000+ 0	1.2935- 2
1.5000+ 1 ~ 2.0000+ 1	3.9583+ 0	3.8398+ 0							1.1765- 1			0.0000+ 0	1.2929- 2
2.0000+ 1 ~ 3.0000+ 1	3.9447+ 0	3.8441+ 0							9.9080- 2			0.0000+ 0	1.2935- 2
3.0000+ 1 ~ 4.0000+ 1	3.9338+ 0	3.8497+ 0							8.3464- 2			0.0000+ 0	1.2931- 2
4.0000+ 1 ~ 5.0000+ 1	3.9307+ 0	3.8565+ 0							7.3965- 2			0.0000+ 0	1.2937- 2
5.0000+ 1 ~ 6.0000+ 1	3.9290+ 0	3.8612+ 0							6.6808- 2			0.0000+ 0	1.2927- 2
6.0000+ 1 ~ 8.0000+ 1	3.9298+ 0	3.8700+ 0							5.9408- 2			0.0000+ 0	1.2936- 2
8.0000+ 1 ~ 1.0000+ 2	3.9354+ 0	3.8818+ 0							5.2746- 2			0.0000+ 0	1.2931- 2
1.0000+ 2 ~ 1.5000+ 2	3.9483+ 0	3.9028+ 0							4.5062- 2			0.0000+ 0	1.2931- 2
1.5000+ 2 ~ 2.0000+ 2	3.9730+ 0	3.9339+ 0							3.8459- 2			0.0000+ 0	1.2935- 2
2.0000+ 2 ~ 3.0000+ 2	4.0157+ 0	3.9827+ 0							3.2664- 2			0.0000+ 0	1.2944- 2
3.0000+ 2 ~ 4.0000+ 2	4.0811+ 0	4.0624+ 0							2.8189- 2			0.0000+ 0	1.2948- 2
4.0000+ 2 ~ 5.0000+ 2	4.1529+ 0	4.1273+ 0							2.5338- 2			0.0000+ 0	1.2955- 2
5.0000+ 2 ~ 6.0000+ 2	4.2318+ 0	4.2083+ 0							2.3417- 2			0.0000+ 0	1.2956- 2
6.0000+ 2 ~ 8.0000+ 2	4.3673+ 0	4.3454+ 0							2.1616- 2			0.0000+ 0	1.2962- 2
8.0000+ 2 ~ 1.0000+ 3	4.5727+ 0	4.5524+ 0							2.0042- 2			0.0000+ 0	1.2965- 2
1.0000+ 3 ~ 1.5000+ 3	5.0435+ 0	5.0241+ 0							1.9117- 2			0.0000+ 0	1.3018- 2
1.5000+ 3 ~ 2.0000+ 3	6.3853+ 0	6.0383+ 0							3.4676- 1			0.0000+ 0	1.3101- 2
2.0000+ 3 ~ 3.0000+ 3	8.9481+ 0	8.9235+ 0							2.4451- 2			0.0000+ 0	1.3187- 2
3.0000+ 3 ~ 4.0000+ 3	2.0972+ 1	2.0924+ 1							4.8645- 2			0.0000+ 0	1.3269- 2
4.0000+ 3 ~ 5.0000+ 3	2.6830+ 1	2.6763+ 1							6.7361- 2			0.0000+ 0	1.3331- 2
5.0000+ 3 ~ 6.0000+ 3	3.3351+ 1	3.3245+ 1							1.0608- 1			0.0000+ 0	1.3489- 2
6.0000+ 3 ~ 8.0000+ 3	2.5401+ 1	2.5335+ 1							6.6058- 2			0.0000+ 0	1.3804- 2
8.0000+ 3 ~ 1.0000+ 4	1.6842+ 1	1.6814+ 1							2.7613- 2			0.0000+ 0	1.4016- 2
1.0000+ 4 ~ 1.5000+ 4	4.2881+ 0	4.2805+ 0							7.5922- 3			0.0000+ 0	1.4695- 2
1.5000+ 4 ~ 2.0000+ 4	2.5249+ 0	2.5181+ 0							6.8506- 3			0.0000+ 0	1.5639- 2
2.0000+ 4 ~ 3.0000+ 4	2.9552+ 0	2.9359+ 0							1.9294- 2			0.0000+ 0	1.7807- 2
3.0000+ 4 ~ 4.0000+ 4	2.6782+ 0	2.6639+ 0							1.4288- 2			0.0000+ 0	2.0614- 2
4.0000+ 4 ~ 5.0000+ 4	3.6297+ 0	3.6172+ 0							1.2543- 2			0.0000+ 0	2.2701- 2
5.0000+ 4 ~ 6.0000+ 4	1.0341+ 1	1.0331+ 1							1.0262- 2			0.0000+ 0	2.5601- 2
6.0000+ 4 ~ 8.0000+ 4	2.6526+ 0	2.6461+ 0							6.5142- 3			0.0000+ 0	3.0722- 2
8.0000+ 4 ~ 1.0000+ 5	7.0947+ 0	7.0853+ 0							9.4247- 3			0.0000+ 0	3.6135- 2
1.0000+ 5 ~ 1.5000+ 5	7.9657+ 0	7.9570+ 0							8.6515- 3			0.0000+ 0	4.7777- 2
1.5000+ 5 ~ 2.0000+ 5	5.2399+ 0	5.2353+ 0							4.6263- 3			0.0000+ 0	6.2506- 2
2.0000+ 5 ~ 3.0000+ 5	3.5664+ 0	3.5631+ 0							3.2629- 3			0.0000+ 0	8.2196- 2
3.0000+ 5 ~ 4.0000+ 5	2.5186+ 0	2.5145+ 0							4.0059- 3	0.0000+ 0		0.0000+ 0	1.0509- 1
4.0000+ 5 ~ 5.0000+ 5	4.0584+ 0	4.0546+ 0							3.7431- 3	0.0000+ 0		0.0000+ 0	1.2287- 1
5.0000+ 5 ~ 6.0000+ 5	2.6063+ 0	2.6016+ 0	1.0219- 3						3.6901- 3	0.0000+ 0		0.0000+ 0	1.3635- 1
6.0000+ 5 ~ 8.0000+ 5	2.7064+ 0	2.6915+ 0	1.1126- 2						3.7708- 3	0.0000+ 0		0.0000+ 0	1.5146- 1
8.0000+ 5 ~ 1.0000+ 6	3.0128+ 0	2.9782+ 0	3.0860- 2						3.8060- 3	0.0000+ 0		0.0000+ 0	1.6866- 1
1.0000+ 6 ~ 1.5000+ 6	2.9873+ 0	2.9018+ 0	8.1528- 2						4.1687- 3	0.0000+ 0		0.0000+ 0	2.0831- 1
1.5000+ 6 ~ 2.0000+ 6	3.0915+ 0	2.6271+ 0	4.6144- 1						2.9312- 3	0.0000+ 0		0.0000+ 0	3.0228- 1
2.0000+ 6 ~ 3.0000+ 6	3.4789+ 0	2.7922+ 0	6.8442- 1						2.3374- 3	0.0000+ 0		0.0000+ 0	4.2908- 1
3.0000+ 6 ~ 4.0000+ 6	3.5921+ 0	2.6482+ 0	9.4213- 1						1.8210- 3	2.0695- 5		0.0000+ 0	5.7383- 1
4.0000+ 6 ~ 5.0000+ 6	3.5815+ 0	2.4004+ 0	1.1793+ 0						1.4988- 3	1.7911- 4		5.4463- 6	6.6590- 1
5.0000+ 6 ~ 6.0000+ 6	3.4582+ 0	2.1489+ 0	1.3036+ 0						1.3230- 3	3.8132- 3		6.9129- 4	7.1929- 1
6.0000+ 6 ~ 8.0000+ 6	3.3579+ 0	2.0186+ 0	1.3088+ 0						8.9296- 4	2.7106- 2		2.5400- 3	7.6888- 1
8.0000+ 6 ~ 1.0000+ 7	3.0123+ 0	1.7100+ 0	1.2282+ 0	5.7237- 3					4.6170- 4	5.6274- 2		1.1533- 2	8.0041- 1
1.0000+ 7 ~ 1.5000+ 7	2.5251+ 0	1.3206+ 0	9.0017- 1	1.6218- 1				1.4287- 2	1.8007- 4	1.0085- 1		2.6699- 2	8.0227- 1
1.5000+ 7 ~ 2.0000+ 7	2.1987+ 0	1.0091+ 0	2.4704- 1	5.2910- 1				2.5386- 1	1.9880- 5	7.3566- 2		8.5809- 2	7.9458- 1

CROSS SECTION

MATERIAL =2241

CR-50

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	5.7810+ 1	8.5813+ 0							4.9201+ 1			0.0000+ 0	1.3463- 2
1.0000- 2 ~ 1.5000- 2	3.1428+ 1	8.5814+ 0							2.2844+ 1			0.0000+ 0	1.3463- 2
1.5000- 2 ~ 2.0000- 2	2.7826+ 1	8.5814+ 0							1.9208+ 1			0.0000+ 0	1.3463- 2
2.0000- 2 ~ 3.0000- 2	2.4733+ 1	8.5814+ 0							1.6146+ 1			0.0000+ 0	1.3463- 2
3.0000- 2 ~ 4.0000- 2	2.2177+ 1	8.5814+ 0							1.3586+ 1			0.0000+ 0	1.3463- 2
4.0000- 2 ~ 5.0000- 2	2.0570+ 1	8.5814+ 0							1.1984+ 1			0.0000+ 0	1.3463- 2
5.0000- 2 ~ 6.0000- 2	1.9426+ 1	8.5815+ 0							1.0821+ 1			0.0000+ 0	1.3463- 2
6.0000- 2 ~ 8.0000- 2	1.8224+ 1	8.5816+ 0							8.6210+ 0			0.0000+ 0	1.3463- 2
8.0000- 2 ~ 1.0000- 1	1.7079+ 1	8.5815+ 0							8.4693+ 0			0.0000+ 0	1.3463- 2
1.0000- 1 ~ 1.5000- 1	1.5829+ 1	8.5816+ 0							7.2317+ 0			0.0000+ 0	1.3463- 2
1.5000- 1 ~ 2.0000- 1	1.4668+ 1	8.5818+ 0							6.0816+ 0			0.0000+ 0	1.3463- 2
2.0000- 1 ~ 3.0000- 1	1.3691+ 1	8.5819+ 0							5.0962+ 0			0.0000+ 0	1.3463- 2
3.0000- 1 ~ 4.0000- 1	1.2895+ 1	8.5822+ 0							4.3038+ 0			0.0000+ 0	1.3463- 2
4.0000- 1 ~ 5.0000- 1	1.2390+ 1	8.5824+ 0							3.7854+ 0			0.0000+ 0	1.3463- 2
5.0000- 1 ~ 6.0000- 1	1.2014+ 1	8.5827+ 0							3.4264+ 0			0.0000+ 0	1.3463- 2
6.0000- 1 ~ 8.0000- 1	1.1647+ 1	8.5830+ 0							3.0435+ 0			0.0000+ 0	1.3463- 2
8.0000- 1 ~ 1.0000+ 0	1.1274+ 1	8.5835+ 0							2.6763+ 0			0.0000+ 0	1.3463- 2
1.0000+ 0 ~ 1.5000+ 0	1.0887+ 1	8.5844+ 0							2.2836+ 0			0.0000+ 0	1.3463- 2
1.5000+ 0 ~ 2.0000+ 0	1.0530+ 1	8.5856+ 0							1.9226+ 0			0.0000+ 0	1.3463- 2
2.0000+ 0 ~ 3.0000+ 0	1.0206+ 1	8.5874+ 0							1.6156+ 0			0.0000+ 0	1.3463- 2
3.0000+ 0 ~ 4.0000+ 0	9.9534+ 0	8.5898+ 0							1.3600+ 0			0.0000+ 0	1.3463- 2
4.0000+ 0 ~ 5.0000+ 0	9.8003+ 0	8.5923+ 0							1.2019+ 0			0.0000+ 0	1.3463- 2
5.0000+ 0 ~ 6.0000+ 0	9.6807+ 0	8.5947+ 0							1.0844+ 0			0.0000+ 0	1.3463- 2
6.0000+ 0 ~ 8.0000+ 0	9.5677+ 0	8.5983+ 0							9.6246- 1			0.0000+ 0	1.3463- 2
8.0000+ 0 ~ 1.0000+ 1	9.4577+ 0	8.6032+ 0							8.5028- 1			0.0000+ 0	1.3463- 2
1.0000+ 1 ~ 1.5000+ 1	9.3499+ 0	8.6118+ 0							7.2318- 1			0.0000+ 0	1.3463- 2
1.5000+ 1 ~ 2.0000+ 1	9.2676+ 0	8.6240+ 0							6.1171- 1			0.0000+ 0	1.3463- 2
2.0000+ 1 ~ 3.0000+ 1	9.1937+ 0	8.6425+ 0							5.1302- 1			0.0000+ 0	1.3463- 2
3.0000+ 1 ~ 4.0000+ 1	9.1335+ 0	8.6672+ 0							4.3444- 1			0.0000+ 0	1.3463- 2
4.0000+ 1 ~ 5.0000+ 1	9.0931+ 0	8.6921+ 0							3.8316- 1			0.0000+ 0	1.3463- 2
5.0000+ 1 ~ 6.0000+ 1	9.0666+ 0	8.7171+ 0							3.4690- 1			0.0000+ 0	1.3463- 2
6.0000+ 1 ~ 8.0000+ 1	9.0669+ 0	8.7550+ 0							3.0990- 1			0.0000+ 0	1.3463- 2
8.0000+ 1 ~ 1.0000+ 2	9.0814+ 0	8.8061+ 0							2.7393- 1			0.0000+ 0	1.3463- 2
1.0000+ 2 ~ 1.5000+ 2	9.1381+ 0	8.8971+ 0							2.3538- 1			0.0000+ 0	1.3468- 2
1.5000+ 2 ~ 2.0000+ 2	9.2445+ 0	9.0305+ 0							2.0121- 1			0.0000+ 0	1.3476- 2
2.0000+ 2 ~ 3.0000+ 2	9.4289+ 0	9.2394+ 0							1.7195- 1			0.0000+ 0	1.3484- 2
3.0000+ 2 ~ 4.0000+ 2	9.7016+ 0	9.5333+ 0							1.4906- 1			0.0000+ 0	1.3492- 2
4.0000+ 2 ~ 5.0000+ 2	9.9995+ 0	9.8463+ 0							1.3481- 1			0.0000+ 0	1.3497- 2
5.0000+ 2 ~ 6.0000+ 2	1.0326+ 1	1.0184+ 1							1.2566- 1			0.0000+ 0	1.3502- 2
6.0000+ 2 ~ 8.0000+ 2	1.0862+ 1	1.0734+ 1							1.1656- 1			0.0000+ 0	1.3507- 2
8.0000+ 2 ~ 1.0000+ 3	1.1667+ 1	1.1554+ 1							1.0914- 1			0.0000+ 0	1.3513- 2
1.0000+ 3 ~ 1.5000+ 3	1.3472+ 1	1.3367+ 1							1.0482- 1			0.0000+ 0	1.3582- 2
1.5000+ 3 ~ 2.0000+ 3	1.6978+ 1	1.6870+ 1							1.0725- 1			0.0000+ 0	1.3687- 2
2.0000+ 3 ~ 3.0000+ 3	2.5333+ 1	2.5204+ 1							1.2933- 1			0.0000+ 0	1.3795- 2
3.0000+ 3 ~ 4.0000+ 3	5.4125+ 1	5.3912+ 1							2.1208- 1			0.0000+ 0	1.3900- 2
4.0000+ 3 ~ 5.0000+ 3	1.6791+ 2	1.6741+ 2							4.9715- 1			0.0000+ 0	1.3978- 2
5.0000+ 3 ~ 6.0000+ 3	4.1974+ 2	4.1872+ 2							1.0150+ 0			0.0000+ 0	1.4137- 2
6.0000+ 3 ~ 8.0000+ 3	1.7132+ 2	1.7098+ 2							3.3479- 1			0.0000+ 0	1.4459- 2
8.0000+ 3 ~ 1.0000+ 4	3.9465+ 1	3.9392+ 1							7.3312- 2			0.0000+ 0	1.4798- 2
1.0000+ 4 ~ 1.5000+ 4	1.3385+ 1	1.3365+ 1							1.9316- 2			0.0000+ 0	1.5704- 2
1.5000+ 4 ~ 2.0000+ 4	6.5211+ 0	6.4607+ 0							6.0340- 2			0.0000+ 0	1.6900- 2
2.0000+ 4 ~ 3.0000+ 4	7.0540+ 0	7.0311+ 0							2.2881- 2			0.0000+ 0	1.9647- 2
3.0000+ 4 ~ 4.0000+ 4	2.0903+ 1	2.0828+ 1							7.5431- 2			0.0000+ 0	2.3203- 2
4.0000+ 4 ~ 5.0000+ 4	9.8408+ 0	9.8202+ 0							2.0652- 2			0.0000+ 0	2.5848- 2
5.0000+ 4 ~ 6.0000+ 4	6.9890+ 0	6.9598+ 0							2.9192- 2			0.0000+ 0	2.9528- 2
6.0000+ 4 ~ 8.0000+ 4	5.3395+ 0	5.3159+ 0							2.3636- 2			0.0000+ 0	3.6034- 2
8.0000+ 4 ~ 1.0000+ 5	5.1619+ 0	5.1498+ 0							1.2106- 2			0.0000+ 0	4.2909- 2
1.0000+ 5 ~ 1.5000+ 5	3.5020+ 0	3.4939+ 0							8.1053- 3			0.0000+ 0	5.7759- 2
1.5000+ 5 ~ 2.0000+ 5	4.2229+ 0	4.2147+ 0							8.1637- 3			0.0000+ 0	7.6487- 2
2.0000+ 5 ~ 3.0000+ 5	2.4903+ 0	2.4871+ 0							3.2159- 3			0.0000+ 0	1.0168- 1
3.0000+ 5 ~ 4.0000+ 5	2.8812+ 0	2.8658+ 0							1.5340- 2	0.0000+ 0		0.0000+ 0	1.3078- 1
4.0000+ 5 ~ 5.0000+ 5	2.7137+ 0	2.6996+ 0							1.4128- 2	0.0000+ 0		0.0000+ 0	1.5333- 1
5.0000+ 5 ~ 6.0000+ 5	2.6395+ 0	2.6259+ 0							1.3578- 2	0.0000+ 0		0.0000+ 0	1.6997- 1
6.0000+ 5 ~ 8.0000+ 5	2.6319+ 0	2.6183+ 0	1.7969- 4						1.3433- 2	0.0000+ 0		0.0000+ 0	1.8644- 1
8.0000+ 5 ~ 1.0000+ 6	2.7156+ 0	2.4678+ 0	2.3931- 1						8.2030- 3	0.0000+ 0		0.0000+ 0	2.1924- 1
1.0000+ 6 ~ 1.5000+ 6	2.9689+ 0	2.5160+ 0	4.4950- 1						8.4628- 3	0.0000+ 0		0.0000+ 0	2.6610- 1
1.5000+ 6 ~ 2.0000+ 6	3.2794+ 0	2.6482+ 0	6.2558- 1						6.4647- 3	0.0000+ 0		0.0000+ 0	3.3463- 1
2.0000+ 6 ~ 3.0000+ 6	3.5100+ 0	2.7470+ 0	7.5669- 1						6.5289- 3	0.0000+ 0		0.0000+ 0	4.4576- 1
3.0000+ 6 ~ 4.0000+ 6	3.5069+ 0	2.5853+ 0	9.1428- 1						6.8254- 3	4.7575- 4		0.0000+ 0	5.9315- 1
4.0000+ 6 ~ 5.0000+ 6	3.4578+ 0	2.2889+ 0	1.1605+ 0						4.2538- 3	4.1175- 3		0.0000+ 0	7.1462- 1
5.0000+ 6 ~ 6.0000+ 6	3.3444+ 0	2.1802+ 0	1.1507+ 0						1.9215- 3	1.1575- 2		0.0000+ 0	7.4958- 1
6.0000+ 6 ~ 8.0000+ 6	3.1491+ 0	1.9644+ 0	1.1392+ 0						1.0943- 3	4.3275- 2		1.0025- 3	7.7760- 1
8.0000+ 6 ~ 1.0000+ 7	2.8968+ 0	1.6676+ 0	9.3283- 1						6.3936- 4	2.8050- 1		1.4913- 2	7.9722- 1
1.0000+ 7 ~ 1.5000+ 7	2.4719+ 0	1.2777+ 0	5.7412- 1	4.6102- 3				1.1830- 1	2.6431- 4	4.3006- 1		6.6730- 2	7.9701- 1
1.5000+ 7 ~ 2.0000+ 7	2.1518+ 0	9.8279- 1	3.4005- 2	6.8330- 2				5.8350- 1	5.8340- 6	3.1535- 1		1.6760- 1	7.9115- 1

MATERIAL =2242

CROSS SECTION

CR-52

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	4.5786+ 0	2.2227+ 0							2.3516+ 0				1.2946- 2
1.0000- 2 ~ 1.5000- 2	3.3149+ 0	2.2227+ 0							1.0918+ 0				1.2946- 2
1.5000- 2 ~ 2.0000- 2	3.1464+ 0	2.2227+ 0							9.1802- 1				1.2946- 2
2.0000- 2 ~ 3.0000- 2	2.9964+ 0	2.2227+ 0							7.7199- 1				1.2946- 2
3.0000- 2 ~ 4.0000- 2	2.8735+ 0	2.2227+ 0							6.4914- 1				1.2946- 2
4.0000- 2 ~ 5.0000- 2	2.7963+ 0	2.2227+ 0							5.7399- 1				1.2946- 2
5.0000- 2 ~ 6.0000- 2	2.7436+ 0	2.2227+ 0							5.1772- 1				1.2946- 2
6.0000- 2 ~ 8.0000- 2	2.6868+ 0	2.2227+ 0							4.6907- 1				1.2946- 2
8.0000- 2 ~ 1.0000- 1	2.6316+ 0	2.2227+ 0							4.0588- 1				1.2946- 2
1.0000- 1 ~ 1.5000- 1	2.5707+ 0	2.2227+ 0							3.4452- 1				1.2946- 2
1.5000- 1 ~ 2.0000- 1	2.5141+ 0	2.2227+ 0							2.9050- 1				1.2946- 2
2.0000- 1 ~ 3.0000- 1	2.4682+ 0	2.2227+ 0							2.4363- 1				1.2948- 2
3.0000- 1 ~ 4.0000- 1	2.4298+ 0	2.2227+ 0							2.0569- 1				1.2946- 2
4.0000- 1 ~ 5.0000- 1	2.4071+ 0	2.2227+ 0							1.8099- 1				1.2946- 2
5.0000- 1 ~ 6.0000- 1	2.3871+ 0	2.2227+ 0							1.6346- 1				1.2946- 2
6.0000- 1 ~ 8.0000- 1	2.3713+ 0	2.2227+ 0							1.4551- 1				1.2946- 2
8.0000- 1 ~ 1.0000+ 0	2.3527+ 0	2.2227+ 0							1.2790- 1				1.2946- 2
1.0000+ 0 ~ 1.5000+ 0	2.3348+ 0	2.2227+ 0							1.0907- 1				1.2946- 2
1.5000+ 0 ~ 2.0000+ 0	2.3179+ 0	2.2227+ 0							9.1887- 2				1.2946- 2
2.0000+ 0 ~ 3.0000+ 0	2.3004+ 0	2.2227+ 0							7.7147- 2				1.2946- 2
3.0000+ 0 ~ 4.0000+ 0	2.2881+ 0	2.2227+ 0							6.4974- 2				1.2946- 2
4.0000+ 0 ~ 5.0000+ 0	2.2810+ 0	2.2226+ 0							5.7187- 2				1.2946- 2
5.0000+ 0 ~ 6.0000+ 0	2.2747+ 0	2.2226+ 0							5.1938- 2				1.2946- 2
6.0000+ 0 ~ 8.0000+ 0	2.2696+ 0	2.2226+ 0							4.5946- 2				1.2946- 2
8.0000+ 0 ~ 1.0000+ 1	2.2637+ 0	2.2226+ 0							4.0429- 2				1.2946- 2
1.0000+ 1 ~ 1.5000+ 1	2.2593+ 0	2.2225+ 0							3.4493- 2				1.2946- 2
1.5000+ 1 ~ 2.0000+ 1	2.2565+ 0	2.2225+ 0							2.9032- 2				1.2946- 2
2.0000+ 1 ~ 3.0000+ 1	2.2527+ 0	2.2224+ 0							2.4416- 2				1.2946- 2
3.0000+ 1 ~ 4.0000+ 1	2.2478+ 0	2.2222+ 0							2.0528- 2				1.2946- 2
4.0000+ 1 ~ 5.0000+ 1	2.2430+ 0	2.2221+ 0							1.8159- 2				1.2946- 2
5.0000+ 1 ~ 6.0000+ 1	2.2387+ 0	2.2219+ 0							1.6370- 2				1.2946- 2
6.0000+ 1 ~ 8.0000+ 1	2.2366+ 0	2.2218+ 0							1.4516- 2				1.2946- 2
8.0000+ 1 ~ 1.0000+ 2	2.2345+ 0	2.2215+ 0							1.2830- 2				1.2946- 2
1.0000+ 2 ~ 1.5000+ 2	2.2328+ 0	2.2210+ 0							1.0898- 2				1.2950- 2
1.5000+ 2 ~ 2.0000+ 2	2.2315+ 0	2.2203+ 0							9.2137- 3				1.2956- 2
2.0000+ 2 ~ 3.0000+ 2	2.2297+ 0	2.2193+ 0							7.7116- 3				1.2963- 2
3.0000+ 2 ~ 4.0000+ 2	2.2274+ 0	2.2179+ 0							6.6216- 3				1.2969- 2
4.0000+ 2 ~ 5.0000+ 2	2.2252+ 0	2.2166+ 0							5.7378- 3				1.2973- 2
5.0000+ 2 ~ 6.0000+ 2	2.2229+ 0	2.2152+ 0							5.1863- 3				1.2977- 2
6.0000+ 2 ~ 8.0000+ 2	2.2195+ 0	2.2131+ 0							4.6268- 3				1.2981- 2
8.0000+ 2 ~ 1.0000+ 3	2.2151+ 0	2.2104+ 0							4.0833- 3				1.2986- 2
1.0000+ 3 ~ 1.5000+ 3	2.2093+ 0	2.2055+ 0							3.6695- 3				1.3040- 2
1.5000+ 3 ~ 2.0000+ 3	2.6198+ 0	2.2259+ 0							3.9382- 1				1.3123- 2
2.0000+ 3 ~ 3.0000+ 3	2.0279+ 0	2.0253+ 0							2.4891- 3				1.3209- 2
3.0000+ 3 ~ 4.0000+ 3	1.6879+ 0	1.6858+ 0							2.0789- 3				1.3292- 2
4.0000+ 3 ~ 5.0000+ 3	1.5102+ 0	1.5084+ 0							1.8349- 3				1.3353- 2
5.0000+ 3 ~ 6.0000+ 3	1.4948+ 0	1.4931+ 0							1.6615- 3				1.3479- 2
6.0000+ 3 ~ 8.0000+ 3	1.4708+ 0	1.4693+ 0							1.4819- 3				1.3734- 2
8.0000+ 3 ~ 1.0000+ 4	1.4376+ 0	1.4363+ 0							1.3148- 3				1.4003- 2
1.0000+ 4 ~ 1.5000+ 4	1.3744+ 0	1.3733+ 0							1.1297- 3				1.4721- 2
1.5000+ 4 ~ 2.0000+ 4	1.2720+ 0	1.2710+ 0							9.7474- 4				1.5668- 2
2.0000+ 4 ~ 3.0000+ 4	1.1867+ 0	1.1707+ 0							1.5991- 2				1.7843- 2
3.0000+ 4 ~ 4.0000+ 4	1.1218+ 0	1.1112+ 0							1.0587- 2				2.0658- 2
4.0000+ 4 ~ 5.0000+ 4	3.2812+ 0	3.2693+ 0							1.1926- 2				2.2752- 2
5.0000+ 4 ~ 6.0000+ 4	1.1670+ 1	1.1660+ 1							9.2629- 3				2.5662- 2
6.0000+ 4 ~ 8.0000+ 4	1.4117+ 0	1.4077+ 0							3.9966- 3				3.0804- 2
8.0000+ 4 ~ 1.0000+ 5	6.9255+ 0	6.9169+ 0							8.5647- 3				3.6237- 2
1.0000+ 5 ~ 1.5000+ 5	8.3132+ 0	8.3046+ 0							8.5433- 3				4.7953- 2
1.5000+ 5 ~ 2.0000+ 5	5.2133+ 0	5.2099+ 0							4.0798- 3				6.2725- 2
2.0000+ 5 ~ 3.0000+ 5	3.5670+ 0	3.5641+ 0							2.8668- 3				8.2574- 2
3.0000+ 5 ~ 4.0000+ 5	3.1875+ 0	3.1839+ 0							3.5644- 3				1.0551- 1
4.0000+ 5 ~ 5.0000+ 5	2.9607+ 0	2.9573+ 0							3.3464- 3				1.2337- 1
5.0000+ 5 ~ 6.0000+ 5	2.8506+ 0	2.8473+ 0							3.3197- 3				1.3685- 1
6.0000+ 5 ~ 8.0000+ 5	2.8135+ 0	2.8101+ 0							3.4134- 3				1.5141- 1
8.0000+ 5 ~ 1.0000+ 6	2.8745+ 0	2.8709+ 0							3.5985- 3				1.6732- 1
1.0000+ 6 ~ 1.5000+ 6	3.0865+ 0	3.0795+ 0	1.0781- 2						4.0896- 3				2.0947- 1
1.5000+ 6 ~ 2.0000+ 6	3.3382+ 0	2.9260+ 0	4.1029- 1						2.8197- 3			0.0000+ 0	2.9760- 1
2.0000+ 6 ~ 3.0000+ 6	3.5247+ 0	2.8805+ 0	6.4207- 1						2.1981- 3			0.0000+ 0	4.2310- 1
3.0000+ 6 ~ 4.0000+ 6	3.6007+ 0	2.6793+ 0	9.1980- 1						1.6290- 3			0.0000+ 0	5.6959- 1
4.0000+ 6 ~ 5.0000+ 6	3.6548+ 0	2.4799+ 0	1.1734+ 0						1.3320- 3	0.0000+ 0		6.5000- 5	6.6714- 1
5.0000+ 6 ~ 6.0000+ 6	3.5574+ 0	2.2372+ 0	1.3145+ 0						8.7591- 4	3.9500- 3		7.0500- 4	7.4674- 1
6.0000+ 6 ~ 8.0000+ 6	3.4036+ 0	2.0447+ 0	1.3255+ 0						4.1300- 4	3.0000- 2		2.9000- 3	7.7978- 1
8.0000+ 6 ~ 1.0000+ 7	3.0736+ 0	1.7614+ 0	1.2484+ 0						2.4219- 4	5.1625- 2		1.1937- 2	8.0256- 1
1.0000+ 7 ~ 1.5000+ 7	2.5513+ 0	1.3466+ 0	9.7134- 1	1.0497- 1				1.0827- 2	1.2677- 4	9.4756- 2		2.4845- 2	8.0217- 1
1.5000+ 7 ~ 2.0000+ 7	2.1981+ 0	1.0102+ 0	2.7928- 1	4.9075- 1				2.6660- 1	1.5040- 5	6.7120- 2		8.4815- 2	7.9446- 1

MATERIAL =2243

CROSS SECTION

CR-53

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 6 ~ 1.0000- 2	7.2658+ 1	1.6306+ 1							5.6319+ 1			0.0000+ 0	1.2702- 2
1.0000- 2 ~ 1.5000- 2	4.2480+ 1	1.6305+ 1							2.6148+ 1			0.0000+ 0	1.2702- 2
1.5000- 2 ~ 2.0000- 2	3.8362+ 1	1.6305+ 1							2.1986+ 1			0.0000+ 0	1.2702- 2
2.0000- 2 ~ 3.0000- 2	3.4824+ 1	1.6306+ 1							1.8496+ 1			0.0000+ 0	1.2702- 2
3.0000- 2 ~ 4.0000- 2	3.1951+ 1	1.6305+ 1							1.5553+ 1			0.0000+ 0	1.2702- 2
4.0000- 2 ~ 5.0000- 2	3.0067+ 1	1.6305+ 1							1.3763+ 1			0.0000+ 0	1.2702- 2
5.0000- 2 ~ 6.0000- 2	2.8714+ 1	1.6305+ 1							1.2400+ 1			0.0000+ 0	1.2702- 2
6.0000- 2 ~ 8.0000- 2	2.7367+ 1	1.6306+ 1							1.1003+ 1			0.0000+ 0	1.2702- 2
8.0000- 2 ~ 1.0000- 1	2.6040+ 1	1.6306+ 1							9.7174+ 0			0.0000+ 0	1.2702- 2
1.0000- 1 ~ 1.5000- 1	2.4621+ 1	1.6306+ 1							8.2578+ 0			0.0000+ 0	1.2702- 2
1.5000- 1 ~ 2.0000- 1	2.3321+ 1	1.6306+ 1							6.9513+ 0			0.0000+ 0	1.2702- 2
2.0000- 1 ~ 3.0000- 1	2.2189+ 1	1.6306+ 1							5.8414+ 0			0.0000+ 0	1.2702- 2
3.0000- 1 ~ 4.0000- 1	2.1291+ 1	1.6307+ 1							4.9172+ 0			0.0000+ 0	1.2702- 2
4.0000- 1 ~ 5.0000- 1	2.0692+ 1	1.6307+ 1							4.3424+ 0			0.0000+ 0	1.2702- 2
5.0000- 1 ~ 6.0000- 1	2.0245+ 1	1.6308+ 1							3.9204+ 0			0.0000+ 0	1.2702- 2
6.0000- 1 ~ 8.0000- 1	1.9842+ 1	1.6309+ 1							3.4802+ 0			0.0000+ 0	1.2702- 2
8.0000- 1 ~ 1.0000+ 0	1.9406+ 1	1.6309+ 1							3.0697+ 0			0.0000+ 0	1.2702- 2
1.0000+ 0 ~ 1.5000+ 0	1.8958+ 1	1.6311+ 1							2.6097+ 0			0.0000+ 0	1.2702- 2
1.5000+ 0 ~ 2.0000+ 0	1.8556+ 1	1.6314+ 1							2.2055+ 0			0.0000+ 0	1.2702- 2
2.0000+ 0 ~ 3.0000+ 0	1.8171+ 1	1.6317+ 1							1.8465+ 0			0.0000+ 0	1.2702- 2
3.0000+ 0 ~ 4.0000+ 0	1.7887+ 1	1.6322+ 1							1.5601+ 0			0.0000+ 0	1.2702- 2
4.0000+ 0 ~ 5.0000+ 0	1.7712+ 1	1.6327+ 1							1.3721+ 0			0.0000+ 0	1.2702- 2
5.0000+ 0 ~ 6.0000+ 0	1.7576+ 1	1.6332+ 1							1.2407+ 0			0.0000+ 0	1.2702- 2
6.0000+ 0 ~ 8.0000+ 0	1.7454+ 1	1.6339+ 1							1.1040+ 0			0.0000+ 0	1.2702- 2
8.0000+ 0 ~ 1.0000+ 1	1.7328+ 1	1.6349+ 1							9.7093- 1			0.0000+ 0	1.2702- 2
1.0000+ 1 ~ 1.5000+ 1	1.7221+ 1	1.6366+ 1							8.2867- 1			0.0000+ 0	1.2702- 2
1.5000+ 1 ~ 2.0000+ 1	1.7146+ 1	1.6391+ 1							6.9860- 1			0.0000+ 0	1.2702- 2
2.0000+ 1 ~ 3.0000+ 1	1.7083+ 1	1.6428+ 1							5.8773- 1			0.0000+ 0	1.2702- 2
3.0000+ 1 ~ 4.0000+ 1	1.7030+ 1	1.6477+ 1							4.9598- 1			0.0000+ 0	1.2702- 2
4.0000+ 1 ~ 5.0000+ 1	1.6997+ 1	1.6527+ 1							4.3831- 1			0.0000+ 0	1.2702- 2
5.0000+ 1 ~ 6.0000+ 1	1.6980+ 1	1.6578+ 1							3.9765- 1			0.0000+ 0	1.2702- 2
6.0000+ 1 ~ 8.0000+ 1	1.7011+ 1	1.6654+ 1							3.5357- 1			0.0000+ 0	1.2702- 2
8.0000+ 1 ~ 1.0000+ 2	1.7073+ 1	1.6757+ 1							3.1291- 1			0.0000+ 0	1.2702- 2
1.0000+ 2 ~ 1.5000+ 2	1.7221+ 1	1.6942+ 1							2.6875- 1			0.0000+ 0	1.2705- 2
1.5000+ 2 ~ 2.0000+ 2	1.7469+ 1	1.7213+ 1							2.2937- 1			0.0000+ 0	1.2711- 2
2.0000+ 2 ~ 3.0000+ 2	1.7875+ 1	1.7642+ 1							1.9601- 1			0.0000+ 0	1.2717- 2
3.0000+ 2 ~ 4.0000+ 2	1.8466+ 1	1.8252+ 1							1.6949- 1			0.0000+ 0	1.2722- 2
4.0000+ 2 ~ 5.0000+ 2	1.9112+ 1	1.8911+ 1							1.5352- 1			0.0000+ 0	1.2727- 2
5.0000+ 2 ~ 6.0000+ 2	1.9813+ 1	1.9622+ 1							1.4256- 1			0.0000+ 0	1.2730- 2
6.0000+ 2 ~ 8.0000+ 2	2.1003+ 1	2.0823+ 1							1.3232- 1			0.0000+ 0	1.2734- 2
8.0000+ 2 ~ 1.0000+ 3	2.2829+ 1	2.2662+ 1							1.2440- 1			0.0000+ 0	1.2738- 2
1.0000+ 3 ~ 1.5000+ 3	2.7023+ 1	2.6872+ 1							1.2020- 1			0.0000+ 0	1.2789- 2
1.5000+ 3 ~ 2.0000+ 3	3.5968+ 1	3.5830+ 1							1.2703- 1			0.0000+ 0	1.2865- 2
2.0000+ 3 ~ 3.0000+ 3	6.4137+ 1	6.3960+ 1							1.7549- 1			0.0000+ 0	1.2945- 2
3.0000+ 3 ~ 4.0000+ 3	1.8071+ 2	1.8032+ 2							3.9632- 1			0.0000+ 0	1.3021- 2
4.0000+ 3 ~ 5.0000+ 3	1.9220+ 2	1.9173+ 2							4.6558- 1			0.0000+ 0	1.3078- 2
5.0000+ 3 ~ 6.0000+ 3	1.4457+ 2	1.4394+ 2							6.3474- 1			0.0000+ 0	1.3195- 2
6.0000+ 3 ~ 8.0000+ 3	1.7554+ 2	1.7501+ 2							5.2870- 1			0.0000+ 0	1.3430- 2
8.0000+ 3 ~ 1.0000+ 4	1.4620+ 2	1.4595+ 2							2.4532- 1			0.0000+ 0	1.3678- 2
1.0000+ 4 ~ 1.5000+ 4	2.6344+ 1	2.6288+ 1							5.5659- 2			0.0000+ 0	1.4339- 2
1.5000+ 4 ~ 2.0000+ 4	1.2040+ 1	1.2007+ 1							3.2464- 2			0.0000+ 0	1.5210- 2
2.0000+ 4 ~ 3.0000+ 4	1.4325+ 1	1.4278+ 1							4.7139- 2			0.0000+ 0	1.7203- 2
3.0000+ 4 ~ 4.0000+ 4	8.0750+ 0	8.0527+ 0							2.2205- 2			0.0000+ 0	1.9781- 2
4.0000+ 4 ~ 5.0000+ 4	4.2054+ 0	4.1883+ 0							1.7076- 2			0.0000+ 0	2.1698- 2
5.0000+ 4 ~ 6.0000+ 4	2.0885+ 0	2.0770+ 0							1.1466- 2			0.0000+ 0	2.4349- 2
6.0000+ 4 ~ 8.0000+ 4	1.2552+ 1	1.2531+ 1							2.1543- 2			0.0000+ 0	2.9023- 2
8.0000+ 4 ~ 1.0000+ 5	1.0908+ 1	1.0890+ 1							1.7749- 2			0.0000+ 0	3.3962- 2
1.0000+ 5 ~ 1.5000+ 5	5.3847+ 0	5.3766+ 0							8.0756- 3			0.0000+ 0	4.4537- 2
1.5000+ 5 ~ 2.0000+ 5	4.2625+ 0	4.2576+ 0							4.8871- 3			0.0000+ 0	5.7845- 2
2.0000+ 5 ~ 3.0000+ 5	3.8795+ 0	3.8752+ 0							4.3490- 3			0.0000+ 0	7.5615- 2
3.0000+ 5 ~ 4.0000+ 5	3.3777+ 0	3.3740+ 0							3.6467- 3			0.0000+ 0	9.6056- 2
4.0000+ 5 ~ 5.0000+ 5	3.1177+ 0	3.1144+ 0							3.2745- 3			0.0000+ 0	1.1201- 1
5.0000+ 5 ~ 6.0000+ 5	2.9838+ 0	2.9700+ 0	1.0757- 2						3.0543- 3			0.0000+ 0	1.2473- 1
6.0000+ 5 ~ 8.0000+ 5	2.9285+ 0	2.8086+ 0	1.1703- 1						2.8538- 3			0.0000+ 0	1.4366- 1
8.0000+ 5 ~ 1.0000+ 6	2.9681+ 0	2.8090+ 0	1.5644- 1						2.7519- 3			0.0000+ 0	1.6342- 1
1.0000+ 6 ~ 1.5000+ 6	3.1434+ 0	2.7244+ 0	4.1879- 1						2.1285- 3			0.0000+ 0	2.2248- 1
1.5000+ 6 ~ 2.0000+ 6	3.3556+ 0	2.5826+ 0	7.7218- 1						1.2229- 3			0.0000+ 0	3.3119- 1
2.0000+ 6 ~ 3.0000+ 6	3.5179+ 0	2.5277+ 0	9.8926- 1						9.1041- 4			0.0000+ 0	4.7710- 1
3.0000+ 6 ~ 4.0000+ 6	3.5749+ 0	2.4487+ 0	1.1253+ 0						6.5269- 4	0.0000+ 0		0.0000+ 0	6.1885- 1
4.0000+ 6 ~ 5.0000+ 6	3.5473+ 0	2.3434+ 0	1.2035+ 0						3.9064- 4	0.0000+ 0		0.0000+ 0	7.0483- 1
5.0000+ 6 ~ 6.0000+ 6	3.4861+ 0	2.2700+ 0	1.2158+ 0						2.6930- 4	0.0000+ 0		6.0000- 6	7.4227- 1
6.0000+ 6 ~ 8.0000+ 6	3.3413+ 0	2.0874+ 0	1.2520+ 0						1.8971- 4	9.1278- 4		6.9650- 4	7.7852- 1
8.0000+ 6 ~ 1.0000+ 7	3.0637+ 0	1.8061+ 0	1.1804+ 0	6.0250- 2					1.2600- 4	8.5375- 3		9.2125- 3	8.0396- 1
1.0000+ 7 ~ 1.5000+ 7	2.5666+ 0	1.3775+ 0	4.9620- 1	6.3710- 1				7.3045- 4	4.0324- 5	2.7006- 2		2.9791- 2	8.0436- 1
1.5000+ 7 ~ 2.0000+ 7	2.2250+ 0	1.0252+ 0	1.1921- 1	9.2500- 1				5.3615- 2	2.9397- 6	3.0535- 2		7.1455- 2	7.9683- 1

CROSS SECTION

MATERIAL =2244

CR-64

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	9.0287+ 0	1.9135+ 0							1.1139+ 0				1.2467- 2
1.0000- 2 ~ 1.5000- 2	2.4317+ 0	1.9135+ 0							5.1718- 1				1.2467- 2
1.5000- 2 ~ 2.0000- 2	2.3511+ 0	1.9135+ 0							4.3485- 1				1.2467- 2
2.0000- 2 ~ 3.0000- 2	2.2796+ 0	1.9135+ 0							3.6547- 1				1.2467- 2
3.0000- 2 ~ 4.0000- 2	2.2218+ 0	1.9135+ 0							3.0763- 1				1.2467- 2
4.0000- 2 ~ 5.0000- 2	2.1852+ 0	1.9135+ 0							2.7121- 1				1.2467- 2
5.0000- 2 ~ 6.0000- 2	2.1601+ 0	1.9135+ 0							2.4494- 1				1.2467- 2
6.0000- 2 ~ 8.0000- 2	2.1329+ 0	1.9135+ 0							2.1791- 1				1.2467- 2
8.0000- 2 ~ 1.0000- 1	2.1071+ 0	1.9135+ 0							1.9160- 1				1.2467- 2
1.0000- 1 ~ 1.5000- 1	2.0783+ 0	1.9135+ 0							1.6368- 1				1.2467- 2
1.5000- 1 ~ 2.0000- 1	2.0516+ 0	1.9135+ 0							1.3773- 1				1.2467- 2
2.0000- 1 ~ 3.0000- 1	2.0298+ 0	1.9135+ 0							1.1544- 1				1.2467- 2
3.0000- 1 ~ 4.0000- 1	2.0116+ 0	1.9135+ 0							9.7389- 2				1.2467- 2
4.0000- 1 ~ 5.0000- 1	2.0008+ 0	1.9135+ 0							8.5644- 2				1.2467- 2
5.0000- 1 ~ 6.0000- 1	1.9914+ 0	1.9135+ 0							7.7712- 2				1.2467- 2
6.0000- 1 ~ 8.0000- 1	1.9838+ 0	1.9135+ 0							6.8836- 2				1.2467- 2
8.0000- 1 ~ 1.0000+ 0	1.9750+ 0	1.9135+ 0							6.0547- 2				1.2467- 2
1.0000+ 0 ~ 1.5000+ 0	1.9663+ 0	1.9135+ 0							5.1669- 2				1.2467- 2
1.5000+ 0 ~ 2.0000+ 0	1.9579+ 0	1.9135+ 0							4.3484- 2				1.2467- 2
2.0000+ 0 ~ 3.0000+ 0	1.9502+ 0	1.9135+ 0							3.6568- 2				1.2467- 2
3.0000+ 0 ~ 4.0000+ 0	1.9446+ 0	1.9135+ 0							3.0750- 2				1.2467- 2
4.0000+ 0 ~ 5.0000+ 0	1.9408+ 0	1.9135+ 0							2.7197- 2				1.2467- 2
5.0000+ 0 ~ 6.0000+ 0	1.9382+ 0	1.9134+ 0							2.4524- 2				1.2467- 2
6.0000+ 0 ~ 8.0000+ 0	1.9356+ 0	1.9134+ 0							2.1746- 2				1.2467- 2
8.0000+ 0 ~ 1.0000+ 1	1.9327+ 0	1.9134+ 0							1.9232- 2				1.2467- 2
1.0000+ 1 ~ 1.5000+ 1	1.9300+ 0	1.9133+ 0							1.6323- 2				1.2467- 2
1.5000+ 1 ~ 2.0000+ 1	1.9271+ 0	1.9132+ 0							1.3797- 2				1.2467- 2
2.0000+ 1 ~ 3.0000+ 1	1.9249+ 0	1.9131+ 0							1.1544- 2				1.2467- 2
3.0000+ 1 ~ 4.0000+ 1	1.9227+ 0	1.9129+ 0							9.7576- 3				1.2467- 2
4.0000+ 1 ~ 5.0000+ 1	1.9215+ 0	1.9127+ 0							8.5798- 3				1.2467- 2
5.0000+ 1 ~ 6.0000+ 1	1.9204+ 0	1.9125+ 0							7.7494- 3				1.2467- 2
6.0000+ 1 ~ 8.0000+ 1	1.9192+ 0	1.9122+ 0							6.9019- 3				1.2467- 2
8.0000+ 1 ~ 1.0000+ 2	1.9181+ 0	1.9118+ 0							6.0693- 3				1.2467- 2
1.0000+ 2 ~ 1.5000+ 2	1.9164+ 0	1.9111+ 0							5.1751- 3				1.2470- 2
1.5000+ 2 ~ 2.0000+ 2	1.9146+ 0	1.9101+ 0							4.3606- 3				1.2476- 2
2.0000+ 2 ~ 3.0000+ 2	1.9124+ 0	1.9087+ 0							3.6633- 3				1.2481- 2
3.0000+ 2 ~ 4.0000+ 2	1.9099+ 0	1.9067+ 0							3.0881- 3				1.2486- 2
4.0000+ 2 ~ 5.0000+ 2	1.9074+ 0	1.9047+ 0							2.7197- 3				1.2490- 2
5.0000+ 2 ~ 6.0000+ 2	1.9052+ 0	1.9027+ 0							2.4723- 3				1.2493- 2
6.0000+ 2 ~ 8.0000+ 2	1.9019+ 0	1.8996+ 0							2.1905- 3				1.2497- 2
8.0000+ 2 ~ 1.0000+ 3	1.8975+ 0	1.8955+ 0							1.9306- 3				1.2501- 2
1.0000+ 3 ~ 1.5000+ 3	1.8899+ 0	1.8882+ 0							1.6528- 3				1.2549- 2
1.5000+ 3 ~ 2.0000+ 3	1.8789+ 0	1.8775+ 0							1.3978- 3				1.2621- 2
2.0000+ 3 ~ 3.0000+ 3	1.7906+ 0	1.7894+ 0							1.1849- 3				1.2697- 2
3.0000+ 3 ~ 4.0000+ 3	1.6241+ 0	1.6231+ 0							1.0085- 3				1.2759- 2
4.0000+ 3 ~ 5.0000+ 3	1.5266+ 0	1.5257+ 0							9.0456- 4				1.2823- 2
5.0000+ 3 ~ 6.0000+ 3	1.4984+ 0	1.4976+ 0							8.2884- 4				1.2933- 2
6.0000+ 3 ~ 8.0000+ 3	1.4507+ 0	1.4500+ 0							7.5851- 4				1.3154- 2
8.0000+ 3 ~ 1.0000+ 4	1.3783+ 0	1.3775+ 0							7.5962- 4				1.3388- 2
1.0000+ 4 ~ 1.5000+ 4	2.1927+ 0	2.1711+ 0							2.1618- 2				1.4009- 2
1.5000+ 4 ~ 2.0000+ 4	1.3321+ 0	1.3187+ 0							1.3317- 2				1.4827- 2
2.0000+ 4 ~ 3.0000+ 4	1.2419+ 1	1.2401+ 1							1.7214- 2				1.6689- 2
3.0000+ 4 ~ 4.0000+ 4	2.6212+ 0	2.6208+ 0							4.1940- 4				1.9094- 2
4.0000+ 4 ~ 5.0000+ 4	2.1113+ 0	2.1110+ 0							3.0702- 4				2.0882- 2
5.0000+ 4 ~ 6.0000+ 4	2.5873+ 0	2.5822+ 0							5.1649- 3				2.3338- 2
6.0000+ 4 ~ 8.0000+ 4	1.8888+ 0	1.8855+ 0							3.2769- 3				2.7655- 2
8.0000+ 4 ~ 1.0000+ 5	1.0859+ 0	1.0855+ 0							3.5733- 4				3.2217- 2
1.0000+ 5 ~ 1.5000+ 5	4.9933+ 0	4.9899+ 0							3.4544- 3				4.1868- 2
1.5000+ 5 ~ 2.0000+ 5	3.1074+ 0	3.1052+ 0							2.1937- 3				5.3979- 2
2.0000+ 5 ~ 3.0000+ 5	3.1370+ 0	3.1342+ 0							2.7766- 3				6.9977- 2
3.0000+ 5 ~ 4.0000+ 5	3.5882+ 0	3.5851+ 0							3.1096- 3				8.8226- 2
4.0000+ 5 ~ 5.0000+ 5	3.2928+ 0	3.2898+ 0							2.9685- 3				1.0246- 1
5.0000+ 5 ~ 6.0000+ 5	3.1374+ 0	3.1344+ 0							2.9210- 3				1.1362- 1
6.0000+ 5 ~ 8.0000+ 5	3.0529+ 0	3.0499+ 0							3.0840- 3				1.2733- 1
8.0000+ 5 ~ 1.0000+ 6	3.0619+ 0	2.8220+ 0	2.3680- 1						2.3035- 3				1.5765- 1
1.0000+ 6 ~ 1.5000+ 6	3.1940+ 0	2.6366+ 0	5.5899- 1						1.4123- 3				2.2771- 1
1.5000+ 6 ~ 2.0000+ 6	3.3601+ 0	2.6347+ 0	7.2407- 1						1.4472- 3				3.1965- 1
2.0000+ 6 ~ 3.0000+ 6	3.5011+ 0	2.6717+ 0	8.2789- 1						1.5588- 3			0.0000+ 0	4.4641- 1
3.0000+ 6 ~ 4.0000+ 6	3.6318+ 0	2.5715+ 0	1.0588+ 0						1.6215- 3			0.0000+ 0	6.0355- 1
4.0000+ 6 ~ 5.0000+ 6	3.6956+ 0	2.4512+ 0	1.2433+ 0						1.0734- 3			0.0000+ 0	7.1020- 1
5.0000+ 6 ~ 6.0000+ 6	3.5918+ 0	2.3355+ 0	1.2558+ 0						5.0808- 4			0.0000+ 0	7.4617- 1
6.0000+ 6 ~ 8.0000+ 6	3.4065+ 0	2.1311+ 0	1.2750+ 0						3.0025- 4			1.1875- 5	7.8096- 1
8.0000+ 6 ~ 1.0000+ 7	3.1007+ 0	1.8454+ 0	1.2547+ 0						1.9822- 4	1.8750- 4		2.8550- 4	8.0615- 1
1.0000+ 7 ~ 1.5000+ 7	2.5957+ 0	1.4082+ 0	6.0102- 1	5.7190- 1					7.8773- 5	7.8830- 3		6.2875- 3	8.0663- 1
1.5000+ 7 ~ 2.0000+ 7	2.2556+ 0	1.0415+ 0	9.5950- 3	1.1484+ 0					5.9275- 7	2.9975- 2		2.8115- 2	7.9966- 1

CROSS SECTION

MATERIAL =2251 MN-65

ENERDY	TOTAL	ELABTIC	INELR	(N.2N)	(N.3N)	FISSION	(N.NA)	(N.NP)	CAPTURE	(N.P)	(N.D)	(N.A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	4.3394+ 1	2.1639+ 0							4.1210+ 1				1.2276- 2
1.0000- 2 ~ 1.5000- 2	2.1318+ 1	2.1839+ 0							1.9134+ 1				1.2285- 2
1.5000- 2 ~ 2.0000- 2	1.8273+ 1	2.1840+ 0							1.6088+ 1				1.2287- 2
2.0000- 2 ~ 3.0000- 2	1.5706+ 1	2.1840+ 0							1.3522+ 1				1.2290- 2
3.0000- 2 ~ 4.0000- 2	1.3565+ 1	2.1841+ 0							1.1381+ 1				1.2292- 2
4.0000- 2 ~ 5.0000- 2	1.2220+ 1	2.1842+ 0							1.0036+ 1				1.2293- 2
5.0000- 2 ~ 6.0000- 2	1.1247+ 1	2.1842+ 0							9.0632+ 0				1.2295- 2
6.0000- 2 ~ 8.0000- 2	1.0246+ 1	2.1843+ 0							8.0618+ 0				1.2296- 2
8.0000- 2 ~ 1.0000- 1	9.2805+ 0	2.1845+ 0							7.0960+ 0				1.2298- 2
1.0000- 1 ~ 1.5000- 1	8.2427+ 0	2.1847+ 0							6.0579+ 0				1.2300- 2
1.5000- 1 ~ 2.0000- 1	7.2827+ 0	2.1851+ 0							5.0976+ 0				1.2302- 2
2.0000- 1 ~ 3.0000- 1	6.4591+ 0	2.1856+ 0							4.2735+ 0				1.2304- 2
3.0000- 1 ~ 4.0000- 1	5.7945+ 0	2.1863+ 0							3.6082+ 0				1.2306- 2
4.0000- 1 ~ 5.0000- 1	5.3615+ 0	2.1870+ 0							3.1745+ 0				1.2308- 2
5.0000- 1 ~ 6.0000- 1	5.0664+ 0	2.1878+ 0							2.8786+ 0				1.2309- 2
6.0000- 1 ~ 8.0000- 1	4.7431+ 0	2.1888+ 0							2.5543+ 0				1.2311- 2
8.0000- 1 ~ 1.0000+ 0	4.4383+ 0	2.1903+ 0							2.2481+ 0				1.2313- 2
1.0000+ 0 ~ 1.5000+ 0	4.1146+ 0	2.1928+ 0							1.9219+ 0				1.2315- 2
1.5000+ 0 ~ 2.0000+ 0	3.8160+ 0	2.1964+ 0							1.6196+ 0				1.2317- 2
2.0000+ 0 ~ 3.0000+ 0	3.5676+ 0	2.2019+ 0							1.3657+ 0				1.2319- 2
3.0000+ 0 ~ 4.0000+ 0	3.3623+ 0	2.2093+ 0							1.1530+ 0				1.2321- 2
4.0000+ 0 ~ 5.0000+ 0	3.2407+ 0	2.2168+ 0							1.0238+ 0				1.2323- 2
5.0000+ 0 ~ 6.0000+ 0	3.1510+ 0	2.2244+ 0							9.2654- 1				1.2324- 2
6.0000+ 0 ~ 8.0000+ 0	3.0627+ 0	2.2361+ 0							8.2658- 1				1.2326- 2
8.0000+ 0 ~ 1.0000+ 1	2.9890+ 0	2.2520+ 0							7.3693- 1				1.2327- 2
1.0000+ 1 ~ 1.5000+ 1	2.9152+ 0	2.2810+ 0							6.3420- 1				1.2329- 2
1.5000+ 1 ~ 2.0000+ 1	2.8722+ 0	2.3251+ 0							5.4709- 1				1.2331- 2
2.0000+ 1 ~ 3.0000+ 1	2.8701+ 0	2.3975+ 0							4.7254- 1				1.2334- 2
3.0000+ 1 ~ 4.0000+ 1	2.9250+ 0	2.5075+ 0							4.1748- 1				1.2336- 2
4.0000+ 1 ~ 5.0000+ 1	3.0182+ 0	2.6335+ 0							3.8485- 1				1.2337- 2
5.0000+ 1 ~ 6.0000+ 1	3.1441+ 0	2.7789+ 0							3.6527- 1				1.2339- 2
6.0000+ 1 ~ 8.0000+ 1	3.4057+ 0	3.0537+ 0							3.5197- 1				1.2340- 2
8.0000+ 1 ~ 1.0000+ 2	3.8658+ 0	3.5176+ 0							3.4812- 1				1.2342- 2
1.0000+ 2 ~ 1.5000+ 2	6.2336+ 0	4.8558+ 0							3.7784- 1				1.2344- 2
1.5000+ 2 ~ 2.0000+ 2	9.5248+ 0	9.0193+ 0							5.0545- 1				1.2346- 2
2.0000+ 2 ~ 3.0000+ 2	6.2790+ 1	6.0956+ 1							1.8345+ 0				1.2348- 2
3.0000+ 2 ~ 4.0000+ 2	9.9822+ 2	9.7914+ 2							1.9077+ 1				1.2350- 2
4.0000+ 2 ~ 5.0000+ 2	6.2439+ 1	6.1721+ 1							7.1817- 1				1.2352- 2
5.0000+ 2 ~ 6.0000+ 2	2.5858+ 1	2.5653+ 1							2.0551- 1				1.2353- 2
6.0000+ 2 ~ 8.0000+ 2	1.8674+ 1	1.8553+ 1							1.2136- 1				1.2355- 2
8.0000+ 2 ~ 1.0000+ 3	2.4460+ 1	2.4246+ 1							2.1358- 1				1.2357- 2
1.0000+ 3 ~ 1.5000+ 3	7.9783+ 1	7.6600+ 1							3.1836+ 0				1.2359- 2
1.5000+ 3 ~ 2.0000+ 3	5.7102+ 1	5.6930+ 1							1.7229- 1				1.2361- 2
2.0000+ 3 ~ 3.0000+ 3	3.0990+ 2	3.0931+ 2							5.8721- 1				1.2441- 2
3.0000+ 3 ~ 4.0000+ 3	3.0394+ 1	3.0351+ 1							4.2429- 2				1.2567- 2
4.0000+ 3 ~ 5.0000+ 3	8.7042+ 0	8.5823+ 0							1.2188- 1				1.2660- 2
5.0000+ 3 ~ 6.0000+ 3	3.4722+ 0	3.4582+ 0							1.3917- 2				1.2805- 2
6.0000+ 3 ~ 8.0000+ 3	4.3899+ 1	4.3753+ 1							1.4539- 1				1.3074- 2
8.0000+ 3 ~ 1.0000+ 4	5.4588+ 1	5.4480+ 1							1.0835- 1				1.3358- 2
1.0000+ 4 ~ 1.5000+ 4	5.6154+ 0	5.5869+ 0							2.8431- 2				1.4111- 2
1.5000+ 4 ~ 2.0000+ 4	3.8921+ 0	3.8478+ 0							4.4311- 2				1.5103- 2
2.0000+ 4 ~ 3.0000+ 4	1.8441+ 1	1.8403+ 1							3.7768- 2				1.6786- 2
3.0000+ 4 ~ 4.0000+ 4	1.6503+ 1	1.6476+ 1							2.6445- 2				1.9291- 2
4.0000+ 4 ~ 5.0000+ 4	9.5518+ 0	9.5335+ 0							1.8231- 2				2.2003- 2
5.0000+ 4 ~ 6.0000+ 4	6.5936+ 0	6.5758+ 0							1.7782- 2				2.5140- 2
6.0000+ 4 ~ 8.0000+ 4	9.6108+ 0	9.5929+ 0							1.7812- 2				2.9692- 2
8.0000+ 4 ~ 1.0000+ 5	6.3740+ 0	6.3596+ 0							1.4340- 2				3.5523- 2
1.0000+ 5 ~ 1.5000+ 5	5.4825+ 0	5.4358+ 0	3.3838- 2						1.2808- 2				4.6989- 2
1.5000+ 5 ~ 2.0000+ 5	4.6511+ 0	4.3442+ 0	2.9885- 1						7.8462- 3				6.5951- 2
2.0000+ 5 ~ 3.0000+ 5	4.0882+ 0	3.6433+ 0	4.3899- 1						5.8799- 3				9.0753- 2
3.0000+ 5 ~ 4.0000+ 5	3.6711+ 0	3.2164+ 0	4.4964- 1						5.0332- 3				1.1658- 1
4.0000+ 5 ~ 5.0000+ 5	3.3948+ 0	2.9321+ 0	4.5756- 1						5.0657- 3				1.3579- 1
5.0000+ 5 ~ 6.0000+ 5	3.1920+ 0	2.7239+ 0	4.6387- 1						4.2421- 3				1.5110- 1
6.0000+ 5 ~ 8.0000+ 5	3.1379+ 0	2.6324+ 0	5.0197- 1						3.5953- 3			1.1115- 6	1.7177- 1
8.0000+ 5 ~ 1.0000+ 6	3.1892+ 0	2.6250+ 0	5.6120- 1						3.0690- 3			4.3530- 6	1.9516- 1
1.0000+ 6 ~ 1.5000+ 6	3.3470+ 0	2.6318+ 0	7.1301- 1						2.3815- 3			1.0500- 5	2.5042- 1
1.5000+ 6 ~ 2.0000+ 6	3.5476+ 0	2.6388+ 0	9.0693- 1						1.9127- 3	1.4536- 6		2.2000- 5	3.4891- 1
2.0000+ 6 ~ 3.0000+ 6	3.6806+ 0	2.5798+ 0	1.0990+ 0						1.7166- 3	1.0200- 4		4.9750- 5	4.9071- 1
3.0000+ 6 ~ 4.0000+ 6	3.7273+ 0	2.5339+ 0	1.1908+ 0						1.3779- 3	1.0540- 3		1.3150- 4	6.1300- 1
4.0000+ 6 ~ 5.0000+ 6	3.6998+ 0	2.4713+ 0	1.2213+ 0						1.1307- 3	5.8145- 3		3.2875- 4	6.8615- 1
5.0000+ 6 ~ 6.0000+ 6	3.6313+ 0	2.3835+ 0	1.2342+ 0						9.4178- 4	1.2030- 2		7.7375- 4	7.3420- 1
6.0000+ 6 ~ 8.0000+ 6	3.4546+ 0	2.2043+ 0	1.2266+ 0						7.6780- 4	1.8687- 2		4.1917- 3	7.8007- 1
8.0000+ 6 ~ 1.0000+ 7	3.2007+ 0	1.9425+ 0	1.2180+ 0				2.3503- 4	1.1480- 5	6.9260- 4	2.8987- 2		1.0014- 2	8.0919- 1
1.0000+ 7 ~ 1.5000+ 7	2.7983+ 0	1.5480+ 0	7.5956- 1	4.1604- 1			2.3725- 3	5.8887- 3	6.7334- 4	4.5931- 2		1.9593- 2	8.1383- 1
1.5000+ 7 ~ 2.0000+ 7	2.4951+ 0	1.2151+ 0	3.3174- 1	8.4830- 1			2.7185- 2	1.4540- 2	5.2894- 4	3.7775- 2		1.9955- 2	8.1406- 1

CROSS SECTION

MATERIAL =2260 FE-0

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	2.1350+ 1	1.1934+ 1							9.4165+ 0	0.0000+ 0		0.0000+ 0	1.2480- 2
1.0000- 2 ~ 1.5000- 2	1.5171+ 1	1.2404+ 1							3.7672+ 0	0.0000+ 0		0.0000+ 0	1.2582- 2
1.5000- 2 ~ 2.0000- 2	1.5527+ 1	1.2434+ 1							3.0929+ 0	0.0000+ 0		0.0000+ 0	1.2607- 2
2.0000- 2 ~ 3.0000- 2	1.4999+ 1	1.2434+ 1							2.5649+ 0	0.0000+ 0		0.0000+ 0	1.2634- 2
3.0000- 2 ~ 4.0000- 2	1.4557+ 1	1.2398+ 1							2.1591+ 0	0.0000+ 0		0.0000+ 0	1.2660- 2
4.0000- 2 ~ 5.0000- 2	1.4283+ 1	1.2401+ 1							1.8820+ 0	0.0000+ 0		0.0000+ 0	1.2679- 2
5.0000- 2 ~ 6.0000- 2	1.4095+ 1	1.2427+ 1							1.6672+ 0	0.0000+ 0		0.0000+ 0	1.2695- 2
6.0000- 2 ~ 8.0000- 2	1.3906+ 1	1.2461+ 1							1.4640+ 0	0.0000+ 0		0.0000+ 0	1.2713- 2
8.0000- 2 ~ 1.0000- 1	1.3717+ 1	1.2460+ 1							1.2571+ 0	0.0000+ 0		0.0000+ 0	1.2732- 2
1.0000- 1 ~ 1.5000- 1	1.3521+ 1	1.2462+ 1							1.0690+ 0	0.0000+ 0		0.0000+ 0	1.2757- 2
1.5000- 1 ~ 2.0000- 1	1.3339+ 1	1.2417+ 1							9.2273- 1	0.0000+ 0		0.0000+ 0	1.2782- 2
2.0000- 1 ~ 3.0000- 1	1.3190+ 1	1.2403+ 1							7.8710- 1	0.0000+ 0		0.0000+ 0	1.2809- 2
3.0000- 1 ~ 4.0000- 1	1.3072+ 1	1.2427+ 1							6.4481- 1	0.0000+ 0		0.0000+ 0	1.2835- 2
4.0000- 1 ~ 5.0000- 1	1.2994+ 1	1.2432+ 1							5.6181- 1	0.0000+ 0		0.0000+ 0	1.2854- 2
5.0000- 1 ~ 6.0000- 1	1.2941+ 1	1.2432+ 1							5.0871- 1	0.0000+ 0		0.0000+ 0	1.2869- 2
6.0000- 1 ~ 8.0000- 1	1.2882+ 1	1.2423+ 1							4.5858- 1	0.0000+ 0		0.0000+ 0	1.2888- 2
8.0000- 1 ~ 1.0000+ 0	1.2822+ 1	1.2398+ 1							4.2410- 1	0.0000+ 0		0.0000+ 0	1.2907- 2
1.0000+ 0 ~ 1.5000+ 0	1.2760+ 1	1.2385+ 1							3.7523- 1	0.0000+ 0		0.0000+ 0	1.2931- 2
1.5000+ 0 ~ 2.0000+ 0	1.2696+ 1	1.2387+ 1							3.0863- 1	0.0000+ 0		0.0000+ 0	1.2957- 2
2.0000+ 0 ~ 3.0000+ 0	1.2641+ 1	1.2388+ 1							2.5265- 1	0.0000+ 0		0.0000+ 0	1.2984- 2
3.0000+ 0 ~ 4.0000+ 0	1.2592+ 1	1.2381+ 1							2.1059- 1	0.0000+ 0		0.0000+ 0	1.3010- 2
4.0000+ 0 ~ 5.0000+ 0	1.2557+ 1	1.2371+ 1							1.8655- 1	0.0000+ 0		0.0000+ 0	1.3029- 2
5.0000+ 0 ~ 6.0000+ 0	1.2532+ 1	1.2360+ 1							1.7169- 1	0.0000+ 0		0.0000+ 0	1.3044- 2
6.0000+ 0 ~ 8.0000+ 0	1.2505+ 1	1.2348+ 1							1.5656- 1	0.0000+ 0		0.0000+ 0	1.3062- 2
8.0000+ 0 ~ 1.0000+ 1	1.2474+ 1	1.2338+ 1							1.3630- 1	0.0000+ 0		0.0000+ 0	1.3082- 2
1.0000+ 1 ~ 1.5000+ 1	1.2430+ 1	1.2315+ 1							1.1470- 1	0.0000+ 0		0.0000+ 0	1.3106- 2
1.5000+ 1 ~ 2.0000+ 1	1.2381+ 1	1.2283+ 1							9.7610- 2	0.0000+ 0		0.0000+ 0	1.3132- 2
2.0000+ 1 ~ 3.0000+ 1	1.2322+ 1	1.2237+ 1							8.4987- 2	0.0000+ 0		0.0000+ 0	1.3159- 2
3.0000+ 1 ~ 4.0000+ 1	1.2248+ 1	1.2176+ 1							7.2531- 2	0.0000+ 0		0.0000+ 0	1.3185- 2
4.0000+ 1 ~ 5.0000+ 1	1.2179+ 1	1.2115+ 1							6.4287- 2	0.0000+ 0		0.0000+ 0	1.3204- 2
5.0000+ 1 ~ 6.0000+ 1	1.2114+ 1	1.2055+ 1							5.9251- 2	0.0000+ 0		0.0000+ 0	1.3219- 2
6.0000+ 1 ~ 8.0000+ 1	1.2021+ 1	1.1966+ 1							5.4991- 2	0.0000+ 0		0.0000+ 0	1.3237- 2
8.0000+ 1 ~ 1.0000+ 2	1.1901+ 1	1.1851+ 1							4.9739- 2	0.0000+ 0		0.0000+ 0	1.3256- 2
1.0000+ 2 ~ 1.5000+ 2	1.1702+ 1	1.1660+ 1							4.1291- 2	0.0000+ 0		0.0000+ 0	1.3281- 2
1.5000+ 2 ~ 2.0000+ 2	1.1429+ 1	1.1395+ 1							3.3439- 2	0.0000+ 0		0.0000+ 0	1.3307- 2
2.0000+ 2 ~ 3.0000+ 2	1.1051+ 1	1.1024+ 1							2.6501- 2	0.0000+ 0		0.0000+ 0	1.3334- 2
3.0000+ 2 ~ 4.0000+ 2	1.0699+ 1	1.0673+ 1							2.0866- 2	0.0000+ 0		0.0000+ 0	1.3369- 2
4.0000+ 2 ~ 5.0000+ 2	1.0178+ 1	1.0161+ 1							1.7157- 2	0.0000+ 0		0.0000+ 0	1.3379- 2
5.0000+ 2 ~ 6.0000+ 2	9.8026+ 0	9.7880+ 0							1.4563- 2	0.0000+ 0		0.0000+ 0	1.3394- 2
6.0000+ 2 ~ 8.0000+ 2	9.3065+ 0	9.2945+ 0							1.1948- 2	0.0000+ 0		0.0000+ 0	1.3412- 2
8.0000+ 2 ~ 1.0000+ 3	8.7256+ 0	8.7159+ 0							9.7055- 3	0.0000+ 0		0.0000+ 0	1.3431- 2
1.0000+ 3 ~ 1.5000+ 3	8.3239+ 0	7.9481+ 0							3.7572- 1	0.0000+ 0		0.0000+ 0	1.3456- 2
1.5000+ 3 ~ 2.0000+ 3	7.0455+ 0	7.0350+ 0							1.0569- 2	0.0000+ 0		0.0000+ 0	1.3482- 2
2.0000+ 3 ~ 3.0000+ 3	6.1416+ 0	6.1375+ 0							4.1764- 3	0.0000+ 0		0.0000+ 0	1.3508- 2
3.0000+ 3 ~ 4.0000+ 3	6.0435+ 0	6.0384+ 0							5.1343- 3	0.0000+ 0		0.0000+ 0	1.3534- 2
4.0000+ 3 ~ 5.0000+ 3	5.4704+ 0	5.4651+ 0							5.2434- 3	0.0000+ 0		0.0000+ 0	1.3553- 2
5.0000+ 3 ~ 6.0000+ 3	5.6754+ 0	5.6696+ 0							5.7909- 3	0.0000+ 0		0.0000+ 0	1.3569- 2
6.0000+ 3 ~ 8.0000+ 3	1.4169+ 1	1.4140+ 1							2.9459- 2	0.0000+ 0		0.0000+ 0	1.3587- 2
8.0000+ 3 ~ 1.0000+ 4	1.1209+ 1	1.1186+ 1							2.2510- 2	0.0000+ 0		0.0000+ 0	1.3606- 2
1.0000+ 4 ~ 1.5000+ 4	4.8892+ 0	4.8756+ 0	6.3040- 5						1.3572- 2	0.0000+ 0		0.0000+ 0	1.3634- 2
1.5000+ 4 ~ 2.0000+ 4	2.9864+ 0	2.9692+ 0	1.5068- 2						2.1243- 3	0.0000+ 0		0.0000+ 0	1.4417- 2
2.0000+ 4 ~ 3.0000+ 4	1.7745+ 1	1.7609+ 1	1.1470- 1						2.1987- 2	0.0000+ 0		0.0000+ 0	1.9450- 2
3.0000+ 4 ~ 4.0000+ 4	9.0646+ 0	8.9627+ 0	8.2444- 2						1.9508- 2	0.0000+ 0		0.0000+ 0	2.3624- 2
4.0000+ 4 ~ 5.0000+ 4	4.7566+ 0	4.6604+ 0	9.0975- 2						5.2378- 3	0.0000+ 0		0.0000+ 0	2.6731- 2
5.0000+ 4 ~ 6.0000+ 4	4.4434+ 0	4.4134+ 0	1.1615- 2						1.8359- 2	0.0000+ 0		0.0000+ 0	3.0963- 2
6.0000+ 4 ~ 8.0000+ 4	3.7205+ 0	3.6803+ 0	3.2535- 2						7.7084- 3	0.0000+ 0		0.0000+ 0	3.8373- 2
8.0000+ 4 ~ 1.0000+ 5	6.0064+ 0	5.9769+ 0	1.1829- 2						1.7653- 2	0.0000+ 0		0.0000+ 0	4.6211- 2
1.0000+ 5 ~ 1.5000+ 5	3.9268+ 0	3.8773+ 0	4.0713- 2						8.8398- 3	0.0000+ 0		0.0000+ 0	6.1090- 2
1.5000+ 5 ~ 2.0000+ 5	4.5360+ 0	4.5151+ 0	1.3037- 2						7.8336- 3	0.0000+ 0		0.0000+ 0	8.2116- 2
2.0000+ 5 ~ 3.0000+ 5	3.0717+ 0	3.0484+ 0	1.6381- 2						6.9345- 3	0.0000+ 0		0.0000+ 0	1.1088- 1
3.0000+ 5 ~ 4.0000+ 5	3.1439+ 0	3.1220+ 0	1.6476- 2						5.4500- 3	0.0000+ 0		0.0000+ 0	1.4325- 1
4.0000+ 5 ~ 5.0000+ 5	3.6121+ 0	3.5878+ 0	1.9328- 2						5.0000- 3	0.0000+ 0		0.0000+ 0	1.6865- 1
5.0000+ 5 ~ 6.0000+ 5	2.7811+ 0	2.7552+ 0	2.0625- 2						5.2625- 3	0.0000+ 0		0.0000+ 0	1.8633- 1
6.0000+ 5 ~ 8.0000+ 5	2.8343+ 0	2.8056+ 0	2.2263- 2						6.5000- 3	0.0000+ 0		0.0000+ 0	2.0444- 1
8.0000+ 5 ~ 1.0000+ 6	2.5048+ 0	2.2962+ 0	2.0453- 1						4.0221- 3	0.0000+ 0		0.0000+ 0	2.2761- 1
1.0000+ 6 ~ 1.5000+ 6	2.7310+ 0	2.1766+ 0	5.5188- 1						2.5882- 3	1.7480- 4		0.0000+ 0	2.6919- 1
1.5000+ 6 ~ 2.0000+ 6	2.9924+ 0	2.2600+ 0	7.3944- 1						2.4414- 3	5.2380- 4		0.0000+ 0	3.2415- 1
2.0000+ 6 ~ 3.0000+ 6	3.3431+ 0	2.4358+ 0	9.0216- 1						2.6085- 3	2.5608- 3		0.0000+ 0	4.2491- 1
3.0000+ 6 ~ 4.0000+ 6	3.4624+ 0	2.2650+ 0	1.1845+ 0						2.3254- 3	1.0538- 2		0.0000+ 0	5.7603- 1
4.0000+ 6 ~ 5.0000+ 6	3.6200+ 0	2.2604+ 0	1.3357+ 0						1.8427- 3	2.0471- 2		1.5353- 3	6.8120- 1
5.0000+ 6 ~ 6.0000+ 6	3.6400+ 0	2.2076+ 0	1.3866+ 0						1.5240- 3	3.2501- 2		1.2262- 2	7.3543- 1
6.0000+ 6 ~ 8.0000+ 6	3.5100+ 0	2.0295+ 0	1.3937+ 0	1.5993- 5					1.0999- 3	5.7008- 2		2.8488- 2	7.7745- 1
8.0000+ 6 ~ 1.0000+ 7	3.1863+ 0	1.7554+ 0	1.2864+ 0	5.2177- 3					6.7150- 4	8.8275- 2		4.9861- 2	7.9998- 1
1.0000+ 7 ~ 1.5000+ 7	2.7045+ 0	1.3736+ 0	9.2026- 1	2.0489- 1					2.7780- 4	1.1793- 1		8.6718- 2	8.1198- 1
1.5000+ 7 ~ 2.0000+ 7	2.3020+ 0	9.9397- 1	3.7612- 1	7.1793- 1					4.3532- 5	7.3698- 2		1.4008- 1	8.2582- 1

MATERIAL =2261

CROSS SECTION

FE-54

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	7.1643+ 0	4.9299- 1							6.6714+ 0	0.0000+ 0		0.0000+ 0	1.2927- 2
1.0000- 2 ~ 1.5000- 2	3.5904+ 0	4.9299- 1							3.0976+ 0	0.0000+ 0		0.0000+ 0	1.3022- 2
1.5000- 2 ~ 2.0000- 2	3.0974+ 0	4.9293- 1							2.6044+ 0	0.0000+ 0		0.0000+ 0	1.3048- 2
2.0000- 2 ~ 3.0000- 2	2.6840+ 0	4.9293- 1							2.1910+ 0	0.0000+ 0		0.0000+ 0	1.3076- 2
3.0000- 2 ~ 4.0000- 2	2.3354+ 0	4.9294- 1							1.8424+ 0	0.0000+ 0		0.0000+ 0	1.3102- 2
4.0000- 2 ~ 5.0000- 2	2.1233+ 0	4.9294- 1							1.6303+ 0	0.0000+ 0		0.0000+ 0	1.3122- 2
5.0000- 2 ~ 6.0000- 2	1.9618+ 0	4.9294- 1							1.4689+ 0	0.0000+ 0		0.0000+ 0	1.3138- 2
6.0000- 2 ~ 8.0000- 2	1.7963+ 0	4.9295- 1							1.3034+ 0	0.0000+ 0		0.0000+ 0	1.3166- 2
8.0000- 2 ~ 1.0000- 1	1.6440+ 0	4.9295- 1							1.1510+ 0	0.0000+ 0		0.0000+ 0	1.3176- 2
1.0000- 1 ~ 1.5000- 1	1.4711+ 0	4.9296- 1							9.7816- 1	0.0000+ 0		0.0000+ 0	1.3201- 2
1.5000- 1 ~ 2.0000- 1	1.3163+ 0	4.9297- 1							8.2338- 1	0.0000+ 0		0.0000+ 0	1.3228- 2
2.0000- 1 ~ 3.0000- 1	1.1849+ 0	4.9299- 1							6.9191- 1	0.0000+ 0		0.0000+ 0	1.3255- 2
3.0000- 1 ~ 4.0000- 1	1.0754+ 0	4.9301- 1							5.8243- 1	0.0000+ 0		0.0000+ 0	1.3282- 2
4.0000- 1 ~ 5.0000- 1	1.0074+ 0	4.9304- 1							5.1436- 1	0.0000+ 0		0.0000+ 0	1.3301- 2
5.0000- 1 ~ 6.0000- 1	9.5742- 1	4.9306- 1							4.6436- 1	0.0000+ 0		0.0000+ 0	1.3317- 2
6.0000- 1 ~ 8.0000- 1	9.0530- 1	4.9309- 1							4.1220- 1	0.0000+ 0		0.0000+ 0	1.3336- 2
8.0000- 1 ~ 1.0000+ 0	8.5682- 1	4.9314- 1							3.6368- 1	0.0000+ 0		0.0000+ 0	1.3355- 2
1.0000+ 0 ~ 1.5000+ 0	8.0242- 1	4.9323- 1							3.0920- 1	0.0000+ 0		0.0000+ 0	1.3381- 2
1.5000+ 0 ~ 2.0000+ 0	7.5458- 1	4.9335- 1							2.6124- 1	0.0000+ 0		0.0000+ 0	1.3407- 2
2.0000+ 0 ~ 3.0000+ 0	7.1225- 1	4.9353- 1							2.1872- 1	0.0000+ 0		0.0000+ 0	1.3435- 2
3.0000+ 0 ~ 4.0000+ 0	6.7857- 1	4.9376- 1							1.8481- 1	0.0000+ 0		0.0000+ 0	1.3461- 2
4.0000+ 0 ~ 5.0000+ 0	6.5655- 1	4.9401- 1							1.6254- 1	0.0000+ 0		0.0000+ 0	1.3481- 2
5.0000+ 0 ~ 6.0000+ 0	6.4122- 1	4.9424- 1							1.4698- 1	0.0000+ 0		0.0000+ 0	1.3496- 2
6.0000+ 0 ~ 8.0000+ 0	6.2540- 1	4.9460- 1							1.3079- 1	0.0000+ 0		0.0000+ 0	1.3515- 2
8.0000+ 0 ~ 1.0000+ 1	6.1015- 1	4.9508- 1							1.1506- 1	0.0000+ 0		0.0000+ 0	1.3535- 2
1.0000+ 1 ~ 1.5000+ 1	5.9412- 1	4.9592- 1							9.8198- 2	0.0000+ 0		0.0000+ 0	1.3560- 2
1.5000+ 1 ~ 2.0000+ 1	5.7991- 1	4.9713- 1							8.2777- 2	0.0000+ 0		0.0000+ 0	1.3586- 2
2.0000+ 1 ~ 3.0000+ 1	5.6859- 1	4.9894- 1							6.9648- 2	0.0000+ 0		0.0000+ 0	1.3614- 2
3.0000+ 1 ~ 4.0000+ 1	5.6015- 1	5.0137- 1							5.8783- 2	0.0000+ 0		0.0000+ 0	1.3640- 2
4.0000+ 1 ~ 5.0000+ 1	5.5576- 1	5.0361- 1							5.1954- 2	0.0000+ 0		0.0000+ 0	1.3660- 2
5.0000+ 1 ~ 6.0000+ 1	5.5340- 1	5.0626- 1							4.7143- 2	0.0000+ 0		0.0000+ 0	1.3676- 2
6.0000+ 1 ~ 8.0000+ 1	5.5188- 1	5.0998- 1							4.1924- 2	0.0000+ 0		0.0000+ 0	1.3694- 2
8.0000+ 1 ~ 1.0000+ 2	5.5207- 1	5.1493- 1							3.7146- 2	0.0000+ 0		0.0000+ 0	1.3714- 2
1.0000+ 2 ~ 1.5000+ 2	5.5566- 1	5.2376- 1							3.1907- 2	0.0000+ 0		0.0000+ 0	1.3739- 2
1.5000+ 2 ~ 2.0000+ 2	5.6384- 1	5.3661- 1							2.7226- 2	0.0000+ 0		0.0000+ 0	1.3768- 2
2.0000+ 2 ~ 3.0000+ 2	5.7979- 1	5.5652- 1							2.3274- 2	0.0000+ 0		0.0000+ 0	1.3793- 2
3.0000+ 2 ~ 4.0000+ 2	6.0431- 1	5.8419- 1							2.0122- 2	0.0000+ 0		0.0000+ 0	1.3820- 2
4.0000+ 2 ~ 5.0000+ 2	6.3145- 1	6.1324- 1							1.8210- 2	0.0000+ 0		0.0000+ 0	1.3840- 2
5.0000+ 2 ~ 6.0000+ 2	6.6059- 1	6.4371- 1							1.6881- 2	0.0000+ 0		0.0000+ 0	1.3855- 2
6.0000+ 2 ~ 8.0000+ 2	7.0839- 1	6.9279- 1							1.5599- 2	0.0000+ 0		0.0000+ 0	1.3874- 2
8.0000+ 2 ~ 1.0000+ 3	7.7844- 1	7.6391- 1							1.4532- 2	0.0000+ 0		0.0000+ 0	1.3894- 2
1.0000+ 3 ~ 1.5000+ 3	9.2308- 1	9.0943- 1							1.3651- 2	0.0000+ 0		0.0000+ 0	1.3919- 2
1.5000+ 3 ~ 2.0000+ 3	1.1848+ 0	1.1714+ 0							1.3458- 2	0.0000+ 0		0.0000+ 0	1.3946- 2
2.0000+ 3 ~ 3.0000+ 3	1.7624+ 0	1.7478+ 0							1.4615- 2	0.0000+ 0		0.0000+ 0	1.3973- 2
3.0000+ 3 ~ 4.0000+ 3	3.0995+ 0	3.0809+ 0							1.8575- 2	0.0000+ 0		0.0000+ 0	1.3999- 2
4.0000+ 3 ~ 5.0000+ 3	6.0286+ 0	6.0009+ 0							2.7669- 2	0.0000+ 0		0.0000+ 0	1.4019- 2
5.0000+ 3 ~ 6.0000+ 3	1.4034+ 1	1.3983+ 1							5.1281- 2	0.0000+ 0		0.0000+ 0	1.4035- 2
6.0000+ 3 ~ 8.0000+ 3	1.4318+ 2	1.4280+ 2							3.7353- 1	0.0000+ 0		0.0000+ 0	1.4053- 2
8.0000+ 3 ~ 1.0000+ 4	1.2628+ 2	1.2590+ 2							3.7776- 1	0.0000+ 0		0.0000+ 0	1.4073- 2
1.0000+ 4 ~ 1.5000+ 4	1.6454+ 1	1.6247+ 1							2.0711- 1	0.0000+ 0		0.0000+ 0	1.4726- 2
1.5000+ 4 ~ 2.0000+ 4	7.9933+ 0	7.9912+ 0							2.0198- 3	0.0000+ 0		0.0000+ 0	1.5994- 2
2.0000+ 4 ~ 3.0000+ 4	4.6123+ 0	4.6116+ 0							7.5228- 4	0.0000+ 0		0.0000+ 0	1.8123- 2
3.0000+ 4 ~ 4.0000+ 4	2.5568+ 0	2.5067+ 0							5.0106- 2	0.0000+ 0		0.0000+ 0	2.1284- 2
4.0000+ 4 ~ 5.0000+ 4	1.3454+ 0	1.3437+ 0							1.6707- 3	0.0000+ 0		0.0000+ 0	2.4558- 2
5.0000+ 4 ~ 6.0000+ 4	1.1966+ 1	1.1921+ 1							4.5395- 2	0.0000+ 0		0.0000+ 0	2.7957- 2
6.0000+ 4 ~ 8.0000+ 4	3.9998+ 0	3.9853+ 0							1.4437- 2	0.0000+ 0		0.0000+ 0	3.3196- 2
8.0000+ 4 ~ 1.0000+ 5	1.3146+ 0	1.3077+ 0							6.8521- 3	0.0000+ 0		0.0000+ 0	4.0264- 2
1.0000+ 5 ~ 1.5000+ 5	4.3703+ 0	4.3549+ 0							1.5403- 2	0.0000+ 0		0.0000+ 0	5.2932- 2
1.5000+ 5 ~ 2.0000+ 5	7.1790+ 0	7.1688+ 0							1.0166- 2	0.0000+ 0		0.0000+ 0	6.9226- 2
2.0000+ 5 ~ 3.0000+ 5	4.2395+ 0	4.2322+ 0							7.2916- 3	0.0000+ 0		0.0000+ 0	9.0781- 2
3.0000+ 5 ~ 4.0000+ 5	3.0875+ 0	3.0793+ 0							8.1803- 3	0.0000+ 0		0.0000+ 0	1.1436- 1
4.0000+ 5 ~ 5.0000+ 5	2.8943+ 0	2.8868+ 0							7.5717- 3	0.0000+ 0		0.0000+ 0	1.3241- 1
5.0000+ 5 ~ 6.0000+ 5	2.8236+ 0	2.8162+ 0							7.3857- 3	0.0000+ 0		0.0000+ 0	1.4646- 1
6.0000+ 5 ~ 8.0000+ 5	2.8046+ 0	2.7972+ 0							7.4021- 3	0.0000+ 0		0.0000+ 0	1.6276- 1
8.0000+ 5 ~ 1.0000+ 6	2.8432+ 0	2.8356+ 0							7.6110- 3	0.0000+ 0		0.0000+ 0	1.8139- 1
1.0000+ 6 ~ 1.5000+ 6	3.0323+ 0	2.9914+ 0	2.8798- 2						8.4446- 3	3.0000- 3		0.0000+ 0	2.1874- 1
1.5000+ 6 ~ 2.0000+ 6	3.2496+ 0	2.6319+ 0	6.0327- 1						5.9114- 3	9.0000- 3		0.0000+ 0	3.0565- 1
2.0000+ 6 ~ 3.0000+ 6	3.4134+ 0	2.4764+ 0	8.8713- 1						5.2459- 3	4.4000- 2		0.0000+ 0	4.1466- 1
3.0000+ 6 ~ 4.0000+ 6	3.4863+ 0	2.2168+ 0	1.0846+ 0						3.5510- 3	1.8100- 1		0.0000+ 0	5.5484- 1
4.0000+ 6 ~ 5.0000+ 6	3.4893+ 0	2.0918+ 0	1.0458+ 0						2.3890- 3	3.4750- 1		1.5750- 3	6.5375- 1
5.0000+ 6 ~ 6.0000+ 6	3.4494+ 0	1.9998+ 0	9.7377- 1						1.9834- 3	4.6000- 1		1.2800- 2	7.1724- 1
6.0000+ 6 ~ 8.0000+ 6	3.2917+ 0	1.8439+ 0	8.8130- 1						1.6756- 3	5.3500- 1		2.9225- 2	7.7429- 1
8.0000+ 6 ~ 1.0000+ 7	2.9899+ 0	1.6059+ 0	7.7165- 1						1.1557- 3	5.6000- 1		5.1150- 2	8.0972- 1
1.0000+ 7 ~ 1.5000+ 7	2.5327+ 0	1.2949+ 0	7.0306- 1	3.4536- 3					5.8548- 4	4.4200- 1		8.8960- 2	8.0864- 1
1.5000+ 7 ~ 2.0000+ 7	2.2331+ 0	9.6182- 1	8.1270- 1	9.9330- 2					2.0807- 4	2.1500- 1		1.4370- 1	7.9481- 1

CROSS SECTION

MATERIAL =2262

FE-56

ENERGY	TOTAL	ELASTIC	INELA	(N.2N)	(N.3N)	FISSION	(N.NA)	(N.NP)	CAPTURE	(N.P)	(N.D)	(N.A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	2.1163+ 1	1.2459+ 1							8.7099+ 0			0.0000+ 0	1.6388- 2
1.0000- 2 ~ 1.5000- 2	1.6500+ 1	1.2459+ 1							4.0408+ 0			0.0000+ 0	1.7281- 2
1.5000- 2 ~ 2.0000- 2	1.5867+ 1	1.2459+ 1							3.3976+ 0			0.0000+ 0	1.7532- 2
2.0000- 2 ~ 3.0000- 2	1.5319+ 1	1.2468+ 1							2.8602+ 0			0.0000+ 0	1.7792- 2
3.0000- 2 ~ 4.0000- 2	1.4867+ 1	1.2459+ 1							2.4078+ 0			0.0000+ 0	1.8043- 2
4.0000- 2 ~ 5.0000- 2	1.4576+ 1	1.2459+ 1							2.1172+ 0			0.0000+ 0	1.8230- 2
5.0000- 2 ~ 6.0000- 2	1.4372+ 1	1.2459+ 1							1.9123+ 0			0.0000+ 0	1.8378- 2
6.0000- 2 ~ 8.0000- 2	1.4160+ 1	1.2459+ 1							1.7014+ 0			0.0000+ 0	1.8566- 2
8.0000- 2 ~ 1.0000- 1	1.3956+ 1	1.2459+ 1							1.4975+ 0			0.0000+ 0	1.8741- 2
1.0000- 1 ~ 1.5000- 1	1.3738+ 1	1.2459+ 1							1.2788+ 0			0.0000+ 0	1.8980- 2
1.5000- 1 ~ 2.0000- 1	1.3533+ 1	1.2458+ 1							1.0748+ 0			0.0000+ 0	1.9231- 2
2.0000- 1 ~ 3.0000- 1	1.3360+ 1	1.2458+ 1							9.0215- 1			0.0000+ 0	1.9492- 2
3.0000- 1 ~ 4.0000- 1	1.3217+ 1	1.2457+ 1							7.5962- 1			0.0000+ 0	1.9743- 2
4.0000- 1 ~ 5.0000- 1	1.3127+ 1	1.2457+ 1							6.6972- 1			0.0000+ 0	1.9929- 2
5.0000- 1 ~ 6.0000- 1	1.3062+ 1	1.2456+ 1							6.0627- 1			0.0000+ 0	2.0078- 2
6.0000- 1 ~ 8.0000- 1	1.2993+ 1	1.2455+ 1							5.3719- 1			0.0000+ 0	2.0255- 2
8.0000- 1 ~ 1.0000+ 0	1.2928+ 1	1.2454+ 1							4.7369- 1			0.0000+ 0	2.0441- 2
1.0000+ 0 ~ 1.5000+ 0	1.2855+ 1	1.2452+ 1							4.0306- 1			0.0000+ 0	2.0680- 2
1.5000+ 0 ~ 2.0000+ 0	1.2789+ 1	1.2449+ 1							3.3981- 1			0.0000+ 0	2.0931- 2
2.0000+ 0 ~ 3.0000+ 0	1.2730+ 1	1.2445+ 1							2.8465- 1			0.0000+ 0	2.1192- 2
3.0000+ 0 ~ 4.0000+ 0	1.2679+ 1	1.2439+ 1							2.3992- 1			0.0000+ 0	2.1443- 2
4.0000+ 0 ~ 5.0000+ 0	1.2645+ 1	1.2434+ 1							2.1113- 1			0.0000+ 0	2.1629- 2
5.0000+ 0 ~ 6.0000+ 0	1.2618+ 1	1.2428+ 1							1.9045- 1			0.0000+ 0	2.1778- 2
6.0000+ 0 ~ 8.0000+ 0	1.2588+ 1	1.2419+ 1							1.6910- 1			0.0000+ 0	2.1954- 2
8.0000+ 0 ~ 1.0000+ 1	1.2557+ 1	1.2408+ 1							1.4864- 1			0.0000+ 0	2.2141- 2
1.0000+ 1 ~ 1.5000+ 1	1.2514+ 1	1.2388+ 1							1.2604- 1			0.0000+ 0	2.2380- 2
1.5000+ 1 ~ 2.0000+ 1	1.2466+ 1	1.2360+ 1							1.0593- 1			0.0000+ 0	2.2631- 2
2.0000+ 1 ~ 3.0000+ 1	1.2406+ 1	1.2318+ 1							8.8075- 2			0.0000+ 0	2.2891- 2
3.0000+ 1 ~ 4.0000+ 1	1.2336+ 1	1.2263+ 1							7.3674- 2			0.0000+ 0	2.3142- 2
4.0000+ 1 ~ 5.0000+ 1	1.2272+ 1	1.2208+ 1							6.4166- 2			0.0000+ 0	2.3329- 2
5.0000+ 1 ~ 6.0000+ 1	1.2211+ 1	1.2154+ 1							5.7501- 2			0.0000+ 0	2.3477- 2
6.0000+ 1 ~ 8.0000+ 1	1.2125+ 1	1.2074+ 1							5.0423- 2			0.0000+ 0	2.3654- 2
8.0000+ 1 ~ 1.0000+ 2	1.2013+ 1	1.1970+ 1							4.3515- 2			0.0000+ 0	2.3840- 2
1.0000+ 2 ~ 1.5000+ 2	1.1830+ 1	1.1794+ 1							3.5978- 2			0.0000+ 0	2.4079- 2
1.5000+ 2 ~ 2.0000+ 2	1.1582+ 1	1.1559+ 1							2.8961- 2			0.0000+ 0	2.4330- 2
2.0000+ 2 ~ 3.0000+ 2	1.1241+ 1	1.1218+ 1							2.2750- 2			0.0000+ 0	2.4591- 2
3.0000+ 2 ~ 4.0000+ 2	1.0828+ 1	1.0810+ 1							1.7690- 2			0.0000+ 0	2.4842- 2
4.0000+ 2 ~ 5.0000+ 2	1.0456+ 1	1.0441+ 1							1.4375- 2			0.0000+ 0	2.5028- 2
5.0000+ 2 ~ 6.0000+ 2	1.0119+ 1	1.0107+ 1							1.2049- 2			0.0000+ 0	2.5177- 2
6.0000+ 2 ~ 8.0000+ 2	9.6740+ 0	9.6643+ 0							9.6897- 3			0.0000+ 0	2.5354- 2
8.0000+ 2 ~ 1.0000+ 3	9.1592+ 0	9.1515+ 0							7.7615- 3			0.0000+ 0	2.5540- 2
1.0000+ 3 ~ 1.5000+ 3	8.8878+ 0	8.4804+ 0							4.0738- 1			0.0000+ 0	2.5779- 2
1.5000+ 3 ~ 2.0000+ 3	7.6733+ 0	7.6699+ 0							3.4245- 3			0.0000+ 0	2.6030- 2
2.0000+ 3 ~ 3.0000+ 3	6.8818+ 0	6.8790+ 0							2.8093- 3			0.0000+ 0	2.6291- 2
3.0000+ 3 ~ 4.0000+ 3	6.1638+ 0	6.1625+ 0							1.2717- 3			0.0000+ 0	2.6542- 2
4.0000+ 3 ~ 5.0000+ 3	5.6716+ 0	5.6707+ 0							8.8892- 4			0.0000+ 0	2.6728- 2
5.0000+ 3 ~ 6.0000+ 3	5.3026+ 0	5.3019+ 0							6.8114- 4			0.0000+ 0	2.6877- 2
6.0000+ 3 ~ 8.0000+ 3	4.8150+ 0	4.8145+ 0							5.2263- 4			0.0000+ 0	2.7053- 2
8.0000+ 3 ~ 1.0000+ 4	4.2397+ 0	4.2393+ 0							4.2964- 4			0.0000+ 0	2.7240- 2
1.0000+ 4 ~ 1.5000+ 4	3.4258+ 0	3.4252+ 0							5.8116- 4			0.0000+ 0	2.7479- 2
1.5000+ 4 ~ 2.0000+ 4	2.2145+ 0	2.2129+ 0							1.5590- 3			0.0000+ 0	2.7730- 2
2.0000+ 4 ~ 3.0000+ 4	1.7950+ 1	1.7927+ 1							2.2507- 2			0.0000+ 0	2.7991- 2
3.0000+ 4 ~ 4.0000+ 4	9.7811+ 0	9.7638+ 0							1.7311- 2			0.0000+ 0	2.8241- 2
4.0000+ 4 ~ 5.0000+ 4	5.4347+ 0	5.4299+ 0							4.8167- 3			0.0000+ 0	2.8426- 2
5.0000+ 4 ~ 6.0000+ 4	4.5561+ 0	4.5392+ 0							1.6848- 2			0.0000+ 0	3.1494- 2
6.0000+ 4 ~ 8.0000+ 4	4.1990+ 0	4.1918+ 0							7.2613- 3			0.0000+ 0	3.9099- 2
8.0000+ 4 ~ 1.0000+ 5	7.5175+ 0	7.4988+ 0							1.8693- 2			0.0000+ 0	4.7134- 2
1.0000+ 5 ~ 1.5000+ 5	4.7590+ 0	4.7505+ 0							8.5583- 3			0.0000+ 0	6.2421- 2
1.5000+ 5 ~ 2.0000+ 5	5.2750+ 0	5.2672+ 0							7.8608- 3			0.0000+ 0	8.3858- 2
2.0000+ 5 ~ 3.0000+ 5	3.9441+ 0	3.9372+ 0							6.9342- 3			0.0000+ 0	1.1367- 1
3.0000+ 5 ~ 4.0000+ 5	2.7842+ 0	2.7789+ 0							5.2210- 3			0.0000+ 0	1.4632- 1
4.0000+ 5 ~ 5.0000+ 5	2.6387+ 0	2.6938+ 0							4.9450- 3			0.0000+ 0	1.7183- 1
5.0000+ 5 ~ 6.0000+ 5	2.5808+ 0	2.5756+ 0							5.1886- 3			0.0000+ 0	1.8963- 1
6.0000+ 5 ~ 8.0000+ 5	2.5584+ 0	2.5523+ 0							6.1282- 3			0.0000+ 0	2.0769- 1
8.0000+ 5 ~ 1.0000+ 6	2.5822+ 0	2.3812+ 0	1.9635- 1						3.7931- 3			0.0000+ 0	2.3096- 1
1.0000+ 6 ~ 1.5000+ 6	2.7886+ 0	2.2144+ 0	5.7090- 1						2.1768- 3			0.0000+ 0	2.7218- 1
1.5000+ 6 ~ 2.0000+ 6	3.0913+ 0	2.3502+ 0	7.3808- 1						2.2074- 3			0.0000+ 0	3.2285- 1
2.0000+ 6 ~ 3.0000+ 6	3.4043+ 0	2.5028+ 0	8.9889- 1						2.4296- 3			0.0000+ 0	4.2204- 1
3.0000+ 6 ~ 4.0000+ 6	3.5360+ 0	2.3381+ 0	1.1956+ 0						2.2246- 3	4.5000- 6		0.0000+ 0	5.7451- 1
4.0000+ 6 ~ 5.0000+ 6	3.5148+ 0	2.1481+ 0	1.3690+ 0						1.7786- 3	2.6950- 4		1.5750- 3	6.8181- 1
5.0000+ 6 ~ 6.0000+ 6	3.4697+ 0	2.0256+ 0	1.4232+ 0						1.4722- 3	6.2500- 3		1.2600- 2	7.3677- 1
6.0000+ 6 ~ 8.0000+ 6	3.3636+ 0	1.8674+ 0	1.4373+ 0						1.0519- 3	2.8225- 2		2.9225- 2	7.7866- 1
8.0000+ 6 ~ 1.0000+ 7	3.0885+ 0	1.6417+ 0	1.3338+ 0						6.3944- 4	6.0750- 2		5.1150- 2	8.0038- 1
1.0000+ 7 ~ 1.5000+ 7	2.6569+ 0	1.3106+ 0	9.5053- 1	2.0519- 1					2.6038- 4	1.0060- 1		8.8960- 2	8.1232- 1
1.5000+ 7 ~ 2.0000+ 7	2.3213+ 0	1.0042+ 0	9.5150- 1	7.5500- 1					3.3017- 5	6.6500- 2		1.4370- 1	8.2720- 1

CROSS SECTION

MATERIAL =2263 FE-57

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	7.8217+ 0	2.0211- 1							7.6196+ 0				1.2698- 2
1.0000- 2 ~ 1.5000- 2	3.7398+ 0	2.0211- 1							3.5377+ 0				1.2880- 2
1.5000- 2 ~ 2.0000- 2	3.1767+ 0	2.0211- 1							2.9746+ 0				1.2931- 2
2.0000- 2 ~ 3.0000- 2	2.7043+ 0	2.0210- 1							2.5014+ 0				1.2984- 2
3.0000- 2 ~ 4.0000- 2	2.3066+ 0	2.0210- 1							2.1033+ 0				1.3035- 2
4.0000- 2 ~ 5.0000- 2	2.0628+ 0	2.0210- 1							1.8599+ 0				1.3073- 2
5.0000- 2 ~ 6.0000- 2	1.8802+ 0	2.0210- 1							1.6774+ 0				1.3103- 2
6.0000- 2 ~ 8.0000- 2	1.6906+ 0	2.0210- 1							1.4874+ 0				1.3139- 2
8.0000- 2 ~ 1.0000- 1	1.5182+ 0	2.0210- 1							1.3151+ 0				1.3177- 2
1.0000- 1 ~ 1.5000- 1	1.3194+ 0	2.0209- 1							1.1163+ 0				1.3226- 2
1.5000- 1 ~ 2.0000- 1	1.1430+ 0	2.0208- 1							9.4125- 1				1.3277- 2
2.0000- 1 ~ 3.0000- 1	9.9183- 1	2.0207- 1							7.8945- 1				1.3330- 2
3.0000- 1 ~ 4.0000- 1	8.6781- 1	2.0206- 1							6.6654- 1				1.3381- 2
4.0000- 1 ~ 5.0000- 1	7.8933- 1	2.0204- 1							5.8654- 1				1.3419- 2
5.0000- 1 ~ 6.0000- 1	7.3205- 1	2.0203- 1							5.2975- 1				1.3449- 2
6.0000- 1 ~ 8.0000- 1	6.7291- 1	2.0201- 1							4.7158- 1				1.3485- 2
8.0000- 1 ~ 1.0000+ 0	6.1729- 1	2.0198- 1							4.1461- 1				1.3523- 2
1.0000+ 0 ~ 1.5000+ 0	5.5517- 1	2.0193- 1							3.5350- 1				1.3571- 2
1.5000+ 0 ~ 2.0000+ 0	5.0000- 1	2.0186- 1							2.9784- 1				1.3622- 2
2.0000+ 0 ~ 3.0000+ 0	4.5160- 1	2.0176- 1							2.5005- 1				1.3675- 2
3.0000+ 0 ~ 4.0000+ 0	4.1246- 1	2.0162- 1							2.1062- 1				1.3726- 2
4.0000+ 0 ~ 5.0000+ 0	3.8696- 1	2.0148- 1							1.8538- 1				1.3764- 2
5.0000+ 0 ~ 6.0000+ 0	3.6930- 1	2.0134- 1							1.6838- 1				1.3795- 2
6.0000+ 0 ~ 8.0000+ 0	3.5011- 1	2.0113- 1							1.4898- 1				1.3830- 2
8.0000+ 0 ~ 1.0000+ 1	3.3207- 1	2.0085- 1							1.3115- 1				1.3868- 2
1.0000+ 1 ~ 1.5000+ 1	3.1228- 1	2.0036- 1							1.1202- 1				1.3917- 2
1.5000+ 1 ~ 2.0000+ 1	2.9396- 1	1.9966- 1							9.4237- 2				1.3968- 2
2.0000+ 1 ~ 3.0000+ 1	2.7788- 1	1.9861- 1							7.9316- 2				1.4021- 2
3.0000+ 1 ~ 4.0000+ 1	2.6400- 1	1.9721- 1							6.6761- 2				1.4072- 2
4.0000+ 1 ~ 5.0000+ 1	2.5480- 1	1.9681- 1							5.9119- 2				1.4110- 2
5.0000+ 1 ~ 6.0000+ 1	2.4785- 1	1.9441- 1							5.3353- 2				1.4140- 2
6.0000+ 1 ~ 8.0000+ 1	2.3972- 1	1.9231- 1							4.7387- 2				1.4176- 2
8.0000+ 1 ~ 1.0000+ 2	2.3144- 1	1.8952- 1							4.2009- 2				1.4214- 2
1.0000+ 2 ~ 1.5000+ 2	2.2046- 1	1.8464- 1							3.5786- 2				1.4263- 2
1.5000+ 2 ~ 2.0000+ 2	2.0805- 1	1.7769- 1							3.0416- 2				1.4314- 2
2.0000+ 2 ~ 3.0000+ 2	1.9300- 1	1.6730- 1							2.5670- 2				1.4367- 2
3.0000+ 2 ~ 4.0000+ 2	1.7549- 1	1.6367- 1							2.1959- 2				1.4416- 2
4.0000+ 2 ~ 5.0000+ 2	1.5957- 1	1.3999- 1							1.9557- 2				1.4456- 2
5.0000+ 2 ~ 6.0000+ 2	1.4452- 1	1.2661- 1							1.7902- 2				1.4486- 2
6.0000+ 2 ~ 8.0000+ 2	1.2346- 1	1.0720- 1							1.6280- 2				1.4522- 2
8.0000+ 2 ~ 1.0000+ 3	9.7331- 2	8.2537- 2							1.4770- 2				1.4560- 2
1.0000+ 3 ~ 1.5000+ 3	5.9674- 2	4.6195- 2							1.3473- 2				1.4608- 2
1.5000+ 3 ~ 2.0000+ 3	3.2771- 1	5.5710- 2							2.7198- 1				1.4659- 2
2.0000+ 3 ~ 3.0000+ 3	2.9208- 1	2.7742- 1							1.4647- 2				1.4712- 2
3.0000+ 3 ~ 4.0000+ 3	3.2915+ 1	3.2795+ 1							1.2031- 1				1.4763- 2
4.0000+ 3 ~ 5.0000+ 3	2.8656+ 1	2.8535+ 1							1.2184- 1				1.4801- 2
5.0000+ 3 ~ 6.0000+ 3	4.0492+ 1	4.0397+ 1							9.5492- 2				1.4832- 2
6.0000+ 3 ~ 8.0000+ 3	9.5630+ 1	9.5300+ 1							3.3051- 1				1.4867- 2
8.0000+ 3 ~ 1.0000+ 4	6.6673+ 0	6.6584+ 0							8.8507- 3				1.4905- 2
1.0000+ 4 ~ 1.5000+ 4	2.4854+ 0	2.4355+ 0	2.8769- 3						4.7081- 2				1.4954- 2
1.5000+ 4 ~ 2.0000+ 4	1.6688+ 0	9.5353- 1	6.8803- 1						2.7197- 2				1.5005- 2
2.0000+ 4 ~ 3.0000+ 4	2.1220+ 1	1.5922+ 1	5.2373+ 0						6.0713- 2				1.8936- 2
3.0000+ 4 ~ 4.0000+ 4	1.4260+ 1	1.0461+ 1	3.7646+ 0						3.4427- 2				1.9935- 2
4.0000+ 4 ~ 5.0000+ 4	1.8793+ 1	1.4604+ 1	4.1541+ 0						3.4025- 2				2.2166- 2
5.0000+ 4 ~ 6.0000+ 4	1.0759+ 1	1.0215+ 1	5.3035- 1						1.3305- 2				2.5193- 2
6.0000+ 4 ~ 8.0000+ 4	1.9451+ 1	1.7955+ 1	1.4856+ 0						1.0396- 2				3.0486- 2
8.0000+ 4 ~ 1.0000+ 5	8.0826+ 0	7.5365+ 0	5.4014- 1						6.0026- 3				3.6079- 2
1.0000+ 5 ~ 1.5000+ 5	1.3046+ 1	1.1182+ 1	1.8591+ 0						5.0620- 3				4.6504- 2
1.5000+ 5 ~ 2.0000+ 5	9.6886+ 0	9.0912+ 0	5.9631- 1						2.1129- 3				6.2071- 2
2.0000+ 5 ~ 3.0000+ 5	4.1997+ 0	3.4417+ 0	7.4801- 1						8.9714- 3				8.4091- 2
3.0000+ 5 ~ 4.0000+ 5	3.6618+ 0	2.9016+ 0	7.5234- 1						7.0837- 3				1.1010- 1
4.0000+ 5 ~ 5.0000+ 5	3.3803+ 0	2.4906+ 0	8.8255- 1						5.7518- 3				1.3775- 1
5.0000+ 5 ~ 6.0000+ 5	3.2354+ 0	2.2862+ 0	9.4179- 1						5.1911- 3				1.6097- 1
6.0000+ 5 ~ 8.0000+ 5	3.1275+ 0	2.1049+ 0	1.0166+ 0						4.7104- 3				1.9174- 1
8.0000+ 5 ~ 1.0000+ 6	3.0906+ 0	1.9654+ 0	1.1209+ 0						4.0628- 3				2.3581- 1
1.0000+ 6 ~ 1.5000+ 6	3.1323+ 0	1.9090+ 0	1.2197+ 0						3.8409- 3				3.1543- 1
1.5000+ 6 ~ 2.0000+ 6	3.2263+ 0	1.9535+ 0	1.2695+ 0						3.3645- 3				4.2540- 1
2.0000+ 6 ~ 3.0000+ 6	3.3509+ 0	2.1048+ 0	1.2425+ 0						3.4787- 3				5.4480- 1
3.0000+ 6 ~ 4.0000+ 6	3.4678+ 0	2.2608+ 0	1.2033+ 0						3.6274- 3				6.3992- 1
4.0000+ 6 ~ 5.0000+ 6	3.5182+ 0	2.3234+ 0	1.1914+ 0						3.3401- 3				6.9341- 1
5.0000+ 6 ~ 6.0000+ 6	3.4836+ 0	2.3068+ 0	1.1742+ 0						2.6904- 3				7.2891- 1
6.0000+ 6 ~ 8.0000+ 6	3.3419+ 0	2.1916+ 0	1.1478+ 0	7.3011- 4					1.7348- 3				7.6710- 1
8.0000+ 6 ~ 1.0000+ 7	3.0501+ 0	1.9549+ 0	8.8420- 1	2.3825- 1					8.1424- 4				7.9814- 1
1.0000+ 7 ~ 1.5000+ 7	2.6659+ 0	1.5399+ 0	3.6931- 1	7.5820- 1					2.1389- 4				8.1366- 1
1.5000+ 7 ~ 2.0000+ 7	2.3764+ 0	1.1546+ 0	3.0307- 1	9.1840- 1					5.2158- 5				8.2024- 1

CROSS SECTION

MATERIAL =2264

FE-58

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	6.7903+ 0	2.8209+ 0							3.9609+ 0				1.2086- 2
1.0000- 2 ~ 1.5000- 2	4.6624+ 0	2.8209+ 0							1.8390+ 0				1.2184- 2
1.5000- 2 ~ 2.0000- 2	4.3739+ 0	2.8209+ 0							1.5463+ 0				1.2211- 2
2.0000- 2 ~ 3.0000- 2	4.1238+ 0	2.8209+ 0							1.3008+ 0				1.2240- 2
3.0000- 2 ~ 4.0000- 2	3.9235+ 0	2.8209+ 0							1.0937+ 0				1.2267- 2
4.0000- 2 ~ 5.0000- 2	3.7886+ 0	2.8209+ 0							9.6792- 1				1.2288- 2
5.0000- 2 ~ 6.0000- 2	3.6937+ 0	2.8209+ 0							8.7196- 1				1.2304- 2
6.0000- 2 ~ 8.0000- 2	3.6002+ 0	2.8209+ 0							7.7366- 1				1.2323- 2
8.0000- 2 ~ 1.0000- 1	3.5059+ 0	2.8209+ 0							6.8361- 1				1.2344- 2
1.0000- 1 ~ 1.5000- 1	3.4070+ 0	2.8209+ 0							5.8061- 1				1.2370- 2
1.5000- 1 ~ 2.0000- 1	3.3157+ 0	2.8209+ 0							4.8879- 1				1.2398- 2
2.0000- 1 ~ 3.0000- 1	3.2355+ 0	2.8209+ 0							4.1075- 1				1.2426- 2
3.0000- 1 ~ 4.0000- 1	3.1730+ 0	2.8209+ 0							3.4589- 1				1.2454- 2
4.0000- 1 ~ 5.0000- 1	3.1302+ 0	2.8209+ 0							3.0526- 1				1.2474- 2
5.0000- 1 ~ 6.0000- 1	3.0981+ 0	2.8208+ 0							2.7561- 1				1.2490- 2
6.0000- 1 ~ 8.0000- 1	3.0708+ 0	2.8208+ 0							2.4484- 1				1.2510- 2
8.0000- 1 ~ 1.0000+ 0	3.0392+ 0	2.8208+ 0							2.1575- 1				1.2530- 2
1.0000+ 0 ~ 1.5000+ 0	3.0123+ 0	2.8208+ 0							1.8353- 1				1.2556- 2
1.5000+ 0 ~ 2.0000+ 0	2.9929+ 0	2.8208+ 0							1.5509- 1				1.2584- 2
2.0000+ 0 ~ 3.0000+ 0	2.9710+ 0	2.8207+ 0							1.2990- 1				1.2612- 2
3.0000+ 0 ~ 4.0000+ 0	2.9474+ 0	2.8206+ 0							1.0974- 1				1.2640- 2
4.0000+ 0 ~ 5.0000+ 0	2.9267+ 0	2.8205+ 0							9.6531- 2				1.2660- 2
5.0000+ 0 ~ 6.0000+ 0	2.9091+ 0	2.8205+ 0							8.7349- 2				1.2677- 2
6.0000+ 0 ~ 8.0000+ 0	2.8991+ 0	2.8204+ 0							7.7697- 2				1.2696- 2
8.0000+ 0 ~ 1.0000+ 1	2.8893+ 0	2.8202+ 0							6.8375- 2				1.2717- 2
1.0000+ 1 ~ 1.5000+ 1	2.8813+ 0	2.8200+ 0							5.8389- 2				1.2743- 2
1.5000+ 1 ~ 2.0000+ 1	2.8757+ 0	2.8196+ 0							4.9270- 2				1.2770- 2
2.0000+ 1 ~ 3.0000+ 1	2.8699+ 0	2.8190+ 0							4.1514- 2				1.2799- 2
3.0000+ 1 ~ 4.0000+ 1	2.8637+ 0	2.8183+ 0							3.5135- 2				1.2826- 2
4.0000+ 1 ~ 5.0000+ 1	2.8585+ 0	2.8175+ 0							3.1169- 2				1.2847- 2
5.0000+ 1 ~ 6.0000+ 1	2.8536+ 0	2.8168+ 0							2.8367- 2				1.2863- 2
6.0000+ 1 ~ 8.0000+ 1	2.8473+ 0	2.8157+ 0							2.5452- 2				1.2882- 2
8.0000+ 1 ~ 1.0000+ 2	2.8392+ 0	2.8142+ 0							2.2860- 2				1.2903- 2
1.0000+ 2 ~ 1.5000+ 2	2.8334+ 0	2.8115+ 0							2.0725- 2				1.2929- 2
1.5000+ 2 ~ 2.0000+ 2	2.8342+ 0	2.8078+ 0							2.3598- 2				1.2957- 2
2.0000+ 2 ~ 3.0000+ 2	3.1912+ 0	2.8024+ 0							3.8461- 1				1.2985- 2
3.0000+ 2 ~ 4.0000+ 2	5.3664+ 0	2.8062+ 0							2.5668+ 0				1.3013- 2
4.0000+ 2 ~ 5.0000+ 2	2.8235+ 0	2.7869+ 0							3.0454- 2				1.3033- 2
5.0000+ 2 ~ 6.0000+ 2	2.7987+ 0	2.7791+ 0							1.3058- 2				1.3049- 2
6.0000+ 2 ~ 8.0000+ 2	2.7840+ 0	2.7674+ 0							9.5250- 3				1.3069- 2
8.0000+ 2 ~ 1.0000+ 3	2.7668+ 0	2.7516+ 0							7.8043- 3				1.3089- 2
1.0000+ 3 ~ 1.5000+ 3	2.7376+ 0	2.7233+ 0							6.5069- 3				1.3115- 2
1.5000+ 3 ~ 2.0000+ 3	2.6951+ 0	2.6815+ 0							5.5605- 3				1.3143- 2
2.0000+ 3 ~ 3.0000+ 3	2.6283+ 0	2.6153+ 0							4.9033- 3				1.3172- 2
3.0000+ 3 ~ 4.0000+ 3	2.5336+ 0	2.5211+ 0							4.5964- 3				1.3199- 2
4.0000+ 3 ~ 5.0000+ 3	2.4332+ 0	2.4208+ 0							4.8319- 3				1.3219- 2
5.0000+ 3 ~ 6.0000+ 3	2.3380+ 0	2.3214+ 0							9.4164- 3				1.3236- 2
6.0000+ 3 ~ 8.0000+ 3	3.6361+ 0	2.8539+ 0							7.7574- 1				1.3255- 2
8.0000+ 3 ~ 1.0000+ 4	8.8270+ 0	8.7745+ 0							4.7064- 2				1.3276- 2
1.0000+ 4 ~ 1.5000+ 4	3.2433+ 1	3.2321+ 1							1.0839- 1				1.3939- 2
1.5000+ 4 ~ 2.0000+ 4	3.5904+ 0	3.5740+ 0							1.5570- 2				1.5218- 2
2.0000+ 4 ~ 3.0000+ 4	2.0063+ 0	1.9656+ 0							4.0697- 2				1.7343- 2
3.0000+ 4 ~ 4.0000+ 4	3.7299+ 0	3.6878+ 0							4.2171- 2				2.0459- 2
4.0000+ 4 ~ 5.0000+ 4	3.5931+ 1	3.5917+ 1							1.4492- 2				2.3657- 2
5.0000+ 4 ~ 6.0000+ 4	9.3647+ 0	9.3427+ 0							2.1972- 2				2.6955- 2
6.0000+ 4 ~ 8.0000+ 4	5.7555+ 0	5.7252+ 0							3.0324- 2				3.1993- 2
8.0000+ 4 ~ 1.0000+ 5	1.2118+ 1	1.2097+ 1							2.1489- 2				3.8738- 2
1.0000+ 5 ~ 1.5000+ 5	6.8858+ 0	6.8829+ 0							2.9393- 3				5.0677- 2
1.5000+ 5 ~ 2.0000+ 5	5.9969+ 0	5.9944+ 0							2.4804- 3				6.5900- 2
2.0000+ 5 ~ 3.0000+ 5	5.2063+ 0	5.2041+ 0							2.2394- 3				8.5788- 2
3.0000+ 5 ~ 4.0000+ 5	4.5656+ 0	4.5635+ 0							2.0836- 3				1.0732- 1
4.0000+ 5 ~ 5.0000+ 5	4.1732+ 0	4.1712+ 0							2.0192- 3				1.2375- 1
5.0000+ 5 ~ 6.0000+ 5	3.9176+ 0	3.9154+ 0							2.1042- 3				1.3661- 1
6.0000+ 5 ~ 8.0000+ 5	3.6864+ 0	3.6841+ 0							2.3064- 3				1.5188- 1
8.0000+ 5 ~ 1.0000+ 6	3.5169+ 0	3.2879+ 0	2.2628- 1						1.5216- 3				1.8169- 1
1.0000+ 6 ~ 1.5000+ 6	3.4212+ 0	2.9388+ 0	4.7981- 1						8.9788- 4				2.3998- 1
1.5000+ 6 ~ 2.0000+ 6	3.3835+ 0	2.7203+ 0	6.6189- 1						9.2182- 4			0.0000+ 0	3.1918- 1
2.0000+ 6 ~ 3.0000+ 6	3.4296+ 0	2.5181+ 0	9.1069- 1						8.4602- 4			0.0000+ 0	4.4438- 1
3.0000+ 6 ~ 4.0000+ 6	3.5279+ 0	2.3990+ 0	1.1283+ 0						7.5390- 4			0.0000+ 0	5.7098- 1
4.0000+ 6 ~ 5.0000+ 6	3.5966+ 0	2.3272+ 0	1.2684+ 0						7.2127- 4			0.0000+ 0	6.5795- 1
5.0000+ 6 ~ 6.0000+ 6	3.5999+ 0	2.2382+ 0	1.3608+ 0						6.5448- 4			0.0000+ 0	7.2366- 1
6.0000+ 6 ~ 8.0000+ 6	3.4849+ 0	2.0657+ 0	1.4180+ 0						5.1179- 4	0.0000+ 0		3.8000- 4	7.8713- 1
8.0000+ 6 ~ 1.0000+ 7	3.2355+ 0	1.8096+ 0	1.4215+ 0						3.8292- 4	1.2500- 4		3.5625- 3	8.2415- 1
1.0000+ 7 ~ 1.5000+ 7	2.7921+ 0	1.4116+ 0	7.8539- 1	5.7682- 1					1.2765- 4	8.8000- 3		1.2020- 2	8.2157- 1
1.5000+ 7 ~ 2.0000+ 7	2.5563+ 0	1.1940+ 0	1.9434- 1	1.1300+ 0					1.6384- 5	2.1000- 2		1.7000- 2	8.0812- 1

CROSS SECTION

MATERIAL =2271

CO-59

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.2102+ 2	6.0005+ 0							1.1602+ 2			0.0000+ 0	1.1446- 2
1.0000- 2 ~ 1.5000- 2	5.9409+ 1	8.0005+ 0							5.3409+ 1			0.0000+ 0	1.1453- 2
1.5000- 2 ~ 2.0000- 2	5.0910+ 1	5.0006+ 0							4.4909+ 1			0.0000+ 0	1.1455- 2
2.0000- 2 ~ 3.0000- 2	4.3797+ 1	6.0006+ 0							3.7797+ 1			0.0000+ 0	1.1457- 2
3.0000- 2 ~ 4.0000- 2	3.7807+ 1	5.0007+ 0							3.1806+ 1			0.0000+ 0	1.1459- 2
4.0000- 2 ~ 5.0000- 2	3.3976+ 1	6.0007+ 0							2.7975+ 1			0.0000+ 0	1.1461- 2
5.0000- 2 ~ 6.0000- 2	3.1292+ 1	6.0008+ 0							2.5292+ 1			0.0000+ 0	1.1462- 2
6.0000- 2 ~ 8.0000- 2	2.8501+ 1	6.0009+ 0							2.2601+ 1			0.0000+ 0	1.1464- 2
8.0000- 2 ~ 1.0000- 1	2.5832+ 1	6.0010+ 0							1.9831+ 1			0.0000+ 0	1.1465- 2
1.0000- 1 ~ 1.5000- 1	2.2913+ 1	6.0013+ 0							1.6912+ 1			0.0000+ 0	1.1467- 2
1.5000- 1 ~ 2.0000- 1	2.0225+ 1	6.0016+ 0							1.4224+ 1			0.0000+ 0	1.1469- 2
2.0000- 1 ~ 3.0000- 1	1.7958+ 1	6.0021+ 0							1.1956+ 1			0.0000+ 0	1.1471- 2
3.0000- 1 ~ 4.0000- 1	1.6084+ 1	6.0028+ 0							1.0081+ 1			0.0000+ 0	1.1473- 2
4.0000- 1 ~ 5.0000- 1	1.4917+ 1	6.0035+ 0							8.9131+ 0			0.0000+ 0	1.1475- 2
5.0000- 1 ~ 6.0000- 1	1.4056+ 1	6.0042+ 0							8.0518+ 0			0.0000+ 0	1.1476- 2
6.0000- 1 ~ 8.0000- 1	1.3159+ 1	6.0052+ 0							7.1541+ 0			0.0000+ 0	1.1477- 2
8.0000- 1 ~ 1.0000+ 0	1.2346+ 1	6.0067+ 0							6.3390+ 0			0.0000+ 0	1.1479- 2
1.0000+ 0 ~ 1.5000+ 0	1.1411+ 1	6.0094+ 0							5.4019+ 0			0.0000+ 0	1.1481- 2
1.5000+ 0 ~ 2.0000+ 0	1.0603+ 1	6.0134+ 0							4.5900+ 0			0.0000+ 0	1.1483- 2
2.0000+ 0 ~ 3.0000+ 0	9.8932+ 0	6.0200+ 0							3.8731+ 0			0.0000+ 0	1.1485- 2
3.0000+ 0 ~ 4.0000+ 0	9.3402+ 0	6.0299+ 0							3.3103+ 0			0.0000+ 0	1.1487- 2
4.0000+ 0 ~ 5.0000+ 0	8.9857+ 0	6.0408+ 0							2.9448+ 0			0.0000+ 0	1.1489- 2
5.0000+ 0 ~ 6.0000+ 0	8.7441+ 0	6.0530+ 0							2.6910+ 0			0.0000+ 0	1.1490- 2
6.0000+ 0 ~ 8.0000+ 0	8.5124+ 0	6.0741+ 0							2.4383+ 0			0.0000+ 0	1.1491- 2
8.0000+ 0 ~ 1.0000+ 1	8.3035+ 0	6.1063+ 0							2.1972+ 0			0.0000+ 0	1.1493- 2
1.0000+ 1 ~ 1.5000+ 1	8.1346+ 0	6.1787+ 0							1.9559+ 0			0.0000+ 0	1.1495- 2
1.5000+ 1 ~ 2.0000+ 1	8.0771+ 0	6.3140+ 0							1.7630+ 0			0.0000+ 0	1.1497- 2
2.0000+ 1 ~ 3.0000+ 1	8.2746+ 0	6.6236+ 0							1.6510+ 0			0.0000+ 0	1.1499- 2
3.0000+ 1 ~ 4.0000+ 1	8.9024+ 0	7.2590+ 0							1.6434+ 0			0.0000+ 0	1.1501- 2
4.0000+ 1 ~ 5.0000+ 1	1.0035+ 1	8.2840+ 0							1.7512+ 0			0.0000+ 0	1.1502- 2
5.0000+ 1 ~ 6.0000+ 1	1.1919+ 1	9.9435+ 0							1.9756+ 0			0.0000+ 0	1.1504- 2
6.0000+ 1 ~ 8.0000+ 1	1.7633+ 1	1.4971+ 1							2.6623+ 0			0.0000+ 0	1.1505- 2
8.0000+ 1 ~ 1.0000+ 2	3.9892+ 1	3.4774+ 1							5.1176+ 0			0.0000+ 0	1.1507- 2
1.0000+ 2 ~ 1.5000+ 2	1.7117+ 3	1.5677+ 3							1.4405+ 2			0.0000+ 0	1.1509- 2
1.5000+ 2 ~ 2.0000+ 2	8.8090+ 1	8.2984+ 1							5.1062+ 0			0.0000+ 0	1.1511- 2
2.0000+ 2 ~ 3.0000+ 2	1.6631+ 1	1.6129+ 1							5.0144- 1			0.0000+ 0	1.1513- 2
3.0000+ 2 ~ 4.0000+ 2	7.8153+ 0	7.6888+ 0							1.2669- 1			0.0000+ 0	1.1616- 2
4.0000+ 2 ~ 5.0000+ 2	5.4093+ 0	5.3478+ 0							6.1478- 2			0.0000+ 0	1.1516- 2
5.0000+ 2 ~ 6.0000+ 2	4.2218+ 0	4.1835+ 0							3.8310- 2			0.0000+ 0	1.1518- 2
6.0000+ 2 ~ 8.0000+ 2	3.2365+ 0	3.2123+ 0							2.4143- 2			0.0000+ 0	1.1519- 2
8.0000+ 2 ~ 1.0000+ 3	2.4589+ 0	2.4430+ 0							1.5914- 2			0.0000+ 0	1.1521- 2
1.0000+ 3 ~ 1.5000+ 3	1.7612+ 0	1.7353+ 0							2.5910- 2			0.0000+ 0	1.1522- 2
1.5000+ 3 ~ 2.0000+ 3	1.2270+ 0	1.2178+ 0							9.1928- 3			0.0000+ 0	1.1625- 2
2.0000+ 3 ~ 3.0000+ 3	3.5294+ 0	3.4494+ 0							7.9974- 2			0.0000+ 0	1.1599- 2
3.0000+ 3 ~ 4.0000+ 3	5.4331+ 0	5.3620+ 0							7.1170- 2			0.0000+ 0	1.1713- 2
4.0000+ 3 ~ 5.0000+ 3	1.4429+ 2	1.4394+ 2							3.4222- 1			0.0000+ 0	1.1799- 2
5.0000+ 3 ~ 6.0000+ 3	1.1445+ 2	1.1429+ 2							1.5573- 1			0.0000+ 0	1.1929- 2
6.0000+ 3 ~ 8.0000+ 3	1.6871+ 1	1.6796+ 1							7.5338- 2			0.0000+ 0	1.2168- 2
8.0000+ 3 ~ 1.0000+ 4	1.3699+ 1	1.3582+ 1							1.1750- 1			0.0000+ 0	1.2421- 2
1.0000+ 4 ~ 1.5000+ 4	7.9726+ 0	7.9109+ 0							6.1658- 2			0.0000+ 0	1.3072- 2
1.5000+ 4 ~ 2.0000+ 4	8.8025+ 0	8.7543+ 0							4.8224- 2			0.0000+ 0	1.3925- 2
2.0000+ 4 ~ 3.0000+ 4	1.5238+ 1	1.5196+ 1							4.1667- 2			0.0000+ 0	1.5339- 2
3.0000+ 4 ~ 4.0000+ 4	1.2145+ 1	1.2113+ 1							3.1649- 2			0.0000+ 0	1.7402- 2
4.0000+ 4 ~ 5.0000+ 4	6.9410+ 0	6.9150+ 0							2.6042- 2			0.0000+ 0	1.9589- 2
5.0000+ 4 ~ 6.0000+ 4	1.0252+ 1	1.0220+ 1							3.1473- 2			0.0000+ 0	2.2053- 2
6.0000+ 4 ~ 8.0000+ 4	6.9005+ 0	6.8801+ 0							2.0383- 2			0.0000+ 0	2.5578- 2
8.0000+ 4 ~ 1.0000+ 5	9.1015+ 0	9.0876+ 0							1.3839- 2			0.0000+ 0	2.9986- 2
1.0000+ 5 ~ 1.5000+ 5	7.8620+ 0	7.8400+ 0							2.2012- 2			0.0000+ 0	3.8704- 2
1.5000+ 5 ~ 2.0000+ 5	6.6338+ 0	6.6162+ 0							1.7598- 2			0.0000+ 0	4.8911- 2
2.0000+ 5 ~ 3.0000+ 5	5.6236+ 0	5.6094+ 0							1.4272- 2			0.0000+ 0	6.1824- 2
3.0000+ 5 ~ 4.0000+ 5	4.8212+ 0	4.8094+ 0							1.1799- 2			0.0000+ 0	7.5639- 2
4.0000+ 5 ~ 5.0000+ 5	4.3008+ 0	4.2904+ 0							1.0245- 2			0.0000+ 0	8.5913- 2
5.0000+ 5 ~ 6.0000+ 5	3.9996+ 0	3.9902+ 0							9.4700- 3			0.0000+ 0	9.6328- 2
6.0000+ 5 ~ 8.0000+ 5	3.7653+ 0	3.7562+ 0							9.0405- 3	2.3369- 9		0.0000+ 0	1.1172- 1
8.0000+ 5 ~ 1.0000+ 6	3.5317+ 0	3.5231+ 0							8.6066- 3	6.1028- 6		0.0000+ 0	1.2799- 1
1.0000+ 6 ~ 1.5000+ 6	3.3711+ 0	3.3039+ 0	5.8666- 2						8.2565- 3	2.8649- 5		0.0000+ 0	1.8913- 1
1.5000+ 6 ~ 2.0000+ 6	3.3475+ 0	3.0243+ 0	3.1447- 1						7.9274- 3	5.5986- 5		0.0000+ 0	2.5819- 1
2.0000+ 6 ~ 3.0000+ 6	3.4296+ 0	2.7266+ 0	6.9731- 1						6.2599- 3	1.5516- 4		0.0000+ 0	4.0391- 1
3.0000+ 6 ~ 4.0000+ 6	3.5543+ 0	2.6098+ 0	9.3864- 1						3.9368- 3	1.7125- 3		0.0000+ 0	5.4382- 1
4.0000+ 6 ~ 5.0000+ 6	3.6201+ 0	2.5521+ 0	1.0592+ 0						2.5822- 3	6.0000- 3		0.0000+ 0	6.3535- 1
5.0000+ 6 ~ 6.0000+ 6	3.6426+ 0	2.5253+ 0	1.1048+ 0						1.7096- 3	1.0000- 2		5.0000- 4	6.9698- 1
6.0000+ 6 ~ 8.0000+ 6	3.5928+ 0	2.4161+ 0	1.1543+ 0						1.0141- 3	1.6200- 2		4.2500- 3	7.5601- 1
8.0000+ 6 ~ 1.0000+ 7	3.4051+ 0	2.1932+ 0	1.1684+ 0						5.3124- 4	3.0275- 2		1.2000- 2	7.9596- 1
1.0000+ 7 ~ 1.5000+ 7	2.9305+ 0	1.7483+ 0	7.5961- 1	3.5580- 1					1.7370- 4	4.6030- 2		2.4900- 2	8.0603- 1
1.5000+ 7 ~ 2.0000+ 7	2.5574+ 0	1.3336+ 0	3.9210- 1	7.7300- 1					3.3696- 5	3.8340- 2		2.0400- 2	7.9015- 1

CROSS SECTION

MATERIAL =2280 NI-0

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	NU-BAR
1.0000- 5 ~ 1.0000- 2	3.0460+ 1	1.6774+ 1							1.3707+ 1	0.0000+ 0		4.8439-19	1.1465- 2
1.0000- 2 ~ 1.5000- 2	2.3138+ 1	1.6774+ 1							8.3639+ 0	0.0000+ 0		1.2111-12	1.1467- 2
1.5000- 2 ~ 2.0000- 2	2.2125+ 1	1.6774+ 1							6.3509+ 0	0.0000+ 0		1.6959-12	1.1468- 2
2.0000- 2 ~ 3.0000- 2	2.1271+ 1	1.6774+ 1							4.4971+ 0	0.0000+ 0		2.4231-12	1.1468- 2
3.0000- 2 ~ 4.0000- 2	2.0559+ 1	1.6774+ 1							3.7852+ 0	0.0000+ 0		3.3927-12	1.1469- 2
4.0000- 2 ~ 5.0000- 2	2.0111+ 1	1.6774+ 1							3.3370+ 0	0.0000+ 0		4.3624-12	1.1470- 2
5.0000- 2 ~ 6.0000- 2	1.9787+ 1	1.6774+ 1							3.0136+ 0	0.0000+ 0		5.3920-12	1.1470- 2
6.0000- 2 ~ 8.0000- 2	1.9465+ 1	1.6774+ 1							2.6808+ 0	0.0000+ 0		6.7864-12	1.1470- 2
8.0000- 2 ~ 1.0000- 1	1.9193+ 1	1.6774+ 1							2.3591+ 0	0.0000+ 0		8.7257-12	1.1471- 2
1.0000- 1 ~ 1.5000- 1	1.8787+ 1	1.6774+ 1							2.0138+ 0	0.0000+ 0		1.2119-11	1.1471- 2
1.5000- 1 ~ 2.0000- 1	1.8468+ 1	1.6774+ 1							1.6944+ 0	0.0000+ 0		1.6967-11	1.1472- 2
2.0000- 1 ~ 3.0000- 1	1.8194+ 1	1.6774+ 1							1.4203+ 0	0.0000+ 0		2.4240-11	1.1473- 2
3.0000- 1 ~ 4.0000- 1	1.7972+ 1	1.6774+ 1							1.1983+ 0	0.0000+ 0		3.3936-11	1.1473- 2
4.0000- 1 ~ 5.0000- 1	1.7827+ 1	1.6779+ 1							1.0538+ 0	0.0000+ 0		4.3632-11	1.1474- 2
5.0000- 1 ~ 6.0000- 1	1.7730+ 1	1.6773+ 1							9.5606- 1	0.0000+ 0		5.3329-11	1.1474- 2
6.0000- 1 ~ 8.0000- 1	1.7620+ 1	1.6773+ 1							8.4706- 1	0.0000+ 0		6.7873-11	1.1474- 2
8.0000- 1 ~ 1.0000+ 0	1.7518+ 1	1.6773+ 1							7.4515- 1	0.0000+ 0		8.7266-11	1.1475- 2
1.0000+ 0 ~ 1.5000+ 0	1.7409+ 1	1.6773+ 1							6.3626- 1	0.0000+ 0		1.2120-10	1.1475- 2
1.5000+ 0 ~ 2.0000+ 0	1.7308+ 1	1.6773+ 1							5.3507- 1	0.0000+ 0		1.6968-10	1.1475- 2
2.0000+ 0 ~ 3.0000+ 0	1.7222+ 1	1.6772+ 1							4.4987- 1	0.0000+ 0		2.4241-10	1.1475- 2
3.0000+ 0 ~ 4.0000+ 0	1.7150+ 1	1.6771+ 1							3.7837- 1	0.0000+ 0		3.3937-10	1.1475- 2
4.0000+ 0 ~ 5.0000+ 0	1.7105+ 1	1.6771+ 1							3.3467- 1	0.0000+ 0		4.3633-10	1.1475- 2
5.0000+ 0 ~ 6.0000+ 0	1.7072+ 1	1.6770+ 1							3.0174- 1	0.0000+ 0		5.3329-10	1.1475- 2
6.0000+ 0 ~ 8.0000+ 0	1.7036+ 1	1.6769+ 1							2.6757- 1	0.0000+ 0		6.7874-10	1.1476- 2
8.0000+ 0 ~ 1.0000+ 1	1.7004+ 1	1.6768+ 1							2.3686- 1	0.0000+ 0		8.7266-10	1.1476- 2
1.0000+ 1 ~ 1.5000+ 1	1.6966+ 1	1.6765+ 1							2.0086- 1	0.0000+ 0		1.2120- 9	1.1476- 2
1.5000+ 1 ~ 2.0000+ 1	1.6931+ 1	1.6762+ 1							1.6977- 1	0.0000+ 0		1.6968- 9	1.1476- 2
2.0000+ 1 ~ 3.0000+ 1	1.6899+ 1	1.6757+ 1							1.4206- 1	0.0000+ 0		2.4241- 9	1.1476- 2
3.0000+ 1 ~ 4.0000+ 1	1.6870+ 1	1.6750+ 1							1.2008- 1	0.0000+ 0		3.3937- 9	1.1476- 2
4.0000+ 1 ~ 5.0000+ 1	1.6848+ 1	1.6743+ 1							1.0560- 1	0.0000+ 0		4.3633- 9	1.1476- 2
5.0000+ 1 ~ 6.0000+ 1	1.6831+ 1	1.6736+ 1							9.5364- 2	0.0000+ 0		5.3330- 9	1.1476- 2
6.0000+ 1 ~ 8.0000+ 1	1.6811+ 1	1.6726+ 1							8.4963- 2	0.0000+ 0		6.7874- 9	1.1476- 2
8.0000+ 1 ~ 1.0000+ 2	1.6787+ 1	1.6712+ 1							7.4728- 2	0.0000+ 0		8.7267- 9	1.1477- 2
1.0000+ 2 ~ 1.5000+ 2	1.6690+ 1	1.6627+ 1							6.3738- 2	0.0000+ 0		1.2120- 8	1.1483- 2
1.5000+ 2 ~ 2.0000+ 2	1.6523+ 1	1.6469+ 1							5.3748- 2	0.0000+ 0		1.6968- 8	1.1493- 2
2.0000+ 2 ~ 3.0000+ 2	1.6356+ 1	1.6311+ 1							4.5199- 2	0.0000+ 0		2.4241- 8	1.1503- 2
3.0000+ 2 ~ 4.0000+ 2	1.6193+ 1	1.6166+ 1							3.8181- 2	0.0000+ 0		3.3937- 8	1.1513- 2
4.0000+ 2 ~ 5.0000+ 2	1.6035+ 1	1.6001+ 1							3.3703- 2	0.0000+ 0		4.3633- 8	1.1521- 2
5.0000+ 2 ~ 6.0000+ 2	1.5882+ 1	1.5851+ 1							3.0726- 2	0.0000+ 0		5.3330- 8	1.1527- 2
6.0000+ 2 ~ 8.0000+ 2	1.5660+ 1	1.5632+ 1							2.7377- 2	0.0000+ 0		6.7874- 8	1.1534- 2
8.0000+ 2 ~ 1.0000+ 3	1.5379+ 1	1.5354+ 1							2.4361- 2	0.0000+ 0		8.7267- 8	1.1541- 2
1.0000+ 3 ~ 1.5000+ 3	1.5132+ 1	1.5093+ 1							3.9449- 2	0.0000+ 0		1.2120- 7	1.1628- 2
1.5000+ 3 ~ 2.0000+ 3	1.4930+ 1	1.4911+ 1							1.9078- 2	0.0000+ 0		1.6968- 7	1.1753- 2
2.0000+ 3 ~ 3.0000+ 3	1.5485+ 1	1.5433+ 1							5.2264- 2	0.0000+ 0		2.4241- 7	1.1885- 2
3.0000+ 3 ~ 4.0000+ 3	2.0303+ 1	2.0269+ 1							3.3353- 2	0.0000+ 0		3.3937- 7	1.2013- 2
4.0000+ 3 ~ 5.0000+ 3	2.8238+ 1	2.8203+ 1							3.4902- 2	0.0000+ 0		4.3633- 7	1.2108- 2
5.0000+ 3 ~ 6.0000+ 3	1.9349+ 1	1.9317+ 1							3.2831- 2	0.0000+ 0		5.3330- 7	1.2291- 2
6.0000+ 3 ~ 8.0000+ 3	1.1265+ 1	1.1239+ 1							2.6978- 2	0.0000+ 0		6.7874- 7	1.2657- 2
8.0000+ 3 ~ 1.0000+ 4	9.1081+ 0	9.0820+ 0							2.6109- 2	0.0000+ 0		8.7267- 7	1.3043- 2
1.0000+ 4 ~ 1.5000+ 4	4.1346+ 1	4.1173+ 1							1.7311- 1	0.0000+ 0		1.2120- 6	1.4014- 2
1.5000+ 4 ~ 2.0000+ 4	5.9756+ 1	5.9675+ 1							8.1553- 2	0.0000+ 0		1.6968- 6	1.5282- 2
2.0000+ 4 ~ 3.0000+ 4	1.8536+ 1	1.6489+ 1							4.7190- 2	0.0000+ 0		2.4241- 6	1.7967- 2
3.0000+ 4 ~ 4.0000+ 4	9.7733+ 0	9.7214+ 0							5.1854- 2	0.0000+ 0		3.3937- 6	2.1382- 2
4.0000+ 4 ~ 5.0000+ 4	6.1949+ 0	6.1759+ 0							1.8946- 2	0.0000+ 0		4.3633- 6	2.3922- 2
5.0000+ 4 ~ 6.0000+ 4	3.1763+ 0	3.1524+ 0							2.3867- 2	0.0000+ 0		5.3330- 6	2.7188- 2
6.0000+ 4 ~ 8.0000+ 4	1.3735+ 1	1.3714+ 1	5.4181- 4						2.1237- 2	0.0000+ 0		6.7874- 6	3.2769- 2
8.0000+ 4 ~ 1.0000+ 5	5.6228+ 0	5.6994+ 0	3.8065- 3						1.9679- 2	0.0000+ 0		8.7267- 6	3.8699- 2
1.0000+ 5 ~ 1.5000+ 5	5.9634+ 0	5.9378+ 0	5.3986- 3						2.0155- 2	0.0000+ 0		1.2120- 5	5.0645- 2
1.5000+ 5 ~ 2.0000+ 5	5.9613+ 0	5.9396+ 0	6.6264- 3						1.6134- 2	0.0000+ 0		1.6968- 5	6.5273- 2
2.0000+ 5 ~ 3.0000+ 5	6.3159+ 0	6.2986+ 0	5.7093- 3						1.1479- 2	0.0000+ 0		2.4241- 5	8.3866- 2
3.0000+ 5 ~ 4.0000+ 5	4.5655+ 0	4.6478+ 0	7.0773- 3						1.0594- 2	0.0000+ 0		3.3937- 5	1.0512- 1
4.0000+ 5 ~ 5.0000+ 5	3.9329+ 0	3.9153+ 0	7.7155- 3						9.8731- 3	0.0000+ 0		4.3633- 5	1.2175- 1
5.0000+ 5 ~ 6.0000+ 5	3.6628+ 0	3.6453+ 0	8.1076- 3						9.2127- 3	6.1092- 5		5.2729- 5	1.3500- 1
6.0000+ 5 ~ 8.0000+ 5	3.4550+ 0	3.4360+ 0	9.0988- 3						9.5706- 3	2.4437- 4		6.5473- 5	1.5080- 1
8.0000+ 5 ~ 1.0000+ 6	3.2510+ 0	3.2301+ 0	1.0396- 2						9.9258- 3	4.8874- 4		8.2465- 5	1.6892- 1
1.0000+ 6 ~ 1.5000+ 6	3.2732+ 0	3.2210+ 0	3.6156- 2						1.0998- 2	4.8534- 3		1.8784- 4	2.0312- 1
1.5000+ 6 ~ 2.0000+ 6	3.1071+ 0	2.6388+ 0	4.4215- 1						7.6395- 3	1.8130- 2		4.1675- 4	2.8348- 1
2.0000+ 6 ~ 3.0000+ 6	3.2360+ 0	2.4414+ 0	7.1664- 1						5.7840- 3	7.0676- 2		1.4842- 3	3.9867- 1
3.0000+ 6 ~ 4.0000+ 6	3.4362+ 0	2.1885+ 0	1.0738+ 0						3.4946- 3	1.8528- 1		5.3168- 3	5.5127- 1
4.0000+ 6 ~ 5.0000+ 6	3.5400+ 0	2.0892+ 0	1.1577+ 0						2.2368- 3	2.7613- 1		1.4720- 2	6.5823- 1
5.0000+ 6 ~ 6.0000+ 6	3.6964+ 0	2.0982+ 0	1.1118+ 0						1.5719- 3	3.5171- 1		3.2718- 2	7.2707- 1
6.0000+ 6 ~ 8.0000+ 6	3.5860+ 0	2.1263+ 0	9.9232- 1	1.0982- 7					1.0365- 3	4.0316- 1		6.2147- 2	7.8601- 1
8.0000+ 6 ~ 1.0000+ 7	3.3663+ 0	1.9732+ 0	8.7035- 1	2.2737- 3			7.2971- 5	8.4850- 6	6.4218- 4	4.2117- 1		9.8565- 2	8.2092- 1
1.0000+ 7 ~ 1.5000+ 7	2.9050+ 0	1.5718+ 0	5.8911- 1	8.1895- 2			1.0414- 2	1.6905- 1	2.4018- 4	3.5259- 1		1.1969- 1	8.2235- 1
1.5000+ 7 ~ 2.0000+ 7	2.4548+ 0	1.1060+ 0	2.3681- 1	2.7526- 1	5.9568- 4		9.1635- 2	5.0044- 1	2.0898- 5	1.9224- 1		5.2771- 2	8.0330- 1

MATERIAL =2281

CROSS SECTION

NI-58

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	4.0268+ 1	2.6019+ 1							1.4248+ 1	0.0000+ 0		8.8930-13	1.1607- 2
1.0000- 2 ~ 1.5000- 2	3.2635+ 1	2.6019+ 1							6.6156+ 0	0.0000+ 0		1.7486-12	1.1607- 2
1.5000- 2 ~ 2.0000- 2	3.1582+ 1	2.6019+ 1							5.5625+ 0	0.0000+ 0		2.4486-12	1.1607- 2
2.0000- 2 ~ 3.0000- 2	3.0698+ 1	2.6018+ 1							4.6785+ 0	0.0000+ 0		3.4986-12	1.1607- 2
3.0000- 2 ~ 4.0000- 2	2.9953+ 1	2.6019+ 1							3.9335+ 0	0.0000+ 0		4.8986-12	1.1607- 2
4.0000- 2 ~ 5.0000- 2	2.9500+ 1	2.6019+ 1							3.4807+ 0	0.0000+ 0		6.2986-12	1.1607- 2
5.0000- 2 ~ 6.0000- 2	2.9156+ 1	2.6019+ 1							3.1364+ 0	0.0000+ 0		7.6986-12	1.1607- 2
6.0000- 2 ~ 8.0000- 2	2.8801+ 1	2.6019+ 1							2.7814+ 0	0.0000+ 0		9.7986-12	1.1607- 2
8.0000- 2 ~ 1.0000- 1	2.8480+ 1	2.6019+ 1							2.4607+ 0	0.0000+ 0		1.2599-11	1.1607- 2
1.0000- 1 ~ 1.5000- 1	2.8107+ 1	2.6018+ 1							2.0879+ 0	0.0000+ 0		1.7499-11	1.1607- 2
1.5000- 1 ~ 2.0000- 1	2.7777+ 1	2.6019+ 1							1.7587+ 0	0.0000+ 0		2.4499-11	1.1607- 2
2.0000- 1 ~ 3.0000- 1	2.7496+ 1	2.6018+ 1							1.4768+ 0	0.0000+ 0		3.4999-11	1.1607- 2
3.0000- 1 ~ 4.0000- 1	2.7263+ 1	2.6018+ 1							1.2455+ 0	0.0000+ 0		4.8999-11	1.1607- 2
4.0000- 1 ~ 5.0000- 1	2.7114+ 1	2.6017+ 1							1.0972+ 0	0.0000+ 0		6.2999-11	1.1607- 2
5.0000- 1 ~ 6.0000- 1	2.7008+ 1	2.6017+ 1							9.9077- 1	0.0000+ 0		7.6999-11	1.1607- 2
6.0000- 1 ~ 8.0000- 1	2.6897+ 1	2.6016+ 1							8.8133- 1	0.0000+ 0		9.7999-11	1.1607- 2
8.0000- 1 ~ 1.0000+ 0	2.6791+ 1	2.6015+ 1							7.7564- 1	0.0000+ 0		1.2600-10	1.1607- 2
1.0000+ 0 ~ 1.5000+ 0	2.6674+ 1	2.6013+ 1							6.6037- 1	0.0000+ 0		1.7500-10	1.1607- 2
1.5000+ 0 ~ 2.0000+ 0	2.6568+ 1	2.6011+ 1							5.5707- 1	0.0000+ 0		2.4500-10	1.1607- 2
2.0000+ 0 ~ 3.0000+ 0	2.6474+ 1	2.6007+ 1							4.6685- 1	0.0000+ 0		3.5000-10	1.1607- 2
3.0000+ 0 ~ 4.0000+ 0	2.6396+ 1	2.6002+ 1							3.9370- 1	0.0000+ 0		4.9000-10	1.1607- 2
4.0000+ 0 ~ 5.0000+ 0	2.6343+ 1	2.5997+ 1							3.4612- 1	0.0000+ 0		6.3000-10	1.1607- 2
5.0000+ 0 ~ 6.0000+ 0	2.6306+ 1	2.5992+ 1							3.1371- 1	0.0000+ 0		7.7000-10	1.1607- 2
6.0000+ 0 ~ 8.0000+ 0	2.6263+ 1	2.5985+ 1							2.7811- 1	0.0000+ 0		9.8000-10	1.1607- 2
8.0000+ 0 ~ 1.0000+ 1	2.6220+ 1	2.5975+ 1							2.4443- 1	0.0000+ 0		1.2600- 9	1.1607- 2
1.0000+ 1 ~ 1.5000+ 1	2.6166+ 1	2.5958+ 1							2.0841- 1	0.0000+ 0		1.7500- 9	1.1607- 2
1.5000+ 1 ~ 2.0000+ 1	2.6109+ 1	2.5933+ 1							1.7513- 1	0.0000+ 0		2.4500- 9	1.1607- 2
2.0000+ 1 ~ 3.0000+ 1	2.6044+ 1	2.5897+ 1							1.4686- 1	0.0000+ 0		3.5000- 9	1.1607- 2
3.0000+ 1 ~ 4.0000+ 1	2.5971+ 1	2.5848+ 1							1.2323- 1	0.0000+ 0		4.9000- 9	1.1607- 2
4.0000+ 1 ~ 5.0000+ 1	2.5908+ 1	2.5800+ 1							1.0859- 1	0.0000+ 0		6.3000- 9	1.1607- 2
5.0000+ 1 ~ 6.0000+ 1	2.5849+ 1	2.5751+ 1							9.7671- 2	0.0000+ 0		7.7000- 9	1.1607- 2
6.0000+ 1 ~ 8.0000+ 1	2.5766+ 1	2.5679+ 1							8.6300- 2	0.0000+ 0		9.8000- 9	1.1607- 2
8.0000+ 1 ~ 1.0000+ 2	2.5660+ 1	2.5584+ 1							7.5844- 2	0.0000+ 0		1.2600- 8	1.1607- 2
1.0000+ 2 ~ 1.5000+ 2	2.5482+ 1	2.5419+ 1							6.3810- 2	0.0000+ 0		1.7500- 8	1.1613- 2
1.5000+ 2 ~ 2.0000+ 2	2.5239+ 1	2.5186+ 1							5.3178- 2	0.0000+ 0		2.4500- 8	1.1623- 2
2.0000+ 2 ~ 3.0000+ 2	2.4889+ 1	2.4845+ 1							4.3653- 2	0.0000+ 0		3.5000- 8	1.1633- 2
3.0000+ 2 ~ 4.0000+ 2	2.4441+ 1	2.4405+ 1							3.5937- 2	0.0000+ 0		4.9000- 8	1.1643- 2
4.0000+ 2 ~ 5.0000+ 2	2.4010+ 1	2.3979+ 1							3.0828- 2	0.0000+ 0		6.3000- 8	1.1651- 2
5.0000+ 2 ~ 6.0000+ 2	2.3595+ 1	2.3567+ 1							2.7162- 2	0.0000+ 0		7.7000- 8	1.1657- 2
6.0000+ 2 ~ 8.0000+ 2	2.2999+ 1	2.2976+ 1							2.3266- 2	0.0000+ 0		9.8000- 8	1.1664- 2
8.0000+ 2 ~ 1.0000+ 3	2.2250+ 1	2.2230+ 1							1.9632- 2	0.0000+ 0		1.2600- 7	1.1671- 2
1.0000+ 3 ~ 1.5000+ 3	2.1047+ 1	2.1031+ 1							1.5572- 2	0.0000+ 0		1.7500- 7	1.1754- 2
1.5000+ 3 ~ 2.0000+ 3	1.9510+ 1	1.9498+ 1							1.1994- 2	0.0000+ 0		2.4500- 7	1.1878- 2
2.0000+ 3 ~ 3.0000+ 3	1.7534+ 1	1.7525+ 1							9.0366- 3	0.0000+ 0		3.5000- 7	1.2008- 2
3.0000+ 3 ~ 4.0000+ 3	1.5289+ 1	1.5283+ 1							6.8467- 3	0.0000+ 0		4.9000- 7	1.2133- 2
4.0000+ 3 ~ 5.0000+ 3	1.3369+ 1	1.3363+ 1							5.7106- 3	0.0000+ 0		6.3000- 7	1.2226- 2
5.0000+ 3 ~ 6.0000+ 3	1.1637+ 1	1.1631+ 1							5.1067- 3	0.0000+ 0		7.7000- 7	1.2406- 2
6.0000+ 3 ~ 8.0000+ 3	9.2352+ 0	9.2243+ 0							1.0926- 2	0.0000+ 0		9.8000- 7	1.2764- 2
8.0000+ 3 ~ 1.0000+ 4	6.0429+ 0	6.0371+ 0							5.8568- 3	0.0000+ 0		1.2600- 6	1.3142- 2
1.0000+ 4 ~ 1.5000+ 4	1.4385+ 1	1.4258+ 1							1.2666- 1	0.0000+ 0		1.7500- 6	1.4096- 2
1.5000+ 4 ~ 2.0000+ 4	7.2195+ 1	7.2130+ 1							6.5277- 2	0.0000+ 0		2.4500- 6	1.5342- 2
2.0000+ 4 ~ 3.0000+ 4	1.6557+ 1	1.6518+ 1							3.8933- 2	0.0000+ 0		3.5000- 6	1.7987- 2
3.0000+ 4 ~ 4.0000+ 4	9.9659+ 0	9.9142+ 0							5.1686- 2	0.0000+ 0		4.9000- 6	2.1353- 2
4.0000+ 4 ~ 5.0000+ 4	6.3785+ 0	6.3660+ 0							1.2489- 2	0.0000+ 0		6.3000- 6	2.3856- 2
5.0000+ 4 ~ 6.0000+ 4	2.2543+ 0	2.2304+ 0							2.3922- 2	0.0000+ 0		7.7000- 6	2.7103- 2
6.0000+ 4 ~ 8.0000+ 4	1.7506+ 1	1.7487+ 1							1.8446- 2	0.0000+ 0		9.8000- 6	3.2659- 2
8.0000+ 4 ~ 1.0000+ 5	6.9848+ 0	6.9629+ 0							2.1845- 2	0.0000+ 0		1.2600- 5	3.8530- 2
1.0000+ 5 ~ 1.5000+ 5	7.3523+ 0	7.3284+ 0							2.3825- 2	0.0000+ 0		1.7500- 5	5.0208- 2
1.5000+ 5 ~ 2.0000+ 5	7.3744+ 0	7.3552+ 0							1.9236- 2	0.0000+ 0		2.4500- 5	6.4627- 2
2.0000+ 5 ~ 3.0000+ 5	7.8155+ 0	7.8021+ 0							1.3330- 2	0.0000+ 0		3.5000- 5	8.3054- 2
3.0000+ 5 ~ 4.0000+ 5	5.2021+ 0	5.1905+ 0							1.1614- 2	0.0000+ 0		4.9000- 5	1.0371- 1
4.0000+ 5 ~ 5.0000+ 5	5.0391+ 0	5.0280+ 0							1.1002- 2	0.0000+ 0		6.3000- 5	1.1991- 1
5.0000+ 5 ~ 6.0000+ 5	3.6693+ 0	3.6585+ 0							1.0643- 2	9.0000- 5		7.6000- 5	1.3278- 1
6.0000+ 5 ~ 8.0000+ 5	3.8945+ 0	3.8834+ 0							1.0717- 2	3.6000- 4		9.4000- 5	1.4816- 1
8.0000+ 5 ~ 1.0000+ 6	3.6365+ 0	3.6246+ 0							1.1021- 2	7.2000- 4		1.1800- 4	1.6597- 1
1.0000+ 6 ~ 1.5000+ 6	3.4198+ 0	3.3958+ 0	4.0451- 3						1.2288- 2	7.1500- 3		2.4000- 4	2.0023- 1
1.5000+ 6 ~ 2.0000+ 6	3.2833+ 0	2.8837+ 0	3.6304- 1						8.6534- 3	2.6700- 2		5.9500- 4	2.8194- 1
2.0000+ 6 ~ 3.0000+ 6	3.2846+ 0	2.5537+ 0	6.1803- 1						6.3198- 3	1.0400- 1		2.1200- 3	3.9696- 1
3.0000+ 6 ~ 4.0000+ 6	3.4159+ 0	2.1565+ 0	9.7609- 1						3.6542- 3	2.7200- 1		7.5750- 3	5.5377- 1
4.0000+ 6 ~ 5.0000+ 6	3.5560+ 0	2.1191+ 0	1.0103+ 0						2.2371- 3	4.0350- 1		2.0800- 2	6.5916- 1
5.0000+ 6 ~ 6.0000+ 6	3.6214+ 0	2.1316+ 0	8.3200- 1						1.5203- 3	5.1000- 1		4.5750- 2	7.2714- 1
6.0000+ 6 ~ 8.0000+ 6	3.5649+ 0	2.1140+ 0	7.9609- 1						1.0033- 3	5.7000- 1		8.3875- 2	7.8592- 1
8.0000+ 6 ~ 1.0000+ 7	3.3320+ 0	1.9431+ 0	6.8830- 1				1.0750- 4	1.2500- 5	6.1941- 4	5.7000- 1		1.3000- 1	8.2104- 1
1.0000+ 7 ~ 1.5000+ 7	2.8459+ 0	1.5255+ 0	4.2846- 1	8.8799- 3			1.5342- 2	2.3870- 1	2.0951- 4	4.7750- 1		1.5170- 1	8.2051- 1
1.5000+ 7 ~ 2.0000+ 7	2.4271+ 0	1.0945+ 0	1.6886- 1	5.2500- 2			1.3500- 1	6.6250- 1	1.2543- 5	2.5075- 1		6.3050- 2	7.9983- 1

CROSS SECTION

MATERIAL =2282 NI-60

ENERGY	TOTAL	ELASTIC	INELR	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	9.6791+ 0	1.0126+ 0							8.6665+ 0			2.9970-14	1.1220- 2
1.0000- 2 ~ 1.5000- 2	5.0364+ 0	1.0126+ 0							4.0238+ 0			7.4940-14	1.1220- 2
1.5000- 2 ~ 2.0000- 2	4.3959+ 0	1.0126+ 0							3.3833+ 0			1.0494-13	1.1220- 2
2.0000- 2 ~ 3.0000- 2	3.8561+ 0	1.0126+ 0							2.8434+ 0			1.4994-13	1.1220- 2
3.0000- 2 ~ 4.0000- 2	3.4059+ 0	1.0126+ 0							2.3933+ 0			2.0994-13	1.1220- 2
4.0000- 2 ~ 5.0000- 2	3.1225+ 0	1.0125+ 0							2.1099+ 0			2.6994-13	1.1220- 2
5.0000- 2 ~ 6.0000- 2	2.9180+ 0	1.0126+ 0							1.9054+ 0			3.2994-13	1.1220- 2
6.0000- 2 ~ 8.0000- 2	2.7076+ 0	1.0126+ 0							1.6951+ 0			4.1994-13	1.1220- 2
8.0000- 2 ~ 1.0000- 1	2.5042+ 0	1.0126+ 0							1.4916+ 0			5.3994-13	1.1220- 2
1.0000- 1 ~ 1.5000- 1	2.2858+ 0	1.0126+ 0							1.2733+ 0			7.4994-13	1.1220- 2
1.5000- 1 ~ 2.0000- 1	2.0839+ 0	1.0126+ 0							1.0714+ 0			1.0499-12	1.1220- 2
2.0000- 1 ~ 3.0000- 1	1.9105+ 0	1.0125+ 0							8.9800- 1			1.4999-12	1.1220- 2
3.0000- 1 ~ 4.0000- 1	1.7701+ 0	1.0125+ 0							7.5764- 1			2.0999-12	1.1220- 2
4.0000- 1 ~ 5.0000- 1	1.6787+ 0	1.0124+ 0							6.6628- 1			2.6999-12	1.1220- 2
5.0000- 1 ~ 6.0000- 1	1.6169+ 0	1.0124+ 0							6.0448- 1			3.2999-12	1.1220- 2
6.0000- 1 ~ 8.0000- 1	1.5479+ 0	1.0123+ 0							5.3556- 1			4.1999-12	1.1220- 2
8.0000- 1 ~ 1.0000+ 0	1.4834+ 0	1.0123+ 0							4.7111- 1			5.3999-12	1.1220- 2
1.0000+ 0 ~ 1.5000+ 0	1.4144+ 0	1.0121+ 0							4.0226- 1			7.4999-12	1.1220- 2
1.5000+ 0 ~ 2.0000+ 0	1.3502+ 0	1.0119+ 0							3.3827- 1			1.0500-11	1.1220- 2
2.0000+ 0 ~ 3.0000+ 0	1.2961+ 0	1.0116+ 0							2.8445- 1			1.5000-11	1.1220- 2
3.0000+ 0 ~ 4.0000+ 0	1.2504+ 0	1.0112+ 0							2.3917- 1			2.1000-11	1.1220- 2
4.0000+ 0 ~ 5.0000+ 0	1.2224+ 0	1.0108+ 0							2.1153- 1			2.7000-11	1.1220- 2
5.0000+ 0 ~ 6.0000+ 0	1.2011+ 0	1.0104+ 0							1.9070- 1			3.3000-11	1.1220- 2
6.0000+ 0 ~ 8.0000+ 0	1.1789+ 0	1.0098+ 0							1.6909- 1			4.2000-11	1.1220- 2
8.0000+ 0 ~ 1.0000+ 1	1.1585+ 0	1.0090+ 0							1.4953- 1			5.4000-11	1.1220- 2
1.0000+ 1 ~ 1.5000+ 1	1.1345+ 0	1.0076+ 0							1.2687- 1			7.5000-11	1.1220- 2
1.5000+ 1 ~ 2.0000+ 1	1.1128+ 0	1.0056+ 0							1.0720- 1			1.0500-10	1.1220- 2
2.0000+ 1 ~ 3.0000+ 1	1.0923+ 0	1.0026+ 0							8.9644- 2			1.5000-10	1.1220- 2
3.0000+ 1 ~ 4.0000+ 1	1.0744+ 0	9.9864- 1							7.5719- 2			2.1000-10	1.1220- 2
4.0000+ 1 ~ 5.0000+ 1	1.0612+ 0	9.9466- 1							6.6533- 2			2.7000-10	1.1220- 2
5.0000+ 1 ~ 6.0000+ 1	1.0507+ 0	9.9070- 1							6.0052- 2			3.3000-10	1.1220- 2
6.0000+ 1 ~ 8.0000+ 1	1.0382+ 0	9.8478- 1							5.3432- 2			4.2000-10	1.1220- 2
8.0000+ 1 ~ 1.0000+ 2	1.0238+ 0	9.7691- 1							4.6924- 2			5.4000-10	1.1220- 2
1.0000+ 2 ~ 1.5000+ 2	1.0032+ 0	9.6325- 1							3.9923- 2			7.5000-10	1.1227- 2
1.5000+ 2 ~ 2.0000+ 2	9.7745- 1	9.4391- 1							3.3545- 2			1.0500- 9	1.1238- 2
2.0000+ 2 ~ 3.0000+ 2	9.4345- 1	9.1538- 1							2.8070- 2			1.5000- 9	1.1249- 2
3.0000+ 2 ~ 4.0000+ 2	9.0161- 1	8.7805- 1							2.3660- 2			2.1000- 9	1.1260- 2
4.0000+ 2 ~ 5.0000+ 2	8.6223- 1	8.4156- 1							2.0673- 2			2.7000- 9	1.1268- 2
5.0000+ 2 ~ 6.0000+ 2	8.2481- 1	8.0607- 1							1.8746- 2			3.3000- 9	1.1275- 2
6.0000+ 2 ~ 8.0000+ 2	7.7066- 1	7.5409- 1							1.6572- 2			4.2000- 9	1.1283- 2
8.0000+ 2 ~ 1.0000+ 3	7.0195- 1	6.8735- 1							1.4600- 2			5.4000- 9	1.1291- 2
1.0000+ 3 ~ 1.5000+ 3	5.9255- 1	5.7803- 1							1.4523- 2			7.5000- 9	1.1380- 2
1.5000+ 3 ~ 2.0000+ 3	4.4692- 1	4.3593- 1							1.0997- 2			1.0500- 8	1.1614- 2
2.0000+ 3 ~ 3.0000+ 3	4.0110- 1	2.6382- 1							1.3728- 1			1.5000- 8	1.1653- 2
3.0000+ 3 ~ 4.0000+ 3	8.5908- 2	7.6418- 2							9.4902- 3			2.1000- 8	1.1787- 2
4.0000+ 3 ~ 5.0000+ 3	2.1210- 2	1.1154- 2							1.0055- 2			2.7000- 8	1.1887- 2
5.0000+ 3 ~ 6.0000+ 3	1.9663- 1	1.4235- 1							5.4278- 2			3.3000- 8	1.2078- 2
6.0000+ 3 ~ 8.0000+ 3	1.3148+ 0	1.2949+ 0							1.9836- 2			4.2000- 8	1.2458- 2
8.0000+ 3 ~ 1.0000+ 4	9.2159+ 0	9.1471+ 0							6.8836- 2			5.4000- 8	1.2859- 2
1.0000+ 4 ~ 1.5000+ 4	1.1143+ 2	1.1118+ 2							2.4964- 1			7.5000- 8	1.3863- 2
1.5000+ 4 ~ 2.0000+ 4	2.8055+ 1	2.8023+ 1							3.2631- 2			1.0500- 7	1.5171- 2
2.0000+ 4 ~ 3.0000+ 4	1.5674+ 1	1.5649+ 1							2.4835- 2			1.5000- 7	1.7924- 2
3.0000+ 4 ~ 4.0000+ 4	1.1474+ 1	1.1455+ 1							1.8526- 2			2.1000- 7	2.1418- 2
4.0000+ 4 ~ 5.0000+ 4	7.3591+ 0	7.3477+ 0							2.1367- 2			2.7000- 7	2.4016- 2
5.0000+ 4 ~ 6.0000+ 4	5.0732+ 0	5.0629+ 0							1.0291- 2			3.3000- 7	2.7371- 2
6.0000+ 4 ~ 8.0000+ 4	5.7554+ 0	5.7452+ 0							1.0237- 2			4.2000- 7	3.3099- 2
8.0000+ 4 ~ 1.0000+ 5	5.1617+ 0	5.1478+ 0							1.3940- 2			5.4000- 7	3.9152- 2
1.0000+ 5 ~ 1.5000+ 5	3.7813+ 0	3.7713+ 0							9.9806- 3			7.5000- 7	5.1194- 2
1.5000+ 5 ~ 2.0000+ 5	4.5700+ 0	4.5610+ 0							9.0358- 3			1.0500- 6	6.6061- 2
2.0000+ 5 ~ 3.0000+ 5	5.0086+ 0	5.0009+ 0							7.6396- 3			1.5000- 6	8.5164- 2
3.0000+ 5 ~ 4.0000+ 5	4.7321+ 0	4.7252+ 0							6.8415- 3			2.1000- 6	1.0670- 1
4.0000+ 5 ~ 5.0000+ 5	2.9480+ 0	2.9411+ 0							6.8143- 3			2.7000- 6	1.2376- 1
5.0000+ 5 ~ 6.0000+ 5	5.1512+ 0	5.1448+ 0							6.3562- 3			3.4000- 6	1.3739- 1
6.0000+ 5 ~ 8.0000+ 5	4.0310+ 0	4.0245+ 0							6.5497- 3			4.6000- 6	1.5358- 1
8.0000+ 5 ~ 1.0000+ 6	3.7369+ 0	3.7301+ 0							6.8239- 3			6.2000- 6	1.7177- 1
1.0000+ 6 ~ 1.5000+ 6	3.4579+ 0	3.3947+ 0	5.8080- 2						7.1309- 3			1.1000- 5	2.0820- 1
1.5000+ 6 ~ 2.0000+ 6	3.2765+ 0	2.6822+ 0	5.8950- 1						4.3912- 3			2.2500- 5	2.8710- 1
2.0000+ 6 ~ 3.0000+ 6	3.2502+ 0	2.3364+ 0	9.0998- 1						3.4310- 3	2.5000- 4		7.3500- 5	4.0204- 1
3.0000+ 6 ~ 4.0000+ 6	3.3947+ 0	2.1194+ 0	1.2706+ 0						1.9851- 3	2.3750- 3		3.6250- 4	5.4660- 1
4.0000+ 6 ~ 5.0000+ 6	3.5524+ 0	2.0715+ 0	1.4597+ 0						1.2623- 3	8.3750- 3		1.5750- 3	6.5704- 1
5.0000+ 6 ~ 6.0000+ 6	3.6342+ 0	2.1150+ 0	1.4923+ 0						8.9840- 4	2.0750- 2		5.1500- 3	7.2705- 1
6.0000+ 6 ~ 8.0000+ 6	3.5989+ 0	2.1201+ 0	1.3993+ 0						5.3328- 4	6.1000- 2		1.7937- 2	7.8634- 1
8.0000+ 6 ~ 1.0000+ 7	3.3875+ 0	1.9827+ 0	1.2414+ 0						3.0754- 4	1.2737- 1		3.5937- 2	8.2066- 1
1.0000+ 7 ~ 1.5000+ 7	2.9335+ 0	1.5793+ 0	9.6315- 1	1.6750- 1				2.6425- 2	1.2160- 4	1.3940- 1		5.8800- 2	8.2500- 1
1.5000+ 7 ~ 2.0000+ 7	2.5119+ 0	1.1299+ 0	4.0950- 1	6.7634- 1				1.8325- 1	8.7366- 6	7.8550- 2		3.4620- 2	8.0851- 1

CROSS SECTION

MATERIAL =2283 NI-61

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.7366+ 1	9.6111+ 0							7.7554+ 0			1.4986-13	1.1037- 2
1.0000- 2 ~ 1.5000- 2	1.3212+ 1	9.6111+ 0							3.6007+ 0			3.7470-13	1.1037- 2
1.5000- 2 ~ 2.0000- 2	1.2639+ 1	9.6110+ 0							3.0275+ 0			5.2470-13	1.1037- 2
2.0000- 2 ~ 3.0000- 2	1.2156+ 1	9.6110+ 0							2.5448+ 0			7.4970-13	1.1037- 2
3.0000- 2 ~ 4.0000- 2	1.1752+ 1	9.6108+ 0							2.1414+ 0			1.0497-12	1.1038- 2
4.0000- 2 ~ 5.0000- 2	1.1500+ 1	9.6109+ 0							1.8887+ 0			1.3497-12	1.1038- 2
5.0000- 2 ~ 6.0000- 2	1.1316+ 1	9.6108+ 0							1.7054+ 0			1.6497-12	1.1038- 2
6.0000- 2 ~ 8.0000- 2	1.1127+ 1	9.6107+ 0							1.5166+ 0			2.0997-12	1.1038- 2
8.0000- 2 ~ 1.0000- 1	1.0946+ 1	9.6105+ 0							1.3351+ 0			2.6997-12	1.1038- 2
1.0000- 1 ~ 1.5000- 1	1.0750+ 1	9.6104+ 0							1.1397+ 0			3.7497-12	1.1038- 2
1.5000- 1 ~ 2.0000- 1	1.0569+ 1	9.6102+ 0							9.6849- 1			5.2497-12	1.1038- 2
2.0000- 1 ~ 3.0000- 1	1.0413+ 1	9.6097+ 0							8.0318- 1			7.4997-12	1.1038- 2
3.0000- 1 ~ 4.0000- 1	1.0287+ 1	9.6092+ 0							6.7807- 1			1.0500-11	1.1038- 2
4.0000- 1 ~ 5.0000- 1	1.0206+ 1	9.6086+ 0							5.9633- 1			1.3500-11	1.1038- 2
5.0000- 1 ~ 6.0000- 1	1.0148+ 1	9.6081+ 0							5.3995- 1			1.6500-11	1.1038- 2
6.0000- 1 ~ 8.0000- 1	1.0086+ 1	9.6072+ 0							4.7931- 1			2.1000-11	1.1038- 2
8.0000- 1 ~ 1.0000+ 0	1.0027+ 1	9.6061+ 0							4.2143- 1			2.7000-11	1.1038- 2
1.0000+ 0 ~ 1.5000+ 0	9.9636+ 0	9.6041+ 0							3.5951- 1			3.7500-11	1.1038- 2
1.5000+ 0 ~ 2.0000+ 0	9.9038+ 0	9.6013+ 0							3.0242- 1			5.2500-11	1.1038- 2
2.0000+ 0 ~ 3.0000+ 0	9.8511+ 0	9.5971+ 0							2.5400- 1			7.5000-11	1.1038- 2
3.0000+ 0 ~ 4.0000+ 0	9.8051+ 0	9.5916+ 0							2.1352- 1			1.0500-10	1.1038- 2
4.0000+ 0 ~ 5.0000+ 0	9.7746+ 0	9.5860+ 0							1.8860- 1			1.3500-10	1.1038- 2
5.0000+ 0 ~ 6.0000+ 0	9.7503+ 0	9.5804+ 0							1.6991- 1			1.6500-10	1.1038- 2
6.0000+ 0 ~ 8.0000+ 0	9.7226+ 0	9.5721+ 0							1.5053- 1			2.1000-10	1.1038- 2
8.0000+ 0 ~ 1.0000+ 1	9.6939+ 0	9.5610+ 0							1.3288- 1			2.7000-10	1.1039- 2
1.0000+ 1 ~ 1.5000+ 1	9.6542+ 0	9.5417+ 0							1.1248- 1			3.7500-10	1.1039- 2
1.5000+ 1 ~ 2.0000+ 1	9.6089+ 0	9.5142+ 0							9.4640- 2			5.2600-10	1.1039- 2
2.0000+ 1 ~ 3.0000+ 1	9.5522+ 0	9.4735+ 0							7.8725- 2			7.5000-10	1.1039- 2
3.0000+ 1 ~ 4.0000+ 1	9.4857+ 0	9.4197+ 0							6.5979- 2			1.0500- 9	1.1039- 2
4.0000+ 1 ~ 5.0000+ 1	9.4242+ 0	9.3667+ 0							5.7561- 2			1.3500- 9	1.1039- 2
5.0000+ 1 ~ 6.0000+ 1	9.3659+ 0	9.3143+ 0							5.1566- 2			1.6500- 9	1.1039- 2
6.0000+ 1 ~ 8.0000+ 1	9.2828+ 0	9.2374+ 0							4.5384- 2			2.1000- 9	1.1039- 2
8.0000+ 1 ~ 1.0000+ 2	9.1761+ 0	9.1368+ 0							3.9298- 2			2.7000- 9	1.1039- 2
1.0000+ 2 ~ 1.5000+ 2	9.0003+ 0	8.9677+ 0							3.2626- 2			3.7500- 9	1.1046- 2
1.5000+ 2 ~ 2.0000+ 2	8.7647+ 0	8.7381+ 0							2.6547- 2			5.2500- 9	1.1057- 2
2.0000+ 2 ~ 3.0000+ 2	8.4412+ 0	8.4200+ 0							2.1140- 2			7.5000- 9	1.1069- 2
3.0000+ 2 ~ 4.0000+ 2	8.0536+ 0	8.0368+ 0							1.6794- 2			1.0500- 8	1.1080- 2
4.0000+ 2 ~ 5.0000+ 2	7.7071+ 0	7.6931+ 0							1.4031- 2			1.3500- 8	1.1089- 2
5.0000+ 2 ~ 6.0000+ 2	7.3953+ 0	7.3832+ 0							1.2123- 2			1.6500- 8	1.1095- 2
6.0000+ 2 ~ 8.0000+ 2	6.9859+ 0	6.9756+ 0							1.0290- 2			2.1000- 8	1.1103- 2
8.0000+ 2 ~ 1.0000+ 3	6.5170+ 0	6.5079+ 0							9.0894- 3			2.7000- 8	1.1112- 2
1.0000+ 3 ~ 1.5000+ 3	9.0217+ 0	7.5335+ 0							1.4882+ 0			3.7500- 8	1.1205- 2
1.5000+ 3 ~ 2.0000+ 3	5.1610+ 0	5.1529+ 0							8.1359- 3			5.2500- 8	1.1346- 2
2.0000+ 3 ~ 3.0000+ 3	4.4934+ 0	4.4837+ 0							9.6769- 3			7.5000- 8	1.1492- 2
3.0000+ 3 ~ 4.0000+ 3	2.1250+ 1	2.0559+ 1							6.9130- 1			1.0500- 7	1.1633- 2
4.0000+ 3 ~ 5.0000+ 3	2.8518+ 0	2.8439+ 0							7.9748- 3			1.3500- 7	1.1738- 2
5.0000+ 3 ~ 6.0000+ 3	1.8226+ 0	1.8103+ 0							1.2324- 2			1.6500- 7	1.1937- 2
6.0000+ 3 ~ 8.0000+ 3	3.9027+ 1	3.8206+ 1							8.2114- 1			2.1000- 7	1.2332- 2
8.0000+ 3 ~ 1.0000+ 4	9.4714+ 0	9.1859+ 0							2.8552- 1			2.7000- 7	1.2750- 2
1.0000+ 4 ~ 1.5000+ 4	9.3359+ 0	9.0881+ 0							2.4776- 1			3.7500- 7	1.3788- 2
1.5000+ 4 ~ 2.0000+ 4	2.3494+ 1	2.3338+ 1							1.5516- 1			5.2500- 7	1.5139- 2
2.0000+ 4 ~ 3.0000+ 4	6.9585+ 0	6.8703+ 0							8.8277- 2			7.5000- 7	1.7966- 2
3.0000+ 4 ~ 4.0000+ 4	1.3090+ 1	1.3000+ 1							8.9396- 2			1.0500- 6	2.1551- 2
4.0000+ 4 ~ 5.0000+ 4	6.2788+ 0	6.2188+ 0							5.9960- 2			1.3500- 6	2.4216- 2
5.0000+ 4 ~ 6.0000+ 4	6.4508+ 0	6.3941+ 0							5.6695- 2			1.6500- 6	2.7226- 2
6.0000+ 4 ~ 8.0000+ 4	8.3749+ 0	8.2740+ 0	5.3641- 2						4.7140- 2			2.1000- 6	3.2605- 2
8.0000+ 4 ~ 1.0000+ 5	8.1008+ 0	7.7493+ 0	3.1814- 1						3.2972- 2			2.7000- 6	4.0613- 2
1.0000+ 5 ~ 1.5000+ 5	7.3087+ 0	6.8304+ 0	4.5128- 1						2.3427- 2			3.7500- 6	5.4823- 2
1.5000+ 5 ~ 2.0000+ 5	6.5483+ 0	6.0662+ 0	4.6209- 1						1.7418- 2			5.2500- 6	7.1547- 2
2.0000+ 5 ~ 3.0000+ 5	5.8268+ 0	5.3351+ 0	4.7775- 1						1.3155- 2			7.5000- 6	9.3509- 2
3.0000+ 5 ~ 4.0000+ 5	5.1862+ 0	4.5813+ 0	5.9283- 1						9.9953- 3			1.0500- 5	1.2182- 1
4.0000+ 5 ~ 5.0000+ 5	4.7514+ 0	4.0960+ 0	6.4660- 1						8.5570- 3			1.3500- 5	1.4489- 1
5.0000+ 5 ~ 6.0000+ 5	4.4343+ 0	3.7467+ 0	6.7962- 1						7.8732- 3			2.0900- 5	1.6442- 1
6.0000+ 5 ~ 8.0000+ 5	4.0988+ 0	3.3262+ 0	7.6299- 1						7.1991- 3	0.0000+ 0		3.8600- 5	1.9168- 1
8.0000+ 5 ~ 1.0000+ 6	3.7865+ 0	2.9076+ 0	8.7200- 1						6.5280- 3	0.0000+ 0		6.2200- 5	2.2594- 1
1.0000+ 6 ~ 1.5000+ 6	3.4787+ 0	2.4015+ 0	1.0715+ 0						4.8000- 3	0.0000+ 0		1.7200- 4	2.9484- 1
1.5000+ 6 ~ 2.0000+ 6	3.2661+ 0	2.0388+ 0	1.2228+ 0						3.3381- 3	5.0000- 4		5.8500- 4	3.9009- 1
2.0000+ 6 ~ 3.0000+ 6	3.2369+ 0	1.9269+ 0	1.3040+ 0						2.4244- 3	1.3125- 3		2.1750- 3	5.0049- 1
3.0000+ 6 ~ 4.0000+ 6	3.3835+ 0	2.0020+ 0	1.3707+ 0						1.9997- 3	2.1250- 3		6.6750- 3	6.0128- 1
4.0000+ 6 ~ 5.0000+ 6	3.5476+ 0	2.1168+ 0	1.4110+ 0						1.5744- 3	3.4625- 3		1.5650- 2	6.7795- 1
5.0000+ 6 ~ 6.0000+ 6	3.6380+ 0	2.2005+ 0	1.4046+ 0						1.1861- 3	6.0250- 3		2.5675- 2	7.3684- 1
6.0000+ 6 ~ 8.0000+ 6	3.6141+ 0	2.2204+ 0	1.3384+ 0	9.2290- 6					7.8041- 4	1.6200- 2		3.8375- 2	7.8830- 1
8.0000+ 6 ~ 1.0000+ 7	3.4160+ 0	2.0997+ 0	1.0211+ 0	1.9031- 1					3.6499- 4	5.0167- 2		5.5375- 2	8.2132- 1
1.0000+ 7 ~ 1.5000+ 7	2.9811+ 0	1.6785+ 0	4.2404- 1	7.2526- 1				3.2550- 3	7.1028- 5	9.4650- 2		5.5600- 2	8.2751- 1
1.6000+ 7 ~ 2.0000+ 7	2.5555+ 0	1.2246+ 0	9.2295- 1	8.9738- 1				2.7470- 2	8.0687- 6	6.4150- 2		1.8975- 2	8.1275- 1

CROSS SECTION

MATERIAL =2284 NI-62

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	5.9441+ 1	9.5048+ 0							4.3936+ 1				1.0869- 2
1.0000- 2 ~ 1.5000- 2	2.9904+ 1	9.5049+ 0							2.0399+ 1				1.0880- 2
1.5000- 2 ~ 2.0000- 2	2.6657+ 1	9.5049+ 0							1.7152+ 1				1.0860- 2
2.0000- 2 ~ 3.0000- 2	2.3938+ 1	9.5060+ 0							1.4433+ 1				1.0860- 2
3.0000- 2 ~ 4.0000- 2	2.1646+ 1	9.5050+ 0							1.2141+ 1				1.0880- 2
4.0000- 2 ~ 5.0000- 2	2.0238+ 1	9.5051+ 0							1.0733+ 1				1.0880- 2
5.0000- 2 ~ 6.0000- 2	1.9186+ 1	9.5052+ 0							9.6810+ 0				1.0860- 2
6.0000- 2 ~ 8.0000- 2	1.8093+ 1	9.5063+ 0							8.5877+ 0				1.0860- 2
8.0000- 2 ~ 1.0000- 1	1.7078+ 1	9.5054+ 0							7.5725+ 0				1.0860- 2
1.0000- 1 ~ 1.5000- 1	1.5963+ 1	9.5056+ 0							6.4477+ 0				1.0860- 2
1.5000- 1 ~ 2.0000- 1	1.4930+ 1	9.5060+ 0							5.4243+ 0				1.0860- 2
2.0000- 1 ~ 3.0000- 1	1.4062+ 1	9.5065+ 0							4.5557+ 0				1.0860- 2
3.0000- 1 ~ 4.0000- 1	1.3343+ 1	9.5071+ 0							3.8356+ 0				1.0860- 2
4.0000- 1 ~ 5.0000- 1	1.2898+ 1	9.5078+ 0							3.3905+ 0				1.0860- 2
5.0000- 1 ~ 6.0000- 1	1.2566+ 1	9.5084+ 0							3.0580+ 0				1.0860- 2
6.0000- 1 ~ 8.0000- 1	1.2222+ 1	9.5094+ 0							2.7125+ 0				1.0880- 2
8.0000- 1 ~ 1.0000+ 0	1.1909+ 1	9.5108+ 0							2.3984+ 0				1.0860- 2
1.0000+ 0 ~ 1.5000+ 0	1.1549+ 1	9.5131+ 0							2.0363+ 0				1.0860- 2
1.5000+ 0 ~ 2.0000+ 0	1.1238+ 1	9.5164+ 0							1.7213+ 0				1.0861- 2
2.0000+ 0 ~ 3.0000+ 0	1.0962+ 1	9.5215+ 0							1.4408+ 0				1.0861- 2
3.0000+ 0 ~ 4.0000+ 0	1.0746+ 1	9.5281+ 0							1.2182+ 0				1.0861- 2
4.0000+ 0 ~ 5.0000+ 0	1.0606+ 1	9.5348+ 0							1.0715+ 0				1.0861- 2
5.0000+ 0 ~ 6.0000+ 0	1.0510+ 1	9.5415+ 0							9.6822- 1				1.0861- 2
6.0000+ 0 ~ 8.0000+ 0	1.0414+ 1	9.5516+ 0							8.6267- 1				1.0861- 2
8.0000+ 0 ~ 1.0000+ 1	1.0324+ 1	9.5650+ 0							7.5915- 1				1.0861- 2
1.0000+ 1 ~ 1.5000+ 1	1.0237+ 1	9.5885+ 0							6.4823- 1				1.0861- 2
1.5000+ 1 ~ 2.0000+ 1	1.0169+ 1	9.6223+ 0							5.4679- 1				1.0861- 2
2.0000+ 1 ~ 3.0000+ 1	1.0134+ 1	9.6733+ 0							4.6079- 1				1.0861- 2
3.0000+ 1 ~ 4.0000+ 1	1.0131+ 1	9.7417+ 0							3.8951- 1				1.0861- 2
4.0000+ 1 ~ 5.0000+ 1	1.0155+ 1	9.8109+ 0							3.4448- 1				1.0861- 2
5.0000+ 1 ~ 6.0000+ 1	1.0196+ 1	9.8807+ 0							3.1408- 1				1.0861- 2
6.0000+ 1 ~ 8.0000+ 1	1.0266+ 1	9.9865+ 0							2.7955- 1				1.0861- 2
8.0000+ 1 ~ 1.0000+ 2	1.0378+ 1	1.0130+ 1							2.4831- 1				1.0861- 2
1.0000+ 2 ~ 1.5000+ 2	1.0603+ 1	1.0388+ 1							2.1508- 1				1.0869- 2
1.5000+ 2 ~ 2.0000+ 2	1.0954+ 1	1.0769+ 1							1.8489- 1				1.0880- 2
2.0000+ 2 ~ 3.0000+ 2	1.1539+ 1	1.1378+ 1							1.6060- 1				1.0892- 2
3.0000+ 2 ~ 4.0000+ 2	1.2399+ 1	1.2262+ 1							1.4134- 1				1.0904- 2
4.0000+ 2 ~ 5.0000+ 2	1.3348+ 1	1.3218+ 1							1.3079- 1				1.0912- 2
5.0000+ 2 ~ 6.0000+ 2	1.4389+ 1	1.4265+ 1							1.2370- 1				1.0919- 2
6.0000+ 2 ~ 8.0000+ 2	1.6161+ 1	1.6043+ 1							1.1793- 1				1.0927- 2
8.0000+ 2 ~ 1.0000+ 3	1.8985+ 1	1.8869+ 1							1.1529- 1				1.0936- 2
1.0000+ 3 ~ 1.5000+ 3	2.5326+ 1	2.5208+ 1							1.1835- 1				1.1031- 2
1.5000+ 3 ~ 2.0000+ 3	3.8715+ 1	3.8580+ 1							1.3506- 1				1.1175- 2
2.0000+ 3 ~ 3.0000+ 3	8.3129+ 1	8.2931+ 1							1.9819- 1				1.1325- 2
3.0000+ 3 ~ 4.0000+ 3	2.5619+ 2	2.5577+ 2							4.1642- 1				1.1469- 2
4.0000+ 3 ~ 5.0000+ 3	5.2782+ 2	5.2717+ 2							6.4945- 1				1.1576- 2
5.0000+ 3 ~ 6.0000+ 3	3.4535+ 2	3.4502+ 2							3.3149- 1				1.1779- 2
6.0000+ 3 ~ 8.0000+ 3	1.2887+ 2	1.2878+ 2							8.9414- 2				1.2182- 2
8.0000+ 3 ~ 1.0000+ 4	5.5293+ 1	5.5195+ 1							9.8057- 2				1.2608- 2
1.0000+ 4 ~ 1.5000+ 4	2.7364+ 1	2.7357+ 1							7.4864- 3				1.3664- 2
1.5000+ 4 ~ 2.0000+ 4	1.5683+ 1	1.5675+ 1							8.5042- 3				1.5037- 2
2.0000+ 4 ~ 3.0000+ 4	1.0425+ 1	1.0410+ 1							1.4869- 2				1.7906- 2
3.0000+ 4 ~ 4.0000+ 4	6.9796+ 0	6.9662+ 0							1.3376- 2				2.1542- 2
4.0000+ 4 ~ 5.0000+ 4	9.7064+ 0	9.6964+ 0							1.0058- 2				2.4245- 2
5.0000+ 4 ~ 6.0000+ 4	6.4304+ 0	6.4270+ 0							3.3895- 3				2.7727- 2
6.0000+ 4 ~ 8.0000+ 4	4.4262+ 0	4.4181+ 0							8.0460- 3				3.3663- 2
8.0000+ 4 ~ 1.0000+ 5	4.6581+ 0	4.6554+ 0							2.7113- 3				3.9937- 2
1.0000+ 5 ~ 1.5000+ 5	1.0169+ 1	1.0161+ 1							7.7173- 3				5.2454- 2
1.5000+ 5 ~ 2.0000+ 5	4.8516+ 0	4.8459+ 0							5.6771- 3				6.7922- 2
2.0000+ 5 ~ 3.0000+ 5	4.0900+ 0	4.0847+ 0							5.2764- 3				8.7936- 2
3.0000+ 5 ~ 4.0000+ 5	4.2867+ 0	4.2817+ 0							5.0631- 3				1.1073- 1
4.0000+ 5 ~ 5.0000+ 5	4.6890+ 0	4.6845+ 0							4.5428- 3				1.2897- 1
5.0000+ 5 ~ 6.0000+ 5	4.6982+ 0	4.6938+ 0							4.4881- 3			0.0000+ 0	1.4368- 1
6.0000+ 5 ~ 8.0000+ 5	4.1617+ 0	4.1571+ 0							4.6841- 3			0.0000+ 0	1.6106- 1
8.0000+ 5 ~ 1.0000+ 6	3.8362+ 0	3.8312+ 0							4.9693- 3			0.0000+ 0	1.7998- 1
1.0000+ 6 ~ 1.5000+ 6	3.5044+ 0	3.3452+ 0	1.5460- 1						4.6005- 3			0.0000+ 0	2.1934- 1
1.5000+ 6 ~ 2.0000+ 6	3.2756+ 0	2.6491+ 0	6.2299- 1						2.8429- 3			0.0000+ 0	2.9537- 1
2.0000+ 6 ~ 3.0000+ 6	3.2239+ 0	2.2330+ 0	9.8817- 1						2.6550- 3			0.0000+ 0	3.9708- 1
3.0000+ 6 ~ 4.0000+ 6	3.3702+ 0	2.0301+ 0	1.3383+ 0						1.8273- 3			9.5000- 6	5.3984- 1
4.0000+ 6 ~ 5.0000+ 6	3.5424+ 0	2.0402+ 0	1.5011+ 0						1.1261- 3	5.8650- 6		3.8750- 5	6.4976- 1
5.0000+ 6 ~ 6.0000+ 6	3.6412+ 0	2.1272+ 0	1.5130+ 0						7.3845- 4	1.0125- 4		1.8925- 4	7.2432- 1
6.0000+ 6 ~ 8.0000+ 6	3.6288+ 0	2.1577+ 0	1.4681+ 0						3.8403- 4	1.3087- 3		1.3612- 3	7.8528- 1
8.0000+ 6 ~ 1.0000+ 7	3.4455+ 0	2.0468+ 0	1.3858+ 0						1.9234- 4	6.7562- 3		6.2875- 3	8.2069- 1
1.0000+ 7 ~ 1.5000+ 7	3.0309+ 0	1.6646+ 0	9.2526- 1	4.1392- 1				1.4040- 3	5.6433- 5	2.0390- 2		1.6150- 2	8.2995- 1
1.5000+ 7 ~ 2.0000+ 7	2.5995+ 0	1.1955+ 0	2.5942- 1	1.0484+ 0				6.3975- 2	2.9335- 6	1.6850- 2		1.6020- 2	8.1684- 1

CROSS SECTION

MATERIAL =2285 NI-64

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	4.6144+ 0	3.4637- 2							4.5798+ 0				1.0520- 2
1.0000- 2 ~ 1.5000- 2	2.1610+ 0	3.4638- 2							2.1263+ 0				1.0520- 2
1.5000- 2 ~ 2.0000- 2	1.8225+ 0	3.4638- 2							1.7879+ 0				1.0520- 2
2.0000- 2 ~ 3.0000- 2	1.5399+ 0	3.4638- 2							1.5052+ 0				1.0520- 2
3.0000- 2 ~ 4.0000- 2	1.3021+ 0	3.4639- 2							1.2674+ 0				1.0520- 2
4.0000- 2 ~ 5.0000- 2	1.1490+ 0	3.4639- 2							1.1144+ 0				1.0520- 2
5.0000- 2 ~ 6.0000- 2	1.0412+ 0	3.4640- 2							1.0066+ 0				1.0520- 2
6.0000- 2 ~ 8.0000- 2	9.3012- 1	3.4641- 2							8.8548- 1				1.0520- 2
8.0000- 2 ~ 1.0000- 1	8.2254- 1	3.4642- 2							7.8790- 1				1.0521- 2
1.0000- 1 ~ 1.5000- 1	7.0764- 1	3.4643- 2							6.7300- 1				1.0521- 2
1.5000- 1 ~ 2.0000- 1	6.0059- 1	3.4646- 2							5.6594- 1				1.0521- 2
2.0000- 1 ~ 3.0000- 1	5.0944- 1	3.4650- 2							4.7479- 1				1.0521- 2
3.0000- 1 ~ 4.0000- 1	4.3457- 1	3.4655- 2							3.9992- 1				1.0521- 2
4.0000- 1 ~ 5.0000- 1	3.8702- 1	3.4660- 2							3.5236- 1				1.0521- 2
5.0000- 1 ~ 6.0000- 1	3.5421- 1	3.4666- 2							3.1954- 1				1.0521- 2
6.0000- 1 ~ 8.0000- 1	3.1749- 1	3.4674- 2							2.8282- 1				1.0521- 2
8.0000- 1 ~ 1.0000+ 0	2.8401- 1	3.4684- 2							2.4933- 1				1.0521- 2
1.0000+ 0 ~ 1.5000+ 0	2.4718- 1	3.4702- 2							2.1247- 1				1.0521- 2
1.5000+ 0 ~ 2.0000+ 0	2.1374- 1	3.4729- 2							1.7902- 1				1.0521- 2
2.0000+ 0 ~ 3.0000+ 0	1.8602- 1	3.4768- 2							1.5025- 1				1.0521- 2
3.0000+ 0 ~ 4.0000+ 0	1.6145- 1	3.4821- 2							1.2663- 1				1.0521- 2
4.0000+ 0 ~ 5.0000+ 0	1.4656- 1	3.4874- 2							1.1169- 1				1.0521- 2
5.0000+ 0 ~ 6.0000+ 0	1.3578- 1	3.4926- 2							1.0085- 1				1.0521- 2
6.0000+ 0 ~ 8.0000+ 0	1.2469- 1	3.5006- 2							8.9587- 2				1.0521- 2
8.0000+ 0 ~ 1.0000+ 1	1.1412- 1	3.5112- 2							7.9013- 2				1.0521- 2
1.0000+ 1 ~ 1.5000+ 1	1.0250- 1	3.5298- 2							6.7198- 2				1.0521- 2
1.5000+ 1 ~ 2.0000+ 1	9.2368- 2	3.5565- 2							5.6803- 2				1.0522- 2
2.0000+ 1 ~ 3.0000+ 1	8.3550- 2	3.5968- 2							4.7582- 2				1.0522- 2
3.0000+ 1 ~ 4.0000+ 1	7.6754- 2	3.6511- 2							4.0243- 2				1.0522- 2
4.0000+ 1 ~ 5.0000+ 1	7.2482- 2	3.7058- 2							3.5424- 2				1.0522- 2
5.0000+ 1 ~ 6.0000+ 1	6.9662- 2	3.7610- 2							3.2052- 2				1.0522- 2
6.0000+ 1 ~ 8.0000+ 1	6.7016- 2	3.8450- 2							2.8566- 2				1.0522- 2
8.0000+ 1 ~ 1.0000+ 2	6.4761- 2	3.9587- 2							2.5174- 2				1.0522- 2
1.0000+ 2 ~ 1.5000+ 2	6.3182- 2	4.1634- 2							2.1548- 2				1.0530- 2
1.5000+ 2 ~ 2.0000+ 2	6.2903- 2	4.4661- 2							1.8241- 2				1.0542- 2
2.0000+ 2 ~ 3.0000+ 2	6.4935- 2	4.9488- 2							1.5449- 2				1.0555- 2
3.0000+ 2 ~ 4.0000+ 2	6.9519- 2	5.6365- 2							1.3164- 2				1.0568- 2
4.0000+ 2 ~ 5.0000+ 2	7.5571- 2	6.3843- 2							1.1727- 2				1.0577- 2
5.0000+ 2 ~ 6.0000+ 2	8.2568- 2	7.1923- 2							1.0745- 2				1.0585- 2
6.0000+ 2 ~ 8.0000+ 2	9.3967- 2	8.4285- 2							9.6812- 3				1.0594- 2
8.0000+ 2 ~ 1.0000+ 3	1.1129- 1	1.0255- 1							8.7364- 3				1.0603- 2
1.0000+ 3 ~ 1.5000+ 3	1.4948- 1	1.4173- 1							7.7588- 3				1.0705- 2
1.5000+ 3 ~ 2.0000+ 3	2.1737- 1	2.1041- 1							6.9575- 3				1.0859- 2
2.0000+ 3 ~ 3.0000+ 3	3.5933- 1	3.5289- 1							6.4440- 3				1.1020- 2
3.0000+ 3 ~ 4.0000+ 3	6.3451- 1	6.2824- 1							6.2663- 3				1.1174- 2
4.0000+ 3 ~ 5.0000+ 3	1.0534+ 0	1.0470+ 0							6.4745- 3				1.1288- 2
5.0000+ 3 ~ 6.0000+ 3	1.6834+ 0	1.6764+ 0							7.0070- 3				1.1504- 2
6.0000+ 3 ~ 8.0000+ 3	3.4268+ 0	3.4181+ 0							8.6719- 3				1.1930- 2
8.0000+ 3 ~ 1.0000+ 4	1.1811+ 1	1.1413+ 1							3.9817- 1				1.2381- 2
1.0000+ 4 ~ 1.5000+ 4	8.7657+ 1	8.7577+ 1							8.0018- 2				1.3489- 2
1.5000+ 4 ~ 2.0000+ 4	4.4180+ 1	4.4150+ 1							3.0586- 2				1.4930- 2
2.0000+ 4 ~ 3.0000+ 4	6.0566+ 0	6.0468+ 0							9.8209- 3				1.7920- 2
3.0000+ 4 ~ 4.0000+ 4	6.4427+ 1	6.4398+ 1							2.9191- 2				2.1703- 2
4.0000+ 4 ~ 5.0000+ 4	3.9853+ 1	3.9850+ 1							3.6233- 3				2.4517- 2
5.0000+ 4 ~ 6.0000+ 4	1.8340+ 1	1.8339+ 1							9.8845- 4				2.8137- 2
6.0000+ 4 ~ 8.0000+ 4	1.1933+ 1	1.1930+ 1							3.2093- 3				3.4308- 2
8.0000+ 4 ~ 1.0000+ 5	8.2916+ 0	8.2914+ 0							1.5393- 4				4.0829- 2
1.0000+ 5 ~ 1.5000+ 5	5.7519+ 0	5.7479+ 0							3.9260- 3				5.3912- 2
1.5000+ 5 ~ 2.0000+ 5	7.8205+ 0	7.8171+ 0							3.3917- 3				7.0102- 2
2.0000+ 5 ~ 3.0000+ 5	5.1364+ 0	5.1333+ 0							3.1666- 3				9.1235- 2
3.0000+ 5 ~ 4.0000+ 5	4.8020+ 0	4.7988+ 0							3.1426- 3				1.1555- 1
4.0000+ 5 ~ 5.0000+ 5	4.7612+ 0	4.7572+ 0							3.9274- 3				1.3525- 1
5.0000+ 5 ~ 6.0000+ 5	4.6967+ 0	4.6927+ 0							3.9782- 3				1.5128- 1
6.0000+ 5 ~ 8.0000+ 5	4.2878+ 0	4.2847+ 0							3.0721- 3				1.7016- 1
8.0000+ 5 ~ 1.0000+ 6	3.9361+ 0	3.9318+ 0							3.2835- 3				1.9005- 1
1.0000+ 6 ~ 1.5000+ 6	3.6579+ 0	3.6272+ 0	2.8982- 2						3.8726- 3				2.2055- 1
1.5000+ 6 ~ 2.0000+ 6	3.2827+ 0	2.9166+ 0	3.6304- 1						2.4050- 3				2.8825- 1
2.0000+ 6 ~ 3.0000+ 6	3.2027+ 0	2.5398+ 0	6.6034- 1						2.4179- 3				3.7187- 1
3.0000+ 6 ~ 4.0000+ 6	3.3490+ 0	2.1210+ 0	1.2266+ 0						1.4283- 3			0.0000+ 0	5.1593- 1
4.0000+ 6 ~ 5.0000+ 6	3.5340+ 0	2.0828+ 0	1.4505+ 0						8.8381- 4			0.0000+ 0	6.3538- 1
5.0000+ 6 ~ 6.0000+ 6	3.6472+ 0	2.0964+ 0	1.5512+ 0						6.4513- 4			1.0750- 5	7.2881- 1
6.0000+ 6 ~ 8.0000+ 6	3.6570+ 0	2.1660+ 0	1.4907+ 0						2.8976- 4	1.1376- 5		6.8875- 5	7.8697- 1
8.0000+ 6 ~ 1.0000+ 7	3.5077+ 0	2.0979+ 0	1.4081+ 0	8.2863- 4					8.8856- 5	2.9687- 4		5.4760- 4	8.2098- 1
1.0000+ 7 ~ 1.5000+ 7	3.1357+ 0	1.7188+ 0	6.5477- 1	7.5475- 1					1.4073- 5	2.8875- 3		4.0975- 3	8.3495- 1
1.5000+ 7 ~ 2.0000+ 7	2.6867+ 0	1.2564+ 0	1.4462- 1	1.2195+ 0	5.5155- 2				3.1020- 7	3.9550- 3		7.3450- 3	8.2430- 1

CROSS SECTION

MATERIAL =2290 CU-0

ENERGY	TOTAL	ELASTIC	INELA	(N.2N)	(N.3N)	FISSION	(N.NA)	(N.NP)	CAPTURE	(N.P)	(N.D)	(N.A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.9541+ 1	7.8588+ 0							1.1682+ 1			0.0000+ 0	1.0509- 2
1.0000- 2 ~ 1.5000- 2	1.3282+ 1	7.8588+ 0							5.4238+ 0			0.0000+ 0	1.0509- 2
1.5000- 2 ~ 2.0000- 2	1.2419+ 1	7.8587+ 0							4.5601+ 0			0.0000+ 0	1.0509- 2
2.0000- 2 ~ 3.0000- 2	1.1695+ 1	7.8586+ 0							3.8359+ 0			0.0000+ 0	1.0509- 2
3.0000- 2 ~ 4.0000- 2	1.1084+ 1	7.8585+ 0							3.2251+ 0			0.0000+ 0	1.0509- 2
4.0000- 2 ~ 5.0000- 2	1.0713+ 1	7.8584+ 0							2.8541+ 0			0.0000+ 0	1.0509- 2
5.0000- 2 ~ 6.0000- 2	1.0429+ 1	7.8583+ 0							2.5710+ 0			0.0000+ 0	1.0509- 2
6.0000- 2 ~ 8.0000- 2	1.0139+ 1	7.8581+ 0							2.2810+ 0			0.0000+ 0	1.0509- 2
8.0000- 2 ~ 1.0000- 1	9.8733+ 0	7.8580+ 0							2.0154+ 0			0.0000+ 0	1.0509- 2
1.0000- 1 ~ 1.5000- 1	9.5690+ 0	7.8576+ 0							1.7114+ 0			0.0000+ 0	1.0509- 2
1.5000- 1 ~ 2.0000- 1	9.2974+ 0	7.8571+ 0							1.4404+ 0			0.0000+ 0	1.0509- 2
2.0000- 1 ~ 3.0000- 1	9.0662+ 0	7.8563+ 0							1.2100+ 0			0.0000+ 0	1.0509- 2
3.0000- 1 ~ 4.0000- 1	8.8736+ 0	7.8552+ 0							1.0184+ 0			0.0000+ 0	1.0509- 2
4.0000- 1 ~ 5.0000- 1	8.7625+ 0	7.8542+ 0							9.0828- 1			0.0000+ 0	1.0509- 2
5.0000- 1 ~ 6.0000- 1	8.6638+ 0	7.8532+ 0							8.1060- 1			0.0000+ 0	1.0509- 2
6.0000- 1 ~ 8.0000- 1	8.5711+ 0	7.8516+ 0							7.1954- 1			0.0000+ 0	1.0509- 2
8.0000- 1 ~ 1.0000+ 0	8.4832+ 0	7.8495+ 0							6.3366- 1			0.0000+ 0	1.0509- 2
1.0000+ 0 ~ 1.5000+ 0	8.3839+ 0	7.8459+ 0							5.3802- 1			0.0000+ 0	1.0509- 2
1.5000+ 0 ~ 2.0000+ 0	8.2940+ 0	7.8407+ 0							4.5328- 1			0.0000+ 0	1.0510- 2
2.0000+ 0 ~ 3.0000+ 0	8.2112+ 0	7.8330+ 0							3.7816- 1			0.0000+ 0	1.0510- 2
3.0000+ 0 ~ 4.0000+ 0	8.1405+ 0	7.8228+ 0							3.1780- 1			0.0000+ 0	1.0510- 2
4.0000+ 0 ~ 5.0000+ 0	8.0906+ 0	7.8125+ 0							2.7808- 1			0.0000+ 0	1.0510- 2
5.0000+ 0 ~ 6.0000+ 0	8.0527+ 0	7.8024+ 0							2.5033- 1			0.0000+ 0	1.0510- 2
6.0000+ 0 ~ 8.0000+ 0	8.0082+ 0	7.7872+ 0							2.2097- 1			0.0000+ 0	1.0510- 2
8.0000+ 0 ~ 1.0000+ 1	7.9598+ 0	7.7671+ 0							1.9245- 1			0.0000+ 0	1.0510- 2
1.0000+ 1 ~ 1.5000+ 1	7.8940+ 0	7.7325+ 0							1.6149- 1			0.0000+ 0	1.0510- 2
1.5000+ 1 ~ 2.0000+ 1	7.8168+ 0	7.6840+ 0							1.3285- 1			0.0000+ 0	1.0510- 2
2.0000+ 1 ~ 3.0000+ 1	7.7212+ 0	7.6132+ 0							1.0786- 1			0.0000+ 0	1.0510- 2
3.0000+ 1 ~ 4.0000+ 1	7.6091+ 0	7.5221+ 0							8.7044- 2			0.0000+ 0	1.0510- 2
4.0000+ 1 ~ 5.0000+ 1	7.5080+ 0	7.4345+ 0							7.3465- 2			0.0000+ 0	1.0510- 2
5.0000+ 1 ~ 6.0000+ 1	7.4142+ 0	7.3503+ 0							6.3830- 2			0.0000+ 0	1.0510- 2
6.0000+ 1 ~ 8.0000+ 1	7.2842+ 0	7.2304+ 0							5.3813- 2			0.0000+ 0	1.0509- 2
8.0000+ 1 ~ 1.0000+ 2	7.1230+ 0	7.0787+ 0							4.4220- 2			0.0000+ 0	1.0512- 2
1.0000+ 2 ~ 1.5000+ 2	6.8709+ 0	6.8367+ 0							3.4246- 2			0.0000+ 0	1.0521- 2
1.5000+ 2 ~ 2.0000+ 2	6.5435+ 0	6.5169+ 0							2.6543- 2			0.0000+ 0	1.0530- 2
2.0000+ 2 ~ 3.0000+ 2	6.7992+ 0	6.2061+ 0							5.9311- 1			0.0000+ 0	1.0539- 2
3.0000+ 2 ~ 4.0000+ 2	5.7136+ 0	5.6969+ 0							1.7166- 2			0.0000+ 0	1.0547- 2
4.0000+ 2 ~ 5.0000+ 2	5.2038+ 0	5.1766+ 0							2.7228- 2			0.0000+ 0	1.0554- 2
5.0000+ 2 ~ 6.0000+ 2	3.1610+ 1	2.1457+ 1							1.0153+ 1			0.0000+ 0	1.0699- 2
6.0000+ 2 ~ 8.0000+ 2	5.8292+ 0	5.6488+ 0							1.8047- 1			0.0000+ 0	1.0806- 2
8.0000+ 2 ~ 1.0000+ 3	4.9027+ 0	4.7358+ 0							1.6689- 1			0.0000+ 0	1.0600- 2
1.0000+ 3 ~ 1.5000+ 3	4.0389+ 0	4.0108+ 0							2.8034- 2			0.0000+ 0	1.0821- 2
1.5000+ 3 ~ 2.0000+ 3	7.2234+ 0	7.1261+ 0							9.7263- 2			0.0000+ 0	1.1160- 2
2.0000+ 3 ~ 3.0000+ 3	9.3057+ 1	9.2344+ 1							7.1233- 1			0.0000+ 0	1.1458- 2
3.0000+ 3 ~ 4.0000+ 3	6.9123+ 0	6.8541+ 0							5.8253- 2			0.0000+ 0	1.1906- 2
4.0000+ 3 ~ 5.0000+ 3	9.6060+ 0	9.2851+ 0							3.2088- 1			0.0000+ 0	1.2059- 2
5.0000+ 3 ~ 6.0000+ 3	1.8301+ 1	1.8018+ 1							2.8328- 1			0.0000+ 0	1.2034- 2
6.0000+ 3 ~ 8.0000+ 3	1.7524+ 1	1.7345+ 1							1.7937- 1			0.0000+ 0	1.2513- 2
8.0000+ 3 ~ 1.0000+ 4	1.7601+ 1	1.7466+ 1							1.3537- 1			0.0000+ 0	1.2548- 2
1.0000+ 4 ~ 1.5000+ 4	1.2324+ 1	1.2256+ 1							6.7408- 2			0.0000+ 0	1.3488- 2
1.5000+ 4 ~ 2.0000+ 4	8.2939+ 0	8.2397+ 0							5.4183- 2			0.0000+ 0	1.4763- 2
2.0000+ 4 ~ 3.0000+ 4	1.1470+ 1	1.1424+ 1							4.5881- 2			0.0000+ 0	1.6537- 2
3.0000+ 4 ~ 4.0000+ 4	1.0715+ 1	1.0679+ 1							3.5674- 2			0.0000+ 0	1.9167- 2
4.0000+ 4 ~ 5.0000+ 4	1.0998+ 1	1.0949+ 1							4.9457- 2			0.0000+ 0	2.1768- 2
5.0000+ 4 ~ 6.0000+ 4	1.0379+ 1	1.0334+ 1							4.4385- 2			0.0000+ 0	2.4490- 2
6.0000+ 4 ~ 8.0000+ 4	9.6882+ 0	9.6490+ 0							3.9181- 2			0.0000+ 0	2.8784- 2
8.0000+ 4 ~ 1.0000+ 5	8.9951+ 0	8.9609+ 0							3.4178- 2			0.0000+ 0	3.4493- 2
1.0000+ 5 ~ 1.5000+ 5	8.1408+ 0	8.1121+ 0							2.8622- 2			0.0000+ 0	4.4986- 2
1.5000+ 5 ~ 2.0000+ 5	7.3063+ 0	7.2828+ 0							2.3649- 2			0.0000+ 0	5.7494- 2
2.0000+ 5 ~ 3.0000+ 5	6.4898+ 0	6.4700+ 0							1.9593- 2			0.0000+ 0	7.3280- 2
3.0000+ 5 ~ 4.0000+ 5	5.7269+ 0	5.7100+ 0							1.6934- 2			0.0000+ 0	9.1550- 2
4.0000+ 5 ~ 5.0000+ 5	5.2000+ 0	5.1845+ 0							1.5559- 2			0.0000+ 0	1.0582- 1
5.0000+ 5 ~ 6.0000+ 5	4.8086+ 0	4.7938+ 0							1.4823- 2			0.0000+ 0	1.1740- 1
6.0000+ 5 ~ 8.0000+ 5	4.3760+ 0	4.3365+ 0	2.6030- 2						1.4313- 2			0.0000+ 0	1.3268- 1
8.0000+ 5 ~ 1.0000+ 6	3.9663+ 0	3.8497+ 0	1.0161- 1						1.3887- 2			0.0000+ 0	1.5273- 1
1.0000+ 6 ~ 1.5000+ 6	3.5501+ 0	3.1789+ 0	3.5880- 1						1.1214- 2	3.8056- 6		0.0000+ 0	1.9792- 1
1.5000+ 6 ~ 2.0000+ 6	3.2886+ 0	2.5684+ 0	7.1258- 1						7.4583- 3	9.4487- 7		0.0000+ 0	2.7728- 1
2.0000+ 6 ~ 3.0000+ 6	3.3437+ 0	2.3103+ 0	1.0279+ 0						5.7669- 3	1.6232- 5		0.0000+ 0	3.8922- 1
3.0000+ 6 ~ 4.0000+ 6	3.6670+ 0	2.3470+ 0	1.3179+ 0						4.0578- 3	2.8883- 4		3.1060- 5	5.2483- 1
4.0000+ 6 ~ 5.0000+ 6	3.9345+ 0	2.4584+ 0	1.4721+ 0						2.9370- 3	8.7679- 4		5.4569- 4	6.3901- 1
5.0000+ 6 ~ 6.0000+ 6	4.0426+ 0	2.5337+ 0	1.5030+ 0						2.0503- 3	1.4909- 3		2.9839- 3	7.2089- 1
6.0000+ 6 ~ 8.0000+ 6	3.9658+ 0	2.5064+ 0	1.4476+ 0				1.5204- 7		1.1988- 3	2.3075- 3		8.3093- 3	7.8521- 1
8.0000+ 6 ~ 1.0000+ 7	3.8957+ 0	2.2912+ 0	1.3791+ 0				1.0483- 6		5.7542- 4	3.5998- 3		2.1182- 2	8.2012- 1
1.0000+ 7 ~ 1.5000+ 7	3.2715+ 0	1.8091+ 0	1.0860+ 0	3.3696- 1			6.7519- 3		1.8344- 4	5.8494- 3		2.8400- 2	8.2172- 1
1.5000+ 7 ~ 2.0000+ 7	2.7774+ 0	1.3293+ 0	4.6821- 1	9.0745- 1			5.3881- 2		2.2872- 5	5.5527- 3		1.3506- 2	7.9941- 1

MATERIAL =2291

CROSS SECTION

CU-63

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.8882+ 1	4.9792+ 0							1.3903+ 1			0.0000+ 0	1.0686- 2
1.0000- 2 ~ 1.5000- 2	1.1434+ 1	4.9792+ 0							6.4546+ 0			0.0000+ 0	1.0686- 2
1.5000- 2 ~ 2.0000- 2	1.0406+ 1	4.9791+ 0							5.4270+ 0			0.0000+ 0	1.0686- 2
2.0000- 2 ~ 3.0000- 2	9.5475+ 0	4.9791+ 0							4.6684+ 0			0.0000+ 0	1.0686- 2
3.0000- 2 ~ 4.0000- 2	8.8247+ 0	4.9790+ 0							3.8457+ 0			0.0000+ 0	1.0686- 2
4.0000- 2 ~ 5.0000- 2	8.3604+ 0	4.9789+ 0							3.3815+ 0			0.0000+ 0	1.0686- 2
5.0000- 2 ~ 6.0000- 2	8.0329+ 0	4.9788+ 0							3.0541+ 0			0.0000+ 0	1.0686- 2
6.0000- 2 ~ 8.0000- 2	7.6967+ 0	4.9787+ 0							2.7170+ 0			0.0000+ 0	1.0686- 2
8.0000- 2 ~ 1.0000- 1	7.3696+ 0	4.9785+ 0							2.3910+ 0			0.0000+ 0	1.0686- 2
1.0000- 1 ~ 1.5000- 1	7.0199+ 0	4.9783+ 0							2.0417+ 0			0.0000+ 0	1.0686- 2
1.5000- 1 ~ 2.0000- 1	6.6936+ 0	4.9779+ 0							1.7157+ 0			0.0000+ 0	1.0686- 2
2.0000- 1 ~ 3.0000- 1	6.4167+ 0	4.9773+ 0							1.4394+ 0			0.0000+ 0	1.0686- 2
3.0000- 1 ~ 4.0000- 1	6.1880+ 0	4.9765+ 0							1.2115+ 0			0.0000+ 0	1.0686- 2
4.0000- 1 ~ 5.0000- 1	6.0432+ 0	4.9757+ 0							1.0675+ 0			0.0000+ 0	1.0686- 2
5.0000- 1 ~ 6.0000- 1	5.9410+ 0	4.9749+ 0							9.6610- 1			0.0000+ 0	1.0686- 2
6.0000- 1 ~ 8.0000- 1	5.8291+ 0	4.9737+ 0							8.5532- 1			0.0000+ 0	1.0686- 2
8.0000- 1 ~ 1.0000+ 0	5.7256+ 0	4.9722+ 0							7.5349- 1			0.0000+ 0	1.0686- 2
1.0000+ 0 ~ 1.5000+ 0	5.6096+ 0	4.9694+ 0							6.4020- 1			0.0000+ 0	1.0686- 2
1.5000+ 0 ~ 2.0000+ 0	5.5039+ 0	4.9655+ 0							5.3842- 1			0.0000+ 0	1.0686- 2
2.0000+ 0 ~ 3.0000+ 0	5.4092+ 0	4.9597+ 0							4.4954- 1			0.0000+ 0	1.0686- 2
3.0000+ 0 ~ 4.0000+ 0	5.3290+ 0	4.9519+ 0							3.7712- 1			0.0000+ 0	1.0686- 2
4.0000+ 0 ~ 5.0000+ 0	5.2746+ 0	4.9442+ 0							3.3039- 1			0.0000+ 0	1.0686- 2
5.0000+ 0 ~ 6.0000+ 0	5.2332+ 0	4.9366+ 0							2.9668- 1			0.0000+ 0	1.0686- 2
6.0000+ 0 ~ 8.0000+ 0	5.1868+ 0	4.9252+ 0							2.6165- 1			0.0000+ 0	1.0686- 2
8.0000+ 0 ~ 1.0000+ 1	5.1382+ 0	4.9102+ 0							2.2798- 1			0.0000+ 0	1.0686- 2
1.0000+ 1 ~ 1.5000+ 1	5.0748+ 0	4.8844+ 0							1.9040- 1			0.0000+ 0	1.0686- 2
1.5000+ 1 ~ 2.0000+ 1	5.0052+ 0	4.8486+ 0							1.5665- 1			0.0000+ 0	1.0686- 2
2.0000+ 1 ~ 3.0000+ 1	4.9232+ 0	4.7969+ 0							1.2630- 1			0.0000+ 0	1.0686- 2
3.0000+ 1 ~ 4.0000+ 1	4.8330+ 0	4.7314+ 0							1.0158- 1			0.0000+ 0	1.0686- 2
4.0000+ 1 ~ 5.0000+ 1	4.7546+ 0	4.6695+ 0							8.5179- 2			0.0000+ 0	1.0686- 2
5.0000+ 1 ~ 6.0000+ 1	4.6843+ 0	4.6108+ 0							7.3533- 2			0.0000+ 0	1.0686- 2
6.0000+ 1 ~ 8.0000+ 1	4.5901+ 0	4.5287+ 0							6.1352- 2			0.0000+ 0	1.0686- 2
8.0000+ 1 ~ 1.0000+ 2	4.4780+ 0	4.4279+ 0							5.0093- 2			0.0000+ 0	1.0686- 2
1.0000+ 2 ~ 1.5000+ 2	4.3098+ 0	4.2718+ 0							3.8001- 2			0.0000+ 0	1.0693- 2
1.5000+ 2 ~ 2.0000+ 2	4.1068+ 0	4.0787+ 0							2.8123- 2			0.0000+ 0	1.0704- 2
2.0000+ 2 ~ 3.0000+ 2	3.8531+ 0	3.8316+ 0							2.1459- 2			0.0000+ 0	1.0716- 2
3.0000+ 2 ~ 4.0000+ 2	3.6364+ 0	3.6164+ 0							1.9938- 2			0.0000+ 0	1.0727- 2
4.0000+ 2 ~ 5.0000+ 2	3.1133+ 0	3.0777+ 0							3.5686- 2			0.0000+ 0	1.0735- 2
5.0000+ 2 ~ 6.0000+ 2	4.1574+ 1	2.6890+ 1							1.4685+ 1			0.0000+ 0	1.0742- 2
6.0000+ 2 ~ 8.0000+ 2	4.6035+ 0	4.3447+ 0							2.5886- 1			0.0000+ 0	1.0750- 2
8.0000+ 2 ~ 1.0000+ 3	3.6136+ 0	3.3738+ 0							2.3974- 1			0.0000+ 0	1.0758- 2
1.0000+ 3 ~ 1.5000+ 3	2.8046+ 0	2.7938+ 0							1.0766- 2			0.0000+ 0	1.0917- 2
1.5000+ 3 ~ 2.0000+ 3	8.0385+ 0	7.8995+ 0							1.3901- 1			0.0000+ 0	1.1160- 2
2.0000+ 3 ~ 3.0000+ 3	3.7720+ 1	3.6852+ 1							8.6732- 1			0.0000+ 0	1.1413- 2
3.0000+ 3 ~ 4.0000+ 3	3.7948+ 0	3.7910+ 0							3.8048- 3			0.0000+ 0	1.1656- 2
4.0000+ 3 ~ 5.0000+ 3	8.5302+ 0	8.1201+ 0							4.1017- 1			0.0000+ 0	1.1836- 2
5.0000+ 3 ~ 6.0000+ 3	2.4447+ 1	2.4038+ 1							4.0889- 1			0.0000+ 0	1.1981- 2
6.0000+ 3 ~ 8.0000+ 3	1.4441+ 1	1.4251+ 1							1.9000- 1			0.0000+ 0	1.2152- 2
8.0000+ 3 ~ 1.0000+ 4	1.9887+ 1	1.9715+ 1							1.7096- 1			0.0000+ 0	1.2332- 2
1.0000+ 4 ~ 1.5000+ 4	1.3323+ 1	1.3240+ 1							8.2106- 2			0.0000+ 0	1.3411- 2
1.5000+ 4 ~ 2.0000+ 4	8.3045+ 0	8.2318+ 0							7.2721- 2			0.0000+ 0	1.4983- 2
2.0000+ 4 ~ 3.0000+ 4	1.2399+ 1	1.2339+ 1							5.9686- 2			0.0000+ 0	1.6618- 2
3.0000+ 4 ~ 4.0000+ 4	1.1571+ 1	1.1528+ 1							4.3179- 2			0.0000+ 0	1.9150- 2
4.0000+ 4 ~ 5.0000+ 4	1.1180+ 1	1.1123+ 1							5.7579- 2			0.0000+ 0	2.1929- 2
5.0000+ 4 ~ 6.0000+ 4	1.0531+ 1	1.0480+ 1							5.1607- 2			0.0000+ 0	2.4710- 2
6.0000+ 4 ~ 8.0000+ 4	9.8082+ 0	9.7625+ 0							4.5657- 2			0.0000+ 0	2.9014- 2
8.0000+ 4 ~ 1.0000+ 5	9.0837+ 0	9.0437+ 0							3.9978- 2			0.0000+ 0	3.4774- 2
1.0000+ 5 ~ 1.5000+ 5	8.1948+ 0	8.1612+ 0							3.3575- 2			0.0000+ 0	4.5272- 2
1.5000+ 5 ~ 2.0000+ 5	7.3298+ 0	7.3019+ 0							2.7802- 2			0.0000+ 0	5.7743- 2
2.0000+ 5 ~ 3.0000+ 5	6.4892+ 0	6.4662+ 0							2.3036- 2			0.0000+ 0	7.3375- 2
3.0000+ 5 ~ 4.0000+ 5	5.7133+ 0	5.6935+ 0							1.9858- 2			0.0000+ 0	9.1234- 2
4.0000+ 5 ~ 5.0000+ 5	5.1815+ 0	5.1633+ 0							1.8199- 2			0.0000+ 0	1.0508- 1
5.0000+ 5 ~ 6.0000+ 5	4.7901+ 0	4.7728+ 0							1.7304- 2			0.0000+ 0	1.1626- 1
6.0000+ 5 ~ 8.0000+ 5	4.3633+ 0	4.3097+ 0	9.6040- 2						1.6640- 2			0.0000+ 0	1.3198- 1
8.0000+ 5 ~ 1.0000+ 6	3.9634+ 0	3.8243+ 0	1.2094- 1						1.6054- 2			0.0000+ 0	1.5177- 1
1.0000+ 6 ~ 1.5000+ 6	3.5821+ 0	3.1343+ 0	4.1169- 1						1.2464- 2			0.0000+ 0	2.0088- 1
1.5000+ 6 ~ 2.0000+ 6	3.3108+ 0	2.5412+ 0	7.6018- 1						8.1765- 3			0.0000+ 0	2.8440- 1
2.0000+ 6 ~ 3.0000+ 6	3.3652+ 0	2.3065+ 0	1.0537+ 0						6.3201- 3			0.0000+ 0	3.9935- 1
3.0000+ 6 ~ 4.0000+ 6	3.6775+ 0	2.3600+ 0	1.3148+ 0						4.6456- 3			4.4950- 5	6.3039- 1
4.0000+ 6 ~ 5.0000+ 6	3.9386+ 0	2.4735+ 0	1.4612+ 0						3.4605- 3			7.9000- 4	6.4038- 1
5.0000+ 6 ~ 6.0000+ 6	4.0433+ 0	2.5407+ 0	1.4967+ 0						2.4594- 3			3.4500- 3	7.2109- 1
6.0000+ 6 ~ 8.0000+ 6	3.9583+ 0	2.5012+ 0	1.4437+ 0				0.0000+ 0		1.4653- 3			1.2025- 2	7.8545- 1
8.0000+ 6 ~ 1.0000+ 7	3.6860+ 0	2.2757+ 0	1.3788+ 0				0.0000+ 0		7.1880- 4			3.0625- 2	8.2018- 1
1.0000+ 7 ~ 1.5000+ 7	3.2525+ 0	1.7870+ 0	1.1729+ 0	2.4201- 1			9.5610- 3		2.4018- 4			4.1100- 2	8.1988- 1
1.5000+ 7 ~ 2.0000+ 7	2.7633+ 0	1.3175+ 0	5.0978- 1	8.4550- 1			7.1300- 2		3.0754- 5			1.9545- 2	7.9784- 1

CROSS SECTION

MATERIAL =2292 CU-65

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	2.1014+ 1	1.4298+ 1							6.7156+ 0				1.0356- 2
1.0000- 2 ~ 1.5000- 2	1.7416+ 1	1.4298+ 1							9.1180+ 0				1.0356- 2
1.5000- 2 ~ 2.0000- 2	1.6920+ 1	1.4298+ 1							2.6216+ 0				1.0356- 2
2.0000- 2 ~ 3.0000- 2	1.6503+ 1	1.4298+ 1							2.2053+ 0				1.0356- 2
3.0000- 2 ~ 4.0000- 2	1.6152+ 1	1.4298+ 1							1.8542+ 0				1.0356- 2
4.0000- 2 ~ 5.0000- 2	1.5939+ 1	1.4298+ 1							1.6410+ 0				1.0356- 2
5.0000- 2 ~ 6.0000- 2	1.5776+ 1	1.4298+ 1							1.4782+ 0				1.0356- 2
6.0000- 2 ~ 8.0000- 2	1.6609+ 1	1.4297+ 1							1.3116+ 0				1.0356- 2
8.0000- 2 ~ 1.0000- 1	1.5455+ 1	1.4297+ 1							1.1589+ 0				1.0356- 2
1.0000- 1 ~ 1.5000- 1	1.5281+ 1	1.4296+ 1							9.8419- 1				1.0356- 2
1.5000- 1 ~ 2.0000- 1	1.5124+ 1	1.4296+ 1							8.2847- 1				1.0356- 2
2.0000- 1 ~ 3.0000- 1	1.4990+ 1	1.4294+ 1							6.9610- 1				1.0356- 2
3.0000- 1 ~ 4.0000- 1	1.4879+ 1	1.4293+ 1							5.8606- 1				1.0356- 2
4.0000- 1 ~ 5.0000- 1	1.4808+ 1	1.4291+ 1							5.1710- 1				1.0356- 2
5.0000- 1 ~ 6.0000- 1	1.4756+ 1	1.4290+ 1							4.6677- 1				1.0356- 2
6.0000- 1 ~ 8.0000- 1	1.4702+ 1	1.4287+ 1							4.1452- 1				1.0356- 2
8.0000- 1 ~ 1.0000+ 0	1.4649+ 1	1.4284+ 1							3.6527- 1				1.0356- 2
1.0000+ 0 ~ 1.5000+ 0	1.4589+ 1	1.4278+ 1							3.1046- 1				1.0356- 2
1.5000+ 0 ~ 2.0000+ 0	1.4532+ 1	1.4270+ 1							2.6196- 1				1.0356- 2
2.0000+ 0 ~ 3.0000+ 0	1.4478+ 1	1.4258+ 1							2.1904- 1				1.0356- 2
3.0000+ 0 ~ 4.0000+ 0	1.4427+ 1	1.4243+ 1							1.8462- 1				1.0356- 2
4.0000+ 0 ~ 5.0000+ 0	1.4389+ 1	1.4227+ 1							1.6204- 1				1.0356- 2
5.0000+ 0 ~ 6.0000+ 0	1.4357+ 1	1.4211+ 1							1.4630- 1				1.0356- 2
6.0000+ 0 ~ 8.0000+ 0	1.4317+ 1	1.4187+ 1							1.2970- 1				1.0356- 2
8.0000+ 0 ~ 1.0000+ 1	1.4270+ 1	1.4156+ 1							1.1361- 1				1.0356- 2
1.0000+ 1 ~ 1.5000+ 1	1.4198+ 1	1.4102+ 1							9.6275- 2				1.0357- 2
1.5000+ 1 ~ 2.0000+ 1	1.4105+ 1	1.4025+ 1							8.0314- 2				1.0357- 2
2.0000+ 1 ~ 3.0000+ 1	1.3978+ 1	1.3911+ 1							6.6549- 2				1.0357- 2
3.0000+ 1 ~ 4.0000+ 1	1.3818+ 1	1.3763+ 1							5.5032- 2				1.0358- 2
4.0000+ 1 ~ 5.0000+ 1	1.3666+ 1	1.3618+ 1							4.7706- 2				1.0358- 2
5.0000+ 1 ~ 6.0000+ 1	1.3519+ 1	1.3477+ 1							4.2405- 2				1.0358- 2
6.0000+ 1 ~ 8.0000+ 1	1.3308+ 1	1.3271+ 1							3.6697- 2				1.0359- 2
8.0000+ 1 ~ 1.0000+ 2	1.3039+ 1	1.3007+ 1							3.1311- 2				1.0359- 2
1.0000+ 2 ~ 1.5000+ 2	1.2697+ 1	1.2672+ 1							2.5678- 2				1.0366- 2
1.5000+ 2 ~ 2.0000+ 2	1.1993+ 1	1.1970+ 1							2.2937- 2				1.0377- 2
2.0000+ 2 ~ 3.0000+ 2	1.3388+ 1	1.1518+ 1							1.8716+ 0				1.0388- 2
3.0000+ 2 ~ 4.0000+ 2	1.0683+ 1	1.0672+ 1							1.1041- 2				1.0399- 2
4.0000+ 2 ~ 5.0000+ 2	9.8839+ 0	9.8756+ 0							8.3244- 3				1.0407- 2
5.0000+ 2 ~ 6.0000+ 2	9.2958+ 0	9.2892+ 0							6.6849- 3				1.0413- 2
6.0000+ 2 ~ 8.0000+ 2	8.6727+ 0	8.5675+ 0							5.1774- 3				1.0421- 2
8.0000+ 2 ~ 1.0000+ 3	7.7913+ 0	7.7873+ 0							3.9914- 3				1.0429- 2
1.0000+ 3 ~ 1.5000+ 3	6.7998+ 0	6.7332+ 0							6.6631- 2				1.0718- 2
1.5000+ 3 ~ 2.0000+ 3	6.3858+ 0	6.3821+ 0							3.7079- 3				1.1167- 2
2.0000+ 3 ~ 3.0000+ 3	2.2598+ 1	2.2233+ 1							3.6519- 1				1.1634- 2
3.0000+ 3 ~ 4.0000+ 3	1.3886+ 1	1.3706+ 1							1.8006- 1				1.2082- 2
4.0000+ 3 ~ 5.0000+ 3	1.1945+ 1	1.1824+ 1							1.2106- 1				1.2416- 2
5.0000+ 3 ~ 6.0000+ 3	4.5537+ 0	4.5515+ 0							2.2610- 3				1.2682- 2
6.0000+ 3 ~ 8.0000+ 3	2.4420+ 1	2.4264+ 1							1.5548- 1				1.2998- 2
8.0000+ 3 ~ 1.0000+ 4	1.2503+ 1	1.2447+ 1							5.5847- 2				1.3331- 2
1.0000+ 4 ~ 1.5000+ 4	1.0097+ 1	1.0062+ 1							3.4523- 2				1.3759- 2
1.5000+ 4 ~ 2.0000+ 4	8.2670+ 0	8.2542+ 0							1.2719- 2				1.4208- 2
2.0000+ 4 ~ 3.0000+ 4	9.3910+ 0	9.3760+ 0							1.4998- 2				1.6284- 2
3.0000+ 4 ~ 4.0000+ 4	8.7979+ 0	8.7790+ 0							1.8887- 2				1.9260- 2
4.0000+ 4 ~ 5.0000+ 4	1.0592+ 1	1.0560+ 1							3.1739- 2				2.1479- 2
5.0000+ 4 ~ 6.0000+ 4	1.0037+ 1	1.0009+ 1							2.8234- 2				2.3976- 2
6.0000+ 4 ~ 8.0000+ 4	9.4200+ 0	9.3954+ 0							2.4633- 2				2.8184- 2
8.0000+ 4 ~ 1.0000+ 5	8.7970+ 0	8.7757+ 0							2.1201- 2				3.3846- 2
1.0000+ 5 ~ 1.5000+ 5	8.0198+ 0	8.0022+ 0							1.7546- 2				4.4369- 2
1.5000+ 5 ~ 2.0000+ 5	7.2598+ 0	7.2392+ 0							1.4360- 2				5.6937- 2
2.0000+ 5 ~ 3.0000+ 5	6.4904+ 0	6.4785+ 0							1.1693- 2				7.3066- 2
3.0000+ 5 ~ 4.0000+ 5	5.7574+ 0	5.7470+ 0							1.0396- 2				8.2247- 2
4.0000+ 5 ~ 5.0000+ 5	5.2413+ 0	5.2317+ 0							9.6567- 3				1.0747- 1
5.0000+ 5 ~ 6.0000+ 5	4.8499+ 0	4.8406+ 0							9.2754- 3				1.1990- 1
6.0000+ 5 ~ 8.0000+ 5	4.4061+ 0	4.3966+ 0	4.0821- 4						9.1091- 3				1.3516- 1
8.0000+ 5 ~ 1.0000+ 6	3.9761+ 0	3.9065+ 0	5.8372- 2						9.0414- 3				1.5493- 1
1.0000+ 6 ~ 1.5000+ 6	3.5329+ 0	3.2787+ 0	2.4052- 1						8.4371- 3	1.2639- 7			1.9351- 1
1.5000+ 6 ~ 2.0000+ 6	3.2419+ 0	2.6291+ 0	6.0615- 1						5.8452- 3	3.0578- 6			2.8256- 1
2.0000+ 6 ~ 3.0000+ 6	3.2955+ 0	2.3210+ 0	9.7016- 1						4.5269- 3	5.2530- 5			3.6699- 1
3.0000+ 6 ~ 4.0000+ 6	3.6434+ 0	2.3178+ 0	1.3248+ 0						2.7374- 3	8.7000- 4			5.1223- 1
4.0000+ 6 ~ 5.0000+ 6	3.9254+ 0	2.4247+ 0	1.4963+ 0						1.7647- 3	2.6375- 3			6.3586- 1
5.0000+ 6 ~ 6.0000+ 6	4.0409+ 0	2.5180+ 0	1.5170+ 0						1.1349- 3	4.6250- 3			7.2043- 1
6.0000+ 6 ~ 8.0000+ 6	3.9624+ 0	2.5182+ 0	1.4563+ 0				4.9206- 7		6.0260- 4	7.4675- 3			7.8466- 1
8.0000+ 6 ~ 1.0000+ 7	3.7162+ 0	2.3260+ 0	1.3796+ 0				3.3926- 6		2.5434- 4	1.1650- 2			8.2039- 1
1.0000+ 7 ~ 1.5000+ 7	3.3149+ 0	1.8586+ 0	8.8859- 1	6.4928- 1			4.6805- 4		5.6499- 5	1.8930- 2			8.2566- 1
1.5000+ 7 ~ 2.0000+ 7	2.8088+ 0	1.3555+ 0	3.7525- 1	1.0460+ 0			1.4215- 2		5.2455- 6	1.7970- 2			8.0331- 1

MATERIAL =2411

CROSS SECTION

NB-93

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	9.8908+ 0	6.3268+ 0							3.5650+ 0	0.0000+ 0		0.0000+ 0	7.3207- 3
1.0000- 2 ~ 1.5000- 2	7.9807+ 0	6.3257+ 0							1.6550+ 0	0.0000+ 0		0.0000+ 0	7.3376- 3
1.5000- 2 ~ 2.0000- 2	7.7171+ 0	6.3257+ 0							1.3914+ 0	0.0000+ 0		0.0000+ 0	7.3424- 3
2.0000- 2 ~ 3.0000- 2	7.4968+ 0	6.3257+ 0							1.1712+ 0	0.0000+ 0		0.0000+ 0	7.3473- 3
3.0000- 2 ~ 4.0000- 2	7.3114+ 0	6.3256+ 0							9.8577- 1	0.0000+ 0		0.0000+ 0	7.3521- 3
4.0000- 2 ~ 5.0000- 2	7.1922+ 0	6.3255+ 0							8.6669- 1	0.0000+ 0		0.0000+ 0	7.3556- 3
5.0000- 2 ~ 6.0000- 2	7.1081+ 0	6.3254+ 0							7.8269- 1	0.0000+ 0		0.0000+ 0	7.3585- 3
6.0000- 2 ~ 8.0000- 2	7.0216+ 0	6.3253+ 0							6.8620- 1	0.0000+ 0		0.0000+ 0	7.3618- 3
8.0000- 2 ~ 1.0000- 1	6.9378+ 0	6.3252+ 0							6.1258- 1	0.0000+ 0		0.0000+ 0	7.3653- 3
1.0000- 1 ~ 1.5000- 1	6.8478+ 0	6.3250+ 0							5.2286- 1	0.0000+ 0		0.0000+ 0	7.3699- 3
1.5000- 1 ~ 2.0000- 1	6.7637+ 0	6.3246+ 0							4.3909- 1	0.0000+ 0		0.0000+ 0	7.3746- 3
2.0000- 1 ~ 3.0000- 1	6.6923+ 0	6.3241+ 0							3.6814- 1	0.0000+ 0		0.0000+ 0	7.3798- 3
3.0000- 1 ~ 4.0000- 1	6.6329+ 0	6.3234+ 0							3.0950- 1	0.0000+ 0		0.0000+ 0	7.3843- 3
4.0000- 1 ~ 5.0000- 1	6.5952+ 0	6.3227+ 0							2.7246- 1	0.0000+ 0		0.0000+ 0	7.3879- 3
5.0000- 1 ~ 6.0000- 1	6.5683+ 0	6.3221+ 0							2.4624- 1	0.0000+ 0		0.0000+ 0	7.3907- 3
6.0000- 1 ~ 8.0000- 1	6.5387+ 0	6.3210+ 0							2.1770- 1	0.0000+ 0		0.0000+ 0	7.3940- 3
8.0000- 1 ~ 1.0000+ 0	6.5111+ 0	6.3196+ 0							1.9139- 1	0.0000+ 0		0.0000+ 0	7.3976- 3
1.0000+ 0 ~ 1.5000+ 0	6.4793+ 0	6.3173+ 0							1.6199- 1	0.0000+ 0		0.0000+ 0	7.4021- 3
1.5000+ 0 ~ 2.0000+ 0	6.4495+ 0	6.3139+ 0							1.3554- 1	0.0000+ 0		0.0000+ 0	7.4069- 3
2.0000+ 0 ~ 3.0000+ 0	6.4212+ 0	6.3089+ 0							1.1228- 1	0.0000+ 0		0.0000+ 0	7.4118- 3
3.0000+ 0 ~ 4.0000+ 0	6.3956+ 0	6.3024+ 0							9.3257- 2	0.0000+ 0		0.0000+ 0	7.4166- 3
4.0000+ 0 ~ 5.0000+ 0	6.3768+ 0	6.2959+ 0							8.0873- 2	0.0000+ 0		0.0000+ 0	7.4201- 3
5.0000+ 0 ~ 6.0000+ 0	6.3615+ 0	6.2895+ 0							7.1909- 2	0.0000+ 0		0.0000+ 0	7.4229- 3
6.0000+ 0 ~ 8.0000+ 0	6.3428+ 0	6.2803+ 0							6.2561- 2	0.0000+ 0		0.0000+ 0	7.4269- 3
8.0000+ 0 ~ 1.0000+ 1	6.3217+ 0	6.2682+ 0							5.3523- 2	0.0000+ 0		0.0000+ 0	7.4298- 3
1.0000+ 1 ~ 1.5000+ 1	6.2915+ 0	6.2480+ 0							4.3425- 2	0.0000+ 0		0.0000+ 0	7.4343- 3
1.5000+ 1 ~ 2.0000+ 1	6.2554+ 0	6.2209+ 0							3.4457- 2	0.0000+ 0		0.0000+ 0	7.4391- 3
2.0000+ 1 ~ 3.0000+ 1	6.2116+ 0	6.1838+ 0							2.7900- 2	0.0000+ 0		0.0000+ 0	7.4441- 3
3.0000+ 1 ~ 4.0000+ 1	6.7840+ 0	6.1394+ 0							6.4459- 1	0.0000+ 0		0.0000+ 0	7.4488- 3
4.0000+ 1 ~ 5.0000+ 1	6.5305+ 0	6.0991+ 0							4.3140- 1	0.0000+ 0		0.0000+ 0	7.4523- 3
5.0000+ 1 ~ 6.0000+ 1	6.0771+ 0	6.0621+ 0							1.5018- 2	0.0000+ 0		0.0000+ 0	7.4552- 3
6.0000+ 1 ~ 8.0000+ 1	6.0227+ 0	6.0106+ 0							1.2099- 2	0.0000+ 0		0.0000+ 0	7.4585- 3
8.0000+ 1 ~ 1.0000+ 2	6.3141+ 0	5.9400+ 0							3.7418- 1	0.0000+ 0		0.0000+ 0	7.4621- 3
1.0000+ 2 ~ 1.5000+ 2	7.4216+ 0	5.9086+ 0							1.5130+ 0	0.0000+ 0		0.0000+ 0	7.4666- 3
1.5000+ 2 ~ 2.0000+ 2	1.4353+ 1	7.3029+ 0							7.0502+ 0	0.0000+ 0		0.0000+ 0	7.4713- 3
2.0000+ 2 ~ 3.0000+ 2	6.1155+ 0	5.9117+ 0							2.0384- 1	0.0000+ 0		0.0000+ 0	7.4763- 3
3.0000+ 2 ~ 4.0000+ 2	1.2853+ 1	8.0659+ 0							4.7968+ 0	0.0000+ 0		0.0000+ 0	7.4810- 3
4.0000+ 2 ~ 5.0000+ 2	6.2904+ 0	5.9318+ 0							3.5860- 1	0.0000+ 0		0.0000+ 0	7.4846- 3
5.0000+ 2 ~ 6.0000+ 2	5.9061+ 0	5.6787+ 0							2.2738- 1	0.0000+ 0		0.0000+ 0	7.4874- 3
6.0000+ 2 ~ 8.0000+ 2	8.6982+ 0	7.1358+ 0							1.5624+ 0	0.0000+ 0		0.0000+ 0	7.4908- 3
8.0000+ 2 ~ 1.0000+ 3	1.0134+ 1	8.6845+ 0							1.4497+ 0	0.0000+ 0		0.0000+ 0	7.4943- 3
1.0000+ 3 ~ 1.5000+ 3	1.3618+ 1	1.1163+ 1							2.4548+ 0	0.0000+ 0		0.0000+ 0	7.9112- 3
1.5000+ 3 ~ 2.0000+ 3	8.7353+ 0	7.3276+ 0							1.4077+ 0	0.0000+ 0		0.0000+ 0	8.5636- 3
2.0000+ 3 ~ 3.0000+ 3	1.2491+ 1	1.0851+ 1							1.6395+ 0	0.0000+ 0		0.0000+ 0	9.2419- 3
3.0000+ 3 ~ 4.0000+ 3	1.0310+ 1	9.1811+ 0							1.1291+ 0	0.0000+ 0		0.0000+ 0	9.8943- 3
4.0000+ 3 ~ 5.0000+ 3	9.4856+ 0	8.7733+ 0							7.1228- 1	0.0000+ 0		0.0000+ 0	1.0379- 2
5.0000+ 3 ~ 6.0000+ 3	1.2065+ 1	1.1033+ 1							1.0323+ 0	0.0000+ 0		0.0000+ 0	1.0766- 2
6.0000+ 3 ~ 8.0000+ 3	1.0848+ 1	1.0026+ 1							8.2207- 1	0.0000+ 0		0.0000+ 0	1.1225- 2
8.0000+ 3 ~ 1.0000+ 4	8.4192+ 0	7.7673+ 0							6.5192- 1	0.0000+ 0		0.0000+ 0	1.1710- 2
1.0000+ 4 ~ 1.5000+ 4	8.3589+ 0	7.8187+ 0							5.4020- 1	0.0000+ 0		0.0000+ 0	1.4606- 2
1.5000+ 4 ~ 2.0000+ 4	8.3514+ 0	7.9210+ 0							4.3043- 1	0.0000+ 0		0.0000+ 0	1.8830- 2
2.0000+ 4 ~ 3.0000+ 4	8.4183+ 0	8.0804+ 0							3.3788- 1	0.0000+ 0		0.0000+ 0	2.3223- 2
3.0000+ 4 ~ 4.0000+ 4	8.5307+ 0	8.2666+ 0	2.7810- 5						2.6407- 1	0.0000+ 0		0.0000+ 0	3.0112- 2
4.0000+ 4 ~ 5.0000+ 4	8.6486+ 0	8.4311+ 0	8.2706- 5						2.1750- 1	0.0000+ 0		0.0000+ 0	3.8045- 2
5.0000+ 4 ~ 6.0000+ 4	8.8121+ 0	8.6298+ 0	1.4999- 4						1.8098- 1	0.0000+ 0		0.0000+ 0	4.6101- 2
6.0000+ 4 ~ 8.0000+ 4	8.9474+ 0	8.7949+ 0	2.7554- 4						1.5137- 1	0.0000+ 0		0.0000+ 0	5.8763- 2
8.0000+ 4 ~ 1.0000+ 5	9.0848+ 0	8.9576+ 0	4.8111- 4						1.2587- 1	0.0000+ 0		0.0000+ 0	7.6057- 2
1.0000+ 5 ~ 1.5000+ 5	9.2151+ 0	9.1117+ 0	1.0171- 3						1.0173- 1	0.0000+ 0		0.0000+ 0	1.0578- 1
1.5000+ 5 ~ 2.0000+ 5	9.2712+ 0	9.1857+ 0	1.9854- 3						8.3392- 2	0.0000+ 0		0.0000+ 0	1.4480- 1
2.0000+ 5 ~ 3.0000+ 5	9.1292+ 0	9.0531+ 0	4.1709- 3						7.1762- 2	0.0000+ 0		0.0000+ 0	1.9841- 1
3.0000+ 5 ~ 4.0000+ 5	8.8134+ 0	8.7411+ 0	7.7511- 3						6.4442- 2	0.0000+ 0		0.0000+ 0	2.5084- 1
4.0000+ 5 ~ 5.0000+ 5	8.4243+ 0	8.3510+ 0	1.2132- 2						6.1097- 2	0.0000+ 0		0.0000+ 0	2.9203- 1
5.0000+ 5 ~ 6.0000+ 5	8.0258+ 0	7.9492+ 0	1.7035- 2						5.9469- 2	0.0000+ 0		0.0000+ 0	3.2261- 1
6.0000+ 5 ~ 8.0000+ 5	7.4649+ 0	7.3681+ 0	3.8805- 2						5.7926- 2	0.0000+ 0		0.0000+ 0	3.5370- 1
8.0000+ 5 ~ 1.0000+ 6	6.8007+ 0	6.4271+ 0	3.2299- 1						5.0317- 2	0.0000+ 0		0.0000+ 0	3.9154- 1
1.0000+ 6 ~ 1.5000+ 6	5.9048+ 0	4.8391+ 0	1.0405+ 0						2.9128- 2	1.4860- 4		8.8000- 5	4.5827- 1
1.5000+ 6 ~ 2.0000+ 6	5.0045+ 0	3.5295+ 0	1.4436+ 0						1.8837- 2	4.4550- 4		1.9800- 4	4.8753- 1
2.0000+ 6 ~ 3.0000+ 6	4.2625+ 0	2.5875+ 0	1.6577+ 0						1.2606- 2	1.0680- 3		3.4500- 4	5.0167- 1
3.0000+ 6 ~ 4.0000+ 6	3.8156+ 0	2.0303+ 0	1.7737+ 0						7.3351- 3	2.0160- 3		5.0700- 4	5.3316- 1
4.0000+ 6 ~ 5.0000+ 6	3.7805+ 0	1.8658+ 0	1.8063+ 0						3.7776- 3	3.5400- 3		7.4600- 4	5.8415- 1
5.0000+ 6 ~ 6.0000+ 6	3.9550+ 0	2.1193+ 0	1.8264+ 0						1.8092- 3	5.6400- 3		1.0620- 3	6.4678- 1
6.0000+ 6 ~ 8.0000+ 6	4.2377+ 0	2.4257+ 0	1.7979+ 0						6.5504- 4	1.1195- 2		1.4400- 3	7.3593- 1
8.0000+ 6 ~ 1.0000+ 7	4.3926+ 0	2.6668+ 0	1.6106+ 0	9.5363- 2					1.7604- 4	1.9950- 2		2.5000- 3	8.1302- 1
1.0000+ 7 ~ 1.5000+ 7	4.2743+ 0	2.4945+ 0	7.6326- 1	9.8270- 1					2.2691- 5	2.5615- 2		7.5935- 3	8.5845- 1
1.5000+ 7 ~ 2.0000+ 7	3.7860+ 0	2.0217+ 0	3.7082- 1	1.3185+ 0	4.7786- 2				1.7542- 6	2.1485- 2		6.2365- 3	8.6326- 1

MATERIAL =2420

CROSS SECTION

MO-0

ENERGY	TOTAL	ELASTIC	INELR	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.3388+ 1	5.4861+ 0							7.9023+ 0	0.0000+ 0		0.0000+ 0	7.0646- 3
1.0000- 2 ~ 1.5000- 2	9.1536+ 0	5.4860+ 0							3.6675+ 0	0.0000+ 0		0.0000+ 0	7.0832- 3
1.5000- 2 ~ 2.0000- 2	8.5690+ 0	5.4859+ 0							3.0830+ 0	0.0000+ 0		0.0000+ 0	7.0902- 3
2.0000- 2 ~ 3.0000- 2	8.0772+ 0	5.4858+ 0							2.5914+ 0	0.0000+ 0		0.0000+ 0	7.0976- 3
3.0000- 2 ~ 4.0000- 2	7.6641+ 0	5.4856+ 0							2.1785+ 0	0.0000+ 0		0.0000+ 0	7.1047- 3
4.0000- 2 ~ 5.0000- 2	7.4091+ 0	5.4854+ 0							1.9236+ 0	0.0000+ 0		0.0000+ 0	7.1100- 3
5.0000- 2 ~ 6.0000- 2	7.2210+ 0	5.4853+ 0							1.7357+ 0	0.0000+ 0		0.0000+ 0	7.1141- 3
6.0000- 2 ~ 8.0000- 2	7.0239+ 0	5.4860+ 0							1.6388+ 0	0.0000+ 0		0.0000+ 0	7.1181- 3
8.0000- 2 ~ 1.0000- 1	6.8421+ 0	5.4847+ 0							1.3574+ 0	0.0000+ 0		0.0000+ 0	7.1244- 3
1.0000- 1 ~ 1.5000- 1	6.6367+ 0	5.4841+ 0							1.1516+ 0	0.0000+ 0		0.0000+ 0	7.1288- 3
1.5000- 1 ~ 2.0000- 1	6.4529+ 0	5.4832+ 0							9.6971- 1	0.0000+ 0		0.0000+ 0	7.1321- 3
2.0000- 1 ~ 3.0000- 1	6.2919+ 0	5.4819+ 0							8.0993- 1	0.0000+ 0		0.0000+ 0	7.1356- 3
3.0000- 1 ~ 4.0000- 1	6.1616+ 0	5.4803+ 0							6.8133- 1	0.0000+ 0		0.0000+ 0	7.1390- 3
4.0000- 1 ~ 5.0000- 1	6.0754+ 0	5.4786+ 0							5.9688- 1	0.0000+ 0		0.0000+ 0	7.1416- 3
5.0000- 1 ~ 6.0000- 1	6.0140+ 0	5.4769+ 0							5.3707- 1	0.0000+ 0		0.0000+ 0	7.1435- 3
6.0000- 1 ~ 8.0000- 1	5.9498+ 0	5.4744+ 0							4.7545- 1	0.0000+ 0		0.0000+ 0	7.1459- 3
8.0000- 1 ~ 1.0000+ 0	5.8861+ 0	5.4711+ 0							4.1501- 1	0.0000+ 0		0.0000+ 0	7.1484- 3
1.0000+ 0 ~ 1.5000+ 0	5.8152+ 0	5.4654+ 0							3.4974- 1	0.0000+ 0		0.0000+ 0	7.1533- 3
1.5000+ 0 ~ 2.0000+ 0	5.7471+ 0	5.4575+ 0							2.8965- 1	0.0000+ 0		0.0000+ 0	7.1593- 3
2.0000+ 0 ~ 3.0000+ 0	5.6847+ 0	5.4460+ 0							2.3867- 1	0.0000+ 0		0.0000+ 0	7.1658- 3
3.0000+ 0 ~ 4.0000+ 0	5.6278+ 0	5.4312+ 0							1.9666- 1	0.0000+ 0		0.0000+ 0	7.1717- 3
4.0000+ 0 ~ 5.0000+ 0	5.5877+ 0	5.4169+ 0							1.7078- 1	0.0000+ 0		0.0000+ 0	7.1762- 3
5.0000+ 0 ~ 6.0000+ 0	5.5564+ 0	5.4031+ 0							1.5329- 1	0.0000+ 0		0.0000+ 0	7.1797- 3
6.0000+ 0 ~ 8.0000+ 0	5.5206+ 0	5.3830+ 0							1.3757- 1	0.0000+ 0		0.0000+ 0	7.1840- 3
8.0000+ 0 ~ 1.0000+ 1	5.4867+ 0	5.3570+ 0							1.2989- 1	0.0000+ 0		0.0000+ 0	7.1885- 3
1.0000+ 1 ~ 1.5000+ 1	6.3602+ 0	5.3125+ 0							1.0477+ 0	0.0000+ 0		0.0000+ 0	7.1923- 3
1.5000+ 1 ~ 2.0000+ 1	5.3697+ 0	5.2463+ 0							1.2344- 1	0.0000+ 0		0.0000+ 0	7.1952- 3
2.0000+ 1 ~ 3.0000+ 1	5.2940+ 0	5.1301+ 0							1.6392- 1	0.0000+ 0		0.0000+ 0	7.1983- 3
3.0000+ 1 ~ 4.0000+ 1	5.6656+ 0	5.0362+ 0							6.2940- 1	0.0000+ 0		0.0000+ 0	7.2013- 3
4.0000+ 1 ~ 5.0000+ 1	1.6497+ 2	9.3237+ 1							7.1737+ 1	0.0000+ 0		0.0000+ 0	7.2034- 3
5.0000+ 1 ~ 6.0000+ 1	7.6114+ 0	7.0995+ 0							5.1190- 1	0.0000+ 0		0.0000+ 0	7.2062- 3
6.0000+ 1 ~ 8.0000+ 1	8.1516+ 0	6.1205+ 0							2.0312+ 0	0.0000+ 0		0.0000+ 0	7.2073- 3
8.0000+ 1 ~ 1.0000+ 2	5.5627+ 0	5.4498+ 0							1.1293- 1	0.0000+ 0		0.0000+ 0	7.2095- 3
1.0000+ 2 ~ 1.5000+ 2	3.9701+ 1	3.2633+ 1							7.0688+ 0	0.0000+ 0		0.0000+ 0	7.2141- 3
1.5000+ 2 ~ 2.0000+ 2	6.7933+ 0	6.1560+ 0							6.3734- 1	0.0000+ 0		0.0000+ 0	7.2199- 3
2.0000+ 2 ~ 3.0000+ 2	6.3294+ 0	5.7831+ 0							5.4623- 1	0.0000+ 0		0.0000+ 0	7.2259- 3
3.0000+ 2 ~ 4.0000+ 2	1.6201+ 1	1.3882+ 1							2.3187+ 0	0.0000+ 0		0.0000+ 0	7.2317- 3
4.0000+ 2 ~ 5.0000+ 2	2.3574+ 1	2.0444+ 1							3.1300+ 0	0.0000+ 0		0.0000+ 0	7.2360- 3
5.0000+ 2 ~ 6.0000+ 2	9.4558+ 0	8.3046+ 0							1.1513+ 0	0.0000+ 0		0.0000+ 0	7.2394- 3
6.0000+ 2 ~ 8.0000+ 2	9.6908+ 0	8.3689+ 0							1.3218+ 0	0.0000+ 0		0.0000+ 0	7.2435- 3
8.0000+ 2 ~ 1.0000+ 3	7.1974+ 0	6.3776+ 0							8.1985- 1	0.0000+ 0		0.0000+ 0	7.2478- 3
1.0000+ 3 ~ 1.5000+ 3	7.4707+ 0	6.7136+ 0							7.5713- 1	0.0000+ 0		0.0000+ 0	7.6495- 3
1.5000+ 3 ~ 2.0000+ 3	1.0492+ 1	9.7825+ 0							7.0948- 1	0.0000+ 0		0.0000+ 0	8.2773- 3
2.0000+ 3 ~ 3.0000+ 3	8.1254+ 0	7.4860+ 0							6.3946- 1	0.0000+ 0		0.0000+ 0	8.9301- 3
3.0000+ 3 ~ 4.0000+ 3	1.2830+ 1	1.2220+ 1							6.1002- 1	0.0000+ 0		0.0000+ 0	9.5586- 3
4.0000+ 3 ~ 5.0000+ 3	7.9764+ 0	7.4281+ 0							5.4826- 1	0.0000+ 0		0.0000+ 0	1.0027- 2
5.0000+ 3 ~ 6.0000+ 3	1.0213+ 1	9.7257+ 0							4.8696- 1	0.0000+ 0		0.0000+ 0	1.0400- 2
6.0000+ 3 ~ 8.0000+ 3	8.4407+ 0	8.0366+ 0							4.0208- 1	0.0000+ 0		0.0000+ 0	1.0844- 2
8.0000+ 3 ~ 1.0000+ 4	1.0179+ 1	9.7999+ 0							3.7874- 1	0.0000+ 0		0.0000+ 0	1.1312- 2
1.0000+ 4 ~ 1.5000+ 4	9.0525+ 0	8.7690+ 0							2.8343- 1	0.0000+ 0		0.0000+ 0	1.4212- 2
1.5000+ 4 ~ 2.0000+ 4	8.6708+ 0	8.4317+ 0							2.3909- 1	0.0000+ 0		0.0000+ 0	1.8443- 2
2.0000+ 4 ~ 3.0000+ 4	8.3670+ 0	8.1683+ 0							1.9867- 1	0.0000+ 0		0.0000+ 0	2.2771- 2
3.0000+ 4 ~ 4.0000+ 4	8.7779+ 0	8.6178+ 0							1.6006- 1	0.0000+ 0		0.0000+ 0	2.9758- 2
4.0000+ 4 ~ 5.0000+ 4	8.5288+ 0	8.3982+ 0							1.3058- 1	0.0000+ 0		0.0000+ 0	3.7695- 2
5.0000+ 4 ~ 6.0000+ 4	8.7711+ 0	8.6583+ 0							1.1284- 1	0.0000+ 0		0.0000+ 0	4.5614- 2
6.0000+ 4 ~ 8.0000+ 4	8.9142+ 0	8.8183+ 0							9.5968- 2	0.0000+ 0		0.0000+ 0	5.8291- 2
8.0000+ 4 ~ 1.0000+ 5	9.0725+ 0	8.9909+ 0							8.1661- 2	0.0000+ 0		0.0000+ 0	7.5610- 2
1.0000+ 5 ~ 1.5000+ 5	9.2175+ 0	9.1484+ 0							6.8903- 2	5.6884-10		0.0000+ 0	1.0537- 1
1.5000+ 5 ~ 2.0000+ 5	9.2735+ 0	9.2132+ 0							6.0270- 2	5.1359- 8		0.0000+ 0	1.4444- 1
2.0000+ 5 ~ 3.0000+ 5	9.1318+ 0	9.0468+ 0	2.8993- 2						5.5956- 2	2.1324- 7		0.0000+ 0	1.9670- 1
3.0000+ 5 ~ 4.0000+ 5	8.8149+ 0	8.6903+ 0	6.9634- 2						5.4700- 2	4.1574- 7		0.0000+ 0	2.5242- 1
4.0000+ 5 ~ 5.0000+ 5	8.4258+ 0	8.2866+ 0	8.3061- 2						5.6108- 2	6.1825- 7		0.0000+ 0	2.9430- 1
5.0000+ 5 ~ 6.0000+ 5	8.0274+ 0	7.8616+ 0	1.0671- 1						5.7117- 2	8.2076- 7		0.0000+ 0	3.2619- 1
6.0000+ 5 ~ 8.0000+ 5	7.4655+ 0	7.2143+ 0	1.9419- 1						5.7015- 2	1.1245- 6		0.0000+ 0	3.6110- 1
8.0000+ 5 ~ 1.0000+ 6	6.7987+ 0	6.2432+ 0	5.0868- 1						4.6774- 2	1.5295- 6		0.0000+ 0	4.0267- 1
1.0000+ 6 ~ 1.5000+ 6	5.9095+ 0	4.9993+ 0	8.7080- 1						3.9159- 2	1.9271- 4		2.0126- 5	4.4002- 1
1.5000+ 6 ~ 2.0000+ 6	5.0030+ 0	3.7928+ 0	1.1745+ 0						3.5004- 2	5.7468- 4		6.0384- 5	4.5703- 1
2.0000+ 6 ~ 3.0000+ 6	4.3040+ 0	2.7150+ 0	1.5588+ 0						2.7899- 2	1.9622- 3		1.8400- 4	4.7191- 1
3.0000+ 6 ~ 4.0000+ 6	3.8717+ 0	2.1334+ 0	1.7107+ 0						2.2452- 2	4.3556- 3		3.9097- 4	5.0819- 1
4.0000+ 6 ~ 5.0000+ 6	3.8176+ 0	2.0162+ 0	1.7773+ 0						1.6833- 2	6.6682- 3		6.4490- 4	5.6968- 1
5.0000+ 6 ~ 6.0000+ 6	3.9685+ 0	2.1381+ 0	1.8101+ 0						1.0268- 2	8.9000- 3		9.4580- 4	6.4089- 1
6.0000+ 6 ~ 8.0000+ 6	4.2381+ 0	2.4234+ 0	1.7904+ 0	5.9334- 3					4.0368- 3	1.2107- 2		2.0479- 3	7.3463- 1
8.0000+ 6 ~ 1.0000+ 7	4.3908+ 0	2.5910+ 0	1.5832+ 0	1.9389- 1					1.0931- 3	1.5667- 2		4.7925- 3	8.1292- 1
1.0000+ 7 ~ 1.5000+ 7	4.2744+ 0	2.5222+ 0	8.0575- 1	9.1145- 1	9.4745- 6				1.9646- 4	2.3996- 2		1.0411- 2	8.5844- 1
1.5000+ 7 ~ 2.0000+ 7	3.7860+ 0	1.9960+ 0	4.2458- 1	1.2992+ 0	3.4275- 2				4.1914- 5	2.5724- 2		6.1298- 3	8.6327- 1

CROSS SECTION

MATERIAL =2421 MO-92

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	5.6095+ 0	5.5452+ 0							6.4215- 2	0.0000+ 0		0.0000+ 0	7.3836- 3
1.0000- 2 ~ 1.5000- 2	5.5751+ 0	5.5452+ 0							2.9816- 2	0.0000+ 0		0.0000+ 0	7.3973- 3
1.5000- 2 ~ 2.0000- 2	5.5703+ 0	5.5452+ 0							2.5069- 2	0.0000+ 0		0.0000+ 0	7.4012- 3
2.0000- 2 ~ 3.0000- 2	5.5663+ 0	5.5452+ 0							2.1073- 2	0.0000+ 0		0.0000+ 0	7.4062- 3
3.0000- 2 ~ 4.0000- 2	5.5630+ 0	5.5452+ 0							1.7731- 2	0.0000+ 0		0.0000+ 0	7.4091- 3
4.0000- 2 ~ 5.0000- 2	5.5609+ 0	5.5452+ 0							1.5643- 2	0.0000+ 0		0.0000+ 0	7.4119- 3
5.0000- 2 ~ 6.0000- 2	5.5594+ 0	5.5452+ 0							1.4125- 2	0.0000+ 0		0.0000+ 0	7.4142- 3
6.0000- 2 ~ 8.0000- 2	5.5578+ 0	5.5452+ 0							1.2567- 2	0.0000+ 0		0.0000+ 0	7.4169- 3
8.0000- 2 ~ 1.0000- 1	5.5563+ 0	5.5452+ 0							1.1060- 2	0.0000+ 0		0.0000+ 0	7.4198- 3
1.0000- 1 ~ 1.5000- 1	5.5547+ 0	5.5452+ 0							9.4422- 3	0.0000+ 0		0.0000+ 0	7.4234- 3
1.5000- 1 ~ 2.0000- 1	5.5532+ 0	5.5452+ 0							7.9394- 3	0.0000+ 0		0.0000+ 0	7.4273- 3
2.0000- 1 ~ 3.0000- 1	5.5519+ 0	5.5452+ 0							6.6531- 3	0.0000+ 0		0.0000+ 0	7.4313- 3
3.0000- 1 ~ 4.0000- 1	5.5508+ 0	5.5452+ 0							5.6200- 3	0.0000+ 0		0.0000+ 0	7.4362- 3
4.0000- 1 ~ 5.0000- 1	5.5501+ 0	5.5452+ 0							4.9441- 3	0.0000+ 0		0.0000+ 0	7.4380- 3
5.0000- 1 ~ 6.0000- 1	5.5497+ 0	5.5452+ 0							4.4743- 3	0.0000+ 0		0.0000+ 0	7.4403- 3
6.0000- 1 ~ 8.0000- 1	5.5492+ 0	5.5452+ 0							3.9766- 3	0.0000+ 0		0.0000+ 0	7.4430- 3
8.0000- 1 ~ 1.0000+ 0	5.5487+ 0	5.5452+ 0							3.4983- 3	0.0000+ 0		0.0000+ 0	7.4469- 3
1.0000+ 0 ~ 1.5000+ 0	5.5481+ 0	5.5451+ 0							2.9857- 3	0.0000+ 0		0.0000+ 0	7.4496- 3
1.5000+ 0 ~ 2.0000+ 0	5.5476+ 0	5.5451+ 0							2.5159- 3	0.0000+ 0		0.0000+ 0	7.4534- 3
2.0000+ 0 ~ 3.0000+ 0	5.5471+ 0	5.5450+ 0							2.1160- 3	0.0000+ 0		0.0000+ 0	7.4574- 3
3.0000+ 0 ~ 4.0000+ 0	5.5467+ 0	5.5449+ 0							1.7843- 3	0.0000+ 0		0.0000+ 0	7.4613- 3
4.0000+ 0 ~ 5.0000+ 0	5.5464+ 0	5.5448+ 0							1.5786- 3	0.0000+ 0		0.0000+ 0	7.4641- 3
5.0000+ 0 ~ 6.0000+ 0	5.5462+ 0	5.5447+ 0							1.4269- 3	0.0000+ 0		0.0000+ 0	7.4664- 3
6.0000+ 0 ~ 8.0000+ 0	5.5459+ 0	5.5446+ 0							1.2694- 3	0.0000+ 0		0.0000+ 0	7.4691- 3
8.0000+ 0 ~ 1.0000+ 1	5.5455+ 0	5.5444+ 0							1.1252- 3	0.0000+ 0		0.0000+ 0	7.4720- 3
1.0000+ 1 ~ 1.5000+ 1	5.5450+ 0	5.5441+ 0							9.6184- 4	0.0000+ 0		0.0000+ 0	7.4757- 3
1.5000+ 1 ~ 2.0000+ 1	5.5444+ 0	5.5436+ 0							8.1974- 4	0.0000+ 0		0.0000+ 0	7.4795- 3
2.0000+ 1 ~ 3.0000+ 1	5.5436+ 0	5.5429+ 0							6.9610- 4	0.0000+ 0		0.0000+ 0	7.4835- 3
3.0000+ 1 ~ 4.0000+ 1	5.5425+ 0	5.5419+ 0							5.9966- 4	0.0000+ 0		0.0000+ 0	7.4874- 3
4.0000+ 1 ~ 5.0000+ 1	5.5415+ 0	5.5409+ 0							5.3894- 4	0.0000+ 0		0.0000+ 0	7.4903- 3
5.0000+ 1 ~ 6.0000+ 1	5.5404+ 0	5.5399+ 0							4.9775- 4	0.0000+ 0		0.0000+ 0	7.4925- 3
6.0000+ 1 ~ 8.0000+ 1	5.5388+ 0	5.5384+ 0							4.5920- 4	0.0000+ 0		0.0000+ 0	7.4952- 3
8.0000+ 1 ~ 1.0000+ 2	5.5367+ 0	5.5363+ 0							4.2685- 4	0.0000+ 0		0.0000+ 0	7.4981- 3
1.0000+ 2 ~ 1.5000+ 2	5.5327+ 0	5.5323+ 0							4.0904- 4	0.0000+ 0		0.0000+ 0	7.5018- 3
1.5000+ 2 ~ 2.0000+ 2	5.5263+ 0	5.5259+ 0							4.4247- 4	0.0000+ 0		0.0000+ 0	7.5056- 3
2.0000+ 2 ~ 3.0000+ 2	5.5112+ 0	5.5102+ 0							9.5676- 4	0.0000+ 0		0.0000+ 0	7.5096- 3
3.0000+ 2 ~ 4.0000+ 2	6.4713+ 0	6.6441+ 0							9.2724- 1	0.0000+ 0		0.0000+ 0	7.6136- 3
4.0000+ 2 ~ 5.0000+ 2	5.5278+ 0	5.5272+ 0							6.7423- 4	0.0000+ 0		0.0000+ 0	7.5164- 3
5.0000+ 2 ~ 6.0000+ 2	5.5081+ 0	5.5078+ 0							2.5420- 4	0.0000+ 0		0.0000+ 0	7.5186- 3
6.0000+ 2 ~ 8.0000+ 2	5.4880+ 0	5.4878+ 0							1.8676- 4	0.0000+ 0		0.0000+ 0	7.5214- 3
8.0000+ 2 ~ 1.0000+ 3	5.4614+ 0	5.4613+ 0							1.7446- 4	0.0000+ 0		0.0000+ 0	7.5242- 3
1.0000+ 3 ~ 1.5000+ 3	5.4064+ 0	5.4062+ 0							2.0980- 4	0.0000+ 0		0.0000+ 0	7.9073- 3
1.5000+ 3 ~ 2.0000+ 3	5.5071+ 0	5.3041+ 0							2.0299- 1	0.0000+ 0		0.0000+ 0	8.5069- 3
2.0000+ 3 ~ 3.0000+ 3	4.7908+ 0	4.6896+ 0							1.0115- 1	0.0000+ 0		0.0000+ 0	9.1305- 3
3.0000+ 3 ~ 4.0000+ 3	1.6554+ 1	1.6209+ 1							3.4572- 1	0.0000+ 0		0.0000+ 0	9.7301- 3
4.0000+ 3 ~ 5.0000+ 3	7.0001+ 0	6.6875+ 0							3.1259- 1	0.0000+ 0		0.0000+ 0	1.0176- 2
5.0000+ 3 ~ 6.0000+ 3	6.0909+ 0	5.8765+ 0							2.1435- 1	0.0000+ 0		0.0000+ 0	1.0531- 2
6.0000+ 3 ~ 8.0000+ 3	6.4356+ 0	6.2140+ 0							2.2167- 1	0.0000+ 0		0.0000+ 0	1.0953- 2
8.0000+ 3 ~ 1.0000+ 4	7.0867+ 0	6.9139+ 0							1.7476- 1	0.0000+ 0		0.0000+ 0	1.1399- 2
1.0000+ 4 ~ 1.5000+ 4	8.0479+ 0	7.9620+ 0							8.5941- 2	0.0000+ 0		0.0000+ 0	1.4208- 2
1.5000+ 4 ~ 2.0000+ 4	9.9445+ 0	9.8663+ 0							7.8204- 2	0.0000+ 0		0.0000+ 0	1.8321- 2
2.0000+ 4 ~ 3.0000+ 4	9.4242+ 0	9.3442+ 0							7.9969- 2	0.0000+ 0		0.0000+ 0	2.2597- 2
3.0000+ 4 ~ 4.0000+ 4	9.6677+ 0	9.5882+ 0							7.9500- 2	0.0000+ 0		0.0000+ 0	2.9506- 2
4.0000+ 4 ~ 5.0000+ 4	7.8060+ 0	7.7552+ 0							5.0809- 2	0.0000+ 0		0.0000+ 0	3.7262- 2
5.0000+ 4 ~ 6.0000+ 4	8.7608+ 0	8.7197+ 0							4.1144- 2	0.0000+ 0		0.0000+ 0	4.5191- 2
6.0000+ 4 ~ 8.0000+ 4	8.8978+ 0	8.8621+ 0							3.5663- 2	0.0000+ 0		0.0000+ 0	5.7788- 2
8.0000+ 4 ~ 1.0000+ 5	9.0512+ 0	9.0200+ 0							3.1198- 2	0.0000+ 0		0.0000+ 0	7.4970- 2
1.0000+ 5 ~ 1.5000+ 5	9.2152+ 0	9.1857+ 0							2.9449- 2	0.0000+ 0		0.0000+ 0	1.0458- 1
1.5000+ 5 ~ 2.0000+ 5	9.2714+ 0	9.2433+ 0							2.8060- 2	0.0000+ 0		0.0000+ 0	1.4348- 1
2.0000+ 5 ~ 3.0000+ 5	9.1295+ 0	9.1010+ 0							2.8533- 2	0.0000+ 0		0.0000+ 0	1.9496- 1
3.0000+ 5 ~ 4.0000+ 5	8.8138+ 0	8.7842+ 0							2.9576- 2	0.0000+ 0		0.0000+ 0	2.4919- 1
4.0000+ 5 ~ 5.0000+ 5	8.4247+ 0	8.3942+ 0							3.0444- 2	0.0000+ 0		0.0000+ 0	2.9013- 1
5.0000+ 5 ~ 6.0000+ 5	8.0260+ 0	7.9947+ 0							3.1355- 2	0.0000+ 0		0.0000+ 0	3.2041- 1
6.0000+ 5 ~ 8.0000+ 5	7.4635+ 0	7.4306+ 0							3.2900- 2	0.0000+ 0		0.0000+ 0	3.5013- 1
8.0000+ 5 ~ 1.0000+ 6	6.7961+ 0	6.7605+ 0							3.5500- 2	0.0000+ 0		0.0000+ 0	3.7076- 1
1.0000+ 6 ~ 1.5000+ 6	5.9016+ 0	5.8578+ 0							4.2497- 2	1.2025- 3		5.9250- 5	3.7420- 1
1.5000+ 6 ~ 2.0000+ 6	5.0041+ 0	4.6090+ 0	3.4789- 1						4.2719- 2	3.6075- 3		1.7775- 4	3.7743- 1
2.0000+ 6 ~ 3.0000+ 6	4.2421+ 0	3.3162+ 0	8.7766- 1						3.4820- 2	1.1982- 2		3.5675- 4	3.8521- 1
3.0000+ 6 ~ 4.0000+ 6	3.8127+ 0	2.4759+ 0	1.2905+ 0						2.2448- 2	2.6327- 2		5.9625- 4	4.4199- 1
4.0000+ 6 ~ 5.0000+ 6	3.7805+ 0	2.1570+ 0	1.5678+ 0						1.4879- 2	3.9500- 2		8.7950- 4	5.3479- 1
5.0000+ 6 ~ 6.0000+ 6	3.9550+ 0	2.1914+ 0	1.7016+ 0						9.1772- 3	5.1500- 2		1.2065- 3	6.2652- 1
6.0000+ 6 ~ 8.0000+ 6	4.2379+ 0	2.4422+ 0	1.7226+ 0						4.0420- 3	6.5450- 2		2.8250- 3	7.3119- 1
8.0000+ 6 ~ 1.0000+ 7	4.3929+ 0	2.6703+ 0	1.6331+ 0						1.2906- 3	7.9400- 2		8.5400- 3	8.1269- 1
1.0000+ 7 ~ 1.5000+ 7	4.2741+ 0	2.5678+ 0	1.5556+ 0	5.0990- 2					3.5920- 4	7.6145- 2		2.2980- 2	8.5844- 1
1.5000+ 7 ~ 2.0000+ 7	3.7858+ 0	1.9603+ 0	1.0051+ 0	7.6906- 1					6.4288- 5	3.8375- 2		1.2514- 2	8.6325- 1

CROSS SECTION

MATERIAL =2422 MO-94

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	6.0365+ 0	5.9980+ 0							4.0566- 2			0.0000+ 0	7.2328- 3
1.0000- 2 ~ 1.5000- 2	6.0188+ 0	5.9980+ 0							1.8835- 2			0.0000+ 0	7.2475- 3
1.5000- 2 ~ 2.0000- 2	6.0138+ 0	5.9980+ 0							1.5836- 2			0.0000+ 0	7.2516- 3
2.0000- 2 ~ 3.0000- 2	6.0113+ 0	5.9980+ 0							1.3320- 2			0.0000+ 0	7.2559- 3
3.0000- 2 ~ 4.0000- 2	6.0091+ 0	5.9980+ 0							1.1199- 2			0.0000+ 0	7.2601- 3
4.0000- 2 ~ 5.0000- 2	6.0079+ 0	5.9980+ 0							9.9110- 3			0.0000+ 0	7.2631- 3
5.0000- 2 ~ 6.0000- 2	6.0069+ 0	5.9979+ 0							8.9300- 3			0.0000+ 0	7.2656- 3
6.0000- 2 ~ 8.0000- 2	6.0059+ 0	5.9979+ 0							7.9199- 3			0.0000+ 0	7.2686- 3
8.0000- 2 ~ 1.0000- 1	6.0050+ 0	5.9979+ 0							7.0065- 3			0.0000+ 0	7.2716- 3
1.0000- 1 ~ 1.5000- 1	6.0039+ 0	5.9979+ 0							5.9456- 3			0.0000+ 0	7.2755- 3
1.5000- 1 ~ 2.0000- 1	6.0029+ 0	5.9979+ 0							5.0082- 3			0.0000+ 0	7.2796- 3
2.0000- 1 ~ 3.0000- 1	6.0021+ 0	5.9979+ 0							4.2085- 3			0.0000+ 0	7.2839- 3
3.0000- 1 ~ 4.0000- 1	6.0015+ 0	5.9979+ 0							3.5478- 3			0.0000+ 0	7.2881- 3
4.0000- 1 ~ 5.0000- 1	6.0010+ 0	5.9979+ 0							3.1265- 3			0.0000+ 0	7.2911- 3
5.0000- 1 ~ 6.0000- 1	6.0007+ 0	5.9979+ 0							2.8237- 3			0.0000+ 0	7.2936- 3
6.0000- 1 ~ 8.0000- 1	6.0004+ 0	5.9979+ 0							2.5121- 3			0.0000+ 0	7.2965- 3
8.0000- 1 ~ 1.0000+ 0	6.0001+ 0	5.9979+ 0							2.2121- 3			0.0000+ 0	7.2996- 3
1.0000+ 0 ~ 1.5000+ 0	5.9997+ 0	5.9978+ 0							1.8843- 3			0.0000+ 0	7.3035- 3
1.5000+ 0 ~ 2.0000+ 0	5.9994+ 0	5.9978+ 0							1.5913- 3			0.0000+ 0	7.3076- 3
2.0000+ 0 ~ 3.0000+ 0	5.9991+ 0	5.9977+ 0							1.3352- 3			0.0000+ 0	7.3119- 3
3.0000+ 0 ~ 4.0000+ 0	5.9987+ 0	5.9976+ 0							1.1284- 3			0.0000+ 0	7.3161- 3
4.0000+ 0 ~ 5.0000+ 0	5.9985+ 0	5.9975+ 0							9.9400- 4			0.0000+ 0	7.3191- 3
5.0000+ 0 ~ 6.0000+ 0	5.9983+ 0	5.9974+ 0							9.0234- 4			0.0000+ 0	7.3216- 3
6.0000+ 0 ~ 8.0000+ 0	5.9981+ 0	5.9973+ 0							8.0269- 4			0.0000+ 0	7.3245- 3
8.0000+ 0 ~ 1.0000+ 1	5.9978+ 0	5.9971+ 0							7.0844- 4			0.0000+ 0	7.3278- 3
1.0000+ 1 ~ 1.5000+ 1	5.9973+ 0	5.9967+ 0							6.0846- 4			0.0000+ 0	7.3315- 3
1.5000+ 1 ~ 2.0000+ 1	5.9967+ 0	5.9962+ 0							5.1749- 4			0.0000+ 0	7.3357- 3
2.0000+ 1 ~ 3.0000+ 1	5.9959+ 0	5.9955+ 0							4.4257- 4			0.0000+ 0	7.3399- 3
3.0000+ 1 ~ 4.0000+ 1	5.9949+ 0	5.9945+ 0							3.8407- 4			0.0000+ 0	7.3441- 3
4.0000+ 1 ~ 5.0000+ 1	5.9938+ 0	5.9935+ 0							3.5255- 4			0.0000+ 0	7.3472- 3
5.0000+ 1 ~ 6.0000+ 1	5.9928+ 0	5.9924+ 0							3.3965- 4			0.0000+ 0	7.3496- 3
6.0000+ 1 ~ 8.0000+ 1	5.9913+ 0	5.9909+ 0							3.6706- 4			0.0000+ 0	7.3525- 3
8.0000+ 1 ~ 1.0000+ 2	5.9897+ 0	5.9888+ 0							8.6926- 4			0.0000+ 0	7.3556- 3
1.0000+ 2 ~ 1.5000+ 2	6.1079+ 0	5.9862+ 0							1.2267- 1			0.0000+ 0	7.3595- 3
1.5000+ 2 ~ 2.0000+ 2	5.9799+ 0	5.9797+ 0							2.4482- 4			0.0000+ 0	7.3636- 3
2.0000+ 2 ~ 3.0000+ 2	5.9712+ 0	5.9711+ 0							1.8508- 4			0.0000+ 0	7.3679- 3
3.0000+ 2 ~ 4.0000+ 2	5.9688+ 0	5.9687+ 0							1.6706- 4			0.0000+ 0	7.3721- 3
4.0000+ 2 ~ 5.0000+ 2	5.9453+ 0	5.9452+ 0							1.6441- 4			0.0000+ 0	7.3752- 3
5.0000+ 2 ~ 6.0000+ 2	5.9304+ 0	5.9302+ 0							1.6952- 4			0.0000+ 0	7.3776- 3
6.0000+ 2 ~ 8.0000+ 2	5.9040+ 0	5.9038+ 0							1.9239- 4			0.0000+ 0	7.3805- 3
8.0000+ 2 ~ 1.0000+ 3	5.8580+ 0	5.8577+ 0							2.9710- 4			0.0000+ 0	7.3836- 3
1.0000+ 3 ~ 1.5000+ 3	5.6122+ 0	5.5623+ 0							4.9971- 2			0.0000+ 0	7.7766- 3
1.5000+ 3 ~ 2.0000+ 3	1.0381+ 1	9.6493+ 0							7.3218- 1			0.0000+ 0	8.3917- 3
2.0000+ 3 ~ 3.0000+ 3	6.9454+ 0	6.5234+ 0							4.2206- 1			0.0000+ 0	9.0314- 3
3.0000+ 3 ~ 4.0000+ 3	9.2037+ 0	8.6640+ 0							5.3973- 1			0.0000+ 0	9.6465- 3
4.0000+ 3 ~ 5.0000+ 3	1.4324+ 1	1.3796+ 1							5.2825- 1			0.0000+ 0	1.0104- 2
5.0000+ 3 ~ 6.0000+ 3	2.0248+ 1	1.9861+ 1							3.8679- 1			0.0000+ 0	1.0468- 2
6.0000+ 3 ~ 8.0000+ 3	7.2030+ 0	7.1146+ 0							8.8406- 2			0.0000+ 0	1.0901- 2
8.0000+ 3 ~ 1.0000+ 4	7.6624+ 0	7.3612- 0							3.0119- 1			0.0000+ 0	1.1359- 2
1.0000+ 4 ~ 1.5000+ 4	1.2031+ 1	1.1816+ 1							2.1488- 1			0.0000+ 0	1.4199- 2
1.5000+ 4 ~ 2.0000+ 4	8.0917+ 0	7.9767+ 0							1.1501- 1			0.0000+ 0	1.8353- 2
2.0000+ 4 ~ 3.0000+ 4	8.3927+ 0	8.2437+ 0							1.4904- 1			0.0000+ 0	2.2673- 2
3.0000+ 4 ~ 4.0000+ 4	8.5096+ 0	8.3960+ 0							1.1358- 1			0.0000+ 0	2.9634- 2
4.0000+ 4 ~ 5.0000+ 4	8.6291+ 0	8.5356+ 0							9.3500- 2			0.0000+ 0	3.7427- 2
5.0000+ 4 ~ 6.0000+ 4	8.7393+ 0	8.6587+ 0							8.0524- 2			0.0000+ 0	4.5408- 2
6.0000+ 4 ~ 8.0000+ 4	8.8795+ 0	8.8108+ 0							6.8734- 2			0.0000+ 0	5.8038- 2
8.0000+ 4 ~ 1.0000+ 5	9.0364+ 0	8.9778+ 0							5.8597- 2			0.0000+ 0	7.5307- 2
1.0000+ 5 ~ 1.5000+ 5	9.2171+ 0	9.1644+ 0							5.2603- 2			0.0000+ 0	1.0501- 1
1.5000+ 5 ~ 2.0000+ 5	9.2732+ 0	9.2248+ 0							4.8372- 2			0.0000+ 0	1.4403- 1
2.0000+ 5 ~ 3.0000+ 5	9.1310+ 0	9.0823+ 0							4.8700- 2			0.0000+ 0	1.9566- 1
3.0000+ 5 ~ 4.0000+ 5	8.8150+ 0	8.7635+ 0							5.1401- 2			0.0000+ 0	2.5009- 1
4.0000+ 5 ~ 5.0000+ 5	8.4257+ 0	8.3710+ 0							5.4688- 2			0.0000+ 0	2.9122- 1
5.0000+ 5 ~ 6.0000+ 5	8.0271+ 0	7.9691+ 0							5.8007- 2			0.0000+ 0	3.2169- 1
6.0000+ 5 ~ 8.0000+ 5	7.4648+ 0	7.4018+ 0							6.2941- 2			0.0000+ 0	3.6173- 1
8.0000+ 5 ~ 1.0000+ 6	6.8026+ 0	6.6015+ 0	1.4156- 1						5.9360- 2			0.0000+ 0	3.8167- 1
1.0000+ 6 ~ 1.5000+ 6	5.9031+ 0	5.1720+ 0	6.8719- 1						4.2344- 2	1.6877-11		1.1200- 4	4.2440- 1
1.5000+ 6 ~ 2.0000+ 6	5.0044+ 0	4.0264+ 0	9.3197- 1						4.4705- 2	1.7869-10		3.3600- 4	4.2985- 1
2.0000+ 6 ~ 3.0000+ 6	4.2423+ 0	2.8179+ 0	1.3869+ 0						3.6492- 2	1.8875- 4		5.3050- 4	4.6335- 1
3.0000+ 6 ~ 4.0000+ 6	3.8152+ 0	2.1763+ 0	1.6059+ 0						2.8553- 2	5.6625- 4		6.9550- 4	4.9826- 1
4.0000+ 6 ~ 5.0000+ 6	3.7800+ 0	2.0391+ 0	1.7158+ 0						2.2416- 2	1.7413- 3		9.1100- 4	5.6364- 1
5.0000+ 6 ~ 6.0000+ 6	3.9544+ 0	2.1470+ 0	1.7879+ 0						1.3950- 2	3.7137- 3		1.1770- 3	6.3842- 1
6.0000+ 6 ~ 8.0000+ 6	4.2371+ 0	2.4309+ 0	1.7902+ 0						5.6551- 3	7.8500- 3		1.6700- 3	7.3422- 1
8.0000+ 6 ~ 1.0000+ 7	4.3921+ 0	2.6649+ 0	1.7025+ 0	3.7616- 3					1.7369- 3	1.5800- 2		3.1850- 3	8.1296- 1
1.0000+ 7 ~ 1.5000+ 7	4.2743+ 0	2.4909+ 0	1.0227+ 0	7.1740- 1					3.8754- 4	3.0787- 2		1.1403- 2	8.5845- 1
1.5000+ 7 ~ 2.0000+ 7	3.7860+ 0	1.9885+ 0	4.5287- 1	1.3050+ 0	1.6238- 3				9.3839- 5	3.0883- 2		6.6220- 3	8.6327- 1

CROSS SECTION

MATERIAL =2423 MO-96

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	4.6928+ 1	5.5877+ 0							4.3341+ 1			0.0000+ 0	7.1720- 3
1.0000- 2 ~ 1.5000- 2	2.5702+ 1	5.5870+ 0							2.0116+ 1			0.0000+ 0	7.1907- 3
1.5000- 2 ~ 2.0000- 2	2.2496+ 1	5.5866+ 0							1.6909+ 1			0.0000+ 0	7.1958- 3
2.0000- 2 ~ 3.0000- 2	1.9796+ 1	5.5859+ 0							1.4210+ 1			0.0000+ 0	7.2010- 3
3.0000- 2 ~ 4.0000- 2	1.7635+ 1	5.5850+ 0							1.1950+ 1			0.0000+ 0	7.2060- 3
4.0000- 2 ~ 5.0000- 2	1.6125+ 1	5.5841+ 0							1.0541+ 1			0.0000+ 0	7.2098- 3
5.0000- 2 ~ 6.0000- 2	1.5096+ 1	5.5832+ 0							9.5133+ 0			0.0000+ 0	7.2127- 3
6.0000- 2 ~ 8.0000- 2	1.4029+ 1	5.5818+ 0							8.4475+ 0			0.0000+ 0	7.2169- 3
8.0000- 2 ~ 1.0000- 1	1.3018+ 1	5.5800+ 0							7.4380+ 0			0.0000+ 0	7.2200- 3
1.0000- 1 ~ 1.5000- 1	1.1891+ 1	5.5768+ 0							6.3141+ 0			0.0000+ 0	7.2248- 3
1.5000- 1 ~ 2.0000- 1	1.0891+ 1	5.5724+ 0							5.3185+ 0			0.0000+ 0	7.2298- 3
2.0000- 1 ~ 3.0000- 1	1.0007+ 1	5.5657+ 0							4.4410+ 0			0.0000+ 0	7.2351- 3
3.0000- 1 ~ 4.0000- 1	9.2935+ 0	5.5568+ 0							3.7367+ 0			0.0000+ 0	7.2401- 3
4.0000- 1 ~ 5.0000- 1	8.8215+ 0	5.5480+ 0							3.2736+ 0			0.0000+ 0	7.2438- 3
5.0000- 1 ~ 6.0000- 1	8.4873+ 0	5.5392+ 0							2.9481+ 0			0.0000+ 0	7.2468- 3
6.0000- 1 ~ 8.0000- 1	8.1333+ 0	5.5262+ 0							2.6071+ 0			0.0000+ 0	7.2503- 3
8.0000- 1 ~ 1.0000+ 0	7.7846+ 0	5.5090+ 0							2.2757+ 0			0.0000+ 0	7.2541- 3
1.0000+ 0 ~ 1.5000+ 0	7.3971+ 0	5.4794+ 0							1.9177+ 0			0.0000+ 0	7.2589- 3
1.5000+ 0 ~ 2.0000+ 0	7.0275+ 0	5.4381+ 0							1.5894+ 0			0.0000+ 0	7.2639- 3
2.0000+ 0 ~ 3.0000+ 0	6.6873+ 0	5.3784+ 0							1.3089+ 0			0.0000+ 0	7.2691- 3
3.0000+ 0 ~ 4.0000+ 0	6.3810+ 0	5.3018+ 0							1.0792+ 0			0.0000+ 0	7.2741- 3
4.0000+ 0 ~ 5.0000+ 0	6.1679+ 0	5.2284+ 0							9.3945- 1			0.0000+ 0	7.2779- 3
5.0000+ 0 ~ 6.0000+ 0	5.9995+ 0	5.1573+ 0							8.4214- 1			0.0000+ 0	7.2808- 3
6.0000+ 0 ~ 8.0000+ 0	5.8017+ 0	5.0544+ 0							7.4729- 1			0.0000+ 0	7.2844- 3
8.0000+ 0 ~ 1.0000+ 1	5.5911+ 0	4.9211+ 0							6.6992- 1			0.0000+ 0	7.2881- 3
1.0000+ 1 ~ 1.5000+ 1	5.3141+ 0	4.6912+ 0							6.2289- 1			0.0000+ 0	7.2929- 3
1.5000+ 1 ~ 2.0000+ 1	5.0018+ 0	4.3483+ 0							6.5348- 1			0.0000+ 0	7.2979- 3
2.0000+ 1 ~ 3.0000+ 1	4.7094+ 0	3.7287+ 0							9.8073- 1			0.0000+ 0	7.3032- 3
3.0000+ 1 ~ 4.0000+ 1	7.2501+ 0	3.3018+ 0							3.9483+ 0			0.0000+ 0	7.3082- 3
4.0000+ 1 ~ 5.0000+ 1	1.0212+ 3	5.6474+ 2							4.5643+ 2			0.0000+ 0	7.3119- 3
5.0000+ 1 ~ 6.0000+ 1	1.9988+ 1	1.6891+ 1							3.0971+ 0			0.0000+ 0	7.3149- 3
6.0000+ 1 ~ 8.0000+ 1	9.5196+ 0	9.1087+ 0							4.1089- 1			0.0000+ 0	7.3184- 3
8.0000+ 1 ~ 1.0000+ 2	7.4632+ 0	7.3587+ 0							1.0457- 1			0.0000+ 0	7.3222- 3
1.0000+ 2 ~ 1.5000+ 2	6.6960+ 0	6.4947+ 0							2.0127- 1			0.0000+ 0	7.3270- 3
1.5000+ 2 ~ 2.0000+ 2	1.0509+ 1	6.5680+ 0							3.9410+ 0			0.0000+ 0	7.3320- 3
2.0000+ 2 ~ 3.0000+ 2	6.1074+ 0	5.7419+ 0							3.6548- 1			0.0000+ 0	7.3372- 3
3.0000+ 2 ~ 4.0000+ 2	2.5442+ 1	1.8710+ 1							6.7326+ 0			0.0000+ 0	7.3422- 3
4.0000+ 2 ~ 5.0000+ 2	6.6060+ 0	6.0554+ 0							5.5064- 1			0.0000+ 0	7.3460- 3
5.0000+ 2 ~ 6.0000+ 2	1.0489+ 1	8.0454+ 0							2.4436+ 0			0.0000+ 0	7.3490- 3
6.0000+ 2 ~ 8.0000+ 2	2.0109+ 1	1.6712+ 1							3.3969+ 0			0.0000+ 0	7.3525- 3
8.0000+ 2 ~ 1.0000+ 3	9.2872+ 0	7.7650+ 0							1.5222+ 0			0.0000+ 0	7.3562- 3
1.0000+ 3 ~ 1.5000+ 3	1.3928+ 1	1.1574+ 1							2.3539+ 0			0.0000+ 0	7.7856- 3
1.5000+ 3 ~ 2.0000+ 3	1.6243+ 1	1.4635+ 1							1.6080+ 0			0.0000+ 0	8.4573- 3
2.0000+ 3 ~ 3.0000+ 3	9.3919+ 0	7.9176+ 0							1.4744+ 0			0.0000+ 0	9.1558- 3
3.0000+ 3 ~ 4.0000+ 3	8.9972+ 0	7.7319+ 0							1.2654+ 0			0.0000+ 0	9.8275- 3
4.0000+ 3 ~ 5.0000+ 3	8.7740+ 0	7.6386+ 0							1.1354+ 0			0.0000+ 0	1.0327- 2
5.0000+ 3 ~ 6.0000+ 3	8.6334+ 0	7.5925+ 0							1.0409+ 0			0.0000+ 0	1.0725- 2
6.0000+ 3 ~ 8.0000+ 3	8.5130+ 0	7.5747+ 0							9.3825- 1			0.0000+ 0	1.1198- 2
8.0000+ 3 ~ 1.0000+ 4	8.4168+ 0	7.5858+ 0							8.3101- 1			0.0000+ 0	1.1697- 2
1.0000+ 4 ~ 1.5000+ 4	8.3664+ 0	7.6592+ 0							7.0719- 1			0.0000+ 0	1.4640- 2
1.5000+ 4 ~ 2.0000+ 4	8.3623+ 0	7.7840+ 0							5.7828- 1			0.0000+ 0	1.8929- 2
2.0000+ 4 ~ 3.0000+ 4	8.4337+ 0	7.9684+ 0							4.6527- 1			0.0000+ 0	2.3388- 2
3.0000+ 4 ~ 4.0000+ 4	8.5528+ 0	8.1869+ 0							3.6588- 1			0.0000+ 0	3.0489- 2
4.0000+ 4 ~ 5.0000+ 4	8.6737+ 0	8.3695+ 0							3.0421- 1			0.0000+ 0	3.8392- 2
5.0000+ 4 ~ 6.0000+ 4	8.7826+ 0	8.5179+ 0							2.6468- 1			0.0000+ 0	4.6460- 2
6.0000+ 4 ~ 8.0000+ 4	8.9268+ 0	8.7035+ 0							2.2329- 1			0.0000+ 0	5.9191- 2
8.0000+ 4 ~ 1.0000+ 5	9.0820+ 0	8.8940+ 0							1.8801- 1			0.0000+ 0	7.5560- 2
1.0000+ 5 ~ 1.5000+ 5	9.2164+ 0	9.0675+ 0							1.4820- 1	3.8186- 9		0.0000+ 0	1.0838- 1
1.5000+ 5 ~ 2.0000+ 5	9.2724+ 0	9.1507+ 0							1.2155- 1	3.9032- 7		0.0000+ 0	1.4550- 1
2.0000+ 5 ~ 3.0000+ 5	9.1348+ 0	8.8512+ 0	1.8444- 1						9.9169- 2	1.3565- 6		0.0000+ 0	2.0164- 1
3.0000+ 5 ~ 4.0000+ 5	8.8140+ 0	8.2856+ 0	4.4297- 1						8.4220- 2	2.6447- 6		0.0000+ 0	2.6474- 1
4.0000+ 5 ~ 5.0000+ 5	8.4248+ 0	7.8168+ 0	5.2694- 1						8.0653- 2	3.9328- 6		0.0000+ 0	3.1180- 1
5.0000+ 5 ~ 6.0000+ 5	8.0263+ 0	7.4045+ 0	5.4163- 1						8.0052- 2	5.2211- 6		0.0000+ 0	3.4604- 1
6.0000+ 5 ~ 8.0000+ 5	7.4650+ 0	6.8544+ 0	5.2999- 1						8.0666- 2	7.1534- 6		0.0000+ 0	3.7973- 1
8.0000+ 5 ~ 1.0000+ 6	6.8021+ 0	5.9597+ 0	7.7392- 1						6.7697- 2	9.7298- 6		0.0000+ 0	4.2207- 1
1.0000+ 6 ~ 1.5000+ 6	5.9058+ 0	4.5847+ 0	1.2740+ 0						4.5908- 2	1.4238- 5		4.8760- 7	4.8022- 1
1.5000+ 6 ~ 2.0000+ 6	5.0045+ 0	3.4052+ 0	1.5621+ 0						3.6259- 2	2.0679- 5		1.4025- 6	5.0732- 1
2.0000+ 6 ~ 3.0000+ 6	4.2614+ 0	2.5281+ 0	1.6921+ 0						2.9590- 2	2.9043- 4		9.7653- 6	5.0973- 1
3.0000+ 6 ~ 4.0000+ 6	3.8151+ 0	2.0364+ 0	1.7540+ 0						2.2075- 2	8.2347- 4		2.8922- 4	5.3151- 1
4.0000+ 6 ~ 5.0000+ 6	3.7799+ 0	1.9739+ 0	1.7916+ 0						1.2602- 2	1.3650- 3		4.7625- 4	5.8180- 1
5.0000+ 6 ~ 6.0000+ 6	3.9544+ 0	2.1222+ 0	1.8228+ 0						5.9019- 3	1.9150- 3		6.6875- 4	6.4668- 1
6.0000+ 6 ~ 8.0000+ 6	4.2369+ 0	2.4105+ 0	1.8025+ 0	1.5580- 2					1.9473- 3	3.9000- 3		1.7450- 3	7.3564- 1
8.0000+ 6 ~ 1.0000+ 7	4.3918+ 0	2.4866+ 0	1.5697+ 0	3.1913- 1					4.4556- 4	8.5550- 3		5.4750- 3	8.1300- 1
1.0000+ 7 ~ 1.5000+ 7	4.2743+ 0	2.5302+ 0	5.9892- 1	1.1100+ 0					4.2015- 5	2.1070- 2		1.3841- 2	8.5845- 1
1.5000+ 7 ~ 2.0000+ 7	3.7859+ 0	1.9654+ 0	2.3952- 1	1.5190+ 0	2.3956- 2				2.9391- 6	3.0090- 2		6.7123- 3	8.6327- 1

CROSS SECTION

MATERIAL =2424 MO-96

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	6.5688+ 0	4.7270+ 0							1.8418+ 0			0.0000+ 0	7.0894- 3
1.0000- 2 ~ 1.5000- 2	5.5822+ 0	4.7270+ 0							8.5625- 1			0.0000+ 0	7.0981- 3
1.5000- 2 ~ 2.0000- 2	5.4461+ 0	4.7269+ 0							7.1916- 1			0.0000+ 0	7.1029- 3
2.0000- 2 ~ 3.0000- 2	5.3319+ 0	4.7269+ 0							6.0602- 1			0.0000+ 0	7.1066- 3
3.0000- 2 ~ 4.0000- 2	5.2356+ 0	4.7268+ 0							5.0878- 1			0.0000+ 0	7.1107- 3
4.0000- 2 ~ 5.0000- 2	5.1771+ 0	4.7268+ 0							4.5035- 1			0.0000+ 0	7.1138- 3
5.0000- 2 ~ 6.0000- 2	5.1325+ 0	4.7267+ 0							4.0575- 1			0.0000+ 0	7.1162- 3
6.0000- 2 ~ 8.0000- 2	6.0867+ 0	4.7266+ 0							3.6006- 1			0.0000+ 0	7.1191- 3
8.0000- 2 ~ 1.0000- 1	5.0448+ 0	4.7265+ 0							3.1833- 1			0.0000+ 0	7.1222- 3
1.0000- 1 ~ 1.5000- 1	4.9967+ 0	4.7263+ 0							2.7044- 1			0.0000+ 0	7.1261- 3
1.5000- 1 ~ 2.0000- 1	4.9538+ 0	4.7260+ 0							2.2786- 1			0.0000+ 0	7.1303- 3
2.0000- 1 ~ 3.0000- 1	4.9172+ 0	4.7255+ 0							1.9167- 1			0.0000+ 0	7.1348- 3
3.0000- 1 ~ 4.0000- 1	4.8866+ 0	4.7249+ 0							1.6168- 1			0.0000+ 0	7.1387- 3
4.0000- 1 ~ 5.0000- 1	4.8672+ 0	4.7243+ 0							1.4285- 1			0.0000+ 0	7.1418- 3
5.0000- 1 ~ 6.0000- 1	4.8529+ 0	4.7237+ 0							1.2917- 1			0.0000+ 0	7.1442- 3
6.0000- 1 ~ 8.0000- 1	4.8378+ 0	4.7228+ 0							1.1502- 1			0.0000+ 0	7.1471- 3
8.0000- 1 ~ 1.0000+ 0	4.8233+ 0	4.7216+ 0							1.0166- 1			0.0000+ 0	7.1602- 3
1.0000+ 0 ~ 1.5000+ 0	4.8064+ 0	4.7195+ 0							8.6921- 2			0.0000+ 0	7.1641- 3
1.5000+ 0 ~ 2.0000+ 0	4.7903+ 0	4.7164+ 0							7.3944- 2			0.0000+ 0	7.1582- 3
2.0000+ 0 ~ 3.0000+ 0	4.7744+ 0	4.7118+ 0							6.2613- 2			0.0000+ 0	7.1625- 3
3.0000+ 0 ~ 4.0000+ 0	4.7592+ 0	4.7055+ 0							5.3664- 2			0.0000+ 0	7.1667- 3
4.0000+ 0 ~ 5.0000+ 0	4.7471+ 0	4.6992+ 0							4.7916- 2			0.0000+ 0	7.1697- 3
5.0000+ 0 ~ 6.0000+ 0	4.7367+ 0	4.6927+ 0							4.4019- 2			0.0000+ 0	7.1722- 3
6.0000+ 0 ~ 8.0000+ 0	4.7228+ 0	4.6828+ 0							4.0021- 2			0.0000+ 0	7.1751- 3
8.0000+ 0 ~ 1.0000+ 1	4.7057+ 0	4.6693+ 0							3.6322- 2			0.0000+ 0	7.1782- 3
1.0000+ 1 ~ 1.5000+ 1	4.6773+ 0	4.6445+ 0							3.2733- 2			0.0000+ 0	7.1821- 3
1.5000+ 1 ~ 2.0000+ 1	4.6369+ 0	4.6069+ 0							2.9977- 2			0.0000+ 0	7.1862- 3
2.0000+ 1 ~ 3.0000+ 1	4.5721+ 0	4.5434+ 0							2.8733- 2			0.0000+ 0	7.1905- 3
3.0000+ 1 ~ 4.0000+ 1	4.4748+ 0	4.4453+ 0							2.9407- 2			0.0000+ 0	7.1947- 3
4.0000+ 1 ~ 5.0000+ 1	4.3589+ 0	4.3268+ 0							3.2138- 2			0.0000+ 0	7.1977- 3
5.0000+ 1 ~ 6.0000+ 1	4.2163+ 0	4.1792+ 0							3.7108- 2			0.0000+ 0	7.2002- 3
6.0000+ 1 ~ 8.0000+ 1	3.9195+ 0	3.8678+ 0							5.1732- 2			0.0000+ 0	7.2031- 3
8.0000+ 1 ~ 1.0000+ 2	3.2619+ 0	3.1586+ 0							1.0325- 1			0.0000+ 0	7.2062- 3
1.0000+ 2 ~ 1.5000+ 2	2.1087+ 2	1.6867+ 2							4.2205+ 1			0.0000+ 0	7.2101- 3
1.5000+ 2 ~ 2.0000+ 2	8.8534+ 0	8.7565+ 0							9.6859- 2			0.0000+ 0	7.2142- 3
2.0000+ 2 ~ 3.0000+ 2	6.5123+ 0	6.5030+ 0							9.2781- 3			0.0000+ 0	7.2185- 3
3.0000+ 2 ~ 4.0000+ 2	5.9783+ 0	6.9766+ 0							2.6798- 3			0.0000+ 0	7.2226- 3
4.0000+ 2 ~ 5.0000+ 2	6.3877+ 0	5.8099+ 0							5.7778- 1			0.0000+ 0	7.2257- 3
5.0000+ 2 ~ 6.0000+ 2	5.8758+ 0	5.8750+ 0							7.4692- 4			0.0000+ 0	7.2282- 3
6.0000+ 2 ~ 8.0000+ 2	5.5666+ 0	5.5661+ 0							4.7588- 4			0.0000+ 0	7.2311- 3
8.0000+ 2 ~ 1.0000+ 3	5.5127+ 0	5.4542+ 0							5.8505- 2			0.0000+ 0	7.2341- 3
1.0000+ 3 ~ 1.5000+ 3	5.3329+ 0	5.2661+ 0							6.6807- 2			0.0000+ 0	7.8284- 3
1.5000+ 3 ~ 2.0000+ 3	4.8393+ 0	4.8378+ 0							1.4998- 3			0.0000+ 0	8.2456- 3
2.0000+ 3 ~ 3.0000+ 3	1.1596+ 1	1.1191+ 1							4.0533- 1			0.0000+ 0	8.8872- 3
3.0000+ 3 ~ 4.0000+ 3	2.6377+ 1	2.5899+ 1							4.7845- 1			0.0000+ 0	9.6042- 3
4.0000+ 3 ~ 5.0000+ 3	7.5845+ 0	7.3843+ 0							2.0023- 1			0.0000+ 0	9.9631- 3
5.0000+ 3 ~ 6.0000+ 3	1.0550+ 1	1.0248+ 1							3.0209- 1			0.0000+ 0	1.0329- 2
6.0000+ 3 ~ 8.0000+ 3	8.8517+ 0	8.5749+ 0							2.7684- 1			0.0000+ 0	1.0763- 2
8.0000+ 3 ~ 1.0000+ 4	1.2184+ 1	1.1858+ 1							3.2608- 1			0.0000+ 0	1.1222- 2
1.0000+ 4 ~ 1.5000+ 4	9.3819+ 0	9.2422+ 0							1.3972- 1			0.0000+ 0	1.4071- 2
1.5000+ 4 ~ 2.0000+ 4	9.0553+ 0	8.8656+ 0							1.8974- 1			0.0000+ 0	1.8239- 2
2.0000+ 4 ~ 3.0000+ 4	8.4268+ 0	8.2953+ 0							1.3150- 1			0.0000+ 0	2.2573- 2
3.0000+ 4 ~ 4.0000+ 4	8.5457+ 0	8.4464+ 0							9.9292- 2			0.0000+ 0	2.9553- 2
4.0000+ 4 ~ 5.0000+ 4	8.6677+ 0	8.5859+ 0							8.1874- 2			0.0000+ 0	3.7367- 2
5.0000+ 4 ~ 6.0000+ 4	8.7798+ 0	8.7091+ 0							7.0703- 2			0.0000+ 0	4.5367- 2
6.0000+ 4 ~ 8.0000+ 4	8.9220+ 0	8.8614+ 0							6.0602- 2			0.0000+ 0	5.8023- 2
8.0000+ 4 ~ 1.0000+ 5	9.0807+ 0	9.0287+ 0							5.2013- 2			0.0000+ 0	7.5322- 2
1.0000+ 5 ~ 1.5000+ 5	9.2172+ 0	9.1697+ 0							4.7388- 2			0.0000+ 0	1.0508- 1
1.5000+ 5 ~ 2.0000+ 5	9.2732+ 0	9.2289+ 0							4.4208- 2			0.0000+ 0	1.4411- 1
2.0000+ 5 ~ 3.0000+ 5	9.1307+ 0	9.0855+ 0							4.5138- 2			0.0000+ 0	1.9576- 1
3.0000+ 5 ~ 4.0000+ 5	8.8145+ 0	8.7662+ 0							4.8226- 2			0.0000+ 0	2.5017- 1
4.0000+ 5 ~ 5.0000+ 5	8.4252+ 0	8.3733+ 0							5.1798- 2			0.0000+ 0	2.8128- 1
5.0000+ 5 ~ 6.0000+ 5	8.0267+ 0	7.9711+ 0							5.5484- 2			0.0000+ 0	3.2173- 1
6.0000+ 5 ~ 8.0000+ 5	7.4661+ 0	7.4015+ 0	2.8286- 3						6.0737- 2			0.0000+ 0	3.5192- 1
8.0000+ 5 ~ 1.0000+ 6	6.7976+ 0	6.3847+ 0	3.6900- 1						4.3569- 2			0.0000+ 0	3.9437- 1
1.0000+ 6 ~ 1.5000+ 6	5.9050+ 0	5.0449+ 0	8.1844- 1						3.9398- 2			2.4375- 7	4.3544- 1
1.5000+ 6 ~ 2.0000+ 6	5.0048+ 0	3.7632+ 0	1.2015+ 0						3.6849- 2			7.3125- 7	4.6012- 1
2.0000+ 6 ~ 3.0000+ 6	4.2444+ 0	2.6625+ 0	1.5532+ 0						2.6996- 2	5.8822- 7		3.6573- 4	4.7972- 1
3.0000+ 6 ~ 4.0000+ 6	3.8149+ 0	2.1062+ 0	1.6801+ 0						2.5458- 2	3.8714- 6		1.0952- 3	5.1426- 1
4.0000+ 6 ~ 5.0000+ 6	3.7796+ 0	2.0084+ 0	1.7472+ 0						2.2021- 2	1.5326- 4		1.8150- 3	5.7176- 1
5.0000+ 6 ~ 6.0000+ 6	3.9541+ 0	2.1369+ 0	1.8001+ 0						1.4211- 2	4.4842- 4		2.5250- 3	6.4148- 1
6.0000+ 6 ~ 8.0000+ 6	4.2366+ 0	2.4283+ 0	1.7956+ 0						5.3682- 3	1.8430- 3		4.4750- 3	7.3486- 1
8.0000+ 6 ~ 1.0000+ 7	4.3914+ 0	2.6191+ 0	1.7091+ 0	4.7826- 2					1.3166- 3	4.5750- 3		8.0850- 3	8.1293- 1
1.0000+ 7 ~ 1.5000+ 7	4.2743+ 0	2.4558+ 0	8.5857- 1	9.3454- 1					1.9032- 4	1.4665- 2		1.0164- 2	8.5844- 1
1.5000+ 7 ~ 2.0000+ 7	3.7859+ 0	2.0225+ 0	3.7078- 1	1.3513+ 0	1.2871- 2				2.9555- 5	2.4777- 2		3.3020- 3	8.6327- 1

CROSS SECTION

MATERIAL =2425 MO-97

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.2364+ 1	5.8635+ 0							6.5109+ 0			0.0000+ 0	7.0281- 3
1.0000- 2 ~ 1.5000- 2	8.8740+ 0	5.8534+ 0							3.0206+ 0			0.0000+ 0	7.0463- 3
1.5000- 2 ~ 2.0000- 2	8.3919+ 0	5.8533+ 0							2.5386+ 0			0.0000+ 0	7.0514- 3
2.0000- 2 ~ 3.0000- 2	7.9881+ 0	5.8532+ 0							2.1349+ 0			0.0000+ 0	7.0567- 3
3.0000- 2 ~ 4.0000- 2	7.6477+ 0	5.8530+ 0							1.7946+ 0			0.0000+ 0	7.0618- 3
4.0000- 2 ~ 5.0000- 2	7.4373+ 0	5.8529+ 0							1.5844+ 0			0.0000+ 0	7.0666- 3
5.0000- 2 ~ 6.0000- 2	7.2816+ 0	5.8527+ 0							1.4288+ 0			0.0000+ 0	7.0687- 3
6.0000- 2 ~ 8.0000- 2	7.1178+ 0	5.8526+ 0							1.2663+ 0			0.0000+ 0	7.0723- 3
8.0000- 2 ~ 1.0000- 1	6.9653+ 0	5.8522+ 0							1.1131+ 0			0.0000+ 0	7.0761- 3
1.0000- 1 ~ 1.5000- 1	6.7975+ 0	5.8517+ 0							9.4579- 1			0.0000+ 0	7.0809- 3
1.5000- 1 ~ 2.0000- 1	6.6426+ 0	5.8509+ 0							7.9162- 1			0.0000+ 0	7.0860- 3
2.0000- 1 ~ 3.0000- 1	6.5104+ 0	5.8498+ 0							6.6058- 1			0.0000+ 0	7.0914- 3
3.0000- 1 ~ 4.0000- 1	6.3997+ 0	5.8483+ 0							5.5146- 1			0.0000+ 0	7.0965- 3
4.0000- 1 ~ 5.0000- 1	6.3298+ 0	5.8466+ 0							4.8301- 1			0.0000+ 0	7.1003- 3
5.0000- 1 ~ 6.0000- 1	6.2773+ 0	5.8453+ 0							4.3197- 1			0.0000+ 0	7.1033- 3
6.0000- 1 ~ 8.0000- 1	6.2215+ 0	5.8432+ 0							3.7831- 1			0.0000+ 0	7.1069- 3
8.0000- 1 ~ 1.0000+ 0	6.1693+ 0	5.8403+ 0							3.2904- 1			0.0000+ 0	7.1107- 3
1.0000+ 0 ~ 1.5000+ 0	6.1068+ 0	5.8354+ 0							2.7137- 1			0.0000+ 0	7.1156- 3
1.5000+ 0 ~ 2.0000+ 0	6.0490+ 0	5.8287+ 0							2.2032- 1			0.0000+ 0	7.1207- 3
2.0000+ 0 ~ 3.0000+ 0	5.9932+ 0	5.8191+ 0							1.7402- 1			0.0000+ 0	7.1260- 3
3.0000+ 0 ~ 4.0000+ 0	5.9431+ 0	5.8072+ 0							1.3597- 1			0.0000+ 0	7.1311- 3
4.0000+ 0 ~ 5.0000+ 0	5.9082+ 0	5.7961+ 0							1.1207- 1			0.0000+ 0	7.1349- 3
5.0000+ 0 ~ 6.0000+ 0	5.8805+ 0	5.7857+ 0							9.4769- 2			0.0000+ 0	7.1379- 3
6.0000+ 0 ~ 8.0000+ 0	5.8483+ 0	5.7715+ 0							7.6900- 2			0.0000+ 0	7.1415- 3
8.0000+ 0 ~ 1.0000+ 1	5.8149+ 0	5.7542+ 0							6.0755- 2			0.0000+ 0	7.1453- 3
1.0000+ 1 ~ 1.5000+ 1	5.7735+ 0	5.7282+ 0							4.5346- 2			0.0000+ 0	7.1502- 3
1.5000+ 1 ~ 2.0000+ 1	5.7935+ 0	5.6963+ 0							9.7138- 2			0.0000+ 0	7.1553- 3
2.0000+ 1 ~ 3.0000+ 1	5.6796+ 0	5.6559+ 0							2.3691- 2			0.0000+ 0	7.1606- 3
3.0000+ 1 ~ 4.0000+ 1	5.6251+ 0	5.6042+ 0							2.0953- 2			0.0000+ 0	7.1657- 3
4.0000+ 1 ~ 5.0000+ 1	5.5679+ 0	5.5415+ 0							2.6470- 2			0.0000+ 0	7.1695- 3
5.0000+ 1 ~ 6.0000+ 1	5.6149+ 0	5.4298+ 0							1.8503- 1			0.0000+ 0	7.1726- 3
6.0000+ 1 ~ 8.0000+ 1	2.9336+ 1	8.6516+ 0							2.0684+ 1			0.0000+ 0	7.1762- 3
8.0000+ 1 ~ 1.0000+ 2	5.8851+ 0	5.8387+ 0							4.8391- 2			0.0000+ 0	7.1800- 3
1.0000+ 2 ~ 1.5000+ 2	6.1488+ 0	5.6454+ 0							5.0333- 1			0.0000+ 0	7.1848- 3
1.5000+ 2 ~ 2.0000+ 2	6.5224+ 0	5.5166+ 0							5.8036- 3			0.0000+ 0	7.1899- 3
2.0000+ 2 ~ 3.0000+ 2	1.3071+ 1	7.9428+ 0							5.1281+ 0			0.0000+ 0	7.1953- 3
3.0000+ 2 ~ 4.0000+ 2	1.1377+ 1	6.9961+ 0							4.3809+ 0			0.0000+ 0	7.2004- 3
4.0000+ 2 ~ 5.0000+ 2	5.5077+ 0	5.3815+ 0							1.2626- 1			0.0000+ 0	7.2042- 3
5.0000+ 2 ~ 6.0000+ 2	3.1279+ 1	2.3916+ 1							7.3630+ 0			0.0000+ 0	7.2072- 3
6.0000+ 2 ~ 8.0000+ 2	1.7267+ 1	1.2937+ 1							4.3198+ 0			0.0000+ 0	7.2108- 3
8.0000+ 2 ~ 1.0000+ 3	7.4389+ 0	6.6502+ 0							7.8873- 1			0.0000+ 0	7.2146- 3
1.0000+ 3 ~ 1.5000+ 3	1.1185+ 1	8.8894+ 0							2.2959+ 0			0.0000+ 0	7.6485- 3
1.5000+ 3 ~ 2.0000+ 3	1.1675+ 1	9.8513+ 0							1.8239+ 0			0.0000+ 0	8.3273- 3
2.0000+ 3 ~ 3.0000+ 3	9.3834+ 0	7.8698+ 0							1.5135+ 0			0.0000+ 0	9.0331- 3
3.0000+ 3 ~ 4.0000+ 3	8.9670+ 0	7.6773+ 0							1.2897+ 0			0.0000+ 0	9.7119- 3
4.0000+ 3 ~ 5.0000+ 3	8.7452+ 0	7.5871+ 0							1.1581+ 0			0.0000+ 0	1.0217- 2
5.0000+ 3 ~ 6.0000+ 3	8.6059+ 0	7.5433+ 0							1.0625+ 0			0.0000+ 0	1.0619- 2
6.0000+ 3 ~ 8.0000+ 3	8.4871+ 0	7.5285+ 0							9.5860- 1			0.0000+ 0	1.1097- 2
8.0000+ 3 ~ 1.0000+ 4	8.3928+ 0	7.5429+ 0							8.4992- 1			0.0000+ 0	1.1601- 2
1.0000+ 4 ~ 1.5000+ 4	8.3452+ 0	7.6210+ 0							7.2415- 1			0.0000+ 0	1.4565- 2
1.5000+ 4 ~ 2.0000+ 4	8.3443+ 0	7.7513+ 0							5.9299- 1			0.0000+ 0	1.8881- 2
2.0000+ 4 ~ 3.0000+ 4	8.4196+ 0	7.9418+ 0							4.7783- 1			0.0000+ 0	2.3370- 2
3.0000+ 4 ~ 4.0000+ 4	8.5431+ 0	8.1665+ 0							3.7655- 1			0.0000+ 0	3.0508- 2
4.0000+ 4 ~ 5.0000+ 4	8.6675+ 0	8.3538+ 0							3.1371- 1			0.0000+ 0	3.8448- 2
5.0000+ 4 ~ 6.0000+ 4	8.7789+ 0	8.5056+ 0							2.7339- 1			0.0000+ 0	4.6549- 2
6.0000+ 4 ~ 8.0000+ 4	8.9262+ 0	8.6951+ 0							2.3104- 1			0.0000+ 0	5.9324- 2
8.0000+ 4 ~ 1.0000+ 5	9.0844+ 0	8.8895+ 0							1.9492- 1			0.0000+ 0	7.6745- 2
1.0000+ 5 ~ 1.5000+ 5	9.2187+ 0	9.0636+ 0							1.5416- 1			0.0000+ 0	1.0863- 1
1.5000+ 5 ~ 2.0000+ 5	9.2746+ 0	9.1475+ 0							1.2887- 1			0.0000+ 0	1.4582- 1
2.0000+ 5 ~ 3.0000+ 5	9.1320+ 0	9.0214+ 0							1.1052- 1			0.0000+ 0	1.9760- 1
3.0000+ 5 ~ 4.0000+ 5	8.8156+ 0	8.7135+ 0							1.0203- 1			0.0000+ 0	2.5215- 1
4.0000+ 5 ~ 5.0000+ 5	8.4295+ 0	8.3269+ 0	2.3959- 3						1.0012- 1			0.0000+ 0	2.9357- 1
5.0000+ 5 ~ 6.0000+ 5	8.0277+ 0	7.7842+ 0	1.4768- 1						9.5698- 2			0.0000+ 0	3.3014- 1
6.0000+ 5 ~ 8.0000+ 5	7.4681+ 0	6.8948+ 0	4.8936- 1						8.3405- 2			0.0000+ 0	3.7898- 1
8.0000+ 5 ~ 1.0000+ 6	6.8039+ 0	5.6892+ 0	1.0485+ 0						6.4378- 2			0.0000+ 0	4.4192- 1
1.0000+ 6 ~ 1.5000+ 6	5.9078+ 0	4.4773+ 0	1.3834+ 0						4.6300- 2	1.1838-11		6.1750- 6	4.9189- 1
1.5000+ 6 ~ 2.0000+ 6	5.0065+ 0	3.3140+ 0	1.6617+ 0						2.6393- 2	6.1033-11		1.5525- 5	5.2050- 1
2.0000+ 6 ~ 3.0000+ 6	4.2630+ 0	2.4772+ 0	1.7514+ 0						2.3545- 2	1.4175- 6		3.1175- 5	5.2049- 1
3.0000+ 6 ~ 4.0000+ 6	3.8147+ 0	2.0085+ 0	1.7870+ 0						1.7899- 2	4.2525- 5		5.2125- 5	5.3856- 1
4.0000+ 6 ~ 5.0000+ 6	3.7793+ 0	1.9699+ 0	1.8089+ 0						9.5764- 3	1.4727- 4		1.3045- 4	5.8527- 1
5.0000+ 6 ~ 6.0000+ 6	3.9537+ 0	2.1166+ 0	1.8314+ 0						4.1684- 3	3.2843- 4		2.6615- 4	6.4693- 1
6.0000+ 6 ~ 8.0000+ 6	4.2361+ 0	2.3908+ 0	1.8047+ 0	3.6831- 2					1.2674- 3	9.6450- 4		6.0700- 4	7.3589- 1
8.0000+ 6 ~ 1.0000+ 7	4.3911+ 0	2.4262+ 0	1.3853+ 0	5.7160- 1					2.5111- 4	2.9560- 3		1.6100- 3	8.1298- 1
1.0000+ 7 ~ 1.5000+ 7	4.2745+ 0	2.5471+ 0	4.2228- 1	1.2883+ 0					2.0010- 5	1.0879- 2		5.7620- 3	8.5844- 1
1.5000+ 7 ~ 2.0000+ 7	3.7861+ 0	1.9936+ 0	4.2803- 1	1.2857+ 0	5.5168- 2				6.9695- 6	2.1457- 2		3.5400- 3	8.6329- 1

CROSS SECTION

MATERIAL =2426 MO-98

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 6 ~ 1.0000- 2	6.0438+ 0	6.6419+ 0							4.0187- 1			0.0000+ 0	6.8401- 3
1.0000- 2 ~ 1.5000- 2	5.8285+ 0	6.6419+ 0							1.8665- 1			0.0000+ 0	6.9547- 3
1.5000- 2 ~ 2.0000- 2	6.7989+ 0	6.6419+ 0							1.5697- 1			0.0000+ 0	6.9588- 3
2.0000- 2 ~ 3.0000- 2	5.7739+ 0	6.6419+ 0							1.3202- 1			0.0000+ 0	6.9631- 3
3.0000- 2 ~ 4.0000- 2	5.7629+ 0	5.6419+ 0							1.1107- 1			0.0000+ 0	6.9673- 3
4.0000- 2 ~ 5.0000- 2	5.7400+ 0	5.6418+ 0							9.8157- 2			0.0000+ 0	6.9703- 3
5.0000- 2 ~ 6.0000- 2	5.7305+ 0	5.6418+ 0							8.8638- 2			0.0000+ 0	6.9728- 3
6.0000- 2 ~ 8.0000- 2	5.7205+ 0	6.6418+ 0							7.8681- 2			0.0000+ 0	6.9757- 3
8.0000- 2 ~ 1.0000- 1	5.7113+ 0	5.6418+ 0							6.9517- 2			0.0000+ 0	6.9787- 3
1.0000- 1 ~ 1.5000- 1	6.7009+ 0	5.6417+ 0							5.9142- 2			0.0000+ 0	6.9827- 3
1.5000- 1 ~ 2.0000- 1	6.6917+ 0	6.6417+ 0							5.0005- 2			0.0000+ 0	6.9868- 3
2.0000- 1 ~ 3.0000- 1	6.6836+ 0	5.6416+ 0							4.2020- 2			0.0000+ 0	6.9911- 3
3.0000- 1 ~ 4.0000- 1	5.6771+ 0	6.6414+ 0							3.5639- 2			0.0000+ 0	6.9962- 3
4.0000- 1 ~ 5.0000- 1	5.6728+ 0	5.6413+ 0							3.1482- 2			0.0000+ 0	6.9982- 3
5.0000- 1 ~ 6.0000- 1	5.6697+ 0	5.6412+ 0							2.8565- 2			0.0000+ 0	7.0007- 3
6.0000- 1 ~ 8.0000- 1	5.6666+ 0	6.6410+ 0							2.5598- 2			0.0000+ 0	7.0036- 3
8.0000- 1 ~ 1.0000+ 0	5.6634+ 0	5.6407+ 0							2.2729- 2			0.0000+ 0	7.0067- 3
1.0000+ 0 ~ 1.5000+ 0	5.6599+ 0	5.6402+ 0							1.9728- 2			0.0000+ 0	7.0106- 3
1.5000+ 0 ~ 2.0000+ 0	5.6566+ 0	5.6395+ 0							1.7096- 2			0.0000+ 0	7.0147- 3
2.0000+ 0 ~ 3.0000+ 0	5.6537+ 0	5.6385+ 0							1.6140- 2			0.0000+ 0	7.0190- 3
3.0000+ 0 ~ 4.0000+ 0	6.6511+ 0	5.6372+ 0							1.3968- 2			0.0000+ 0	7.0231- 3
4.0000+ 0 ~ 5.0000+ 0	5.6497+ 0	5.6358+ 0							1.3933- 2			0.0000+ 0	7.0262- 3
5.0000+ 0 ~ 6.0000+ 0	5.6494+ 0	5.6345+ 0							1.4916- 2			0.0000+ 0	7.0286- 3
6.0000+ 0 ~ 8.0000+ 0	5.6521+ 0	5.6324+ 0							1.9703- 2			0.0000+ 0	7.0315- 3
8.0000+ 0 ~ 1.0000+ 1	5.6756+ 0	5.6297+ 0							4.6861- 2			0.0000+ 0	7.0346- 3
1.0000+ 1 ~ 1.5000+ 1	9.5735+ 0	5.6259+ 0							3.9476+ 0			0.0000+ 0	7.0385- 3
1.5000+ 1 ~ 2.0000+ 1	5.6428+ 0	5.6181+ 0							2.4758- 2			0.0000+ 0	7.0426- 3
2.0000+ 1 ~ 3.0000+ 1	5.6158+ 0	5.6077+ 0							8.1412- 3			0.0000+ 0	7.0469- 3
3.0000+ 1 ~ 4.0000+ 1	5.5987+ 0	5.5937+ 0							5.0387- 3			0.0000+ 0	7.0510- 3
4.0000+ 1 ~ 5.0000+ 1	5.5836+ 0	5.5795+ 0							4.0716- 3			0.0000+ 0	7.0541- 3
5.0000+ 1 ~ 6.0000+ 1	5.5686+ 0	5.5650+ 0							3.5914- 3			0.0000+ 0	7.0566- 3
6.0000+ 1 ~ 8.0000+ 1	5.5459+ 0	5.5428+ 0							3.1708- 3			0.0000+ 0	7.0595- 3
8.0000+ 1 ~ 1.0000+ 2	5.5148+ 0	5.5119+ 0							2.8851- 3			0.0000+ 0	7.0625- 3
1.0000+ 2 ~ 1.5000+ 2	5.4563+ 0	6.4536+ 0							2.7211- 3			0.0000+ 0	7.0664- 3
1.5000+ 2 ~ 2.0000+ 2	5.3606+ 0	5.3577+ 0							2.8582- 3			0.0000+ 0	7.0706- 3
2.0000+ 2 ~ 3.0000+ 2	5.1580+ 0	5.1539+ 0							4.1013- 3			0.0000+ 0	7.0748- 3
3.0000+ 2 ~ 4.0000+ 2	4.6792+ 0	4.6619+ 0							1.7319- 2			0.0000+ 0	7.0790- 3
4.0000+ 2 ~ 5.0000+ 2	7.9294+ 1	6.6953+ 1							1.2341+ 1			0.0000+ 0	7.0820- 3
5.0000+ 2 ~ 6.0000+ 2	7.7817+ 0	7.7500+ 0							3.1679- 2			0.0000+ 0	7.0845- 3
6.0000+ 2 ~ 8.0000+ 2	8.4426+ 0	6.9074+ 0							1.5352+ 0			0.0000+ 0	7.0874- 3
8.0000+ 2 ~ 1.0000+ 3	9.2368+ 0	7.1514+ 0							2.0655+ 0			0.0000+ 0	7.0904- 3
1.0000+ 3 ~ 1.5000+ 3	5.2133+ 0	5.0679+ 0							1.4544- 1			0.0000+ 0	7.4860- 3
1.5000+ 3 ~ 2.0000+ 3	1.3230+ 1	1.2774+ 1							4.5616- 1			0.0000+ 0	8.1051- 3
2.0000+ 3 ~ 3.0000+ 3	7.6097+ 0	7.1448+ 0							4.6496- 1			0.0000+ 0	8.7488- 3
3.0000+ 3 ~ 4.0000+ 3	7.8855+ 0	7.6147+ 0							2.7078- 1			0.0000+ 0	9.3679- 3
4.0000+ 3 ~ 5.0000+ 3	6.5157+ 0	6.0614+ 0							4.5428- 1			0.0000+ 0	9.8262- 3
5.0000+ 3 ~ 6.0000+ 3	8.4049+ 0	8.0302+ 0							3.7462- 1			0.0000+ 0	1.0195- 2
6.0000+ 3 ~ 8.0000+ 3	9.3351+ 0	9.1265+ 0							2.0861- 1			0.0000+ 0	1.0631- 2
8.0000+ 3 ~ 1.0000+ 4	1.4804+ 1	1.4618+ 1							1.8619- 1			0.0000+ 0	1.1091- 2
1.0000+ 4 ~ 1.5000+ 4	9.5774+ 0	9.4266+ 0							1.5088- 1			0.0000+ 0	1.3951- 2
1.5000+ 4 ~ 2.0000+ 4	7.4948+ 0	7.3826+ 0							1.1220- 1			0.0000+ 0	1.8134- 2
2.0000+ 4 ~ 3.0000+ 4	6.7863+ 0	6.6904+ 0							9.5895- 2			0.0000+ 0	2.2483- 2
3.0000+ 4 ~ 4.0000+ 4	8.7625+ 0	8.6810+ 0							8.1486- 2			0.0000+ 0	2.9486- 2
4.0000+ 4 ~ 5.0000+ 4	8.6599+ 0	8.5909+ 0							6.9009- 2			0.0000+ 0	3.7322- 2
5.0000+ 4 ~ 6.0000+ 4	8.7744+ 0	8.7147+ 0							5.9701- 2			0.0000+ 0	4.5344- 2
6.0000+ 4 ~ 8.0000+ 4	8.9193+ 0	8.8679+ 0							5.1391- 2			0.0000+ 0	6.8030- 2
8.0000+ 4 ~ 1.0000+ 5	9.0807+ 0	9.0363+ 0							4.4412- 2			0.0000+ 0	7.5363- 2
1.0000+ 5 ~ 1.5000+ 5	9.2191+ 0	9.1779+ 0							4.1123- 2			0.0000+ 0	1.0515- 1
1.5000+ 5 ~ 2.0000+ 5	9.2750+ 0	9.2361+ 0							3.8884- 2			0.0000+ 0	1.4423- 1
2.0000+ 5 ~ 3.0000+ 5	9.1322+ 0	9.0921+ 0							4.0096- 2			0.0000+ 0	1.9688- 1
3.0000+ 5 ~ 4.0000+ 5	8.8157+ 0	8.7726+ 0							4.3043- 2			0.0000+ 0	2.5025- 1
4.0000+ 5 ~ 5.0000+ 5	8.4263+ 0	8.3800+ 0							4.6264- 2			0.0000+ 0	2.9130- 1
5.0000+ 5 ~ 6.0000+ 5	8.0277+ 0	7.9781+ 0							4.9595- 2			0.0000+ 0	3.2168- 1
6.0000+ 5 ~ 8.0000+ 5	7.4669+ 0	7.3921+ 0	2.0463- 2						5.4329- 2			0.0000+ 0	3.5274- 1
8.0000+ 5 ~ 1.0000+ 6	6.7988+ 0	6.2432+ 0	5.1574- 1						3.9158- 2			0.0000+ 0	4.0408- 1
1.0000+ 6 ~ 1.5000+ 6	5.9051+ 0	4.9125+ 0	9.5594- 1						3.4149- 2			6.0250- 8	4.4661- 1
1.5000+ 6 ~ 2.0000+ 6	5.0057+ 0	3.7281+ 0	1.2436+ 0						3.1617- 2			1.8075- 7	4.6412- 1
2.0000+ 6 ~ 3.0000+ 6	4.2440+ 0	2.5920+ 0	1.6288+ 0						2.2382- 2			3.0057- 6	4.9307- 1
3.0000+ 6 ~ 4.0000+ 6	3.8144+ 0	2.0690+ 0	1.7347+ 0						1.9996- 2	1.5425- 8		8.5352- 6	5.2562- 1
4.0000+ 6 ~ 5.0000+ 6	3.7789+ 0	1.9899+ 0	1.7701+ 0						1.8835- 2	8.1403- 7		1.4922- 4	5.7662- 1
5.0000+ 6 ~ 6.0000+ 6	3.9535+ 0	2.1281+ 0	1.8108+ 0						1.3284- 2	2.0513- 6		4.2507- 4	6.4345- 1
6.0000+ 6 ~ 8.0000+ 6	4.2358+ 0	2.4262+ 0	1.8014+ 0						5.5583- 3	8.4335- 5		1.5465- 3	7.3529- 1
8.0000+ 6 ~ 1.0000+ 7	4.3906+ 0	2.6397+ 0	1.5301+ 0	2.1468- 1					1.4580- 3	1.0230- 3		3.1750- 3	8.1295- 1
1.0000+ 7 ~ 1.5000+ 7	4.2743+ 0	2.5234+ 0	5.6055- 1	1.1769+ 0					2.0516- 4	8.0990- 3		4.7406- 3	8.5844- 1
1.5000+ 7 ~ 2.0000+ 7	3.7860+ 0	2.0270+ 0	1.3175- 1	1.5145+ 0	8.7602- 2				2.1389- 5	2.0405- 2		4.6595- 3	8.6329- 1

CROSS SECTION

MATERIAL =2427

MO-100

ENERGY	TOTAL	ELASTIC	INELR	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	5.9163+ 0	5.3004+ 0							6.1594- 1			0.0000+ 0	6.8031- 3
1.0000- 2 ~ 1.5000- 2	5.5863+ 0	5.3004+ 0							2.8596- 1			0.0000+ 0	6.8179- 3
1.5000- 2 ~ 2.0000- 2	5.5408+ 0	5.3003+ 0							2.4044- 1			0.0000+ 0	6.8220- 3
2.0000- 2 ~ 3.0000- 2	5.5026+ 0	5.3003+ 0							2.0216- 1			0.0000+ 0	6.8264- 3
3.0000- 2 ~ 4.0000- 2	5.4703+ 0	5.3003+ 0							1.7000- 1			0.0000+ 0	6.8305- 3
4.0000- 2 ~ 5.0000- 2	5.4505+ 0	5.3003+ 0							1.5020- 1			0.0000+ 0	6.8336- 3
5.0000- 2 ~ 6.0000- 2	5.4358+ 0	5.3002+ 0							1.3556- 1			0.0000+ 0	6.8361- 3
6.0000- 2 ~ 8.0000- 2	5.4204+ 0	5.3002+ 0							1.2024- 1			0.0000+ 0	6.8390- 3
8.0000- 2 ~ 1.0000- 1	5.4063+ 0	5.3001+ 0							1.0617- 1			0.0000+ 0	6.8421- 3
1.0000- 1 ~ 1.5000- 1	5.3902+ 0	5.3000+ 0							9.0177- 2			0.0000+ 0	6.8461- 3
1.5000- 1 ~ 2.0000- 1	5.3760+ 0	5.2999+ 0							7.6071- 2			0.0000+ 0	6.8502- 3
2.0000- 1 ~ 3.0000- 1	5.3634+ 0	5.2997+ 0							6.3720- 2			0.0000+ 0	6.8546- 3
3.0000- 1 ~ 4.0000- 1	5.3532+ 0	5.2994+ 0							5.3795- 2			0.0000+ 0	6.8587- 3
4.0000- 1 ~ 5.0000- 1	5.3465+ 0	5.2992+ 0							4.7297- 2			0.0000+ 0	6.8618- 3
5.0000- 1 ~ 6.0000- 1	5.3416+ 0	5.2989+ 0							4.2704- 2			0.0000+ 0	6.8643- 3
6.0000- 1 ~ 8.0000- 1	5.3365+ 0	5.2985+ 0							3.7991- 2			0.0000+ 0	6.8672- 3
8.0000- 1 ~ 1.0000+ 0	5.3313+ 0	5.2979+ 0							3.3361- 2			0.0000+ 0	6.8703- 3
1.0000+ 0 ~ 1.5000+ 0	5.3254+ 0	5.2970+ 0							2.8420- 2			0.0000+ 0	6.8743- 3
1.5000+ 0 ~ 2.0000+ 0	5.3195+ 0	5.2956+ 0							2.3864- 2			0.0000+ 0	6.8784- 3
2.0000+ 0 ~ 3.0000+ 0	5.3136+ 0	5.2936+ 0							1.9987- 2			0.0000+ 0	6.8827- 3
3.0000+ 0 ~ 4.0000+ 0	5.3077+ 0	5.2910+ 0							1.6745- 2			0.0000+ 0	6.8869- 3
4.0000+ 0 ~ 5.0000+ 0	5.3030+ 0	5.2883+ 0							1.4693- 2			0.0000+ 0	6.8900- 3
5.0000+ 0 ~ 6.0000+ 0	5.2990+ 0	5.2857+ 0							1.3275- 2			0.0000+ 0	6.8925- 3
6.0000+ 0 ~ 8.0000+ 0	5.2934+ 0	5.2817+ 0							1.1672- 2			0.0000+ 0	6.8954- 3
8.0000+ 0 ~ 1.0000+ 1	5.2867+ 0	5.2765+ 0							1.0206- 2			0.0000+ 0	6.8985- 3
1.0000+ 1 ~ 1.5000+ 1	5.2761+ 0	5.2675+ 0							8.6031- 3			0.0000+ 0	6.9024- 3
1.5000+ 1 ~ 2.0000+ 1	5.2620+ 0	5.2549+ 0							7.1284- 3			0.0000+ 0	6.9066- 3
2.0000+ 1 ~ 3.0000+ 1	5.2422+ 0	5.2363+ 0							5.8898- 3			0.0000+ 0	6.9109- 3
3.0000+ 1 ~ 4.0000+ 1	5.2169+ 0	5.2121+ 0							4.8802- 3			0.0000+ 0	6.9151- 3
4.0000+ 1 ~ 5.0000+ 1	5.1925+ 0	5.1883+ 0							4.2835- 3			0.0000+ 0	6.9182- 3
5.0000+ 1 ~ 6.0000+ 1	5.1686+ 0	5.1647+ 0							3.9297- 3			0.0000+ 0	6.9207- 3
6.0000+ 1 ~ 8.0000+ 1	5.1331+ 0	5.1294+ 0							3.7246- 3			0.0000+ 0	6.9236- 3
8.0000+ 1 ~ 1.0000+ 2	5.8537+ 0	5.0830+ 0							7.7072- 1			0.0000+ 0	6.9267- 3
1.0000+ 2 ~ 1.5000+ 2	4.9933+ 0	4.9888+ 0							4.5635- 3			0.0000+ 0	6.9306- 3
1.5000+ 2 ~ 2.0000+ 2	4.8273+ 0	4.8234+ 0							3.8757- 3			0.0000+ 0	6.9348- 3
2.0000+ 2 ~ 3.0000+ 2	4.3264+ 0	4.3168+ 0							9.5825- 3			0.0000+ 0	6.9391- 3
3.0000+ 2 ~ 4.0000+ 2	7.7698+ 1	7.0488+ 1							7.2102+ 0			0.0000+ 0	6.9433- 3
4.0000+ 2 ~ 5.0000+ 2	7.2354+ 0	7.2193+ 0							1.6116- 2			0.0000+ 0	6.9464- 3
5.0000+ 2 ~ 6.0000+ 2	6.7718+ 0	6.1161+ 0							6.5575- 1			0.0000+ 0	6.9488- 3
6.0000+ 2 ~ 8.0000+ 2	5.8731+ 0	5.7290+ 0							1.4409- 1			0.0000+ 0	6.9518- 3
8.0000+ 2 ~ 1.0000+ 3	5.5136+ 0	5.5126+ 0							9.0611- 4			0.0000+ 0	6.9549- 3
1.0000+ 3 ~ 1.5000+ 3	7.6631+ 0	6.4203+ 0							1.2428+ 0			0.0000+ 0	7.3529- 3
1.5000+ 3 ~ 2.0000+ 3	1.1174+ 1	1.0376+ 1							7.9771- 1			0.0000+ 0	7.9760- 3
2.0000+ 3 ~ 3.0000+ 3	6.7063+ 0	6.3726+ 0							3.3373- 1			0.0000+ 0	8.6238- 3
3.0000+ 3 ~ 4.0000+ 3	9.0102+ 0	8.5799+ 0							4.3032- 1			0.0000+ 0	9.2469- 3
4.0000+ 3 ~ 5.0000+ 3	5.8064+ 0	5.5862+ 0							2.2019- 1			0.0000+ 0	9.7101- 3
5.0000+ 3 ~ 6.0000+ 3	1.5534+ 1	1.5385+ 1							1.4914- 1			0.0000+ 0	1.0079- 2
6.0000+ 3 ~ 8.0000+ 3	9.7518+ 0	9.4933+ 0							2.5853- 1			0.0000+ 0	1.0518- 2
8.0000+ 3 ~ 1.0000+ 4	7.3201+ 0	7.1733+ 0							1.4672- 1			0.0000+ 0	1.0981- 2
1.0000+ 4 ~ 1.5000+ 4	7.7840+ 0	7.6660+ 0							1.1806- 1			0.0000+ 0	1.3863- 2
1.5000+ 4 ~ 2.0000+ 4	1.0121+ 1	1.0008+ 1							1.1328- 1			0.0000+ 0	1.8053- 2
2.0000+ 4 ~ 3.0000+ 4	1.0164+ 1	1.0067+ 1							9.7490- 2			0.0000+ 0	2.2420- 2
3.0000+ 4 ~ 4.0000+ 4	8.5237+ 0	8.4397+ 0							8.3991- 2			0.0000+ 0	2.9446- 2
4.0000+ 4 ~ 5.0000+ 4	8.6515+ 0	8.5833+ 0							6.8220- 2			0.0000+ 0	3.7905- 2
5.0000+ 4 ~ 6.0000+ 4	8.7684+ 0	8.7093+ 0							5.9072- 2			0.0000+ 0	4.5347- 2
6.0000+ 4 ~ 8.0000+ 4	8.9160+ 0	8.8651+ 0							5.0982- 2			0.0000+ 0	5.8062- 2
8.0000+ 4 ~ 1.0000+ 5	9.0803+ 0	9.0361+ 0							4.4217- 2			0.0000+ 0	7.5428- 2
1.0000+ 5 ~ 1.5000+ 5	9.2196+ 0	9.1784+ 0							4.1137- 2			0.0000+ 0	1.0626- 1
1.5000+ 5 ~ 2.0000+ 5	9.2754+ 0	9.2363+ 0							3.9128- 2			0.0000+ 0	1.4438- 1
2.0000+ 5 ~ 3.0000+ 5	9.1324+ 0	9.0917+ 0							4.0685- 2			0.0000+ 0	1.9606- 1
3.0000+ 5 ~ 4.0000+ 5	8.8156+ 0	8.7714+ 0							4.4150- 2			0.0000+ 0	2.5046- 1
4.0000+ 5 ~ 5.0000+ 5	8.4262+ 0	8.3781+ 0							4.7990- 2			0.0000+ 0	2.9152- 1
5.0000+ 5 ~ 6.0000+ 5	8.0321+ 0	7.8863+ 0	9.9593- 2						4.4059- 2			0.0000+ 0	3.2619- 1
6.0000+ 5 ~ 8.0000+ 5	7.4660+ 0	6.8233+ 0	6.1523- 1						2.6777- 2			0.0000+ 0	3.8257- 1
8.0000+ 5 ~ 1.0000+ 6	6.7991+ 0	5.8198+ 0	9.4911- 1						2.6157- 2			0.0000+ 0	4.3081- 1
1.0000+ 6 ~ 1.5000+ 6	5.9076+ 0	4.6881+ 0	1.1936+ 0						2.4468- 2			2.7000- 9	4.6908- 1
1.5000+ 6 ~ 2.0000+ 6	5.0060+ 0	3.5447+ 0	1.4342+ 0						2.4803- 2			8.1000- 9	4.8757- 1
2.0000+ 6 ~ 3.0000+ 6	4.2433+ 0	2.5628+ 0	1.6546+ 0						2.5122- 2			6.4560- 7	4.9762- 1
3.0000+ 6 ~ 4.0000+ 6	3.8140+ 0	2.0412+ 0	1.7490+ 0						2.1936- 2			1.9152- 6	5.3025- 1
4.0000+ 6 ~ 5.0000+ 6	3.7785+ 0	1.9652+ 0	1.7985+ 0						1.4422- 2			5.4625- 6	5.6354- 1
5.0000+ 6 ~ 6.0000+ 6	3.9630+ 0	2.1170+ 0	1.8281+ 0						7.4133- 3	1.0020-12		1.1287- 5	6.4679- 1
6.0000+ 6 ~ 8.0000+ 6	4.2352+ 0	2.4236+ 0	1.8080+ 0						2.5870- 3	9.5000- 6		1.0610- 4	7.3588- 1
8.0000+ 6 ~ 1.0000+ 7	4.3900+ 0	2.6522+ 0	1.5193+ 0	3.1627- 1					7.4338- 4	3.9260- 4		4.9200- 4	8.1297- 1
1.0000+ 7 ~ 1.5000+ 7	4.2744+ 0	2.5495+ 0	5.9786- 1	1.1195+ 0	9.8386- 5				1.5227- 4	4.7812- 3		2.2002- 3	8.5844- 1
1.5000+ 7 ~ 2.0000+ 7	3.7859+ 0	1.9920+ 0	5.5723- 1	1.1987+ 0	2.2683- 2				1.2318- 4	1.1900- 2		5.2450- 3	8.6329- 1

CROSS SECTION

MATERIAL =2721

HF-174

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.2106+ 3	0.0000+ 0							1.2023+ 3	0.0000+ 0		0.0000+ 0	4.0943- 3
1.0000- 2 ~ 1.5000- 2	5.6558+ 2	0.0000+ 0							5.5744+ 2	0.0000+ 0		0.0000+ 0	4.1410- 3
1.5000- 2 ~ 2.0000- 2	4.7822+ 2	0.0000+ 0							4.7003+ 2	0.0000+ 0		0.0000+ 0	4.1541- 3
2.0000- 2 ~ 3.0000- 2	4.0234+ 2	0.0000+ 0							3.9428+ 2	0.0000+ 0		0.0000+ 0	4.1677- 3
3.0000- 2 ~ 4.0000- 2	3.4031+ 2	0.0000+ 0							3.3220+ 2	0.0000+ 0		0.0000+ 0	4.1808- 3
4.0000- 2 ~ 5.0000- 2	3.0058+ 2	0.0000+ 0							2.9251+ 2	0.0000+ 0		0.0000+ 0	4.1906- 3
5.0000- 2 ~ 6.0000- 2	2.7245+ 2	0.0000+ 0							2.6440+ 2	0.0000+ 0		0.0000+ 0	4.1984- 3
6.0000- 2 ~ 8.0000- 2	2.4289+ 2	0.0000+ 0							2.3478+ 2	0.0000+ 0		0.0000+ 0	4.2076- 3
8.0000- 2 ~ 1.0000- 1	2.1495+ 2	0.0000+ 0							2.0690+ 2	0.0000+ 0		0.0000+ 0	4.2174- 3
1.0000- 1 ~ 1.5000- 1	1.8406+ 2	0.0000+ 0							1.7597+ 2	0.0000+ 0		0.0000+ 0	4.2299- 3
1.5000- 1 ~ 2.0000- 1	1.5610+ 2	0.0000+ 0							1.4804+ 2	0.0000+ 0		0.0000+ 0	4.2430- 3
2.0000- 1 ~ 3.0000- 1	1.3227+ 2	0.0000+ 0							1.2424+ 2	0.0000+ 0		0.0000+ 0	4.2566- 3
3.0000- 1 ~ 4.0000- 1	1.1298+ 2	0.0000+ 0							1.0496+ 2	0.0000+ 0		0.0000+ 0	4.2697- 3
4.0000- 1 ~ 5.0000- 1	1.0057+ 2	0.0000+ 0							9.2564+ 1	0.0000+ 0		0.0000+ 0	4.2795- 3
5.0000- 1 ~ 6.0000- 1	9.1437+ 1	7.4672+ 0							8.3921+ 1	0.0000+ 0		0.0000+ 0	4.2873- 3
6.0000- 1 ~ 8.0000- 1	8.1173+ 1	6.6256+ 0							7.4437+ 1	0.0000+ 0		0.0000+ 0	4.2965- 3
8.0000- 1 ~ 1.0000+ 0	7.1795+ 1	6.0273+ 0							6.5723+ 1	0.0000+ 0		0.0000+ 0	4.3063- 3
1.0000+ 0 ~ 1.5000+ 0	6.1069+ 1	5.5916+ 0							5.5451+ 1	0.0000+ 0		0.0000+ 0	4.3188- 3
1.5000+ 0 ~ 2.0000+ 0	5.1742+ 1	5.3173+ 0							4.6376+ 1	0.0000+ 0		0.0000+ 0	4.3319- 3
2.0000+ 0 ~ 3.0000+ 0	4.3541+ 1	5.0730+ 0							3.8417+ 1	0.0000+ 0		0.0000+ 0	4.3455- 3
3.0000+ 0 ~ 4.0000+ 0	3.7424+ 1	4.8270+ 0							3.2555+ 1	0.0000+ 0		0.0000+ 0	4.3586- 3
4.0000+ 0 ~ 5.0000+ 0	5.1209+ 1	4.7547+ 0							4.6422+ 1	0.0000+ 0		0.0000+ 0	4.3684- 3
5.0000+ 0 ~ 6.0000+ 0	2.9918+ 1	4.5812+ 0							2.5312+ 1	0.0000+ 0		0.0000+ 0	4.3762- 3
6.0000+ 0 ~ 8.0000+ 0	2.6725+ 1	4.3030+ 0							2.2408+ 1	0.0000+ 0		0.0000+ 0	4.3854- 3
8.0000+ 0 ~ 1.0000+ 1	2.3933+ 1	3.8250+ 0							2.0104+ 1	0.0000+ 0		0.0000+ 0	4.3951- 3
1.0000+ 1 ~ 1.5000+ 1	3.1468+ 2	2.6593+ 1							2.8907+ 2	0.0000+ 0		0.0000+ 0	4.4077- 3
1.5000+ 1 ~ 2.0000+ 1	2.0612+ 1	5.1515+ 0							1.6439+ 1	0.0000+ 0		0.0000+ 0	4.4208- 3
2.0000+ 1 ~ 3.0000+ 1	2.7845+ 2	1.0099+ 2							1.7743+ 2	0.0000+ 0		0.0000+ 0	4.4344- 3
3.0000+ 1 ~ 4.0000+ 1	3.0542+ 2	1.3075+ 2							1.7464+ 2	0.0000+ 0		0.0000+ 0	4.4475- 3
4.0000+ 1 ~ 5.0000+ 1	1.6353+ 1	7.2014+ 0							9.1239+ 0	0.0000+ 0		0.0000+ 0	4.4573- 3
5.0000+ 1 ~ 6.0000+ 1	1.3732+ 1	5.4676+ 0							8.2365+ 0	0.0000+ 0		0.0000+ 0	4.4651- 3
6.0000+ 1 ~ 8.0000+ 1	2.1597+ 2	9.7296+ 1							1.1865+ 2	0.0000+ 0		0.0000+ 0	4.4743- 3
8.0000+ 1 ~ 1.0000+ 2	1.5190+ 1	7.7958+ 0							7.3765+ 0	0.0000+ 0		0.0000+ 0	4.4840- 3
1.0000+ 2 ~ 1.5000+ 2	2.0468+ 2	1.2780+ 2							7.6865+ 1	0.0000+ 0		0.0000+ 0	4.4965- 3
1.5000+ 2 ~ 2.0000+ 2	6.3726+ 1	3.9897+ 1							2.3823+ 1	0.0000+ 0		0.0000+ 0	4.5097- 3
2.0000+ 2 ~ 3.0000+ 2	9.9278+ 1	6.7755+ 1							3.1523+ 1	0.0000+ 0		0.0000+ 0	4.5233- 3
3.0000+ 2 ~ 4.0000+ 2	6.6620+ 1	4.4849+ 1							2.1771+ 1	0.0000+ 0		0.0000+ 0	4.5364- 3
4.0000+ 2 ~ 5.0000+ 2	5.9081+ 1	4.1251+ 1							1.7831+ 1	0.0000+ 0		0.0000+ 0	4.5462- 3
5.0000+ 2 ~ 6.0000+ 2	5.3766+ 1	3.8561+ 1							1.5204+ 1	0.0000+ 0		0.0000+ 0	4.5540- 3
6.0000+ 2 ~ 8.0000+ 2	4.8340+ 1	3.5653+ 1							1.2687+ 1	0.0000+ 0		0.0000+ 0	4.5632- 3
8.0000+ 2 ~ 1.0000+ 3	4.3008+ 1	3.2670+ 1							1.0338+ 1	0.0000+ 0		0.0000+ 0	4.5729- 3
1.0000+ 3 ~ 1.5000+ 3	3.7484+ 1	2.9362+ 1							8.1212+ 0	0.0000+ 0		0.0000+ 0	5.7282- 3
1.5000+ 3 ~ 2.0000+ 3	3.2117+ 1	2.5998+ 1							6.1188+ 0	0.0000+ 0		0.0000+ 0	7.6357- 3
2.0000+ 3 ~ 3.0000+ 3	2.7734+ 1	2.3058+ 1							4.6764+ 0	0.0000+ 0		0.0000+ 0	9.4152- 3
3.0000+ 3 ~ 4.0000+ 3	2.3937+ 1	2.0396+ 1							3.5411+ 0	0.0000+ 0		0.0000+ 0	1.1223- 2
4.0000+ 3 ~ 5.0000+ 3	2.1551+ 1	1.8645+ 1							2.9054+ 0	0.0000+ 0		0.0000+ 0	1.2567- 2
5.0000+ 3 ~ 6.0000+ 3	1.9867+ 1	1.7371+ 1							2.4961+ 0	0.0000+ 0		0.0000+ 0	1.3638- 2
6.0000+ 3 ~ 8.0000+ 3	1.8148+ 1	1.6029+ 1							2.1184+ 0	0.0000+ 0		0.0000+ 0	1.4910- 2
8.0000+ 3 ~ 1.0000+ 4	1.6457+ 1	1.4679+ 1							1.7772+ 0	0.0000+ 0		0.0000+ 0	1.6254- 2
1.0000+ 4 ~ 1.5000+ 4	1.4700+ 1	1.3228+ 1							1.4719+ 0	0.0000+ 0		0.0000+ 0	2.3431- 2
1.5000+ 4 ~ 2.0000+ 4	1.2989+ 1	1.1783+ 1							1.2057+ 0	0.0000+ 0		0.0000+ 0	3.3803- 2
2.0000+ 4 ~ 3.0000+ 4	1.1582+ 1	1.0561+ 1							1.0203+ 0	0.0000+ 0		0.0000+ 0	4.4589- 2
3.0000+ 4 ~ 4.0000+ 4	1.0352+ 1	9.4792+ 0							8.7324- 1	0.0000+ 0		0.0000+ 0	6.0136- 2
4.0000+ 4 ~ 5.0000+ 4	9.5690+ 0	8.7819+ 0							7.8710- 1	0.0000+ 0		0.0000+ 0	7.6520- 2
5.0000+ 4 ~ 6.0000+ 4	9.0769+ 0	8.3438+ 0							7.3306- 1	0.0000+ 0		0.0000+ 0	9.2045- 2
6.0000+ 4 ~ 8.0000+ 4	8.6515+ 0	7.9651+ 0							6.8634- 1	0.0000+ 0		0.0000+ 0	1.1452- 1
8.0000+ 4 ~ 1.0000+ 5	8.2516+ 0	7.6009+ 0	1.1381- 2						6.3917- 1	0.0000+ 0		0.0000+ 0	1.4214- 1
1.0000+ 5 ~ 1.5000+ 5	7.8354+ 0	7.1612+ 0	1.3820- 1						5.3334- 1	0.0000+ 0		0.0000+ 0	1.8543- 1
1.5000+ 5 ~ 2.0000+ 5	7.4853+ 0	6.7477+ 0	2.7569- 1						4.6102- 1	0.0000+ 0		0.0000+ 0	2.3517- 1
2.0000+ 5 ~ 3.0000+ 5	7.2785+ 0	6.4232+ 0	4.3002- 1						4.2413- 1	0.0000+ 0		0.0000+ 0	2.8869- 1
3.0000+ 5 ~ 4.0000+ 5	7.2045+ 0	6.2048+ 0	5.9166- 1						4.0787- 1	0.0000+ 0		0.0000+ 0	3.3718- 1
4.0000+ 5 ~ 5.0000+ 5	7.2492+ 0	6.1158+ 0	7.2656- 1						4.0684- 1	0.0000+ 0		0.0000+ 0	3.6985- 1
5.0000+ 5 ~ 6.0000+ 5	7.3347+ 0	6.0792+ 0	8.4236- 1						4.1317- 1	0.0000+ 0		0.0000+ 0	3.9512- 1
6.0000+ 5 ~ 8.0000+ 5	7.4653+ 0	6.0522+ 0	9.7853- 1						4.3459- 1	0.0000+ 0		0.0000+ 0	4.2787- 1
8.0000+ 5 ~ 1.0000+ 6	7.5868+ 0	5.9648+ 0	1.1582+ 0						4.6374- 1	0.0000+ 0		0.0000+ 0	4.7225- 1
1.0000+ 6 ~ 1.5000+ 6	7.6000+ 0	5.6550+ 0	1.4713+ 0						4.7354- 1	0.0000+ 0		0.0000+ 0	5.4957- 1
1.5000+ 6 ~ 2.0000+ 6	7.3672+ 0	5.0905+ 0	1.8504+ 0						4.2503- 1	0.0000+ 0		0.0000+ 0	6.4076- 1
2.0000+ 6 ~ 3.0000+ 6	6.7731+ 0	4.3023+ 0	2.1066+ 0						3.5232- 1	0.0000+ 0		0.0000+ 0	7.0846- 1
3.0000+ 6 ~ 4.0000+ 6	6.0609+ 0	3.5197+ 0	2.3149+ 0						2.1151- 1	0.0000+ 0		0.0000+ 0	7.4402- 1
4.0000+ 6 ~ 5.0000+ 6	5.5368+ 0	2.9982+ 0	2.4488+ 0						8.7181- 2	1.2850- 5		1.2875- 5	7.4778- 1
5.0000+ 6 ~ 6.0000+ 6	5.2615+ 0	2.7034+ 0	2.5249+ 0						2.9092- 2	8.8850- 5		5.9700- 5	7.4920- 1
6.0000+ 6 ~ 8.0000+ 6	5.1391+ 0	2.5931+ 0	2.5386+ 0						6.5886- 3	2.6108- 4		8.3475- 5	7.7153- 1
8.0000+ 6 ~ 1.0000+ 7	5.2241+ 0	2.7237+ 0	2.4903+ 0	7.9250- 3					1.1253- 3	6.4935- 4		1.2030- 4	8.1605- 1
1.0000+ 7 ~ 1.5000+ 7	5.5535+ 0	3.1875+ 0	1.7978+ 0	5.6402- 1					1.6053- 4	1.8984- 3		2.5417- 4	8.7769- 1
1.5000+ 7 ~ 2.0000+ 7	5.7017+ 0	3.1733+ 0	5.0341- 1	2.0095+ 0	1.0193- 2				7.2510- 6	4.3248- 3		6.0788- 4	9.2073- 1

CROSS SECTION

MATERIAL =2722 HF-176

ENERGY	TOTAL	ELASTIC	INELA	(N.2N)	(N.3N)	FISSION	(N.NA)	(N.NP)	CAPTURE	(N.P)	(N.D)	(N.A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.2497+ 2	8.0000+ 0							1.1676+ 2			0.0000+ 0	4.0365- 3
1.0000- 2 ~ 1.5000- 2	6.2153+ 1	8.0000+ 0							5.4028+ 1			0.0000+ 0	4.0803- 3
1.5000- 2 ~ 2.0000- 2	5.3834+ 1	8.0000+ 0							4.5672+ 1			0.0000+ 0	4.0926- 3
2.0000- 2 ~ 3.0000- 2	4.6455+ 1	8.0000+ 0							3.8400+ 1			0.0000+ 0	4.1055- 3
3.0000- 2 ~ 4.0000- 2	4.0462+ 1	8.0000+ 0							3.2374+ 1			0.0000+ 0	4.1178- 3
4.0000- 2 ~ 5.0000- 2	3.6554+ 1	8.0000+ 0							2.8510+ 1			0.0000+ 0	4.1269- 3
5.0000- 2 ~ 6.0000- 2	3.3814+ 1	8.0000+ 0							2.5771+ 1			0.0000+ 0	4.1342- 3
6.0000- 2 ~ 8.0000- 2	3.0966+ 1	8.0000+ 0							2.2882+ 1			0.0000+ 0	4.1429- 3
8.0000- 2 ~ 1.0000- 1	2.8204+ 1	8.0000+ 0							2.0163+ 1			0.0000+ 0	4.1521- 3
1.0000- 1 ~ 1.5000- 1	2.5230+ 1	8.0000+ 0							1.7168+ 1			0.0000+ 0	4.1638- 3
1.5000- 1 ~ 2.0000- 1	2.2515+ 1	8.0000+ 0							1.4470+ 1			0.0000+ 0	4.1761- 3
2.0000- 1 ~ 3.0000- 1	2.0140+ 1	8.0000+ 0							1.2123+ 1			0.0000+ 0	4.1890- 3
3.0000- 1 ~ 4.0000- 1	1.8231+ 1	8.0000+ 0							1.0223+ 1			0.0000+ 0	4.2013- 3
4.0000- 1 ~ 5.0000- 1	1.7000+ 1	8.0000+ 0							8.9953+ 0			0.0000+ 0	4.2104- 3
5.0000- 1 ~ 6.0000- 1	1.5126+ 1	7.0775+ 0							8.0325+ 0			0.0000+ 0	4.2177- 3
6.0000- 1 ~ 8.0000- 1	1.3536+ 1	6.1875+ 0							7.3405+ 0			0.0000+ 0	4.2264- 3
8.0000- 1 ~ 1.0000+ 0	1.2258+ 1	5.5532+ 0							6.6966+ 0			0.0000+ 0	4.2356- 3
1.0000+ 0 ~ 1.5000+ 0	1.1051+ 1	5.0964+ 0							5.9361+ 0			0.0000+ 0	4.2473- 3
1.5000+ 0 ~ 2.0000+ 0	1.0100+ 1	4.7955+ 0							5.2783+ 0			0.0000+ 0	4.2596- 3
2.0000+ 0 ~ 3.0000+ 0	9.2954+ 0	4.4997+ 0							4.7817+ 0			0.0000+ 0	4.2724- 3
3.0000+ 0 ~ 4.0000+ 0	8.7822+ 0	4.1706+ 0							4.6083+ 0			0.0000+ 0	4.2848- 3
4.0000+ 0 ~ 5.0000+ 0	8.8168+ 0	3.7979+ 0							5.0099+ 0			0.0000+ 0	4.2939- 3
5.0000+ 0 ~ 6.0000+ 0	9.9582+ 0	3.2357+ 0							6.7131+ 0			0.0000+ 0	4.3012- 3
6.0000+ 0 ~ 8.0000+ 0	8.5600+ 2	4.5820+ 1							8.1018+ 2			0.0000+ 0	4.3099- 3
8.0000+ 0 ~ 1.0000+ 1	5.1880+ 1	1.2005+ 1							3.9873+ 1			0.0000+ 0	4.3191- 3
1.0000+ 1 ~ 1.5000+ 1	8.3849+ 0	5.5854+ 0							2.7970+ 0			0.0000+ 0	4.3308- 3
1.5000+ 1 ~ 2.0000+ 1	6.4427+ 0	4.6581+ 0							1.7807+ 0			0.0000+ 0	4.3431- 3
2.0000+ 1 ~ 3.0000+ 1	5.3113+ 0	3.7655+ 0							1.5436+ 0			0.0000+ 0	4.3559- 3
3.0000+ 1 ~ 4.0000+ 1	3.8277+ 0	1.9854+ 0							1.8409+ 0			0.0000+ 0	4.3683- 3
4.0000+ 1 ~ 5.0000+ 1	1.0447+ 3	7.0329+ 2							3.4146+ 2			0.0000+ 0	4.3774- 3
5.0000+ 1 ~ 6.0000+ 1	5.0499+ 1	3.0379+ 1							2.0116+ 1			0.0000+ 0	4.3847- 3
6.0000+ 1 ~ 8.0000+ 1	5.7803+ 1	1.9895+ 1							3.7905+ 1			0.0000+ 0	4.3934- 3
8.0000+ 1 ~ 1.0000+ 2	8.9096+ 0	8.1855+ 0							7.2309- 1			0.0000+ 0	4.4026- 3
1.0000+ 2 ~ 1.5000+ 2	3.5692+ 1	1.8626+ 1							1.7064+ 1			0.0000+ 0	4.4143- 3
1.5000+ 2 ~ 2.0000+ 2	2.8528+ 1	1.5643+ 1							1.2882+ 1			0.0000+ 0	4.4266- 3
2.0000+ 2 ~ 3.0000+ 2	7.4481+ 1	5.3425+ 1							2.1053+ 1			0.0000+ 0	4.4394- 3
3.0000+ 2 ~ 4.0000+ 2	3.2563+ 1	2.4791+ 1							7.7718+ 0			0.0000+ 0	4.4518- 3
4.0000+ 2 ~ 5.0000+ 2	4.0217+ 1	3.1595+ 1							8.6225+ 0			0.0000+ 0	4.4609- 3
5.0000+ 2 ~ 6.0000+ 2	3.0436+ 1	2.6521+ 1							3.9156+ 0			0.0000+ 0	4.4682- 3
6.0000+ 2 ~ 8.0000+ 2	5.2163+ 1	4.4516+ 1							7.6465+ 0			0.0000+ 0	4.4769- 3
8.0000+ 2 ~ 1.0000+ 3	3.2423+ 1	2.5134+ 1							7.2890+ 0			0.0000+ 0	4.4860- 3
1.0000+ 3 ~ 1.5000+ 3	2.8637+ 1	2.2891+ 1							5.7460+ 0			0.0000+ 0	5.6174- 3
1.5000+ 3 ~ 2.0000+ 3	2.4959+ 1	2.0606+ 1							4.3537+ 0			0.0000+ 0	7.3878- 3
2.0000+ 3 ~ 3.0000+ 3	2.1956+ 1	1.8603+ 1							3.3534+ 0			0.0000+ 0	9.2288- 3
3.0000+ 3 ~ 4.0000+ 3	1.9355+ 1	1.6787+ 1							2.5683+ 0			0.0000+ 0	1.0999- 2
4.0000+ 3 ~ 5.0000+ 3	1.7720+ 1	1.5589+ 1							2.1307+ 0			0.0000+ 0	1.2316- 2
5.0000+ 3 ~ 6.0000+ 3	1.6567+ 1	1.4717+ 1							1.8500+ 0			0.0000+ 0	1.3365- 2
6.0000+ 3 ~ 8.0000+ 3	1.5388+ 1	1.3796+ 1							1.5920+ 0			0.0000+ 0	1.4611- 2
8.0000+ 3 ~ 1.0000+ 4	1.4229+ 1	1.2869+ 1							1.3593+ 0			0.0000+ 0	1.5927- 2
1.0000+ 4 ~ 1.5000+ 4	1.3023+ 1	1.1872+ 1							1.1505+ 0			0.0000+ 0	2.3006- 2
1.5000+ 4 ~ 2.0000+ 4	1.1846+ 1	1.0880+ 1							9.6637- 1			0.0000+ 0	3.3241- 2
2.0000+ 4 ~ 3.0000+ 4	1.0874+ 1	1.0041+ 1							8.3297- 1			0.0000+ 0	4.3885- 2
3.0000+ 4 ~ 4.0000+ 4	1.0019+ 1	9.2967+ 0							7.2260- 1			0.0000+ 0	5.9227- 2
4.0000+ 4 ~ 5.0000+ 4	9.4693+ 0	8.8147+ 0							6.5459- 1			0.0000+ 0	7.5400- 2
5.0000+ 4 ~ 6.0000+ 4	9.0768+ 0	8.4662+ 0							6.1051- 1			0.0000+ 0	9.0723- 2
6.0000+ 4 ~ 8.0000+ 4	8.6510+ 0	8.0790+ 0							5.7200- 1			0.0000+ 0	1.1288- 1
8.0000+ 4 ~ 1.0000+ 5	8.2505+ 0	7.7040+ 0	2.0088- 2						5.2612- 1			0.0000+ 0	1.4016- 1
1.0000+ 5 ~ 1.5000+ 5	7.8351+ 0	7.2447+ 0	1.6116- 1						4.2645- 1			0.0000+ 0	1.8332- 1
1.5000+ 5 ~ 2.0000+ 5	7.4850+ 0	6.8151+ 0	3.0638- 1						3.6358- 1			0.0000+ 0	2.3284- 1
2.0000+ 5 ~ 3.0000+ 5	7.2750+ 0	6.4788+ 0	4.6365- 1						3.3155- 1			0.0000+ 0	2.8620- 1
3.0000+ 5 ~ 4.0000+ 5	7.2042+ 0	6.2568+ 0	6.3020- 1						3.1700- 1			0.0000+ 0	3.3434- 1
4.0000+ 5 ~ 5.0000+ 5	7.2490+ 0	6.1647+ 0	7.6902- 1						3.1536- 1			0.0000+ 0	3.6889- 1
5.0000+ 5 ~ 6.0000+ 5	7.3343+ 0	6.1257+ 0	8.8813- 1						3.2059- 1	0.0000+ 0		0.0000+ 0	3.9209- 1
6.0000+ 5 ~ 8.0000+ 5	7.4650+ 0	6.0979+ 0	1.0285+ 0						3.3917- 1	0.0000+ 0		0.0000+ 0	4.2469- 1
8.0000+ 5 ~ 1.0000+ 6	7.5819+ 0	6.0482+ 0	1.1529+ 0						3.8030- 1	0.0000+ 0		0.0000+ 0	4.6580- 1
1.0000+ 6 ~ 1.5000+ 6	7.5999+ 0	5.8023+ 0	1.3570+ 0						4.4041- 1	0.0000+ 0		0.0000+ 0	5.3584- 1
1.5000+ 6 ~ 2.0000+ 6	7.3723+ 0	5.1504+ 0	1.8324+ 0						3.8927- 1	0.0000+ 0		0.0000+ 0	5.3443- 1
2.0000+ 6 ~ 3.0000+ 6	6.7727+ 0	4.3114+ 0	2.1547+ 0						2.9257- 1	0.0000+ 0		0.0000+ 0	7.0701- 1
3.0000+ 6 ~ 4.0000+ 6	6.0605+ 0	3.5200+ 0	2.3711+ 0						1.5378- 1	0.0000+ 0		0.0000+ 0	7.4390- 1
4.0000+ 6 ~ 5.0000+ 6	5.5378+ 0	2.9978+ 0	2.4832+ 0						5.4931- 2	1.4125- 6		2.8250- 6	7.4787- 1
5.0000+ 6 ~ 6.0000+ 6	5.2612+ 0	2.7031+ 0	2.5385+ 0						1.7176- 2	1.0425- 5		1.5150- 5	7.4923- 1
6.0000+ 6 ~ 8.0000+ 6	5.1389+ 0	2.5928+ 0	2.5417+ 0						3.9958- 3	4.8875- 5		1.8900- 5	7.7154- 1
8.0000+ 6 ~ 1.0000+ 7	5.2287+ 0	2.8914+ 0	2.0355+ 0	2.9829- 1					6.1388- 4	1.8599- 4		2.2825- 5	8.1612- 1
1.0000+ 7 ~ 1.5000+ 7	5.5540+ 0	3.1169+ 0	8.7498- 1	1.5602+ 0					5.5506- 5	8.1724- 4		5.1720- 5	8.7818- 1
1.5000+ 7 ~ 2.0000+ 7	5.7012+ 0	3.2559+ 0	2.0240- 1	2.0437+ 0	1.9685- 1				2.1704- 6	2.6307- 3		1.4833- 4	9.2073- 1

CROSS SECTION

MATERIAL =2723

HF-177

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.1324+ 3	7.0000+ 0							1.1252+ 3	0.0000+ 0		0.0000+ 0	4.1644- 3
1.0000- 2 ~ 1.5000- 2	5.2443+ 2	7.0000+ 0							5.1727+ 2	0.0000+ 0		0.0000+ 0	4.2288- 3
1.5000- 2 ~ 2.0000- 2	4.3762+ 2	7.0000+ 0							4.3043+ 2	0.0000+ 0		0.0000+ 0	4.2471- 3
2.0000- 2 ~ 3.0000- 2	3.6474+ 2	7.0000+ 0							3.5768+ 2	0.0000+ 0		0.0000+ 0	4.2683- 3
3.0000- 2 ~ 4.0000- 2	3.1353+ 2	7.0000+ 0							3.0646+ 2	0.0000+ 0		0.0000+ 0	4.2886- 3
4.0000- 2 ~ 5.0000- 2	2.8163+ 2	7.0000+ 0							2.7460+ 2	0.0000+ 0		0.0000+ 0	4.3037- 3
5.0000- 2 ~ 6.0000- 2	2.5916+ 2	7.0000+ 0							2.5213+ 2	0.0000+ 0		0.0000+ 0	4.3158- 3
6.0000- 2 ~ 8.0000- 2	2.3565+ 2	7.0000+ 0							2.2869+ 2	0.0000+ 0		0.0000+ 0	4.3301- 3
8.0000- 2 ~ 1.0000- 1	2.1300+ 2	7.0000+ 0							2.0597+ 2	0.0000+ 0		0.0000+ 0	4.3452- 3
1.0000- 1 ~ 1.5000- 1	1.9238+ 2	6.9370+ 0							1.8643+ 2	0.0000+ 0		0.0000+ 0	4.3646- 3
1.5000- 1 ~ 2.0000- 1	1.7528+ 2	6.8391+ 0							1.6843+ 2	0.0000+ 0		0.0000+ 0	4.3849- 3
2.0000- 1 ~ 3.0000- 1	1.6495+ 2	5.5789+ 0							1.5932+ 2	0.0000+ 0		0.0000+ 0	4.4081- 3
3.0000- 1 ~ 4.0000- 1	1.7109+ 2	3.5991+ 0							1.6738+ 2	0.0000+ 0		0.0000+ 0	4.4264- 3
4.0000- 1 ~ 5.0000- 1	1.9797+ 2	2.1841+ 0							1.9570+ 2	0.0000+ 0		0.0000+ 0	4.4415- 3
5.0000- 1 ~ 6.0000- 1	2.3168+ 2	3.6711+ 0							2.2801+ 2	0.0000+ 0		0.0000+ 0	4.4536- 3
6.0000- 1 ~ 8.0000- 1	3.7386+ 2	7.6379+ 0							3.6623+ 2	0.0000+ 0		0.0000+ 0	4.4679- 3
8.0000- 1 ~ 1.0000+ 0	1.4353+ 3	3.9234+ 1							1.3961+ 3	0.0000+ 0		0.0000+ 0	4.4830- 3
1.0000+ 0 ~ 1.5000+ 0	6.3189+ 3	2.0545+ 2							6.1135+ 3	0.0000+ 0		0.0000+ 0	4.5024- 3
1.5000+ 0 ~ 2.0000+ 0	3.3529+ 2	1.8358+ 1							3.1693+ 2	0.0000+ 0		0.0000+ 0	4.5227- 3
2.0000+ 0 ~ 3.0000+ 0	6.5244+ 3	7.5477+ 2							5.7696+ 3	0.0000+ 0		0.0000+ 0	4.5439- 3
3.0000+ 0 ~ 4.0000+ 0	8.6682+ 1	1.5994+ 1							7.0688+ 1	0.0000+ 0		0.0000+ 0	4.5642- 3
4.0000+ 0 ~ 5.0000+ 0	4.1922+ 1	3.9570+ 0							3.7965+ 1	0.0000+ 0		0.0000+ 0	4.5793- 3
5.0000+ 0 ~ 6.0000+ 0	1.6353+ 3	1.2357+ 2							1.5117+ 3	0.0000+ 0		0.0000+ 0	4.5914- 3
6.0000+ 0 ~ 8.0000+ 0	1.7811+ 3	2.3598+ 2							1.5451+ 3	0.0000+ 0		0.0000+ 0	4.6057- 3
8.0000+ 0 ~ 1.0000+ 1	7.9660+ 2	7.6999+ 1							7.1960+ 2	0.0000+ 0		0.0000+ 0	4.6208- 3
1.0000+ 1 ~ 1.5000+ 1	1.6062+ 2	1.4650+ 1							1.4597+ 2	0.0000+ 0		0.0000+ 0	4.6402- 3
1.5000+ 1 ~ 2.0000+ 1	9.5282+ 0	7.1977+ 0							2.3305+ 0	0.0000+ 0		0.0000+ 0	4.6606- 3
2.0000+ 1 ~ 3.0000+ 1	7.0709+ 1	7.2460+ 0							6.3463+ 1	0.0000+ 0		0.0000+ 0	4.6817- 3
3.0000+ 1 ~ 4.0000+ 1	9.3669+ 1	1.3704+ 1							7.9964+ 1	0.0000+ 0		0.0000+ 0	4.7020- 3
4.0000+ 1 ~ 5.0000+ 1	2.2649+ 2	4.4034+ 1							1.8246+ 2	0.0000+ 0		0.0000+ 0	4.7172- 3
5.0000+ 1 ~ 6.0000+ 1	1.4800+ 2	2.6378+ 1							1.2162+ 2	0.0000+ 0		0.0000+ 0	4.7292- 3
6.0000+ 1 ~ 8.0000+ 1	2.4619+ 2	1.0888+ 2							1.3731+ 2	0.0000+ 0		0.0000+ 0	4.7435- 3
8.0000+ 1 ~ 1.0000+ 2	7.5696+ 1	2.2532+ 1							5.3163+ 1	0.0000+ 0		0.0000+ 0	4.7586- 3
1.0000+ 2 ~ 1.5000+ 2	7.5936+ 1	2.9507+ 1							4.6429+ 1	0.0000+ 0		0.0000+ 0	4.7780- 3
1.5000+ 2 ~ 2.0000+ 2	7.8578+ 1	3.8663+ 1							3.9914+ 1	0.0000+ 0		0.0000+ 0	4.7984- 3
2.0000+ 2 ~ 3.0000+ 2	6.3660+ 1	2.7907+ 1							3.5753+ 1	0.0000+ 0		0.0000+ 0	4.8195- 3
3.0000+ 2 ~ 4.0000+ 2	4.8716+ 1	1.6848+ 1							3.1869+ 1	0.0000+ 0		0.0000+ 0	4.8398- 3
4.0000+ 2 ~ 5.0000+ 2	4.3547+ 1	1.6354+ 1							2.7193+ 1	0.0000+ 0		0.0000+ 0	4.8550- 3
5.0000+ 2 ~ 6.0000+ 2	3.9903+ 1	1.5954+ 1							2.3949+ 1	0.0000+ 0		0.0000+ 0	4.8670- 3
6.0000+ 2 ~ 8.0000+ 2	3.6184+ 1	1.5485+ 1							2.0700+ 1	0.0000+ 0		0.0000+ 0	4.8813- 3
8.0000+ 2 ~ 1.0000+ 3	3.2529+ 1	1.4967+ 1							1.7562+ 1	0.0000+ 0		0.0000+ 0	4.8965- 3
1.0000+ 3 ~ 1.5000+ 3	2.8742+ 1	1.4326+ 1							1.4416+ 1	0.0000+ 0		0.0000+ 0	8.2583- 3
1.5000+ 3 ~ 2.0000+ 3	2.5064+ 1	1.3620+ 1							1.1443+ 1	0.0000+ 0		0.0000+ 0	8.3866- 3
2.0000+ 3 ~ 3.0000+ 3	2.2059+ 1	1.2922+ 1							9.1374+ 0	0.0000+ 0		0.0000+ 0	1.0600- 2
3.0000+ 3 ~ 4.0000+ 3	1.9457+ 1	1.2234+ 1							7.2224+ 0	0.0000+ 0		0.0000+ 0	1.2728- 2
4.0000+ 3 ~ 5.0000+ 3	1.7820+ 1	1.1739+ 1							6.0815+ 0	0.0000+ 0		0.0000+ 0	1.4311- 2
5.0000+ 3 ~ 6.0000+ 3	1.6665+ 1	1.1353+ 1							5.3121+ 0	0.0000+ 0		0.0000+ 0	1.5572- 2
6.0000+ 3 ~ 8.0000+ 3	1.5485+ 1	1.0919+ 1							4.5665+ 0	0.0000+ 0		0.0000+ 0	1.7070- 2
8.0000+ 3 ~ 1.0000+ 4	1.4323+ 1	1.0457+ 1							3.8663+ 0	0.0000+ 0		0.0000+ 0	1.8652- 2
1.0000+ 4 ~ 1.5000+ 4	1.3115+ 1	9.9150+ 0							3.1996+ 0	0.0000+ 0		0.0000+ 0	[illegible].3517- 2
1.5000+ 4 ~ 2.0000+ 4	1.1934+ 1	9.3396+ 0							2.5945+ 0	0.0000+ 0		0.0000+ 0	3.7811- 2
2.0000+ 4 ~ 3.0000+ 4	1.0957+ 1	8.8027+ 0							2.1541+ 0	0.0000+ 0		0.0000+ 0	4.9556- 2
3.0000+ 4 ~ 4.0000+ 4	1.0097+ 1	8.2950+ 0							1.8018+ 0	0.0000+ 0		0.0000+ 0	6.6271- 2
4.0000+ 4 ~ 5.0000+ 4	9.5429+ 0	7.9448+ 0							1.5975+ 0	0.0000+ 0		0.0000+ 0	8.3756- 2
5.0000+ 4 ~ 6.0000+ 4	9.0773+ 0	7.6244+ 0							1.4522+ 0	0.0000+ 0		0.0000+ 0	1.0023- 1
6.0000+ 4 ~ 8.0000+ 4	8.6526+ 0	7.3318+ 0							1.3203+ 0	0.0000+ 0		0.0000+ 0	1.2405- 1
8.0000+ 4 ~ 1.0000+ 5	8.2559+ 0	7.0510+ 0							1.2045+ 0	0.0000+ 0		0.0000+ 0	1.5336- 1
1.0000+ 5 ~ 1.5000+ 5	7.8289+ 0	6.6960+ 0	7.4591- 2						1.0564+ 0	0.0000+ 0		0.0000+ 0	1.9739- 1
1.5000+ 5 ~ 2.0000+ 5	7.4850+ 0	6.3495+ 0	2.3142- 1						9.0329- 1	0.0000+ 0		0.0000+ 0	2.4945- 1
2.0000+ 5 ~ 3.0000+ 5	7.2656+ 0	6.1352+ 0	3.2115- 1						8.0875- 1	0.0000+ 0		0.0000+ 0	3.0178- 1
3.0000+ 5 ~ 4.0000+ 5	7.1989+ 0	5.9939+ 0	4.9692- 1						7.0749- 1	0.0000+ 0		0.0000+ 0	3.4883- 1
4.0000+ 5 ~ 5.0000+ 5	7.2457+ 0	5.9145+ 0	6.9899- 1						6.3213- 1	0.0000+ 0		0.0000+ 0	3.8215- 1
5.0000+ 5 ~ 6.0000+ 5	7.3328+ 0	5.8570+ 0	8.9973- 1						5.7595- 1	0.0000+ 0		0.0000+ 0	4.0976- 1
6.0000+ 5 ~ 8.0000+ 5	7.4652+ 0	5.7675+ 0	1.1859+ 0						5.1179- 1	0.0000+ 0		0.0000+ 0	4.4879- 1
8.0000+ 5 ~ 1.0000+ 6	7.5870+ 0	5.6479+ 0	1.4859+ 0						4.5321- 1	0.0000+ 0		0.0000+ 0	4.9847- 1
1.0000+ 6 ~ 1.5000+ 6	7.5932+ 0	5.3748+ 0	1.8277+ 0						3.8971- 1	0.0000+ 0		0.0000+ 0	5.7748- 1
1.5000+ 6 ~ 2.0000+ 6	7.3534+ 0	4.9114+ 0	2.1325+ 0						3.0506- 1	0.0000+ 0		0.0000+ 0	6.6148- 1
2.0000+ 6 ~ 3.0000+ 6	6.7729+ 0	4.2233+ 0	2.3553+ 0						1.7787- 1	0.0000+ 0		0.0000+ 0	7.2115- 1
3.0000+ 6 ~ 4.0000+ 6	6.0556+ 0	3.5022+ 0	2.4796+ 0						7.1325- 2	1.2725- 6		1.6500- 6	7.4819- 1
4.0000+ 6 ~ 5.0000+ 6	5.6428+ 0	2.9933+ 0	2.6211+ 0						2.3417- 2	6.0950- 6		6.8300- 6	7.4852- 1
5.0000+ 6 ~ 6.0000+ 6	5.2613+ 0	2.7029+ 0	2.5498+ 0						7.1812- 3	1.3800- 5		7.9150- 6	7.4930- 1
6.0000+ 6 ~ 8.0000+ 6	5.1375+ 0	2.5972+ 0	2.4483+ 0	9.0010- 2					1.6191- 3	3.3676- 5		9.9575- 6	7.7138- 1
8.0000+ 6 ~ 1.0000+ 7	5.2285+ 0	2.7414+ 0	1.3863+ 0	1.0995+ 0					1.6657- 4	1.1514- 4		1.5650- 5	8.1604- 1
1.0000+ 7 ~ 1.5000+ 7	5.5508+ 0	3.1010+ 0	6.3637- 1	1.8129+ 0					1.4979- 5	5.2778- 4		4.1910- 5	8.7803- 1
1.5000+ 7 ~ 2.0000+ 7	5.6777+ 0	3.2154+ 0	1.4873- 1	1.9541+ 0	3.5757- 1				4.6337- 7	1.7423- 3		1.1874- 4	9.1965- 1

CROSS SECTION

MATERIAL =2724 HF-178

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	2.7079+ 2	5.0000+ 0							2.6480+ 2			0.0000+ 0	3.9608- 3
1.0000- 2 ~ 1.5000- 2	1.2811+ 2	5.0000+ 0							1.2242+ 2			0.0000+ 0	3.9980- 3
1.5000- 2 ~ 2.0000- 2	1.0678+ 2	5.0000+ 0							1.0343+ 2			0.0000+ 0	4.0084- 3
2.0000- 2 ~ 3.0000- 2	9.1826+ 1	5.0000+ 0							8.6575+ 1			0.0000+ 0	4.0193- 3
3.0000- 2 ~ 4.0000- 2	7.6124+ 1	5.0000+ 0							7.0932+ 1			0.0000+ 0	4.0297- 3
4.0000- 2 ~ 5.0000- 2	6.6311+ 1	5.0000+ 0							6.0864+ 1			0.0000+ 0	4.0376- 3
5.0000- 2 ~ 6.0000- 2	5.9378+ 1	5.0000+ 0							5.4164+ 1			0.0000+ 0	4.0437- 3
6.0000- 2 ~ 8.0000- 2	5.2666+ 1	5.0000+ 0							4.7548+ 1			0.0000+ 0	4.0610- 3
8.0000- 2 ~ 1.0000- 1	4.6661+ 1	5.0000+ 0							4.1388+ 1			0.0000+ 0	4.0588- 3
1.0000- 1 ~ 1.5000- 1	3.9931+ 1	4.9960+ 0							3.4837+ 1			0.0000+ 0	4.0687- 3
1.5000- 1 ~ 2.0000- 1	3.4211+ 1	4.9850+ 0							2.9063+ 1			0.0000+ 0	4.0792- 3
2.0000- 1 ~ 3.0000- 1	3.0467+ 1	4.9675+ 0							2.5370+ 1			0.0000+ 0	4.0900- 3
3.0000- 1 ~ 4.0000- 1	2.7936+ 1	4.9350+ 0							2.2938+ 1			0.0000+ 0	4.1006- 3
4.0000- 1 ~ 5.0000- 1	2.6300+ 1	4.8900+ 0							2.0386+ 1			0.0000+ 0	4.1082- 3
5.0000- 1 ~ 6.0000- 1	2.3194+ 1	4.8053+ 0							1.8389+ 1			0.0000+ 0	4.1144- 3
6.0000- 1 ~ 8.0000- 1	2.1609+ 1	4.6003+ 0							1.7008+ 1			0.0000+ 0	4.1218- 3
8.0000- 1 ~ 1.0000+ 0	2.0147+ 1	4.2586+ 0							1.5889+ 1			0.0000+ 0	4.1296- 3
1.0000+ 0 ~ 1.5000+ 0	1.7114+ 1	2.1561+ 0							1.4958+ 1			0.0000+ 0	4.1395- 3
1.5000+ 0 ~ 2.0000+ 0	1.4979+ 1	1.8792- 1							1.4791+ 1			0.0000+ 0	4.1499- 3
2.0000+ 0 ~ 3.0000+ 0	1.6407+ 1	1.8632- 1							1.6220+ 1			0.0000+ 0	4.1608- 3
3.0000+ 0 ~ 4.0000+ 0	2.2018+ 1	1.1036+ 0							2.0914+ 1			0.0000+ 0	4.1712- 3
4.0000+ 0 ~ 5.0000+ 0	3.6159+ 1	4.4909+ 0							3.1668+ 1			0.0000+ 0	4.1790- 3
5.0000+ 0 ~ 6.0000+ 0	7.8253+ 1	1.7516+ 1							6.0736+ 1			0.0000+ 0	4.1852- 3
6.0000+ 0 ~ 8.0000+ 0	1.2090+ 4	5.4508+ 3							6.6394+ 3			0.0000+ 0	4.1926- 3
8.0000+ 0 ~ 1.0000+ 1	1.0023+ 3	5.0973+ 2							4.9260+ 2			0.0000+ 0	4.2009- 3
1.0000+ 1 ~ 1.5000+ 1	4.8370+ 1	3.5262+ 1							1.3108+ 1			0.0000+ 0	4.2103- 3
1.5000+ 1 ~ 2.0000+ 1	1.7305+ 1	1.5337+ 1							1.9686+ 0			0.0000+ 0	4.2207- 3
2.0000+ 1 ~ 3.0000+ 1	1.1060+ 1	1.0513+ 1							5.4773- 1			0.0000+ 0	4.2316- 3
3.0000+ 1 ~ 4.0000+ 1	8.5777+ 0	8.3980+ 0							1.7970- 1			0.0000+ 0	4.2420- 3
4.0000+ 1 ~ 5.0000+ 1	7.5814+ 0	7.4931+ 0							8.8260- 2			0.0000+ 0	4.2498- 3
5.0000+ 1 ~ 6.0000+ 1	7.0166+ 0	6.9631+ 0							5.3537- 2			0.0000+ 0	4.2560- 3
6.0000+ 1 ~ 8.0000+ 1	6.4840+ 0	6.4498+ 0							3.4243- 2			0.0000+ 0	4.2633- 3
8.0000+ 1 ~ 1.0000+ 2	5.8978+ 0	5.8522+ 0							4.5602- 2			0.0000+ 0	4.2711- 3
1.0000+ 2 ~ 1.5000+ 2	1.1104+ 1	6.1310+ 0							4.9727+ 0			0.0000+ 0	4.2810- 3
1.5000+ 2 ~ 2.0000+ 2	1.2294+ 1	6.2481+ 0							6.0458+ 0			0.0000+ 0	4.2915- 3
2.0000+ 2 ~ 3.0000+ 2	9.4817+ 1	7.5812+ 1							1.9005+ 1			0.0000+ 0	4.3023- 3
3.0000+ 2 ~ 4.0000+ 2	6.3081+ 1	4.6570+ 1							6.6106+ 0			0.0000+ 0	4.3126- 3
4.0000+ 2 ~ 5.0000+ 2	2.3830+ 1	1.9629+ 1							4.2011+ 0			0.0000+ 0	4.3205- 3
5.0000+ 2 ~ 6.0000+ 2	5.6315+ 1	4.6456+ 1							9.8592+ 0			0.0000+ 0	4.3267- 3
6.0000+ 2 ~ 8.0000+ 2	6.5644+ 1	6.2124+ 1							3.5199+ 0			0.0000+ 0	4.3341- 3
8.0000+ 2 ~ 1.0000+ 3	1.4018+ 1	1.2736+ 1							1.2812+ 0			0.0000+ 0	4.3418- 3
1.0000+ 3 ~ 1.5000+ 3	4.1845+ 1	3.9874+ 1							1.9705+ 0			0.0000+ 0	5.4127- 3
1.5000+ 3 ~ 2.0000+ 3	2.5489+ 1	2.3663+ 1							1.8265+ 0			0.0000+ 0	7.0890- 3
2.0000+ 3 ~ 3.0000+ 3	2.2463+ 1	2.1087+ 1							1.3760+ 0			0.0000+ 0	8.8322- 3
3.0000+ 3 ~ 4.0000+ 3	1.9835+ 1	1.8805+ 1							1.0298+ 0			0.0000+ 0	1.0509- 2
4.0000+ 3 ~ 5.0000+ 3	1.8177+ 1	1.7336+ 1							8.4113- 1			0.0000+ 0	1.1755- 2
5.0000+ 3 ~ 6.0000+ 3	1.7003+ 1	1.6281+ 1							7.2200- 1			0.0000+ 0	1.2748- 2
6.0000+ 3 ~ 8.0000+ 3	1.5797+ 1	1.5183+ 1							6.1414- 1			0.0000+ 0	1.3928- 2
8.0000+ 3 ~ 1.0000+ 4	1.4606+ 1	1.4088+ 1							5.1801- 1			0.0000+ 0	1.5175- 2
1.0000+ 4 ~ 1.5000+ 4	1.3353+ 1	1.2920+ 1							4.3346- 1			0.0000+ 0	2.1956- 2
1.5000+ 4 ~ 2.0000+ 4	1.2119+ 1	1.1759+ 1							3.6028- 1			0.0000+ 0	3.1772- 2
2.0000+ 4 ~ 3.0000+ 4	1.1079+ 1	1.0769+ 1							3.0979- 1			0.0000+ 0	4.1979- 2
3.0000+ 4 ~ 4.0000+ 4	1.0149+ 1	9.8788+ 0							2.7056- 1			0.0000+ 0	5.6709- 2
4.0000+ 4 ~ 5.0000+ 4	9.5387+ 0	9.2898+ 0							2.4892- 1			0.0000+ 0	7.2245- 2
5.0000+ 4 ~ 6.0000+ 4	9.0773+ 0	8.8419+ 0							2.3539- 1			0.0000+ 0	8.6977- 2
6.0000+ 4 ~ 8.0000+ 4	8.6519+ 0	8.4301+ 0							2.2179- 1			0.0000+ 0	1.0834- 1
8.0000+ 4 ~ 1.0000+ 5	8.2623+ 0	8.0348+ 0	1.3088- 2						2.0410- 1			0.0000+ 0	1.3465- 1
1.0000+ 5 ~ 1.5000+ 5	7.8351+ 0	7.5041+ 0	1.9576- 1						1.3425- 1			0.0000+ 0	1.7723- 1
1.5000+ 5 ~ 2.0000+ 5	7.4848+ 0	7.0133+ 0	3.6661- 1						1.0377- 1			0.0000+ 0	2.2632- 1
2.0000+ 5 ~ 3.0000+ 5	7.2782+ 0	6.6488+ 0	5.3914- 1						8.9935- 2			0.0000+ 0	2.7897- 1
3.0000+ 5 ~ 4.0000+ 5	7.2016+ 0	6.4033+ 0	7.1605- 1						8.2044- 2			0.0000+ 0	3.2669- 1
4.0000+ 5 ~ 5.0000+ 5	7.2485+ 0	6.3051+ 0	8.6444- 1						7.8965- 2			0.0000+ 0	3.5869- 1
5.0000+ 5 ~ 6.0000+ 5	7.3341+ 0	6.2624+ 0	9.9255- 1						7.9199- 2			0.0000+ 0	3.8351- 1
6.0000+ 5 ~ 8.0000+ 5	7.4648+ 0	6.2320+ 0	1.1490+ 0						8.3688- 2			0.0000+ 0	4.1644- 1
8.0000+ 5 ~ 1.0000+ 6	7.5817+ 0	6.1858+ 0	1.3002+ 0						9.5556- 2			0.0000+ 0	4.5544- 1
1.0000+ 6 ~ 1.5000+ 6	7.6008+ 0	5.9151+ 0	1.5753+ 0						1.1008- 1			0.0000+ 0	5.2592- 1
1.5000+ 6 ~ 2.0000+ 6	7.3666+ 0	5.1576+ 0	2.1186+ 0						8.8673- 2	0.0000+ 0		0.0000+ 0	6.3262- 1
2.0000+ 6 ~ 3.0000+ 6	6.7727+ 0	4.3128+ 0	2.3914+ 0						5.5100- 2	0.0000+ 0		0.0000+ 0	7.0692- 1
3.0000+ 6 ~ 4.0000+ 6	6.0605+ 0	3.5156+ 0	2.5181+ 0						2.1848- 2	0.0000+ 0		0.0000+ 0	7.4483- 1
4.0000+ 6 ~ 5.0000+ 6	5.5427+ 0	2.9945+ 0	2.5383+ 0						6.8010- 3	0.0000+ 0		0.0000+ 0	7.4820- 1
5.0000+ 6 ~ 6.0000+ 6	5.2612+ 0	2.7027+ 0	2.5565+ 0						2.1272- 3	2.9800- 7		7.4600- 7	7.4933- 1
6.0000+ 6 ~ 8.0000+ 6	5.1393+ 0	2.6076+ 0	2.5310+ 0						4.8244- 4	6.0115- 6		2.3375- 6	7.7146- 1
8.0000+ 6 ~ 1.0000+ 7	5.2323+ 0	2.8394+ 0	1.9169+ 0	4.7951- 1					6.2037- 5	5.0676- 5		3.9637- 6	8.1616- 1
1.0000+ 7 ~ 1.5000+ 7	5.5603+ 0	3.0914+ 0	7.6937- 1	1.6885+ 0					4.4147- 6	3.8761- 4		1.3787- 6	8.7767- 1
1.5000+ 7 ~ 2.0000+ 7	5.7012+ 0	3.2588+ 0	1.6860- 1	1.7457+ 0	5.2620- 1				1.5122- 7	1.7480- 3		4.9700- 5	9.2073- 1

CROSS SECTION

MATERIAL =2725

MF-178

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.4488+ 2	6.0000+ 0							1.3872+ 2			0.0000+ 0	9.9972- 3
1.0000- 2 ~ 1.5000- 2	7.0394+ 1	6.0000+ 0							6.4293+ 1			0.0000+ 0	4.0482- 3
1.5000- 2 ~ 2.0000- 2	6.0355+ 1	6.0000+ 0							5.4223+ 1			0.0000+ 0	4.0599- 3
2.0000- 2 ~ 3.0000- 2	5.1539+ 1	6.0000+ 0							4.5495+ 1			0.0000+ 0	4.0742- 3
3.0000- 2 ~ 4.0000- 2	4.4423+ 1	6.0000+ 0							3.8352+ 1			0.0000+ 0	4.0880- 3
4.0000- 2 ~ 5.0000- 2	3.9820+ 1	6.0000+ 0							3.3785+ 1			0.0000+ 0	4.0982- 3
5.0000- 2 ~ 6.0000- 2	3.6573+ 1	6.0000+ 0							3.0537+ 1			0.0000+ 0	4.1064- 3
6.0000- 2 ~ 8.0000- 2	3.3169+ 1	6.0000+ 0							2.7089+ 1			0.0000+ 0	4.1161- 3
8.0000- 2 ~ 1.0000- 1	2.9898+ 1	6.0000+ 0							2.3864+ 1			0.0000+ 0	4.1263- 3
1.0000- 1 ~ 1.5000- 1	2.6376+ 1	6.0000+ 0							2.0324+ 1			0.0000+ 0	4.1394- 3
1.5000- 1 ~ 2.0000- 1	2.3182+ 1	6.0000+ 0							1.7144+ 1			0.0000+ 0	4.1532- 3
2.0000- 1 ~ 3.0000- 1	2.0382+ 1	6.0000+ 0							1.4347+ 1			0.0000+ 0	4.1675- 3
3.0000- 1 ~ 4.0000- 1	1.8096+ 1	6.0000+ 0							1.2090+ 1			0.0000+ 0	4.1812- 3
4.0000- 1 ~ 5.0000- 1	1.6670+ 1	6.0000+ 0							1.0666+ 1			0.0000+ 0	4.1915- 3
5.0000- 1 ~ 6.0000- 1	1.5866+ 1	5.9619+ 0							9.9006+ 0			0.0000+ 0	4.1996- 3
6.0000- 1 ~ 8.0000- 1	1.4261+ 1	5.5448+ 0							8.7076+ 0			0.0000+ 0	4.2093- 3
8.0000- 1 ~ 1.0000+ 0	1.2844+ 1	5.1860+ 0							7.6535+ 0			0.0000+ 0	4.2195- 3
1.0000+ 0 ~ 1.5000+ 0	1.1702+ 1	4.8255+ 0							6.8546+ 0			0.0000+ 0	4.2326- 3
1.5000+ 0 ~ 2.0000+ 0	1.0933+ 1	4.4970+ 0							6.4015+ 0			0.0000+ 0	4.2464- 3
2.0000+ 0 ~ 3.0000+ 0	1.0605+ 1	4.1467+ 0							6.4399+ 0			0.0000+ 0	4.2607- 3
3.0000+ 0 ~ 4.0000+ 0	1.1727+ 1	3.6616+ 0							8.0603+ 0			0.0000+ 0	4.2745- 3
4.0000+ 0 ~ 5.0000+ 0	2.1760+ 1	2.8850+ 0							1.8864+ 1			0.0000+ 0	4.2847- 3
5.0000+ 0 ~ 6.0000+ 0	1.4591+ 3	8.1816+ 1							1.3773+ 3			0.0000+ 0	4.2928- 3
6.0000+ 0 ~ 8.0000+ 0	3.1846+ 1	8.6487+ 0							2.3189+ 1			0.0000+ 0	4.3025- 3
8.0000+ 0 ~ 1.0000+ 1	9.2795+ 0	5.3660+ 0							3.9104+ 0			0.0000+ 0	4.3128- 3
1.0000+ 1 ~ 1.5000+ 1	7.2456+ 0	4.5372+ 0							2.7059+ 0			0.0000+ 0	4.3259- 3
1.5000+ 1 ~ 2.0000+ 1	5.5307+ 1	5.5167+ 0							4.9787+ 1			0.0000+ 0	4.3396- 3
2.0000+ 1 ~ 3.0000+ 1	7.7563+ 1	8.9031+ 0							6.8658+ 1			0.0000+ 0	4.3539- 3
3.0000+ 1 ~ 4.0000+ 1	2.0076+ 2	4.4482+ 1							1.5627+ 2			0.0000+ 0	4.3677- 3
4.0000+ 1 ~ 5.0000+ 1	1.8874+ 2	5.0046+ 1							1.3869+ 2			0.0000+ 0	4.3779- 3
5.0000+ 1 ~ 6.0000+ 1	7.6117+ 1	1.3854+ 1							6.2259+ 1			0.0000+ 0	4.3861- 3
6.0000+ 1 ~ 8.0000+ 1	3.4525+ 1	7.8774+ 0							2.6645+ 1			0.0000+ 0	4.3958- 3
8.0000+ 1 ~ 1.0000+ 2	8.8548+ 1	3.0107+ 1							5.8440+ 1			0.0000+ 0	4.4060- 3
1.0000+ 2 ~ 1.5000+ 2	1.2014+ 2	5.1867+ 1							6.8273+ 1			0.0000+ 0	4.4191- 3
1.5000+ 2 ~ 2.0000+ 2	9.3872+ 1	4.2163+ 1							5.1707+ 1			0.0000+ 0	4.4329- 3
2.0000+ 2 ~ 3.0000+ 2	1.0089+ 2	6.1830+ 1							3.8997+ 1			0.0000+ 0	4.4472- 3
3.0000+ 2 ~ 4.0000+ 2	4.8660+ 1	2.8302+ 1							2.0258+ 1			0.0000+ 0	4.4609- 3
4.0000+ 2 ~ 5.0000+ 2	4.3393+ 1	2.6580+ 1							1.6813+ 1			0.0000+ 0	4.4711- 3
5.0000+ 2 ~ 6.0000+ 2	3.9751+ 1	2.5264+ 1							1.4487+ 1			0.0000+ 0	4.4793- 3
6.0000+ 2 ~ 8.0000+ 2	3.6033+ 1	2.3809+ 1							1.2224+ 1			0.0000+ 0	4.4890- 3
8.0000+ 2 ~ 1.0000+ 3	3.2381+ 1	2.2290+ 1							1.0091+ 1			0.0000+ 0	4.4992- 3
1.0000+ 3 ~ 1.5000+ 3	2.8596+ 1	2.0557+ 1							8.0399+ 0			0.0000+ 0	5.8708- 3
1.5000+ 3 ~ 2.0000+ 3	2.4921+ 1	1.8758+ 1							6.1629+ 0			0.0000+ 0	7.5036- 3
2.0000+ 3 ~ 3.0000+ 3	2.1921+ 1	1.7138+ 1							4.7826+ 0			0.0000+ 0	9.4095- 3
3.0000+ 3 ~ 4.0000+ 3	1.9322+ 1	1.5642+ 1							3.6803+ 0			0.0000+ 0	1.1242- 2
4.0000+ 3 ~ 5.0000+ 3	1.7689+ 1	1.4636+ 1							3.0527+ 0			0.0000+ 0	1.2605- 2
5.0000+ 3 ~ 6.0000+ 3	1.6538+ 1	1.3894+ 1							2.6433+ 0			0.0000+ 0	1.3691- 2
6.0000+ 3 ~ 8.0000+ 3	1.5361+ 1	1.3101+ 1							2.2598+ 0			0.0000+ 0	1.4981- 2
8.0000+ 3 ~ 1.0000+ 4	1.4205+ 1	1.2296+ 1							1.9083+ 0			0.0000+ 0	1.6344- 2
1.0000+ 4 ~ 1.5000+ 4	1.3003+ 1	1.1419+ 1							1.5839+ 0			0.0000+ 0	2.3620- 2
1.5000+ 4 ~ 2.0000+ 4	1.1831+ 1	1.0538+ 1							1.2922+ 0			0.0000+ 0	3.3879- 2
2.0000+ 4 ~ 3.0000+ 4	1.0864+ 1	9.7871+ 0							1.0765+ 0			0.0000+ 0	4.4651- 2
3.0000+ 4 ~ 4.0000+ 4	1.0015+ 1	9.1170+ 0							8.9794- 1			0.0000+ 0	6.0077- 2
4.0000+ 4 ~ 5.0000+ 4	9.4696+ 0	8.6804+ 0							7.8924- 1			0.0000+ 0	7.6279- 2
5.0000+ 4 ~ 6.0000+ 4	9.0797+ 0	8.3750+ 0							7.0427- 1			0.0000+ 0	9.1563- 2
6.0000+ 4 ~ 8.0000+ 4	8.6544+ 0	8.0200+ 0							6.3408- 1			0.0000+ 0	1.1370- 1
8.0000+ 4 ~ 1.0000+ 5	8.2572+ 0	7.6845+ 0							5.7239- 1			0.0000+ 0	1.4097- 1
1.0000+ 5 ~ 1.5000+ 5	7.8281+ 0	7.2713+ 0	6.0556- 2						4.9506- 1			0.0000+ 0	1.8194- 1
1.5000+ 5 ~ 2.0000+ 5	7.4851+ 0	6.8160+ 0	2.7257- 1						3.9543- 1			0.0000+ 0	2.3258- 1
2.0000+ 5 ~ 3.0000+ 5	7.2644+ 0	6.4798+ 0	4.7947- 1						3.1602- 1			0.0000+ 0	2.8629- 1
3.0000+ 5 ~ 4.0000+ 5	7.1959+ 0	6.1770+ 0	7.8597- 1						2.3266- 1			0.0000+ 0	3.3851- 1
4.0000+ 5 ~ 5.0000+ 5	7.2452+ 0	6.0197+ 0	1.0325+ 0						1.9278- 1			0.0000+ 0	3.7536- 1
5.0000+ 5 ~ 6.0000+ 5	7.3335+ 0	5.9580+ 0	1.2036+ 0						1.7176- 1			0.0000+ 0	4.0278- 1
6.0000+ 5 ~ 8.0000+ 5	7.4649+ 0	5.8994+ 0	1.4105+ 0						1.5508- 1	0.0000+ 0		0.0000+ 0	4.3867- 1
8.0000+ 5 ~ 1.0000+ 6	7.5861+ 0	5.8397+ 0	1.5975+ 0						1.4887- 1	0.0000+ 0		0.0000+ 0	4.8211- 1
1.0000+ 6 ~ 1.5000+ 6	7.5985+ 0	5.8008+ 0	1.8523+ 0						1.4283- 1	0.0000+ 0		0.0000+ 0	5.5450- 1
1.5000+ 6 ~ 2.0000+ 6	7.3541+ 0	5.0300+ 0	2.2127+ 0						1.0534- 1	0.0000+ 0		0.0000+ 0	6.4658- 1
2.0000+ 6 ~ 3.0000+ 6	6.7737+ 0	4.2516+ 0	2.4585+ 0						6.0067- 2	0.0000+ 0		0.0000+ 0	7.1686- 1
3.0000+ 6 ~ 4.0000+ 6	6.0616+ 0	3.5008+ 0	2.5395+ 0						1.5549- 2	0.0000+ 0		0.0000+ 0	7.4812- 1
4.0000+ 6 ~ 5.0000+ 6	5.5436+ 0	2.9936+ 0	2.5427+ 0						4.4309- 3	7.0500- 8		2.2460- 7	7.4862- 1
5.0000+ 6 ~ 6.0000+ 6	5.2647+ 0	2.7068+ 0	2.5559+ 0						1.3237- 3	2.1250- 7		4.9000- 7	7.4976- 1
6.0000+ 6 ~ 8.0000+ 6	5.1419+ 0	2.4465+ 0	2.5442+ 0	1.4860- 1					2.9332- 4	8.4875- 7		7.6725- 7	7.7197- 1
8.0000+ 6 ~ 1.0000+ 7	5.2300+ 0	2.6265+ 0	1.7420+ 0	8.5865- 1					3.3605- 5	4.2200- 6		4.1525- 6	8.1603- 1
1.0000+ 7 ~ 1.5000+ 7	6.5563+ 0	3.1130+ 0	7.3231- 1	1.7104+ 0					2.2482- 6	3.2324- 5		4.7550- 6	8.7828- 1
1.5000+ 7 ~ 2.0000+ 7	5.7015+ 0	3.2624+ 0	1.2427- 1	1.8232+ 0	4.9136- 1				3.2958- 8	1.4646- 4		1.5306- 5	9.2073- 1

CROSS SECTION

MATERIAL =2726

HF-180

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	7.7222+ 1	3.8368+ 1							3.8821+ 1			0.0000+ 0	3.9125- 3
1.0000- 2 ~ 1.5000- 2	3.8717+ 1	2.0617+ 1							1.7988+ 1			0.0000+ 0	3.9486- 3
1.5000- 2 ~ 2.0000- 2	3.5350+ 1	2.0027+ 1							1.6176+ 1			0.0000+ 0	3.9586- 3
2.0000- 2 ~ 3.0000- 2	3.2267+ 1	1.9478+ 1							1.2738+ 1			0.0000+ 0	3.9691- 3
3.0000- 2 ~ 4.0000- 2	3.0052+ 1	1.9230+ 1							1.0739+ 1			0.0000+ 0	3.9791- 3
4.0000- 2 ~ 5.0000- 2	2.8598+ 1	1.9096+ 1							9.4598+ 0			0.0000+ 0	3.9867- 3
5.0000- 2 ~ 6.0000- 2	2.7721+ 1	1.9123+ 1							8.5524+ 0			0.0000+ 0	3.9926- 3
6.0000- 2 ~ 8.0000- 2	2.7022+ 1	1.9336+ 1							7.6946+ 0			0.0000+ 0	3.9987- 3
8.0000- 2 ~ 1.0000- 1	2.6301+ 1	1.9563+ 1							6.6926+ 0			0.0000+ 0	4.0072- 3
1.0000- 1 ~ 1.5000- 1	2.5361+ 1	1.9616+ 1							5.6983+ 0			0.0000+ 0	4.0169- 3
1.5000- 1 ~ 2.0000- 1	2.4384+ 1	1.9548+ 1							4.8023+ 0			0.0000+ 0	4.0270- 3
2.0000- 1 ~ 3.0000- 1	2.3463+ 1	1.9424+ 1							4.0286+ 0			0.0000+ 0	4.0375- 3
3.0000- 1 ~ 4.0000- 1	2.2456+ 1	1.9058+ 1							3.3974+ 0			0.0000+ 0	4.0476- 3
4.0000- 1 ~ 5.0000- 1	2.1793+ 1	1.8800+ 1							2.9905+ 0			0.0000+ 0	4.0551- 3
5.0000- 1 ~ 6.0000- 1	2.0836+ 1	1.8057+ 1							2.7793+ 0			0.0000+ 0	4.0610- 3
6.0000- 1 ~ 8.0000- 1	2.0450+ 1	1.8003+ 1							2.4473+ 0			0.0000+ 0	4.0682- 3
8.0000- 1 ~ 1.0000+ 0	2.0081+ 1	1.7932+ 1							2.1469+ 0			0.0000+ 0	4.0756- 3
1.0000+ 0 ~ 1.5000+ 0	1.9606+ 1	1.7810+ 1							1.7966+ 0			0.0000+ 0	4.0853- 3
1.5000+ 0 ~ 2.0000+ 0	1.9126+ 1	1.7639+ 1							1.4871+ 0			0.0000+ 0	4.0954- 3
2.0000+ 0 ~ 3.0000+ 0	1.8599+ 1	1.7390+ 1							1.2084+ 0			0.0000+ 0	4.1059- 3
3.0000+ 0 ~ 4.0000+ 0	1.8050+ 1	1.7072+ 1							9.7763- 1			0.0000+ 0	4.1160- 3
4.0000+ 0 ~ 5.0000+ 0	1.7602+ 1	1.6770+ 1							8.3168- 1			0.0000+ 0	4.1235- 3
5.0000+ 0 ~ 6.0000+ 0	1.7203+ 1	1.6480+ 1							7.2275- 1			0.0000+ 0	4.1294- 3
6.0000+ 0 ~ 8.0000+ 0	1.6678+ 1	1.6071+ 1							6.0717- 1			0.0000+ 0	4.1366- 3
8.0000+ 0 ~ 1.0000+ 1	1.6062+ 1	1.5563+ 1							4.9854- 1			0.0000+ 0	4.1440- 3
1.0000+ 1 ~ 1.5000+ 1	1.5159+ 1	1.4778+ 1							3.8106- 1			0.0000+ 0	4.1537- 3
1.5000+ 1 ~ 2.0000+ 1	1.4082+ 1	1.3805+ 1							2.7688- 1			0.0000+ 0	4.1638- 3
2.0000+ 1 ~ 3.0000+ 1	1.2819+ 1	1.2624+ 1							1.9520- 1			0.0000+ 0	4.1743- 3
3.0000+ 1 ~ 4.0000+ 1	1.1466+ 1	1.1326+ 1							1.3987- 1			0.0000+ 0	4.1844- 3
4.0000+ 1 ~ 5.0000+ 1	1.0293+ 1	1.0172+ 1							1.2140- 1			0.0000+ 0	4.1919- 3
5.0000+ 1 ~ 6.0000+ 1	9.0068+ 0	8.8541+ 0							1.5270- 1			0.0000+ 0	4.1979- 3
6.0000+ 1 ~ 8.0000+ 1	1.6243+ 2	9.1799+ 1							7.0631+ 1			0.0000+ 0	4.2050- 3
8.0000+ 1 ~ 1.0000+ 2	1.1428+ 1	1.1293+ 1							1.3555- 1			0.0000+ 0	4.2125- 3
1.0000+ 2 ~ 1.5000+ 2	8.6039+ 0	8.4554+ 0							4.8488- 2			0.0000+ 0	4.2221- 3
1.5000+ 2 ~ 2.0000+ 2	6.4279+ 1	4.1829+ 1							2.2450+ 1			0.0000+ 0	4.2322- 3
2.0000+ 2 ~ 3.0000+ 2	8.0728+ 0	8.0591+ 0							1.3664- 2			0.0000+ 0	4.2427- 3
3.0000+ 2 ~ 4.0000+ 2	6.6642+ 0	6.6477+ 0							6.5076- 3			0.0000+ 0	4.2528- 3
4.0000+ 2 ~ 5.0000+ 2	3.6972+ 1	3.0780+ 1							6.1927+ 0			0.0000+ 0	4.2603- 3
5.0000+ 2 ~ 6.0000+ 2	1.2236+ 1	1.0192+ 1							2.0442+ 0			0.0000+ 0	4.2663- 3
6.0000+ 2 ~ 8.0000+ 2	5.0210+ 1	4.8747+ 1							1.4623+ 0			0.0000+ 0	4.2734- 3
8.0000+ 2 ~ 1.0000+ 3	1.4638+ 1	1.4003+ 1							6.3449- 1			0.0000+ 0	4.2809- 3
1.0000+ 3 ~ 1.5000+ 3	1.8916+ 1	1.8181+ 1							7.3492- 1			0.0000+ 0	5.3373- 3
1.5000+ 3 ~ 2.0000+ 3	2.2886+ 1	2.2408+ 1							4.7805- 1			0.0000+ 0	6.9912- 3
2.0000+ 3 ~ 3.0000+ 3	1.8902+ 1	1.8310+ 1							5.9218- 1			0.0000+ 0	8.7111- 3
3.0000+ 3 ~ 4.0000+ 3	1.9795+ 1	1.9295+ 1							5.0011- 1			0.0000+ 0	1.0365- 2
4.0000+ 3 ~ 5.0000+ 3	1.8140+ 1	1.7720+ 1							4.1953- 1			0.0000+ 0	1.1595- 2
5.0000+ 3 ~ 6.0000+ 3	1.6968+ 1	1.6599+ 1							3.6906- 1			0.0000+ 0	1.2575- 2
6.0000+ 3 ~ 8.0000+ 3	1.5765+ 1	1.5441+ 1							3.2320- 1			0.0000+ 0	1.3739- 2
8.0000+ 3 ~ 1.0000+ 4	1.4576+ 1	1.4294+ 1							2.8168- 1			0.0000+ 0	1.4968- 2
1.0000+ 4 ~ 1.5000+ 4	1.3328+ 1	1.3085+ 1							2.4307- 1			0.0000+ 0	2.1671- 2
1.5000+ 4 ~ 2.0000+ 4	1.2099+ 1	1.1892+ 1							2.0759- 1			0.0000+ 0	3.1374- 2
2.0000+ 4 ~ 3.0000+ 4	1.1065+ 1	1.0885+ 1							1.8056- 1			0.0000+ 0	4.1464- 2
3.0000+ 4 ~ 4.0000+ 4	1.0142+ 1	9.9839+ 0							1.5857- 1			0.0000+ 0	5.6039- 2
4.0000+ 4 ~ 5.0000+ 4	9.5374+ 0	9.3912+ 0							1.4619- 1			0.0000+ 0	7.1421- 2
5.0000+ 4 ~ 6.0000+ 4	9.0786+ 0	8.9404+ 0							1.3822- 1			0.0000+ 0	8.6004- 2
6.0000+ 4 ~ 8.0000+ 4	8.6528+ 0	8.5223+ 0							1.3056- 1			0.0000+ 0	1.0714- 1
8.0000+ 4 ~ 1.0000+ 5	8.2529+ 0	8.1201+ 0	1.4332- 2						1.1808- 1			0.0000+ 0	1.3321- 1
1.0000+ 5 ~ 1.5000+ 5	7.8351+ 0	7.5586+ 0	2.0836- 1						6.7928- 2			0.0000+ 0	1.7595- 1
1.5000+ 5 ~ 2.0000+ 5	7.4847+ 0	7.0514+ 0	3.8263- 1						5.0403- 2			0.0000+ 0	2.2506- 1
2.0000+ 5 ~ 3.0000+ 5	7.2780+ 0	6.6784+ 0	5.5621- 1						4.3039- 2			0.0000+ 0	2.7765- 1
3.0000+ 5 ~ 4.0000+ 5	7.2008+ 0	6.4279+ 0	7.3401- 1						3.8655- 2			0.0000+ 0	3.2533- 1
4.0000+ 5 ~ 5.0000+ 5	7.2482+ 0	6.3282+ 0	8.8344- 1						3.6554- 2			0.0000+ 0	3.5727- 1
5.0000+ 5 ~ 6.0000+ 5	7.3338+ 0	6.2846+ 0	1.0129+ 0						3.6437- 2			0.0000+ 0	3.8205- 1
6.0000+ 5 ~ 8.0000+ 5	7.4646+ 0	6.2541+ 0	1.1721+ 0						3.8364- 2			0.0000+ 0	4.1388- 1
8.0000+ 5 ~ 1.0000+ 6	7.5817+ 0	6.2091+ 0	1.3288+ 0						4.3739- 2			0.0000+ 0	4.5387- 1
1.0000+ 6 ~ 1.5000+ 6	7.8007+ 0	5.9227+ 0	1.8265+ 0						4.9430- 2			0.0000+ 0	6.2524- 1
1.5000+ 6 ~ 2.0000+ 6	7.3535+ 0	5.2025+ 0	2.1084+ 0						3.7048- 2			0.0000+ 0	6.2529- 1
2.0000+ 6 ~ 3.0000+ 6	6.7739+ 0	4.3619+ 0	2.3795+ 0						2.8861- 2			0.0000+ 0	7.0045- 1
3.0000+ 6 ~ 4.0000+ 6	6.0609+ 0	3.5369+ 0	2.5005+ 0						1.7498- 2	0.0000+ 0		0.0000+ 0	7.4054- 1
4.0000+ 6 ~ 5.0000+ 6	5.5430+ 0	3.0004+ 0	2.5320+ 0						7.6516- 3	1.7300-10		5.3500- 8	7.4683- 1
5.0000+ 6 ~ 6.0000+ 6	5.2615+ 0	2.7041+ 0	2.5538+ 0						2.6575- 3	2.8680- 9		2.3800- 7	7.4902- 1
6.0000+ 6 ~ 8.0000+ 6	5.1432+ 0	2.5988+ 0	2.5438+ 0						6.0166- 4	8.2147- 8		5.9775- 7	7.7207- 1
8.0000+ 6 ~ 1.0000+ 7	5.2239+ 0	2.6572+ 0	1.6767+ 0	8.8033- 1					8.0062- 5	1.8880- 6		2.2428- 6	8.1604- 1
1.0000+ 7 ~ 1.5000+ 7	5.5503+ 0	3.0698+ 0	5.1523- 1	1.9649+ 0					5.8294- 6	3.2424- 5		1.2684- 5	8.7778- 1
1.5000+ 7 ~ 2.0000+ 7	5.7011+ 0	3.2805+ 0	5.6040- 2	1.7546+ 0	6.0966- 1				1.9063- 7	2.0379- 4		5.8340- 5	9.2073- 1

CROSS SECTION

TA-181

MATERIAL =2731

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	7.1366+ 1	6.1174+ 0							6.5249+ 1				3.7162- 3
1.0000- 2 ~ 1.5000- 2	3.8482+ 1	6.1148+ 0							3.0367+ 1				3.7162- 3
1.5000- 2 ~ 2.0000- 2	3.1681+ 1	6.1130+ 0							2.5568+ 1				3.7162- 3
2.0000- 2 ~ 3.0000- 2	2.7673+ 1	6.1104+ 0							2.1562+ 1				3.7162- 3
3.0000- 2 ~ 4.0000- 2	2.4303+ 1	6.1069+ 0							1.8196+ 1				3.7162- 3
4.0000- 2 ~ 5.0000- 2	2.2150+ 1	6.1034+ 0							1.6046+ 1				3.7162- 3
5.0000- 2 ~ 6.0000- 2	2.0638+ 1	6.0998+ 0							1.4538+ 1				3.7162- 3
6.0000- 2 ~ 8.0000- 2	1.9083+ 1	6.0946+ 0							1.2988+ 1				3.7162- 3
8.0000- 2 ~ 1.0000- 1	1.7590+ 1	6.0875+ 0							1.1502+ 1				3.7162- 3
1.0000- 1 ~ 1.5000- 1	1.5985+ 1	6.0750+ 0							9.9103+ 0				3.7162- 3
1.5000- 1 ~ 2.0000- 1	1.4507+ 1	6.0569+ 0							8.4500+ 0				3.7162- 3
2.0000- 1 ~ 3.0000- 1	1.3284+ 1	6.0295+ 0							7.2544+ 0				3.7162- 3
3.0000- 1 ~ 4.0000- 1	1.2298+ 1	5.9923+ 0							6.3058+ 0				3.7162- 3
4.0000- 1 ~ 5.0000- 1	1.1703+ 1	5.9541+ 0							5.7491+ 0				3.7162- 3
5.0000- 1 ~ 6.0000- 1	1.1291+ 1	5.9150+ 0							5.3759+ 0				3.7162- 3
6.0000- 1 ~ 8.0000- 1	1.0892+ 1	5.8542+ 0							5.0382+ 0				3.7162- 3
8.0000- 1 ~ 1.0000+ 0	1.0589+ 1	5.7665+ 0							4.8209+ 0				3.7162- 3
1.0000+ 0 ~ 1.5000+ 0	1.0423+ 1	5.6038+ 0							4.8193+ 0				3.7169- 3
1.5000+ 0 ~ 2.0000+ 0	1.0749+ 1	5.3276+ 0							5.4211+ 0				3.7180- 3
2.0000+ 0 ~ 3.0000+ 0	1.3544+ 1	4.7393+ 0							8.8045+ 0				3.7192- 3
3.0000+ 0 ~ 4.0000+ 0	5.8462+ 1	4.1031+ 0							5.4359+ 1				3.7203- 3
4.0000+ 0 ~ 5.0000+ 0	2.0405+ 3	1.4945+ 2							1.8910+ 3				3.7211- 3
5.0000+ 0 ~ 6.0000+ 0	2.4324+ 1	1.0530+ 1							1.3794+ 1				3.7218- 3
6.0000+ 0 ~ 8.0000+ 0	1.0779+ 1	7.3349+ 0							3.4438+ 0				3.7226- 3
8.0000+ 0 ~ 1.0000+ 1	1.5983+ 1	5.0995+ 0							1.0283+ 1				3.7234- 3
1.0000+ 1 ~ 1.5000+ 1	1.9991+ 2	2.0862+ 1							1.7905+ 2				3.7245- 3
1.5000+ 1 ~ 2.0000+ 1	7.5947+ 0	6.1134+ 0							1.4813+ 0				3.7256- 3
2.0000+ 1 ~ 3.0000+ 1	7.6216+ 1	1.1396+ 1							6.4820+ 1				3.7268- 3
3.0000+ 1 ~ 4.0000+ 1	3.8672+ 2	1.2087+ 2							2.6585+ 2				3.7279- 3
4.0000+ 1 ~ 5.0000+ 1	2.0408+ 1	1.3503+ 1							6.9052+ 0				3.7287- 3
5.0000+ 1 ~ 6.0000+ 1	9.2046+ 0	7.5147+ 0							1.6899+ 0				3.7294- 3
6.0000+ 1 ~ 8.0000+ 1	4.4173+ 1	1.0474+ 1							3.3699+ 1				3.7301- 3
8.0000+ 1 ~ 1.0000+ 2	1.5022+ 2	9.0292+ 1							5.9925+ 1				3.7310- 3
1.0000+ 2 ~ 1.5000+ 2	6.6949+ 1	3.0691+ 1							3.6257+ 1				3.7576- 3
1.5000+ 2 ~ 2.0000+ 2	7.6364+ 1	4.6491+ 1							2.9874+ 1				3.7989- 3
2.0000+ 2 ~ 3.0000+ 2	4.9543+ 1	2.3720+ 1							2.5823+ 1				3.8419- 3
3.0000+ 2 ~ 4.0000+ 2	3.6668+ 1	2.0423+ 1							1.6246+ 1				3.8832- 3
4.0000+ 2 ~ 5.0000+ 2	4.1969+ 1	2.4769+ 1							1.7200+ 1				3.9139- 3
5.0000+ 2 ~ 6.0000+ 2	3.8449+ 1	2.6704+ 1							1.1745+ 1				3.9384- 3
6.0000+ 2 ~ 8.0000+ 2	3.0037+ 1	2.0579+ 1							9.4576+ 0				3.9675- 3
8.0000+ 2 ~ 1.0000+ 3	3.6147+ 1	2.5837+ 1							1.0310+ 1				3.9962- 3
1.0000+ 3 ~ 1.5000+ 3	2.3768+ 1	1.2829+ 1							1.0939+ 1				4.1461- 3
1.5000+ 3 ~ 2.0000+ 3	2.1299+ 1	1.2996+ 1							8.3038+ 0				4.3579- 3
2.0000+ 3 ~ 3.0000+ 3	1.8854+ 1	1.2854+ 1							5.9991+ 0				4.7106- 3
3.0000+ 3 ~ 4.0000+ 3	1.6982+ 1	1.2397+ 1							4.5855+ 0				5.2783- 3
4.0000+ 3 ~ 5.0000+ 3	1.5662+ 1	1.1930+ 1							3.7319+ 0				5.8386- 3
5.0000+ 3 ~ 6.0000+ 3	1.4702+ 1	1.1600+ 1							3.1025+ 0				6.4007- 3
6.0000+ 3 ~ 8.0000+ 3	1.3880+ 1	1.1312+ 1	2.4201- 2						2.5437+ 0				7.3633- 3
8.0000+ 3 ~ 1.0000+ 4	1.3076+ 1	1.0951+ 1	5.0443- 2						2.0753+ 0				8.7395- 3
1.0000+ 4 ~ 1.5000+ 4	1.2251+ 1	1.0505+ 1	7.7440- 2						1.6723+ 0				1.1662- 2
1.5000+ 4 ~ 2.0000+ 4	1.1359+ 1	9.9694+ 0	1.0677- 1						1.2861+ 0				1.5294- 2
2.0000+ 4 ~ 3.0000+ 4	1.0449+ 1	9.3517+ 0	1.4052- 1						9.5871- 1				2.0948- 2
3.0000+ 4 ~ 4.0000+ 4	9.8603+ 0	8.9170+ 0	1.7672- 1						7.6910- 1				2.9284- 2
4.0000+ 4 ~ 5.0000+ 4	9.6093+ 0	8.7479+ 0	2.0527- 1						6.5840- 1				3.7121- 2
5.0000+ 4 ~ 6.0000+ 4	9.4350+ 0	8.6411+ 0	2.2911- 1						5.6342- 1				4.4725- 2
6.0000+ 4 ~ 8.0000+ 4	9.2714+ 0	8.5126+ 0	2.5930- 1						4.9846- 1				5.6083- 2
8.0000+ 4 ~ 1.0000+ 5	9.1014+ 0	8.3624+ 0	2.9331- 1						4.4475- 1				7.0617- 2
1.0000+ 5 ~ 1.5000+ 5	8.4588+ 0	7.7068+ 0	3.6115- 1						3.8973- 1				9.3253- 2
1.5000+ 5 ~ 2.0000+ 5	7.8959+ 0	6.9103+ 0	6.8121- 1						3.0376- 1				1.2405- 1
2.0000+ 5 ~ 3.0000+ 5	7.5151+ 0	6.4337+ 0	8.2650- 1						2.5427- 1				1.5868- 1
3.0000+ 5 ~ 4.0000+ 5	7.1249+ 0	5.9301+ 0	9.8510- 1						2.0934- 1	0.0000+ 0			1.9539- 1
4.0000+ 5 ~ 5.0000+ 5	6.9918+ 0	5.6845+ 0	1.1204+ 0						1.8682- 1	0.0000+ 0			2.2745- 1
5.0000+ 5 ~ 6.0000+ 5	6.8293+ 0	5.3334+ 0	1.3323+ 0						1.6339- 1	0.0000+ 0			2.6292- 1
6.0000+ 5 ~ 8.0000+ 5	6.8590+ 0	5.2031+ 0	1.5077+ 0						1.4838- 1	0.0000+ 0			3.1469- 1
8.0000+ 5 ~ 1.0000+ 6	7.0358+ 0	5.1985+ 0	1.7049+ 0						1.3255- 1	0.0000+ 0			3.8663- 1
1.0000+ 6 ~ 1.5000+ 6	7.2283+ 0	5.1235+ 0	2.0106+ 0						9.1520- 2	0.0000+ 0			5.0982- 1
1.5000+ 6 ~ 2.0000+ 6	7.2976+ 0	5.0338+ 0	2.2117+ 0						5.1713- 2	0.0000+ 0			6.1080- 1
2.0000+ 6 ~ 3.0000+ 6	7.1388+ 0	4.8000+ 0	2.3102+ 0						2.7675- 2	0.0000+ 0			6.8868- 1
3.0000+ 6 ~ 4.0000+ 6	6.5742+ 0	4.1576+ 0	2.4031+ 0						1.1918- 2	0.0000+ 0			7.5112- 1
4.0000+ 6 ~ 5.0000+ 6	6.0532+ 0	3.5701+ 0	2.4761+ 0						4.8031- 3	0.0000+ 0			7.8280- 1
5.0000+ 6 ~ 6.0000+ 6	5.6536+ 0	3.1295+ 0	2.5192+ 0						1.7799- 3	0.0000+ 0			7.9024- 1
6.0000+ 6 ~ 8.0000+ 6	5.1640+ 0	2.6664+ 0	2.4781+ 0	1.8598- 2					4.8747- 4	0.0000+ 0			7.8193- 1
8.0000+ 6 ~ 1.0000+ 7	5.0907+ 0	2.6480+ 0	1.4681+ 0	9.8742- 1					7.5248- 5	0.0000+ 0			7.8100- 1
1.0000+ 7 ~ 1.5000+ 7	5.2560+ 0	2.8688+ 0	2.8837- 1	2.0966+ 0					2.9313- 6	1.5860- 3			8.3820- 1
1.5000+ 7 ~ 2.0000+ 7	5.4000+ 0	3.0455+ 0	7.3000- 2	2.2760+ 0					8.9511- 8	5.4720- 3			8.7997- 1

CROSS SECTION

PB-0

MATERIAL =2820

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.1959+ 1	1.1421+ 1					0.0000+ 0		5.3100- 1	0.0000+ 0		0.0000+ 0	4.0610- 4
1.0000- 2 ~ 1.5000- 2	1.1676+ 1	1.1421+ 1					0.0000+ 0		2.4628- 1	0.0000+ 0		0.0000+ 0	4.0750- 4
1.5000- 2 ~ 2.0000- 2	1.1642+ 1	1.1421+ 1					0.0000+ 0		2.0731- 1	0.0000+ 0		0.0000+ 0	4.0817- 4
2.0000- 2 ~ 3.0000- 2	1.1600+ 1	1.1421+ 1					0.0000+ 0		1.7435- 1	0.0000+ 0		0.0000+ 0	4.0887- 4
3.0000- 2 ~ 4.0000- 2	1.1579+ 1	1.1421+ 1					0.0000+ 0		1.4659- 1	0.0000+ 0		0.0000+ 0	4.0954- 4
4.0000- 2 ~ 5.0000- 2	1.1567+ 1	1.1421+ 1					0.0000+ 0		1.2968- 1	0.0000+ 0		0.0000+ 0	4.1004- 4
5.0000- 2 ~ 6.0000- 2	1.1556+ 1	1.1421+ 1					0.0000+ 0		1.1690- 1	0.0000+ 0		0.0000+ 0	4.1044- 4
6.0000- 2 ~ 8.0000- 2	1.1539+ 1	1.1421+ 1					0.0000+ 0		1.0365- 1	0.0000+ 0		0.0000+ 0	4.1091- 4
8.0000- 2 ~ 1.0000- 1	1.1518+ 1	1.1421+ 1					0.0000+ 0		9.1599- 2	0.0000+ 0		0.0000+ 0	4.1141- 4
1.0000- 1 ~ 1.5000- 1	1.1504+ 1	1.1421+ 1					0.0000+ 0		7.7806- 2	0.0000+ 0		0.0000+ 0	4.1205- 4
1.5000- 1 ~ 2.0000- 1	1.1500+ 1	1.1421+ 1					0.0000+ 0		6.5570- 2	0.0000+ 0		0.0000+ 0	4.1272- 4
2.0000- 1 ~ 3.0000- 1	1.1494+ 1	1.1421+ 1					0.0000+ 0		5.5031- 2	0.0000+ 0		0.0000+ 0	4.1342- 4
3.0000- 1 ~ 4.0000- 1	1.1488+ 1	1.1421+ 1					0.0000+ 0		4.6442- 2	0.0000+ 0		0.0000+ 0	4.1410- 4
4.0000- 1 ~ 5.0000- 1	1.1481+ 1	1.1421+ 1					0.0000+ 0		4.0887- 2	0.0000+ 0		0.0000+ 0	4.1460- 4
5.0000- 1 ~ 6.0000- 1	1.1475+ 1	1.1421+ 1					0.0000+ 0		3.6925- 2	0.0000+ 0		0.0000+ 0	4.1500- 4
6.0000- 1 ~ 8.0000- 1	1.1466+ 1	1.1421+ 1					0.0000+ 0		3.2861- 2	0.0000+ 0		0.0000+ 0	4.1547- 4
8.0000- 1 ~ 1.0000+ 0	1.1454+ 1	1.1421+ 1					0.0000+ 0		2.8880- 2	0.0000+ 0		0.0000+ 0	4.1597- 4
1.0000+ 0 ~ 1.5000+ 0	1.1447+ 1	1.1421+ 1					0.0000+ 0		2.4623- 2	0.0000+ 0		0.0000+ 0	4.1661- 4
1.5000+ 0 ~ 2.0000+ 0	1.1446+ 1	1.1421+ 1					0.0000+ 0		2.0765- 2	0.0000+ 0		0.0000+ 0	4.1728- 4
2.0000+ 0 ~ 3.0000+ 0	1.1444+ 1	1.1421+ 1					0.0000+ 0		1.7418- 2	0.0000+ 0		0.0000+ 0	4.1798- 4
3.0000+ 0 ~ 4.0000+ 0	1.1442+ 1	1.1421+ 1					0.0000+ 0		1.4683- 2	0.0000+ 0		0.0000+ 0	4.1865- 4
4.0000+ 0 ~ 5.0000+ 0	1.1440+ 1	1.1421+ 1					0.0000+ 0		1.2913- 2	0.0000+ 0		0.0000+ 0	4.1915- 4
5.0000+ 0 ~ 6.0000+ 0	1.1438+ 1	1.1421+ 1					0.0000+ 0		1.1723- 2	0.0000+ 0		0.0000+ 0	4.1955- 4
6.0000+ 0 ~ 8.0000+ 0	1.1435+ 1	1.1420+ 1					0.0000+ 0		1.0383- 2	0.0000+ 0		0.0000+ 0	4.2002- 4
8.0000+ 0 ~ 1.0000+ 1	1.1431+ 1	1.1420+ 1					0.0000+ 0		9.1321- 3	0.0000+ 0		0.0000+ 0	4.2052- 4
1.0000+ 1 ~ 1.5000+ 1	1.1429+ 1	1.1420+ 1					0.0000+ 0		7.7957- 3	0.0000+ 0		0.0000+ 0	4.2124- 4
1.5000+ 1 ~ 2.0000+ 1	1.1428+ 1	1.1420+ 1					0.0000+ 0		6.5598- 3	0.0000+ 0		0.0000+ 0	4.2202- 4
2.0000+ 1 ~ 3.0000+ 1	1.1427+ 1	1.1420+ 1					0.0000+ 0		5.5166- 3	0.0000+ 0		0.0000+ 0	4.2283- 4
3.0000+ 1 ~ 4.0000+ 1	1.1426+ 1	1.1420+ 1					0.0000+ 0		4.6407- 3	0.0000+ 0		0.0000+ 0	4.2362- 4
4.0000+ 1 ~ 5.0000+ 1	1.1425+ 1	1.1419+ 1					0.0000+ 0		4.1055- 3	0.0000+ 0		0.0000+ 0	4.2420- 4
5.0000+ 1 ~ 6.0000+ 1	1.1424+ 1	1.1419+ 1					0.0000+ 0		3.7018- 3	0.0000+ 0		0.0000+ 0	4.2467- 4
6.0000+ 1 ~ 8.0000+ 1	1.1423+ 1	1.1419+ 1					0.0000+ 0		3.2848- 3	0.0000+ 0		0.0000+ 0	4.2522- 4
8.0000+ 1 ~ 1.0000+ 2	1.1421+ 1	1.1418+ 1					0.0000+ 0		2.9011- 3	0.0000+ 0		0.0000+ 0	4.2580- 4
1.0000+ 2 ~ 1.5000+ 2	1.1419+ 1	1.1417+ 1					0.0000+ 0		2.4694- 3	0.0000+ 0		0.0000+ 0	4.2655- 4
1.5000+ 2 ~ 2.0000+ 2	1.1418+ 1	1.1415+ 1					0.0000+ 0		2.0905- 3	0.0000+ 0		0.0000+ 0	4.2733- 4
2.0000+ 2 ~ 3.0000+ 2	1.1415+ 1	1.1413+ 1					0.0000+ 0		1.7543- 3	0.0000+ 0		0.0000+ 0	4.2815- 4
3.0000+ 2 ~ 4.0000+ 2	1.1412+ 1	1.1410+ 1					0.0000+ 0		1.4888- 3	0.0000+ 0		0.0000+ 0	4.2893- 4
4.0000+ 2 ~ 5.0000+ 2	1.1408+ 1	1.1406+ 1					0.0000+ 0		1.3161- 3	0.0000+ 0		0.0000+ 0	4.2951- 4
5.0000+ 2 ~ 6.0000+ 2	1.1405+ 1	1.1403+ 1					0.0000+ 0		1.1961- 3	0.0000+ 0		0.0000+ 0	4.2998- 4
6.0000+ 2 ~ 8.0000+ 2	1.1399+ 1	1.1397+ 1					0.0000+ 0		1.0746- 3	0.0000+ 0		0.0000+ 0	4.3053- 4
8.0000+ 2 ~ 1.0000+ 3	1.1391+ 1	1.1390+ 1					0.0000+ 0		9.7229- 4	0.0000+ 0		0.0000+ 0	4.3111- 4
1.0000+ 3 ~ 1.5000+ 3	1.1348+ 1	1.1346+ 1					0.0000+ 0		1.0230- 3	0.0000+ 0		0.0000+ 0	3.7315- 3
1.5000+ 3 ~ 2.0000+ 3	1.1566+ 1	1.1502+ 1					0.0000+ 0		6.3493- 2	0.0000+ 0		0.0000+ 0	4.0550- 3
2.0000+ 3 ~ 3.0000+ 3	1.1340+ 1	1.1317+ 1					0.0000+ 0		2.2698- 2	0.0000+ 0		0.0000+ 0	4.4033- 3
3.0000+ 3 ~ 4.0000+ 3	1.1280+ 1	1.1226+ 1					0.0000+ 0		5.3310- 2	0.0000+ 0		0.0000+ 0	4.7423- 3
4.0000+ 3 ~ 5.0000+ 3	1.0956+ 1	1.0955+ 1					0.0000+ 0		4.3212- 4	0.0000+ 0		0.0000+ 0	5.0007- 3
5.0000+ 3 ~ 6.0000+ 3	1.0822+ 1	1.0821+ 1					0.0000+ 0		4.0112- 4	0.0000+ 0		0.0000+ 0	5.4009- 3
6.0000+ 3 ~ 8.0000+ 3	1.0619+ 1	1.0615+ 1					0.0000+ 0		3.7598- 3	0.0000+ 0		0.0000+ 0	6.1403- 3
8.0000+ 3 ~ 1.0000+ 4	1.0641+ 1	1.0632+ 1					0.0000+ 0		9.3425- 3	0.0000+ 0		0.0000+ 0	6.9455- 3
1.0000+ 4 ~ 1.5000+ 4	1.0944+ 1	1.0937+ 1					0.0000+ 0		6.2629- 3	0.0000+ 0		0.0000+ 0	9.8189- 3
1.5000+ 4 ~ 2.0000+ 4	1.0643+ 1	1.0629+ 1					0.0000+ 0		1.3598- 2	0.0000+ 0		0.0000+ 0	1.3731- 2
2.0000+ 4 ~ 3.0000+ 4	9.5753+ 0	9.5693+ 0					0.0000+ 0		6.0217- 3	0.0000+ 0		0.0000+ 0	1.7843- 2
3.0000+ 4 ~ 4.0000+ 4	8.6944+ 0	8.6877+ 0					0.0000+ 0		6.6878- 3	0.0000+ 0		0.0000+ 0	2.1643- 2
4.0000+ 4 ~ 5.0000+ 4	1.1158+ 1	1.1150+ 1					0.0000+ 0		8.4939- 3	0.0000+ 0		0.0000+ 0	2.4595- 2
5.0000+ 4 ~ 6.0000+ 4	9.3220+ 0	9.3204+ 0					0.0000+ 0		1.5875- 3	0.0000+ 0		0.0000+ 0	2.8880- 2
6.0000+ 4 ~ 8.0000+ 4	1.1775+ 1	1.1771+ 1					0.0000+ 0		3.9451- 3	0.0000+ 0		0.0000+ 0	3.6495- 2
8.0000+ 4 ~ 1.0000+ 5	9.7707+ 0	9.7670+ 0					0.0000+ 0		3.6765- 3	0.0000+ 0		0.0000+ 0	4.4642- 2
1.0000+ 5 ~ 1.5000+ 5	8.9165+ 0	8.9125+ 0					0.0000+ 0		4.0079- 3	0.0000+ 0		0.0000+ 0	5.9711- 2
1.5000+ 5 ~ 2.0000+ 5	8.1015+ 0	8.0989+ 0					0.0000+ 0		3.1786- 3	0.0000+ 0		0.0000+ 0	7.7486- 2
2.0000+ 5 ~ 3.0000+ 5	7.6736+ 0	7.6717+ 0					0.0000+ 0		1.9568- 3	0.0000+ 0		0.0000+ 0	1.0047- 1
3.0000+ 5 ~ 4.0000+ 5	7.0869+ 0	7.0854+ 0					0.0000+ 0		1.5309- 3	0.0000+ 0		0.0000+ 0	1.2329- 1
4.0000+ 5 ~ 5.0000+ 5	5.3664+ 0	5.3649+ 0					0.0000+ 0		1.5186- 3	0.0000+ 0		0.0000+ 0	1.4069- 1
5.0000+ 5 ~ 6.0000+ 5	5.4039+ 0	5.3997+ 0	2.9390- 3				0.0000+ 0		1.2064- 3	0.0000+ 0		0.0000+ 0	1.5346- 1
6.0000+ 5 ~ 8.0000+ 5	5.4104+ 0	5.3629+ 0	4.6223- 2				0.0000+ 0		1.2366- 3	0.0000+ 0		0.0000+ 0	1.7122- 1
8.0000+ 5 ~ 1.0000+ 6	5.3203+ 0	5.1828+ 0	1.3416- 1				0.0000+ 0		3.3102- 3	0.0000+ 0		0.0000+ 0	1.8662- 1
1.0000+ 6 ~ 1.5000+ 6	5.0447+ 0	4.7431+ 0	2.9900- 1				0.0000+ 0		2.6872- 3	0.0000+ 0		0.0000+ 0	2.1498- 1
1.5000+ 6 ~ 2.0000+ 6	5.5551+ 0	5.0331+ 0	5.2012- 1				0.0000+ 0		1.9162- 3	0.0000+ 0		0.0000+ 0	2.7402- 1
2.0000+ 6 ~ 3.0000+ 6	7.0454+ 0	6.1411+ 0	9.0312- 1				0.0000+ 0		1.2658- 3	0.0000+ 0		0.0000+ 0	4.2212- 1
3.0000+ 6 ~ 4.0000+ 6	7.7889+ 0	6.3162+ 0	1.4719+ 0				0.0000+ 0		8.5159- 4	0.0000+ 0		0.0000+ 0	6.0007- 1
4.0000+ 6 ~ 5.0000+ 6	7.6295+ 0	5.6699+ 0	1.9590+ 0				0.0000+ 0		6.5826- 4	0.0000+ 0		0.0000+ 0	7.0339- 1
5.0000+ 6 ~ 6.0000+ 6	7.0095+ 0	4.6917+ 0	2.3173+ 0				0.0000+ 0		4.8466- 4	3.5000- 8		1.8086- 8	7.5904- 1
6.0000+ 6 ~ 8.0000+ 6	5.8979+ 0	3.5435+ 0	2.3539+ 0	1.7017- 6			0.0000+ 0		4.9900- 4	9.7087- 7		1.0641- 6	7.3885- 1
8.0000+ 6 ~ 1.0000+ 7	5.2514+ 0	2.8378+ 0	2.3638+ 0	4.8648- 2			0.0000+ 0	0.0000+ 0	8.5026- 4	2.3301- 5		1.2930- 5	7.1641- 1
1.0000+ 7 ~ 1.5000+ 7	5.2686+ 0	2.8051+ 0	9.4779- 1	1.5131+ 0	1.0358- 6		1.3642- 4	2.3153- 5	7.7478- 4	5.4708- 4		6.1401- 4	7.9373- 1
1.5000+ 7 ~ 2.0000+ 7	5.7664+ 0	3.2254+ 0	6.9136- 1	1.6801+ 0	1.3672- 1		1.5800- 2	3.8773- 3	3.2251- 4	2.4035- 3		1.0415- 2	8.9987- 1

CROSS SECTION

MATERIAL =2821

PB-204

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.3996+ 1	1.1341+ 1					0.0000+ 0		2.0452+ 0	0.0000+ 0		0.0000+ 0	9.9404- 5
1.0000- 2 ~ 1.5000- 2	1.2309+ 1	1.1341+ 1					0.0000+ 0		9.4905- 1	0.0000+ 0		0.0000+ 0	4.0721- 3
1.5000- 2 ~ 2.0000- 2	1.2169+ 1	1.1341+ 1					0.0000+ 0		7.9846- 1	0.0000+ 0		0.0000+ 0	4.1090- 3
2.0000- 2 ~ 3.0000- 2	1.2022+ 1	1.1341+ 1					0.0000+ 0		6.7152- 1	0.0000+ 0		0.0000+ 0	4.1475- 3
3.0000- 2 ~ 4.0000- 2	1.1931+ 1	1.1341+ 1					0.0000+ 0		5.8461- 1	0.0000+ 0		0.0000+ 0	4.1845- 3
4.0000- 2 ~ 5.0000- 2	1.1876+ 1	1.1341+ 1					0.0000+ 0		4.9948- 1	0.0000+ 0		0.0000+ 0	4.2120- 3
5.0000- 2 ~ 6.0000- 2	1.1830+ 1	1.1341+ 1					0.0000+ 0		4.5024- 1	0.0000+ 0		0.0000+ 0	4.2339- 3
6.0000- 2 ~ 8.0000- 2	1.1771+ 1	1.1341+ 1					0.0000+ 0		3.9923- 1	0.0000+ 0		0.0000+ 0	4.2699- 3
8.0000- 2 ~ 1.0000- 1	1.1705+ 1	1.1341+ 1					0.0000+ 0		3.5297- 1	0.0000+ 0		0.0000+ 0	4.2874- 3
1.0000- 1 ~ 1.5000- 1	1.1653+ 1	1.1341+ 1					0.0000+ 0		2.9968- 1	0.0000+ 0		0.0000+ 0	4.3227- 3
1.5000- 1 ~ 2.0000- 1	1.1623+ 1	1.1341+ 1					0.0000+ 0		2.5255- 1	0.0000+ 0		0.0000+ 0	4.3596- 3
2.0000- 1 ~ 3.0000- 1	1.1592+ 1	1.1341+ 1					0.0000+ 0		2.1197- 1	0.0000+ 0		0.0000+ 0	4.3981- 3
3.0000- 1 ~ 4.0000- 1	1.1563+ 1	1.1341+ 1					0.0000+ 0		1.7869- 1	0.0000+ 0		0.0000+ 0	4.4351- 3
4.0000- 1 ~ 5.0000- 1	1.1540+ 1	1.1341+ 1					0.0000+ 0		1.5750- 1	0.0000+ 0		0.0000+ 0	4.4626- 3
5.0000- 1 ~ 6.0000- 1	1.1520+ 1	1.1341+ 1					0.0000+ 0		1.4225- 1	0.0000+ 0		0.0000+ 0	4.4845- 3
6.0000- 1 ~ 8.0000- 1	1.1493+ 1	1.1341+ 1					0.0000+ 0		1.2660- 1	0.0000+ 0		0.0000+ 0	4.5105- 3
8.0000- 1 ~ 1.0000+ 0	1.1461+ 1	1.1341+ 1					0.0000+ 0		1.1132- 1	0.0000+ 0		0.0000+ 0	4.5380- 3
1.0000+ 0 ~ 1.5000+ 0	1.1440+ 1	1.1341+ 1					0.0000+ 0		9.4891- 2	0.0000+ 0		0.0000+ 0	4.5792- 3
1.5000+ 0 ~ 2.0000+ 0	1.1430+ 1	1.1341+ 1					0.0000+ 0		8.0033- 2	0.0000+ 0		0.0000+ 0	4.6102- 3
2.0000+ 0 ~ 3.0000+ 0	1.1420+ 1	1.1340+ 1					0.0000+ 0		6.7150- 2	0.0000+ 0		0.0000+ 0	4.6487- 3
3.0000+ 0 ~ 4.0000+ 0	1.1410+ 1	1.1340+ 1					0.0000+ 0		5.6630- 2	0.0000+ 0		0.0000+ 0	4.6857- 3
4.0000+ 0 ~ 5.0000+ 0	1.1403+ 1	1.1340+ 1					0.0000+ 0		4.9825- 2	0.0000+ 0		0.0000+ 0	4.7132- 3
5.0000+ 0 ~ 6.0000+ 0	1.1396+ 1	1.1339+ 1					0.0000+ 0		4.5249- 2	0.0000+ 0		0.0000+ 0	4.7351- 3
6.0000+ 0 ~ 8.0000+ 0	1.1387+ 1	1.1339+ 1					0.0000+ 0		4.0102- 2	0.0000+ 0		0.0000+ 0	4.7611- 3
8.0000+ 0 ~ 1.0000+ 1	1.1377+ 1	1.1338+ 1					0.0000+ 0		3.5299- 2	0.0000+ 0		0.0000+ 0	4.7866- 3
1.0000+ 1 ~ 1.5000+ 1	1.1369+ 1	1.1337+ 1					0.0000+ 0		3.0180- 2	0.0000+ 0		0.0000+ 0	4.8238- 3
1.5000+ 1 ~ 2.0000+ 1	1.1364+ 1	1.1336+ 1					0.0000+ 0		2.5443- 2	0.0000+ 0		0.0000+ 0	4.8608- 3
2.0000+ 1 ~ 3.0000+ 1	1.1359+ 1	1.1333+ 1					0.0000+ 0		2.1462- 2	0.0000+ 0		0.0000+ 0	4.8993- 3
3.0000+ 1 ~ 4.0000+ 1	1.1353+ 1	1.1330+ 1					0.0000+ 0		1.8130- 2	0.0000+ 0		0.0000+ 0	4.9363- 3
4.0000+ 1 ~ 5.0000+ 1	1.1347+ 1	1.1327+ 1					0.0000+ 0		1.6105- 2	0.0000+ 0		0.0000+ 0	4.9637- 3
5.0000+ 1 ~ 6.0000+ 1	1.1342+ 1	1.1324+ 1					0.0000+ 0		1.4584- 2	0.0000+ 0		0.0000+ 0	4.9857- 3
6.0000+ 1 ~ 8.0000+ 1	1.1335+ 1	1.1319+ 1					0.0000+ 0		1.3025- 2	0.0000+ 0		0.0000+ 0	5.0117- 3
8.0000+ 1 ~ 1.0000+ 2	1.1325+ 1	1.1313+ 1					0.0000+ 0		1.1614- 2	0.0000+ 0		0.0000+ 0	5.0392- 3
1.0000+ 2 ~ 1.5000+ 2	1.1311+ 1	1.1301+ 1					0.0000+ 0		1.0034- 2	0.0000+ 0		0.0000+ 0	5.0744- 3
1.5000+ 2 ~ 2.0000+ 2	1.1293+ 1	1.1283+ 1					0.0000+ 0		8.6978- 3	0.0000+ 0		0.0000+ 0	5.1114- 3
2.0000+ 2 ~ 3.0000+ 2	1.1264+ 1	1.1255+ 1					0.0000+ 0		7.5847- 3	0.0000+ 0		0.0000+ 0	5.1499- 3
3.0000+ 2 ~ 4.0000+ 2	1.1223+ 1	1.1215+ 1					0.0000+ 0		6.8177- 3	0.0000+ 0		0.0000+ 0	5.1868- 3
4.0000+ 2 ~ 5.0000+ 2	1.1178+ 1	1.1170+ 1					0.0000+ 0		6.4381- 3	0.0000+ 0		0.0000+ 0	5.2143- 3
5.0000+ 2 ~ 6.0000+ 2	1.1127+ 1	1.1119+ 1					0.0000+ 0		6.3111- 3	0.0000+ 0		0.0000+ 0	5.2382- 3
6.0000+ 2 ~ 8.0000+ 2	1.1036+ 1	1.1028+ 1					0.0000+ 0		6.5128- 3	0.0000+ 0		0.0000+ 0	5.2629- 3
8.0000+ 2 ~ 1.0000+ 3	1.0877+ 1	1.0869+ 1					0.0000+ 0		7.5277- 3	0.0000+ 0		0.0000+ 0	5.2898- 3
1.0000+ 3 ~ 1.5000+ 3	1.0133+ 1	1.0112+ 1					0.0000+ 0		2.0230- 2	0.0000+ 0		0.0000+ 0	5.3250- 3
1.5000+ 3 ~ 2.0000+ 3	3.0006+ 1	2.5517+ 1					0.0000+ 0		4.4881+ 0	0.0000+ 0		0.0000+ 0	5.3620- 3
2.0000+ 3 ~ 3.0000+ 3	2.0357+ 1	1.8775+ 1					0.0000+ 0		1.5813+ 0	0.0000+ 0		0.0000+ 0	5.4004- 3
3.0000+ 3 ~ 4.0000+ 3	1.1277+ 1	1.1272+ 1					0.0000+ 0		4.7442- 3	0.0000+ 0		0.0000+ 0	5.4374- 3
4.0000+ 3 ~ 5.0000+ 3	1.0162+ 1	1.0160+ 1					0.0000+ 0		2.2719- 3	0.0000+ 0		0.0000+ 0	5.4649- 3
5.0000+ 3 ~ 6.0000+ 3	9.2262+ 0	9.2232+ 0					0.0000+ 0		2.6671- 3	0.0000+ 0		0.0000+ 0	5.8232- 3
6.0000+ 3 ~ 8.0000+ 3	7.6981+ 0	7.4529+ 0					0.0000+ 0		2.4499- 1	0.0000+ 0		0.0000+ 0	6.7055- 3
8.0000+ 3 ~ 1.0000+ 4	2.5166+ 1	2.4526+ 1					0.0000+ 0		6.4027- 1	0.0000+ 0		0.0000+ 0	7.6377- 3
1.0000+ 4 ~ 1.5000+ 4	1.3031+ 1	1.2929+ 1					0.0000+ 0		1.0193- 1	0.0000+ 0		0.0000+ 0	9.6887- 3
1.5000+ 4 ~ 2.0000+ 4	9.2884+ 0	9.2430+ 0					0.0000+ 0		4.5339- 2	0.0000+ 0		0.0000+ 0	1.2287- 2
2.0000+ 4 ~ 3.0000+ 4	1.1347+ 1	1.1267+ 1					0.0000+ 0		8.0242- 2	0.0000+ 0		0.0000+ 0	1.7045- 2
3.0000+ 4 ~ 4.0000+ 4	1.0379+ 1	1.0331+ 1					0.0000+ 0		4.8210- 2	0.0000+ 0		0.0000+ 0	2.2871- 2
4.0000+ 4 ~ 5.0000+ 4	9.5822+ 0	9.5566+ 0					0.0000+ 0		2.5606- 2	0.0000+ 0		0.0000+ 0	2.7204- 2
5.0000+ 4 ~ 6.0000+ 4	1.2979+ 1	1.2942+ 1					0.0000+ 0		3.6846- 2	0.0000+ 0		0.0000+ 0	3.1625- 2
6.0000+ 4 ~ 8.0000+ 4	1.2502+ 1	1.2468+ 1					0.0000+ 0		3.4101- 2	0.0000+ 0		0.0000+ 0	3.8937- 2
8.0000+ 4 ~ 1.0000+ 5	1.1954+ 1	1.1923+ 1					0.0000+ 0		3.1201- 2	0.0000+ 0		0.0000+ 0	4.8202- 2
1.0000+ 5 ~ 1.5000+ 5	1.1072+ 1	1.1044+ 1					0.0000+ 0		2.8048- 2	0.0000+ 0		0.0000+ 0	6.4040- 2
1.5000+ 5 ~ 2.0000+ 5	1.0134+ 1	1.0109+ 1					0.0000+ 0		2.5201- 2	0.0000+ 0		0.0000+ 0	8.1981- 2
2.0000+ 5 ~ 3.0000+ 5	9.0215+ 0	8.9978+ 0					0.0000+ 0		2.3736- 2	0.0000+ 0		0.0000+ 0	1.0296- 1
3.0000+ 5 ~ 4.0000+ 5	7.8316+ 0	7.8078+ 0					0.0000+ 0		2.3721- 2	0.0000+ 0		0.0000+ 0	1.2477- 1
4.0000+ 5 ~ 5.0000+ 5	6.9185+ 0	6.8948+ 0					0.0000+ 0		2.4616- 2	0.0000+ 0		0.0000+ 0	1.4117- 1
5.0000+ 5 ~ 6.0000+ 5	6.2240+ 0	6.1979+ 0					0.0000+ 0		2.6025- 2	0.0000+ 0		0.0000+ 0	1.5430- 1
6.0000+ 5 ~ 8.0000+ 5	5.5149+ 0	5.4860+ 0					0.0000+ 0		2.8895- 2	0.0000+ 0		0.0000+ 0	1.7079- 1
8.0000+ 5 ~ 1.0000+ 6	4.9853+ 0	4.9000+ 0	5.3491- 2				0.0000+ 0		3.1033- 2	0.0000+ 0		0.0000+ 0	1.9264- 1
1.0000+ 6 ~ 1.5000+ 6	4.9236+ 0	4.4445+ 0	4.5690- 1				0.0000+ 0		2.3417- 2	0.0000+ 0		0.0000+ 0	2.4369- 1
1.5000+ 6 ~ 2.0000+ 6	5.6443+ 0	4.5920+ 0	1.0370+ 0				0.0000+ 0		1.6720- 2	0.0000+ 0		0.0000+ 0	3.3064- 1
2.0000+ 6 ~ 3.0000+ 6	7.0367+ 0	5.0827+ 0	1.9375+ 0				0.0000+ 0		1.6609- 2	0.0000+ 0		0.0000+ 0	5.2291- 1
3.0000+ 6 ~ 4.0000+ 6	7.6992+ 0	5.3284+ 0	2.3568+ 0				0.0000+ 0		1.4051- 2	0.0000+ 0		0.0000+ 0	6.9882- 1
4.0000+ 6 ~ 5.0000+ 6	7.3877+ 0	5.0296+ 0	2.3501+ 0				0.0000+ 0		7.5901- 3	0.0000+ 0		0.0000+ 0	7.5471- 1
5.0000+ 6 ~ 6.0000+ 6	6.7770+ 0	4.4214+ 0	2.3512+ 0				0.0000+ 0		3.7587- 3	2.5000- 6		1.0000- 6	7.6160- 1
6.0000+ 6 ~ 8.0000+ 6	5.8609+ 0	3.5156+ 0	2.3429+ 0				0.0000+ 0		1.5780- 3	1.0000- 5		4.0000- 6	7.3392- 1
8.0000+ 6 ~ 1.0000+ 7	5.2028+ 0	2.8068+ 0	2.3890+ 0	6.1002- 3			0.0000+ 0	0.0000+ 0	6.2876- 4	3.9000- 5		1.3375- 5	7.1155- 1
1.0000+ 7 ~ 1.5000+ 7	5.1657+ 0	2.7328+ 0	9.2092- 1	1.5147+ 0			2.6673- 6	1.7437- 5	9.2464- 5	2.0240- 4		9.8400- 5	7.9460- 1
1.5000+ 7 ~ 2.0000+ 7	5.7493+ 0	3.2247+ 0	7.1198- 1	1.7820+ 0	2.9674- 2		2.1850- 4	3.7415- 4	3.2846- 6	3.4095- 4		4.0395- 4	9.0087- 1

CROSS SECTION

MATERIAL =2822

PB-206

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.1436+ 1	1.1342+ 1					0.0000+ 0		8.6635- 2			0.0000+ 0	3.9618- 3
1.0000- 2 ~ 1.5000- 2	1.1383+ 1	1.1342+ 1					0.0000+ 0		4.0179- 2			0.0000+ 0	3.3817- 3
1.5000- 2 ~ 2.0000- 2	1.1378+ 1	1.1342+ 1					0.0000+ 0		3.3824- 2			0.0000+ 0	3.3873- 3
2.0000- 2 ~ 3.0000- 2	1.1371+ 1	1.1342+ 1					0.0000+ 0		2.8447- 2			0.0000+ 0	3.3931- 3
3.0000- 2 ~ 4.0000- 2	1.1368+ 1	1.1342+ 1					0.0000+ 0		2.3918- 2			0.0000+ 0	3.3986- 3
4.0000- 2 ~ 5.0000- 2	1.1366+ 1	1.1342+ 1					0.0000+ 0		2.1159- 2			0.0000+ 0	3.4028- 3
5.0000- 2 ~ 6.0000- 2	1.1364+ 1	1.1342+ 1					0.0000+ 0		1.9073- 2			0.0000+ 0	3.4061- 3
6.0000- 2 ~ 8.0000- 2	1.1361+ 1	1.1342+ 1					0.0000+ 0		1.6911- 2			0.0000+ 0	3.4100- 3
8.0000- 2 ~ 1.0000- 1	1.1357+ 1	1.1342+ 1					0.0000+ 0		1.4943- 2			0.0000+ 0	3.4142- 3
1.0000- 1 ~ 1.5000- 1	1.1355+ 1	1.1342+ 1					0.0000+ 0		1.2694- 2			0.0000+ 0	3.4196- 3
1.5000- 1 ~ 2.0000- 1	1.1355+ 1	1.1342+ 1					0.0000+ 0		1.0698- 2			0.0000+ 0	3.4251- 3
2.0000- 1 ~ 3.0000- 1	1.1354+ 1	1.1342+ 1					0.0000+ 0		8.9785- 3			0.0000+ 0	3.4309- 3
3.0000- 1 ~ 4.0000- 1	1.1353+ 1	1.1342+ 1					0.0000+ 0		7.5772- 3			0.0000+ 0	3.4365- 3
4.0000- 1 ~ 5.0000- 1	1.1352+ 1	1.1342+ 1					0.0000+ 0		6.6709- 3			0.0000+ 0	3.4406- 3
5.0000- 1 ~ 6.0000- 1	1.1351+ 1	1.1342+ 1					0.0000+ 0		6.0245- 3			0.0000+ 0	3.4439- 3
6.0000- 1 ~ 8.0000- 1	1.1349+ 1	1.1342+ 1					0.0000+ 0		5.3615- 3			0.0000+ 0	3.4478- 3
8.0000- 1 ~ 1.0000+ 0	1.1347+ 1	1.1342+ 1					0.0000+ 0		4.7115- 3			0.0000+ 0	3.4520- 3
1.0000+ 0 ~ 1.5000+ 0	1.1346+ 1	1.1342+ 1					0.0000+ 0		4.0174- 3			0.0000+ 0	3.4573- 3
1.5000+ 0 ~ 2.0000+ 0	1.1346+ 1	1.1342+ 1					0.0000+ 0		3.3878- 3			0.0000+ 0	3.4629- 3
2.0000+ 0 ~ 3.0000+ 0	1.1345+ 1	1.1342+ 1					0.0000+ 0		2.8417- 3			0.0000+ 0	3.4687- 3
3.0000+ 0 ~ 4.0000+ 0	1.1345+ 1	1.1342+ 1					0.0000+ 0		2.3954- 3			0.0000+ 0	3.4743- 3
4.0000+ 0 ~ 5.0000+ 0	1.1345+ 1	1.1342+ 1					0.0000+ 0		2.1067- 3			0.0000+ 0	3.4784- 3
5.0000+ 0 ~ 6.0000+ 0	1.1344+ 1	1.1342+ 1					0.0000+ 0		1.9124- 3			0.0000+ 0	3.4817- 3
6.0000+ 0 ~ 8.0000+ 0	1.1344+ 1	1.1342+ 1					0.0000+ 0		1.6938- 3			0.0000+ 0	3.4856- 3
8.0000+ 0 ~ 1.0000+ 1	1.1343+ 1	1.1342+ 1					0.0000+ 0		1.4896- 3			0.0000+ 0	3.4898- 3
1.0000+ 1 ~ 1.5000+ 1	1.1343+ 1	1.1341+ 1					0.0000+ 0		1.2715- 3			0.0000+ 0	3.4951- 3
1.5000+ 1 ~ 2.0000+ 1	1.1343+ 1	1.1341+ 1					0.0000+ 0		1.0698- 3			0.0000+ 0	3.6007- 3
2.0000+ 1 ~ 3.0000+ 1	1.1343+ 1	1.1341+ 1					0.0000+ 0		8.9958- 4			0.0000+ 0	3.5065- 3
3.0000+ 1 ~ 4.0000+ 1	1.1342+ 1	1.1341+ 1					0.0000+ 0		7.5659- 4			0.0000+ 0	3.5121- 3
4.0000+ 1 ~ 5.0000+ 1	1.1342+ 1	1.1341+ 1					0.0000+ 0		6.6920- 4			0.0000+ 0	3.5162- 3
5.0000+ 1 ~ 6.0000+ 1	1.1342+ 1	1.1341+ 1					0.0000+ 0		6.0324- 4			0.0000+ 0	3.5195- 3
6.0000+ 1 ~ 8.0000+ 1	1.1342+ 1	1.1341+ 1					0.0000+ 0		5.3511- 4			0.0000+ 0	3.5235- 3
8.0000+ 1 ~ 1.0000+ 2	1.1341+ 1	1.1341+ 1					0.0000+ 0		4.7231- 4			0.0000+ 0	3.5278- 3
1.0000+ 2 ~ 1.5000+ 2	1.1341+ 1	1.1340+ 1					0.0000+ 0		4.0173- 4			0.0000+ 0	3.5329- 3
1.5000+ 2 ~ 2.0000+ 2	1.1340+ 1	1.1340+ 1					0.0000+ 0		3.3965- 4			0.0000+ 0	3.5385- 3
2.0000+ 2 ~ 3.0000+ 2	1.1339+ 1	1.1339+ 1					0.0000+ 0		2.8439- 4			0.0000+ 0	3.5443- 3
3.0000+ 2 ~ 4.0000+ 2	1.1338+ 1	1.1338+ 1					0.0000+ 0		2.4049- 4			0.0000+ 0	3.5489- 3
4.0000+ 2 ~ 5.0000+ 2	1.1337+ 1	1.1336+ 1					0.0000+ 0		2.1168- 4			0.0000+ 0	3.5540- 3
5.0000+ 2 ~ 6.0000+ 2	1.1335+ 1	1.1335+ 1					0.0000+ 0		1.9134- 4			0.0000+ 0	3.5573- 3
6.0000+ 2 ~ 8.0000+ 2	1.1334+ 1	1.1333+ 1					0.0000+ 0		1.7061- 4			0.0000+ 0	3.5613- 3
8.0000+ 2 ~ 1.0000+ 3	1.1331+ 1	1.1331+ 1					0.0000+ 0		1.5023- 4			0.0000+ 0	3.5664- 3
1.0000+ 3 ~ 1.5000+ 3	1.1258+ 1	1.1258+ 1					0.0000+ 0		1.2860- 4			0.0000+ 0	3.7981- 3
1.5000+ 3 ~ 2.0000+ 3	1.1113+ 1	1.1113+ 1					0.0000+ 0		1.1002- 4			0.0000+ 0	4.1606- 3
2.0000+ 3 ~ 3.0000+ 3	1.0897+ 1	1.0697+ 1					0.0000+ 0		1.0583- 4			0.0000+ 0	4.5376- 3
3.0000+ 3 ~ 4.0000+ 3	1.1199+ 1	1.1042+ 1					0.0000+ 0		1.5733- 1			0.0000+ 0	4.9002- 3
4.0000+ 3 ~ 5.0000+ 3	1.0319+ 1	1.0319+ 1					0.0000+ 0		7.6891- 5			0.0000+ 0	5.1697- 3
5.0000+ 3 ~ 6.0000+ 3	1.0030+ 1	1.0030+ 1					0.0000+ 0		6.4469- 5			0.0000+ 0	5.6065- 3
6.0000+ 3 ~ 8.0000+ 3	9.5962+ 0	9.5962+ 0					0.0000+ 0		5.7002- 5			0.0000+ 0	6.4266- 3
8.0000+ 3 ~ 1.0000+ 4	9.0166+ 0	9.0166+ 0					0.0000+ 0		5.1634- 5			0.0000+ 0	7.2932- 3
1.0000+ 4 ~ 1.5000+ 4	8.7320+ 0	8.7215+ 0					0.0000+ 0		1.0636- 2			0.0000+ 0	1.0329- 2
1.5000+ 4 ~ 2.0000+ 4	8.9031+ 0	8.8622+ 0					0.0000+ 0		4.0890- 2			0.0000+ 0	1.4619- 2
2.0000+ 4 ~ 3.0000+ 4	9.4960+ 0	9.4811+ 0					0.0000+ 0		1.4891- 2			0.0000+ 0	1.8875- 2
3.0000+ 4 ~ 4.0000+ 4	8.9508+ 0	8.9427+ 0					0.0000+ 0		8.0122- 3			0.0000+ 0	2.3064- 2
4.0000+ 4 ~ 5.0000+ 4	9.1130+ 0	9.1108+ 0					0.0000+ 0		2.1812- 3			0.0000+ 0	2.6179- 2
5.0000+ 4 ~ 6.0000+ 4	8.2987+ 0	8.2952+ 0					0.0000+ 0		3.5883- 3			0.0000+ 0	3.0595- 2
6.0000+ 4 ~ 8.0000+ 4	8.5391+ 0	8.5325+ 0					0.0000+ 0		6.6734- 3			0.0000+ 0	3.8465- 2
8.0000+ 4 ~ 1.0000+ 5	8.7196+ 0	8.7144+ 0					0.0000+ 0		5.1848- 3			0.0000+ 0	4.6782- 2
1.0000+ 5 ~ 1.5000+ 5	8.7907+ 0	8.7873+ 0					0.0000+ 0		3.3766- 3			0.0000+ 0	6.1723- 2
1.5000+ 5 ~ 2.0000+ 5	8.5870+ 0	8.5847+ 0					0.0000+ 0		2.3305- 3			0.0000+ 0	7.9632- 2
2.0000+ 5 ~ 3.0000+ 5	8.9716+ 0	8.9692+ 0					0.0000+ 0		2.3972- 3			0.0000+ 0	1.0097- 1
3.0000+ 5 ~ 4.0000+ 5	7.8067+ 0	7.8044+ 0					0.0000+ 0		2.3458- 3			0.0000+ 0	1.2346- 1
4.0000+ 5 ~ 5.0000+ 5	6.9031+ 0	6.9008+ 0					0.0000+ 0		2.3601- 3			0.0000+ 0	1.4030- 1
5.0000+ 5 ~ 6.0000+ 5	6.2072+ 0	6.2047+ 0					0.0000+ 0		2.5008- 3			0.0000+ 0	1.5333- 1
6.0000+ 5 ~ 8.0000+ 5	5.4892+ 0	5.4869+ 0					0.0000+ 0		2.8317- 3			0.0000+ 0	1.6839- 1
8.0000+ 5 ~ 1.0000+ 6	4.9457+ 0	4.7488+ 0	1.9316- 1				0.0000+ 0		2.2458- 3	0.0000+ 0		0.0000+ 0	1.9205- 1
1.0000+ 6 ~ 1.5000+ 6	4.8722+ 0	4.3144+ 0	5.5817- 1				0.0000+ 0		1.6591- 3	0.0000+ 0		0.0000+ 0	2.3418- 1
1.5000+ 6 ~ 2.0000+ 6	5.6597+ 0	4.5315+ 0	1.1288+ 0				0.0000+ 0		1.1709- 3	0.0000+ 0		0.0000+ 0	3.1726- 1
2.0000+ 6 ~ 3.0000+ 6	7.0901+ 0	5.2497+ 0	1.8402+ 0				0.0000+ 0		8.1496- 4	0.0000+ 0		0.0000+ 0	4.9946- 1
3.0000+ 6 ~ 4.0000+ 6	7.7470+ 0	5.5107+ 0	2.2353+ 0				0.0000+ 0		7.7755- 4	0.0000+ 0		0.0000+ 0	6.8101- 1
4.0000+ 6 ~ 5.0000+ 6	7.4489+ 0	5.0868+ 0	2.3611+ 0				0.0000+ 0		7.6662- 4	0.0000+ 0		0.0000+ 0	7.5649- 1
5.0000+ 6 ~ 6.0000+ 6	6.8509+ 0	4.4911+ 0	2.3588+ 0				0.0000+ 0		4.2360- 4	0.0000+ 0		0.0000+ 0	7.6367- 1
6.0000+ 6 ~ 8.0000+ 6	5.9324+ 0	3.5789+ 0	2.3526+ 0				0.0000+ 0		1.6705- 4	2.6375- 6		3.5375- 6	7.3710- 1
8.0000+ 6 ~ 1.0000+ 7	5.2511+ 0	2.8437+ 0	2.3895+ 0	1.7451- 2			0.0000+ 0	0.0000+ 0	7.1132- 5	6.5375- 5		3.6625- 5	7.1446- 1
1.0000+ 7 ~ 1.5000+ 7	5.1802+ 0	2.7329+ 0	9.4453- 1	1.5039+ 0	2.4008- 7		5.0497- 5	3.1138- 6	1.0725- 5	1.1983- 3		1.1047- 3	7.9395- 1
1.5000+ 7 ~ 2.0000+ 7	5.7585+ 0	3.2242+ 0	8.6655- 1	1.5800+ 0	5.9028- 2		1.0170- 2	1.8927- 3	1.1830- 7	4.9045- 3		1.2082- 2	9.0021- 1

CROSS SECTION

MATERIAL =2823

PB-207

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 6 ~ 1.0000- 2	1.9536+ 1	1.1341+ 1					0.0000+ 0		2.1752+ 0			0.0000+ 0	3.8207- 3
1.0000- 2 ~ 1.5000- 2	1.2367+ 1	1.1341+ 1					0.0000+ 0		1.0088+ 0			0.0000+ 0	3.9377- 3
1.5000- 2 ~ 2.0000- 2	1.2197+ 1	1.1341+ 1					0.0000+ 0		8.4922- 1			0.0000+ 0	3.9705- 3
2.0000- 2 ~ 3.0000- 2	1.2061+ 1	1.1341+ 1					0.0000+ 0		7.1403- 1			0.0000+ 0	4.0047- 3
3.0000- 2 ~ 4.0000- 2	1.1974+ 1	1.1341+ 1					0.0000+ 0		6.0052- 1			0.0000+ 0	4.0375- 3
4.0000- 2 ~ 5.0000- 2	1.1905+ 1	1.1341+ 1					0.0000+ 0		5.3045- 1			0.0000+ 0	4.0619- 3
5.0000- 2 ~ 6.0000- 2	1.1838+ 1	1.1341+ 1					0.0000+ 0		4.7885- 1			0.0000+ 0	4.0814- 3
6.0000- 2 ~ 8.0000- 2	1.1770+ 1	1.1341+ 1					0.0000+ 0		4.2487- 1			0.0000+ 0	4.1046- 3
8.0000- 2 ~ 1.0000- 1	1.1719+ 1	1.1341+ 1					0.0000+ 0		3.7493- 1			0.0000+ 0	4.1290- 3
1.0000- 1 ~ 1.5000- 1	1.1675+ 1	1.1341+ 1					0.0000+ 0		3.1846- 1			0.0000+ 0	4.1603- 3
1.5000- 1 ~ 2.0000- 1	1.1639+ 1	1.1341+ 1					0.0000+ 0		2.6891- 1			0.0000+ 0	4.1931- 3
2.0000- 1 ~ 3.0000- 1	1.1587+ 1	1.1341+ 1					0.0000+ 0		2.2528- 1			0.0000+ 0	4.2273- 3
3.0000- 1 ~ 4.0000- 1	1.1533+ 1	1.1341+ 1					0.0000+ 0		1.9029- 1			0.0000+ 0	4.2601- 3
4.0000- 1 ~ 5.0000- 1	1.1511+ 1	1.1341+ 1					0.0000+ 0		1.6738- 1			0.0000+ 0	4.2846- 3
5.0000- 1 ~ 6.0000- 1	1.1493+ 1	1.1341+ 1					0.0000+ 0		1.5121- 1			0.0000+ 0	4.3040- 3
6.0000- 1 ~ 8.0000- 1	1.1479+ 1	1.1341+ 1					0.0000+ 0		1.3461- 1			0.0000+ 0	4.3271- 3
8.0000- 1 ~ 1.0000+ 0	1.1461+ 1	1.1341+ 1					0.0000+ 0		1.1836- 1			0.0000+ 0	4.3516- 3
1.0000+ 0 ~ 1.5000+ 0	1.1450+ 1	1.1341+ 1					0.0000+ 0		1.0092- 1			0.0000+ 0	4.3829- 3
1.5000+ 0 ~ 2.0000+ 0	1.1444+ 1	1.1341+ 1					0.0000+ 0		8.4964- 2			0.0000+ 0	4.4157- 3
2.0000+ 0 ~ 3.0000+ 0	1.1437+ 1	1.1341+ 1					0.0000+ 0		7.1389- 2			0.0000+ 0	4.4499- 3
3.0000+ 0 ~ 4.0000+ 0	1.1428+ 1	1.1341+ 1					0.0000+ 0		6.0085- 2			0.0000+ 0	4.4827- 3
4.0000+ 0 ~ 5.0000+ 0	1.1420+ 1	1.1341+ 1					0.0000+ 0		5.2959- 2			0.0000+ 0	4.5072- 3
5.0000+ 0 ~ 6.0000+ 0	1.1412+ 1	1.1341+ 1					0.0000+ 0		4.8005- 2			0.0000+ 0	4.5266- 3
6.0000+ 0 ~ 8.0000+ 0	1.1400+ 1	1.1341+ 1					0.0000+ 0		4.2469- 2			0.0000+ 0	4.5497- 3
8.0000+ 0 ~ 1.0000+ 1	1.1384+ 1	1.1341+ 1					0.0000+ 0		3.7395- 2			0.0000+ 0	4.5742- 3
1.0000+ 1 ~ 1.5000+ 1	1.1375+ 1	1.1341+ 1					0.0000+ 0		3.1879- 2			0.0000+ 0	4.6055- 3
1.5000+ 1 ~ 2.0000+ 1	1.1373+ 1	1.1341+ 1					0.0000+ 0		2.6878- 2			0.0000+ 0	4.6383- 3
2.0000+ 1 ~ 3.0000+ 1	1.1371+ 1	1.1340+ 1					0.0000+ 0		2.2674- 2			0.0000+ 0	4.6725- 3
3.0000+ 1 ~ 4.0000+ 1	1.1368+ 1	1.1340+ 1					0.0000+ 0		1.9007- 2			0.0000+ 0	4.7053- 3
4.0000+ 1 ~ 5.0000+ 1	1.1365+ 1	1.1340+ 1					0.0000+ 0		1.6779- 2			0.0000+ 0	4.7298- 3
5.0000+ 1 ~ 6.0000+ 1	1.1362+ 1	1.1340+ 1					0.0000+ 0		1.5149- 2			0.0000+ 0	4.7492- 3
6.0000+ 1 ~ 8.0000+ 1	1.1358+ 1	1.1340+ 1					0.0000+ 0		1.3442- 2			0.0000+ 0	4.7724- 3
8.0000+ 1 ~ 1.0000+ 2	1.1353+ 1	1.1339+ 1					0.0000+ 0		1.1864- 2			0.0000+ 0	4.7968- 3
1.0000+ 2 ~ 1.5000+ 2	1.1349+ 1	1.1338+ 1					0.0000+ 0		1.0079- 2			0.0000+ 0	4.8281- 3
1.5000+ 2 ~ 2.0000+ 2	1.1348+ 1	1.1337+ 1					0.0000+ 0		8.5238- 3			0.0000+ 0	4.8609- 3
2.0000+ 2 ~ 3.0000+ 2	1.1346+ 1	1.1336+ 1					0.0000+ 0		7.1349- 3			0.0000+ 0	4.8951- 3
3.0000+ 2 ~ 4.0000+ 2	1.1343+ 1	1.1334+ 1					0.0000+ 0		6.0321- 3			0.0000+ 0	4.9280- 3
4.0000+ 2 ~ 5.0000+ 2	1.1340+ 1	1.1332+ 1					0.0000+ 0		5.3063- 3			0.0000+ 0	4.9524- 3
5.0000+ 2 ~ 6.0000+ 2	1.1337+ 1	1.1330+ 1					0.0000+ 0		4.7959- 3			0.0000+ 0	4.9719- 3
6.0000+ 2 ~ 8.0000+ 2	1.1333+ 1	1.1327+ 1					0.0000+ 0		4.2725- 3			0.0000+ 0	4.9960- 3
8.0000+ 2 ~ 1.0000+ 3	1.1327+ 1	1.1323+ 1					0.0000+ 0		3.7595- 3			0.0000+ 0	5.0194- 3
1.0000+ 3 ~ 1.5000+ 3	1.1289+ 1	1.1285+ 1					0.0000+ 0		3.2113- 3			0.0000+ 0	5.0507- 3
1.5000+ 3 ~ 2.0000+ 3	1.1218+ 1	1.1215+ 1					0.0000+ 0		2.7107- 3			0.0000+ 0	5.0836- 3
2.0000+ 3 ~ 3.0000+ 3	1.1112+ 1	1.1109+ 1					0.0000+ 0		2.3065- 3			0.0000+ 0	5.1177- 3
3.0000+ 3 ~ 4.0000+ 3	1.1172+ 1	1.1102+ 1					0.0000+ 0		6.9393- 2			0.0000+ 0	5.1506- 3
4.0000+ 3 ~ 5.0000+ 3	1.0827+ 1	1.0824+ 1					0.0000+ 0		1.7178- 3			0.0000+ 0	5.1750- 3
5.0000+ 3 ~ 6.0000+ 3	1.0684+ 1	1.0681+ 1					0.0000+ 0		1.5634- 3			0.0000+ 0	5.4947- 3
6.0000+ 3 ~ 8.0000+ 3	1.0469+ 1	1.0467+ 1					0.0000+ 0		1.4116- 3			0.0000+ 0	6.2820- 3
8.0000+ 3 ~ 1.0000+ 4	1.0270+ 1	1.0268+ 1					0.0000+ 0		1.6176- 3			0.0000+ 0	7.1140- 3
1.0000+ 4 ~ 1.5000+ 4	1.3029+ 1	1.3018+ 1					0.0000+ 0		1.0270- 2			0.0000+ 0	1.0053- 2
1.5000+ 4 ~ 2.0000+ 4	1.2160+ 1	1.2145+ 1					0.0000+ 0		1.4497- 2			0.0000+ 0	1.4112- 2
2.0000+ 4 ~ 3.0000+ 4	7.2155+ 0	7.2095+ 0					0.0000+ 0		5.9188- 3			0.0000+ 0	1.8334- 2
3.0000+ 4 ~ 4.0000+ 4	4.7694+ 0	4.7509+ 0					0.0000+ 0		1.8471- 2			0.0000+ 0	2.2393- 2
4.0000+ 4 ~ 5.0000+ 4	1.6467+ 1	1.6432+ 1					0.0000+ 0		3.4413- 2			0.0000+ 0	2.5412- 2
5.0000+ 4 ~ 6.0000+ 4	9.2891+ 0	9.2882+ 0					0.0000+ 0		8.9769- 4			0.0000+ 0	2.9734- 2
6.0000+ 4 ~ 8.0000+ 4	9.7066+ 0	9.7043+ 0					0.0000+ 0		2.3025- 3			0.0000+ 0	3.7469- 2
8.0000+ 4 ~ 1.0000+ 5	1.0381+ 1	1.0373+ 1					0.0000+ 0		8.2911- 3			0.0000+ 0	4.6643- 2
1.0000+ 5 ~ 1.5000+ 5	8.7474+ 0	8.7402+ 0					0.0000+ 0		7.2884- 3			0.0000+ 0	6.0520- 2
1.5000+ 5 ~ 2.0000+ 5	7.6853+ 0	7.6767+ 0					0.0000+ 0		8.6076- 3			0.0000+ 0	7.8425- 2
2.0000+ 5 ~ 3.0000+ 5	7.4971+ 0	7.4925+ 0					0.0000+ 0		4.6020- 3			0.0000+ 0	9.9990- 2
3.0000+ 5 ~ 4.0000+ 5	6.5354+ 0	6.5333+ 0					0.0000+ 0		2.1514- 3			0.0000+ 0	1.2292- 1
4.0000+ 5 ~ 5.0000+ 5	6.6830+ 0	6.6805+ 0					0.0000+ 0		2.5252- 3			0.0000+ 0	1.4008- 1
5.0000+ 5 ~ 6.0000+ 5	6.2042+ 0	6.1897+ 0	1.3298- 2				0.0000+ 0		1.0811- 3			0.0000+ 0	1.5358- 1
6.0000+ 5 ~ 8.0000+ 5	5.4819+ 0	5.2705+ 0	2.0915- 1				0.0000+ 0		6.7188- 4			0.0000+ 0	1.7451- 1
8.0000+ 5 ~ 1.0000+ 6	4.9323+ 0	4.5378+ 0	3.9303- 1				0.0000+ 0		5.3160- 4	0.0000+ 0		0.0000+ 0	1.9765- 1
1.0000+ 6 ~ 1.5000+ 6	4.9890+ 0	4.2528+ 0	7.1780- 1				0.0000+ 0		5.1284- 4	0.0000+ 0		0.0000+ 0	2.3795- 1
1.5000+ 6 ~ 2.0000+ 6	6.6784+ 0	4.6248+ 0	1.0569+ 0				0.0000+ 0		5.4267- 4	0.0000+ 0		0.0000+ 0	3.0444- 1
2.0000+ 6 ~ 3.0000+ 6	7.1174+ 0	5.3479+ 0	1.7704+ 0				0.0000+ 0		5.9580- 4	0.0000+ 0		0.0000+ 0	4.9109- 1
3.0000+ 6 ~ 4.0000+ 6	7.7596+ 0	5.5501+ 0	2.2090+ 0				0.0000+ 0		6.2869- 4	0.0000+ 0		0.0000+ 0	6.7894- 1
4.0000+ 6 ~ 5.0000+ 6	7.4798+ 0	5.1938+ 0	2.2849+ 0				0.0000+ 0		4.9296- 4	0.0000+ 0		0.0000+ 0	7.4461- 1
5.0000+ 6 ~ 6.0000+ 6	6.8863+ 0	4.5396+ 0	2.3459+ 0				0.0000+ 0		1.7863- 4	0.0000+ 0		1.8500- 8	7.6218- 1
6.0000+ 6 ~ 8.0000+ 6	5.9681+ 0	3.6121+ 0	2.3552+ 0	7.7000- 6			0.0000+ 0		6.2605- 5	8.8250- 7		5.7962- 7	7.3829- 1
8.0000+ 6 ~ 1.0000+ 7	5.2753+ 0	2.8624+ 0	2.2463+ 0	1.6563- 1			0.0000+ 0	0.0000+ 0	2.7064- 5	3.1313- 5		7.5000- 6	7.1593- 1
1.0000+ 7 ~ 1.5000+ 7	5.1894+ 0	2.7332+ 0	9.1336- 1	1.5434+ 0	4.4252- 6		3.7210- 5	6.2207- 5	4.3383- 6	7.8485- 4		2.3604- 4	7.9366- 1
1.5000+ 7 ~ 2.0000+ 7	5.7642+ 0	3.2237+ 0	6.9168- 1	1.5241+ 0	3.1334- 1		3.5550- 3	4.4838- 3	5.3725- 8	1.5638- 3		1.7708- 3	8.9987- 1

CROSS SECTION

MATERIAL =2824 PB-208

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.1494+ 1	1.1499+ 1					0.0000+ 0		1.4861- 3			0.0000+ 0	3.7783- 3
1.0000- 2 ~ 1.5000- 2	1.1493+ 1	1.1493+ 1					0.0000+ 0		6.8952- 4			0.0000+ 0	3.8897- 3
1.5000- 2 ~ 2.0000- 2	1.1493+ 1	1.1493+ 1					0.0000+ 0		5.7976- 4			0.0000+ 0	3.9210- 3
2.0000- 2 ~ 3.0000- 2	1.1493+ 1	1.1493+ 1					0.0000+ 0		4.8815- 4			0.0000+ 0	3.9536- 3
3.0000- 2 ~ 4.0000- 2	1.1493+ 1	1.1493+ 1					0.0000+ 0		4.1107- 4			0.0000+ 0	3.9849- 3
4.0000- 2 ~ 5.0000- 2	1.1493+ 1	1.1493+ 1					0.0000+ 0		3.6142- 4			0.0000+ 0	4.0082- 3
5.0000- 2 ~ 6.0000- 2	1.1493+ 1	1.1493+ 1					0.0000+ 0		3.2643- 4			0.0000+ 0	4.0267- 3
6.0000- 2 ~ 8.0000- 2	1.1493+ 1	1.1493+ 1					0.0000+ 0		2.9042- 4			0.0000+ 0	4.0487- 3
8.0000- 2 ~ 1.0000- 1	1.1493+ 1	1.1493+ 1					0.0000+ 0		2.5549- 4			0.0000+ 0	4.0720- 3
1.0000- 1 ~ 1.5000- 1	1.1493+ 1	1.1493+ 1					0.0000+ 0		2.1822- 4			0.0000+ 0	4.1019- 3
1.5000- 1 ~ 2.0000- 1	1.1493+ 1	1.1493+ 1					0.0000+ 0		1.8355- 4			0.0000+ 0	4.1332- 3
2.0000- 1 ~ 3.0000- 1	1.1493+ 1	1.1493+ 1					0.0000+ 0		1.5395- 4			0.0000+ 0	4.1657- 3
3.0000- 1 ~ 4.0000- 1	1.1493+ 1	1.1493+ 1					0.0000+ 0		1.2971- 4			0.0000+ 0	4.1970- 3
4.0000- 1 ~ 5.0000- 1	1.1493+ 1	1.1493+ 1					0.0000+ 0		1.1422- 4			0.0000+ 0	4.2203- 3
5.0000- 1 ~ 6.0000- 1	1.1493+ 1	1.1493+ 1					0.0000+ 0		1.0366- 4			0.0000+ 0	4.2369- 3
6.0000- 1 ~ 8.0000- 1	1.1493+ 1	1.1493+ 1					0.0000+ 0		9.1709- 5			0.0000+ 0	4.2609- 3
8.0000- 1 ~ 1.0000+ 0	1.1493+ 1	1.1493+ 1					0.0000+ 0		8.0820- 5			0.0000+ 0	4.2842- 3
1.0000+ 0 ~ 1.5000+ 0	1.1493+ 1	1.1493+ 1					0.0000+ 0		6.8920- 5			0.0000+ 0	4.3140- 3
1.5000+ 0 ~ 2.0000+ 0	1.1493+ 1	1.1493+ 1					0.0000+ 0		5.8022- 5			0.0000+ 0	4.3453- 3
2.0000+ 0 ~ 3.0000+ 0	1.1493+ 1	1.1493+ 1					0.0000+ 0		4.8737- 5			0.0000+ 0	4.3779- 3
3.0000+ 0 ~ 4.0000+ 0	1.1493+ 1	1.1493+ 1					0.0000+ 0		4.1043- 5			0.0000+ 0	4.4092- 3
4.0000+ 0 ~ 5.0000+ 0	1.1493+ 1	1.1493+ 1					0.0000+ 0		3.6229- 5			0.0000+ 0	4.4325- 3
5.0000+ 0 ~ 6.0000+ 0	1.1493+ 1	1.1493+ 1					0.0000+ 0		3.2710- 5			0.0000+ 0	4.4511- 3
6.0000+ 0 ~ 8.0000+ 0	1.1493+ 1	1.1493+ 1					0.0000+ 0		2.9035- 5			0.0000+ 0	4.4731- 3
8.0000+ 0 ~ 1.0000+ 1	1.1493+ 1	1.1493+ 1					0.0000+ 0		2.5629- 5			0.0000+ 0	4.4964- 3
1.0000+ 1 ~ 1.5000+ 1	1.1493+ 1	1.1493+ 1					0.0000+ 0		2.1786- 5			0.0000+ 0	4.5262- 3
1.5000+ 1 ~ 2.0000+ 1	1.1492+ 1	1.1492+ 1					0.0000+ 0		1.8418- 5			0.0000+ 0	4.5575- 3
2.0000+ 1 ~ 3.0000+ 1	1.1492+ 1	1.1492+ 1					0.0000+ 0		1.5424- 5			0.0000+ 0	4.5901- 3
3.0000+ 1 ~ 4.0000+ 1	1.1492+ 1	1.1492+ 1					0.0000+ 0		1.3046- 5			0.0000+ 0	4.6214- 3
4.0000+ 1 ~ 5.0000+ 1	1.1491+ 1	1.1491+ 1					0.0000+ 0		1.1483- 5			0.0000+ 0	4.6447- 3
5.0000+ 1 ~ 6.0000+ 1	1.1491+ 1	1.1491+ 1					0.0000+ 0		1.0385- 5			0.0000+ 0	4.6632- 3
6.0000+ 1 ~ 8.0000+ 1	1.1490+ 1	1.1490+ 1					0.0000+ 0		9.2574- 6			0.0000+ 0	4.6853- 3
8.0000+ 1 ~ 1.0000+ 2	1.1490+ 1	1.1490+ 1					0.0000+ 0		8.1560- 6			0.0000+ 0	4.7086- 3
1.0000+ 2 ~ 1.5000+ 2	1.1488+ 1	1.1488+ 1					0.0000+ 0		6.9790- 6			0.0000+ 0	4.7384- 3
1.5000+ 2 ~ 2.0000+ 2	1.1486+ 1	1.1486+ 1					0.0000+ 0		5.9027- 6			0.0000+ 0	4.7697- 3
2.0000+ 2 ~ 3.0000+ 2	1.1484+ 1	1.1484+ 1					0.0000+ 0		4.9959- 6			0.0000+ 0	4.8022- 3
3.0000+ 2 ~ 4.0000+ 2	1.1480+ 1	1.1480+ 1					0.0000+ 0		4.2463- 6			0.0000+ 0	4.8336- 3
4.0000+ 2 ~ 5.0000+ 2	1.1476+ 1	1.1476+ 1					0.0000+ 0		3.7789- 6			0.0000+ 0	4.8568- 3
5.0000+ 2 ~ 6.0000+ 2	1.1472+ 1	1.1472+ 1					0.0000+ 0		3.4601- 6			0.0000+ 0	4.8754- 3
6.0000+ 2 ~ 8.0000+ 2	1.1467+ 1	1.1467+ 1					0.0000+ 0		3.1061- 6			0.0000+ 0	4.8974- 3
8.0000+ 2 ~ 1.0000+ 3	1.1459+ 1	1.1459+ 1					0.0000+ 0		2.7902- 6			0.0000+ 0	4.9207- 3
1.0000+ 3 ~ 1.5000+ 3	1.1446+ 1	1.1446+ 1					0.0000+ 0		2.4572- 6			0.0000+ 0	4.9505- 3
1.5000+ 3 ~ 2.0000+ 3	1.1427+ 1	1.1427+ 1					0.0000+ 0		2.1664- 6			0.0000+ 0	4.9819- 3
2.0000+ 3 ~ 3.0000+ 3	1.1399+ 1	1.1399+ 1					0.0000+ 0		1.9441- 6			0.0000+ 0	5.0144- 3
3.0000+ 3 ~ 4.0000+ 3	1.1362+ 1	1.1362+ 1					0.0000+ 0		1.7843- 6			0.0000+ 0	5.0457- 3
4.0000+ 3 ~ 5.0000+ 3	1.1325+ 1	1.1325+ 1					0.0000+ 0		1.7101- 6			0.0000+ 0	5.0690- 3
5.0000+ 3 ~ 6.0000+ 3	1.1287+ 1	1.1287+ 1					0.0000+ 0		1.6795- 6			0.0000+ 0	5.3744- 3
6.0000+ 3 ~ 8.0000+ 3	1.1231+ 1	1.1231+ 1					0.0000+ 0		1.6662- 6			0.0000+ 0	6.1265- 3
8.0000+ 3 ~ 1.0000+ 4	1.1156+ 1	1.1156+ 1					0.0000+ 0		1.6941- 6			0.0000+ 0	6.9213- 3
1.0000+ 4 ~ 1.5000+ 4	1.1026+ 1	1.1026+ 1					0.0000+ 0		1.8310- 6			0.0000+ 0	9.7568- 3
1.5000+ 4 ~ 2.0000+ 4	1.0839+ 1	1.0839+ 1					0.0000+ 0		2.1181- 6			0.0000+ 0	1.3679- 2
2.0000+ 4 ~ 3.0000+ 4	1.0559+ 1	1.0559+ 1					0.0000+ 0		2.8050- 6			0.0000+ 0	1.7757- 2
3.0000+ 4 ~ 4.0000+ 4	1.0186+ 1	1.0186+ 1					0.0000+ 0		4.3693- 6			0.0000+ 0	2.1679- 2
4.0000+ 4 ~ 5.0000+ 4	9.8999+ 0	9.8999+ 0					0.0000+ 0		7.6835- 6			0.0000+ 0	2.4695- 2
5.0000+ 4 ~ 6.0000+ 4	9.7125+ 0	9.7125+ 0					0.0000+ 0		1.6569- 5			0.0000+ 0	2.8817- 2
6.0000+ 4 ~ 8.0000+ 4	1.4120+ 1	1.4118+ 1					0.0000+ 0		2.5753- 3			0.0000+ 0	3.5409- 2
8.0000+ 4 ~ 1.0000+ 5	9.9411+ 0	9.9408+ 0					0.0000+ 0		2.9839- 4			0.0000+ 0	4.4431- 2
1.0000+ 5 ~ 1.5000+ 5	9.0033+ 0	9.0010+ 0					0.0000+ 0		2.2699- 3			0.0000+ 0	5.9240- 2
1.5000+ 5 ~ 2.0000+ 5	8.0074+ 0	8.0067+ 0					0.0000+ 0		6.9025- 4			0.0000+ 0	7.7139- 2
2.0000+ 5 ~ 3.0000+ 5	7.1553+ 0	7.1553+ 0					0.0000+ 0		5.6585- 5			0.0000+ 0	9.8949- 2
3.0000+ 5 ~ 4.0000+ 5	6.9861+ 0	6.9858+ 0					0.0000+ 0		3.0138- 4			0.0000+ 0	1.2235- 1
4.0000+ 5 ~ 5.0000+ 5	4.0786+ 0	4.0785+ 0					0.0000+ 0		8.9905- 5			0.0000+ 0	1.3991- 1
5.0000+ 5 ~ 6.0000+ 5	5.7943+ 0	5.7938+ 0					0.0000+ 0		4.3684- 4			0.0000+ 0	1.5317- 1
6.0000+ 5 ~ 8.0000+ 5	5.1629+ 0	5.1622+ 0					0.0000+ 0		7.1827- 4			0.0000+ 0	1.6722- 1
8.0000+ 5 ~ 1.0000+ 6	4.9208+ 0	4.9165+ 0					0.0000+ 0		4.2230- 3			0.0000+ 0	1.7982- 1
1.0000+ 6 ~ 1.5000+ 6	4.9604+ 0	4.9569+ 0					0.0000+ 0		3.4644- 3			0.0000+ 0	1.9802- 1
1.5000+ 6 ~ 2.0000+ 6	5.7078+ 0	5.7052+ 0					0.0000+ 0		2.4426- 3			0.0000+ 0	2.4654- 1
2.0000+ 6 ~ 3.0000+ 6	7.1042+ 0	7.0245+ 0	7.8740- 2				0.0000+ 0		1.3262- 3			0.0000+ 0	3.7123- 1
3.0000+ 6 ~ 4.0000+ 6	7.7464+ 0	6.9593+ 0	7.8628- 1				0.0000+ 0		6.2661- 4			0.0000+ 0	5.4292- 1
4.0000+ 6 ~ 5.0000+ 6	7.4969+ 0	5.8666+ 0	1.6261+ 0				0.0000+ 0		4.8992- 4			0.0000+ 0	6.6668- 1
5.0000+ 6 ~ 6.0000+ 6	6.9083+ 0	4.6210+ 0	2.2853+ 0				0.0000+ 0		5.5000- 4	0.0000+ 0		0.0000+ 0	7.5564- 1
6.0000+ 6 ~ 8.0000+ 6	5.9997+ 0	3.6438+ 0	2.3544+ 0				0.0000+ 0		8.0511- 4	0.0000+ 0		5.2500- 8	7.3978- 1
8.0000+ 6 ~ 1.0000+ 7	5.2986+ 0	2.8810+ 0	2.4009+ 0	1.4794- 2			0.0000+ 0		1.5612- 3	1.5287- 7		4.3112- 6	7.1749- 1
1.0000+ 7 ~ 1.5000+ 7	5.2026+ 0	2.7338+ 0	9.6452- 1	1.5044+ 0			2.2135- 4	1.6050- 6	1.4689- 3	1.5648- 4		5.6149- 4	7.9338- 1
1.5000+ 7 ~ 2.0000+ 7	5.7676+ 0	3.2231+ 0	6.1010- 1	1.7893+ 0	1.0083- 1		2.3969- 2	4.6279- 3	6.1531- 4	1.6625- 3		1.3560- 2	8.9952- 1

CROSS SECTION

MATERIAL =2901 TM-228

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	3.8305+ 2	1.2825+ 1				9.2820- 1			3.6929+ 2				4.5945- 3
1.0000- 2 ~ 1.5000- 2	1.8499+ 2	1.2818+ 1				4.3100- 1			1.7174+ 2				4.8310- 3
1.5000- 2 ~ 2.0000- 2	1.5773+ 2	1.2813+ 1				3.6240- 1			1.4465+ 2				5.0265- 3
2.0000- 2 ~ 3.0000- 2	1.3493+ 2	1.2806+ 1				3.0489- 1			1.2180+ 2				5.1238- 3
3.0000- 2 ~ 4.0000- 2	1.1576+ 2	1.2795+ 1				2.5640- 1			1.0266+ 2				5.2184- 3
4.0000- 2 ~ 5.0000- 2	1.0403+ 2	1.2785+ 1				2.2684- 1			9.1035+ 1				5.2887- 3
5.0000- 2 ~ 6.0000- 2	9.5240+ 1	1.2775+ 1				2.0441- 1			8.2227+ 1				5.3447- 3
6.0000- 2 ~ 8.0000- 2	8.6178+ 1	1.2760+ 1				1.8138- 1			7.3221+ 1				5.4112- 3
8.0000- 2 ~ 1.0000- 1	7.7810+ 1	1.2739+ 1				1.6012- 1			6.4945+ 1				5.4815- 3
1.0000- 1 ~ 1.5000- 1	6.8555+ 1	1.2701+ 1				1.3615- 1			5.5703+ 1				5.5716- 3
1.5000- 1 ~ 2.0000- 1	6.0329+ 1	1.2646+ 1				1.1529- 1			4.7786+ 1				5.6662- 3
2.0000- 1 ~ 3.0000- 1	5.3417+ 1	1.2554+ 1				9.6261- 2			4.0773+ 1				5.7645- 3
3.0000- 1 ~ 4.0000- 1	4.7974+ 1	1.2420+ 1				8.1019- 2			3.5474+ 1				5.8590- 3
4.0000- 1 ~ 5.0000- 1	4.4922+ 1	1.2268+ 1				7.1675- 2			3.2569+ 1				5.9293- 3
5.0000- 1 ~ 6.0000- 1	4.2932+ 1	1.2097+ 1				6.4608- 2			3.0775+ 1				5.9853- 3
6.0000- 1 ~ 8.0000- 1	4.1584+ 1	1.1786+ 1				5.7272- 2			2.9735+ 1				6.0518- 3
8.0000- 1 ~ 1.0000+ 0	4.2053+ 1	1.1244+ 1				5.0415- 2			3.0688+ 1				6.1221- 3
1.0000+ 0 ~ 1.5000+ 0	5.6638+ 1	9.4064+ 0				4.2897- 2			4.7158+ 1				6.2122- 3
1.5000+ 0 ~ 2.0000+ 0	3.2031+ 3	7.2965+ 1				3.6159- 2			3.1300+ 3				6.3068- 3
2.0000+ 0 ~ 3.0000+ 0	1.1392+ 2	2.4557+ 1				3.0329- 2			8.9305+ 1				6.4051- 3
3.0000+ 0 ~ 4.0000+ 0	2.8545+ 1	1.6670+ 1				2.5570- 2			1.1810+ 1				6.4996- 3
4.0000+ 0 ~ 5.0000+ 0	2.4584+ 1	1.5481+ 1				2.2527- 2			9.0598+ 0				6.5699- 3
5.0000+ 0 ~ 6.0000+ 0	2.3640+ 1	1.4624+ 1				2.0365- 2			8.9824+ 0				6.6259- 3
6.0000+ 0 ~ 8.0000+ 0	3.5281+ 2	2.6782+ 1				1.8078- 2			3.2598+ 2				6.6925- 3
8.0000+ 0 ~ 1.0000+ 1	2.0573+ 2	9.5502+ 1				1.5927- 2			1.1017+ 2				6.7628- 3
1.0000+ 1 ~ 1.5000+ 1	1.7702+ 2	8.8623+ 1				1.3562- 2			8.8254+ 1				6.8529- 3
1.5000+ 1 ~ 2.0000+ 1	1.5112+ 2	8.1658+ 1				1.1433- 2			6.9392+ 1				6.9474- 3
2.0000+ 1 ~ 3.0000+ 1	1.2872+ 2	7.4711+ 1				9.5896- 3			5.3910+ 1				7.0457- 3
3.0000+ 1 ~ 4.0000+ 1	1.1041+ 2	6.8384+ 1				8.0843- 3			4.1973+ 1				7.1402- 3
4.0000+ 1 ~ 5.0000+ 1	9.8728+ 1	6.3905+ 1				7.1224- 3			3.4741+ 1				7.2105- 3
5.0000+ 1 ~ 6.0000+ 1	9.0412+ 1	6.0504+ 1				6.4389- 3			2.9841+ 1				7.2666- 3
6.0000+ 1 ~ 8.0000+ 1	8.1611+ 1	5.6671+ 1				5.7163- 3			2.4906+ 1				7.3331- 3
8.0000+ 1 ~ 1.0000+ 2	7.3333+ 1	5.2828+ 1				5.0361- 3			2.0485+ 1				7.4034- 3
1.0000+ 2 ~ 1.5000+ 2	6.4262+ 1	4.8269+ 1				4.2684- 3			1.5946+ 1				7.4935- 3
1.5000+ 2 ~ 2.0000+ 2	5.6042+ 1	4.3872+ 1				3.6152- 3			1.2149+ 1				7.5880- 3
2.0000+ 2 ~ 3.0000+ 2	4.8966+ 1	3.9783+ 1				3.0322- 3			9.1728+ 0				7.6863- 3
3.0000+ 2 ~ 4.0000+ 2	4.3172+ 1	3.6191+ 1				2.6663- 3			6.9662+ 0				7.7809- 3
4.0000+ 2 ~ 5.0000+ 2	3.9471+ 1	3.3793+ 1				2.2521- 3			5.6699+ 0				7.8512- 3
5.0000+ 2 ~ 6.0000+ 2	3.6836+ 1	3.2018+ 1				2.0360- 3			4.8124+ 0				7.9072- 3
6.0000+ 2 ~ 8.0000+ 2	3.4052+ 1	3.0073+ 1				1.8075- 3			3.9703+ 0				7.9737- 3
8.0000+ 2 ~ 1.0000+ 3	3.1423+ 1	2.8181+ 1				1.5925- 3			3.2366+ 0				8.0440- 3
1.0000+ 3 ~ 1.5000+ 3	2.8551+ 1	2.6025+ 1				1.3560- 3			2.5152+ 0				8.1341- 3
1.5000+ 3 ~ 2.0000+ 3	2.5935+ 1	2.3996+ 1				1.1432- 3			1.9345+ 0				8.2286- 3
2.0000+ 3 ~ 3.0000+ 3	2.3766+ 1	2.2236+ 1				5.3330- 4			1.5257+ 0				8.3270- 3
3.0000+ 3 ~ 4.0000+ 3	2.1965+ 1	2.0732+ 1				0.0000+ 0			1.2310+ 0				8.4215- 3
4.0000+ 3 ~ 5.0000+ 3	2.0737+ 1	1.9681+ 1				0.0000+ 0			1.0499+ 0				8.4918- 3
5.0000+ 3 ~ 6.0000+ 3	1.9810+ 1	1.8882+ 1				0.0000+ 0			9.2496- 1				8.5478- 3
6.0000+ 3 ~ 8.0000+ 3	1.8858+ 1	1.8045+ 1				0.0000+ 0			8.1288- 1				9.7424- 3
8.0000+ 3 ~ 1.0000+ 4	1.7980+ 1	1.7258+ 1				0.0000+ 0			7.2125- 1				1.1992- 2
1.0000+ 4 ~ 1.5000+ 4	1.6996+ 1	1.6367+ 1				0.0000+ 0			6.2852- 1				1.6211- 2
1.5000+ 4 ~ 2.0000+ 4	1.6065+ 1	1.5518+ 1				0.0000+ 0			5.4665- 1				2.2029- 2
2.0000+ 4 ~ 3.0000+ 4	1.5205+ 1	1.4729+ 1				0.0000+ 0			4.7561- 1				3.1096- 2
3.0000+ 4 ~ 4.0000+ 4	1.4433+ 1	1.4016+ 1				0.0000+ 0			4.1681- 1				4.2551- 2
4.0000+ 4 ~ 5.0000+ 4	1.3872+ 1	1.3498+ 1				0.0000+ 0			3.7332- 1				5.4176- 2
5.0000+ 4 ~ 6.0000+ 4	1.3428+ 1	1.3087+ 1	3.2127- 3			0.0000+ 0			3.3722- 1				6.4935- 2
6.0000+ 4 ~ 8.0000+ 4	1.2932+ 1	1.2549+ 1	9.7097- 2			0.0000+ 0			2.8382- 1				8.0379- 2
8.0000+ 4 ~ 1.0000+ 5	1.2373+ 1	1.1929+ 1	2.1245- 1			0.0000+ 0			2.3076- 1				9.9975- 2
1.0000+ 5 ~ 1.5000+ 5	1.1609+ 1	1.1058+ 1	3.6065- 1			0.0000+ 0			1.8737- 1				1.3116- 1
1.5000+ 5 ~ 2.0000+ 5	1.0774+ 1	1.0104+ 1	5.1259- 1			0.0000+ 0			1.5681- 1				1.6811- 1
2.0000+ 5 ~ 3.0000+ 5	9.8361+ 0	9.0247+ 0	6.8860- 1			0.0000+ 0			1.3828- 1				2.1171- 1
3.0000+ 5 ~ 4.0000+ 5	8.8629+ 0	7.8699+ 0	8.7308- 1			0.0000+ 0			1.1667- 1				2.5928- 1
4.0000+ 5 ~ 5.0000+ 5	8.2447+ 0	6.9699+ 0	1.1680+ 0			5.0000- 4			1.0124- 1				2.9891- 1
5.0000+ 5 ~ 6.0000+ 5	7.7424+ 0	6.3292+ 0	1.3156+ 0			1.5000- 3			9.4698- 2				3.3068- 1
6.0000+ 5 ~ 8.0000+ 5	7.2591+ 0	5.6912+ 0	1.4632+ 0			1.3500- 2			9.6641- 2				3.6885- 1
8.0000+ 5 ~ 1.0000+ 6	6.8053+ 0	6.1231+ 0	1.5276+ 0			5.2500- 2			1.0189- 1				4.1375- 1
1.0000+ 6 ~ 1.5000+ 6	6.8140+ 0	4.7277+ 0	1.8982+ 0			8.8400- 2			1.0195- 1				4.8598- 1
1.5000+ 6 ~ 2.0000+ 6	7.0974+ 0	4.6462+ 0	2.2359+ 0			1.2040- 1			9.6298- 2				5.7066- 1
2.0000+ 6 ~ 3.0000+ 6	7.5642+ 0	4.8906+ 0	2.4447+ 0			1.6050- 1			5.7879- 2				6.7584- 1
3.0000+ 6 ~ 4.0000+ 6	7.7515+ 0	5.0348+ 0	2.5243+ 0			1.7000- 1			1.9567- 2				7.5985- 1
4.0000+ 6 ~ 5.0000+ 6	7.4673+ 0	4.7714+ 0	2.6147+ 0			1.7000- 1			4.6415- 3				7.8897- 1
5.0000+ 6 ~ 6.0000+ 6	7.0384+ 0	4.3646+ 0	2.4979+ 0			1.7000- 1			9.9295- 4				7.9696- 1
6.0000+ 6 ~ 8.0000+ 6	6.1889+ 0	3.7619+ 0	2.0323+ 0	9.4849- 2		3.2187- 1			1.4228- 4				7.9023- 1
8.0000+ 6 ~ 1.0000+ 7	5.7662+ 0	3.1791+ 0	1.0052+ 0	1.0540+ 0		5.2250- 1			6.1434- 6				7.7687- 1
1.0000+ 7 ~ 1.5000+ 7	5.5583+ 0	3.0614+ 0	1.2692- 1	1.6992+ 0	1.1952- 1	5.4920- 1			7.2028- 8				8.0498- 1
1.5000+ 7 ~ 2.0000+ 7	6.1582+ 0	3.7007+ 0	1.0566- 2	5.0495- 1	1.2618+ 0	6.7980- 1			7.9109-11				8.7740- 1

CROSS SECTION

MATERIAL =2902

TH-230

ENERGY	TOTAL	ELASTIC	INELA	(N.2N)	(N.3N)	FISSION	(N.NA)	(N.NP)	CAPTURE	(N.P)	(N.O)	(N.A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	7.7764+ 1	9.7927+ 0				0.0000+ 0			6.7992+ 1				4.6116- 9
1.0000- 2 ~ 1.5000- 2	4.1686+ 1	9.7859+ 0				0.0000+ 0			3.1900+ 1				4.8569- 3
1.5000- 2 ~ 2.0000- 2	3.6764+ 1	9.7813+ 0				0.0000+ 0			2.6983+ 1				5.0539- 3
2.0000- 2 ~ 3.0000- 2	3.2658+ 1	9.7744+ 0				0.0000+ 0			2.2882+ 1				5.1547- 3
3.0000- 2 ~ 4.0000- 2	2.9252+ 1	9.7661+ 0				0.0000+ 0			1.9484+ 1				5.2517- 3
4.0000- 2 ~ 5.0000- 2	2.7157+ 1	9.7557+ 0				0.0000+ 0			1.7403+ 1				5.3239- 3
5.0000- 2 ~ 6.0000- 2	2.5652+ 1	9.7462+ 0				0.0000+ 0			1.5907+ 1				5.3813- 3
6.0000- 2 ~ 8.0000- 2	2.4126+ 1	9.7316+ 0				0.0000+ 0			1.4394+ 1				5.4496- 3
8.0000- 2 ~ 1.0000- 1	2.2719+ 1	9.7118+ 0				0.0000+ 0			1.3007+ 1				5.5217- 3
1.0000- 1 ~ 1.5000- 1	2.1279+ 1	9.6756+ 0				0.0000+ 0			1.1604+ 1				5.6142- 3
1.5000- 1 ~ 2.0000- 1	2.0063+ 1	9.6211+ 0				0.0000+ 0			1.0443+ 1				5.7111- 3
2.0000- 1 ~ 3.0000- 1	1.9307+ 1	9.5303+ 0				0.0000+ 0			9.7788+ 0				5.8120- 3
3.0000- 1 ~ 4.0000- 1	1.9027+ 1	9.3935+ 0				0.0000+ 0			9.6345+ 0				5.9090- 3
4.0000- 1 ~ 5.0000- 1	1.9352+ 1	9.2317+ 0				0.0000+ 0			1.0120+ 1				5.9811- 3
5.0000- 1 ~ 6.0000- 1	2.0201+ 1	9.0369+ 0				0.0000+ 0			1.1164+ 1				6.0386- 3
6.0000- 1 ~ 8.0000- 1	2.2851+ 1	8.6470+ 0				0.0000+ 0			1.4204+ 1				6.1069- 3
8.0000- 1 ~ 1.0000+ 0	3.1329+ 1	7.8309+ 0				0.0000+ 0			2.3497+ 1				6.1790- 3
1.0000+ 0 ~ 1.5000+ 0	2.0967+ 3	3.3546+ 1				0.0000+ 0			2.0631+ 3				6.2714- 3
1.5000+ 0 ~ 2.0000+ 0	1.3826+ 2	1.9839+ 1				0.0000+ 0			1.1842+ 2				6.3684- 3
2.0000+ 0 ~ 3.0000+ 0	1.7370+ 1	1.2562+ 1				0.0000+ 0			4.8071+ 0				6.4693- 3
3.0000+ 0 ~ 4.0000+ 0	1.2665+ 1	1.1470+ 1				0.0000+ 0			1.1952+ 0				6.5663- 3
4.0000+ 0 ~ 5.0000+ 0	1.1721+ 1	1.1035+ 1				0.0000+ 0			6.8603- 1				6.6384- 3
5.0000+ 0 ~ 6.0000+ 0	1.1265+ 1	1.0733+ 1				0.0000+ 0			5.3199- 1				6.6959- 3
6.0000+ 0 ~ 8.0000+ 0	1.0805+ 1	1.0335+ 1				0.0000+ 0			4.6903- 1				6.7642- 3
8.0000+ 0 ~ 1.0000+ 1	1.0256+ 1	9.7578+ 0				0.0000+ 0			4.9830- 1				6.8363- 3
1.0000+ 1 ~ 1.5000+ 1	9.0272+ 0	7.8836+ 0				0.0000+ 0			1.1434+ 0				6.9287- 3
1.5000+ 1 ~ 2.0000+ 1	5.8514+ 2	1.7719+ 2				0.0000+ 0			4.0795+ 2				7.0257- 3
2.0000+ 1 ~ 3.0000+ 1	1.8388+ 2	5.4836+ 1				0.0000+ 0			1.2904+ 2				7.1266- 3
3.0000+ 1 ~ 4.0000+ 1	1.3093+ 2	3.1459+ 1				0.0000+ 0			9.9474+ 1				7.2236- 3
4.0000+ 1 ~ 5.0000+ 1	1.1808+ 2	4.4065+ 1				0.0000+ 0			7.3999+ 1				7.2957- 3
5.0000+ 1 ~ 6.0000+ 1	1.5293+ 1	1.4984+ 1				0.0000+ 0			3.0852- 1				7.3532- 3
6.0000+ 1 ~ 8.0000+ 1	3.3431+ 1	1.4405+ 1				0.0000+ 0			1.9026+ 1				7.4214- 3
8.0000+ 1 ~ 1.0000+ 2	7.6685+ 1	4.3081+ 1				0.0000+ 0			3.3605+ 1				7.4936- 3
1.0000+ 2 ~ 1.5000+ 2	5.6167+ 1	3.0793+ 1				0.0000+ 0			2.5374+ 1				7.5860- 3
1.6000+ 2 ~ 2.0000+ 2	6.5708+ 1	4.5995+ 1				0.0000+ 0			1.9713+ 1				7.6830- 3
2.0000+ 2 ~ 3.0000+ 2	8.6365+ 1	6.8963+ 1				0.0000+ 0			1.7402+ 1				7.7839- 3
3.0000+ 2 ~ 4.0000+ 2	4.1219+ 1	3.6995+ 1				0.0000+ 0			4.2232+ 0				7.8809- 3
4.0000+ 2 ~ 5.0000+ 2	5.9492+ 1	5.3896+ 1				0.0000+ 0			5.5954+ 0				7.9530- 3
5.0000+ 2 ~ 6.0000+ 2	4.6466+ 1	4.2996+ 1				0.0000+ 0			3.4316+ 0				8.0105- 3
6.0000+ 2 ~ 8.0000+ 2	3.2419+ 1	2.8523+ 1				0.0000+ 0			3.8887+ 0				8.0787- 3
8.0000+ 2 ~ 1.0000+ 3	2.9986+ 1	2.6806+ 1				0.0000+ 0			3.1768+ 0				8.1509- 3
1.0000+ 3 ~ 1.5000+ 3	2.7329+ 1	2.4844+ 1				0.0000+ 0			2.4763+ 0				8.2439- 3
1.5000+ 3 ~ 2.0000+ 3	2.4910+ 1	2.2995+ 1				0.0000+ 0			1.9116+ 0				8.3403- 3
2.0000+ 3 ~ 3.0000+ 3	2.2826+ 1	2.1329+ 1				0.0000+ 0			1.4929+ 0				8.4412- 3
3.0000+ 3 ~ 4.0000+ 3	2.1100+ 1	1.9905+ 1				0.0000+ 0			1.1938+ 0				8.5381- 3
4.0000+ 3 ~ 5.0000+ 3	2.0008+ 1	1.8976+ 1				0.0000+ 0			1.0302+ 0				8.6103- 3
5.0000+ 3 ~ 6.0000+ 3	1.9223+ 1	1.8298+ 1				0.0000+ 0			9.2378- 1				8.6678- 3
6.0000+ 3 ~ 8.0000+ 3	1.8375+ 1	1.7554+ 1				0.0000+ 0			8.1987- 1				9.8845- 3
8.0000+ 3 ~ 1.0000+ 4	1.7565+ 1	1.6835+ 1				0.0000+ 0			7.2967- 1				1.2174- 2
1.0000+ 4 ~ 1.5000+ 4	1.6659+ 1	1.6021+ 1				0.0000+ 0			6.3737- 1				1.6459- 2
1.5000+ 4 ~ 2.0000+ 4	1.5801+ 1	1.5246+ 1				0.0000+ 0			5.5505- 1				2.2361- 2
2.0000+ 4 ~ 3.0000+ 4	1.5008+ 1	1.4525+ 1				0.0000+ 0			4.8263- 1				3.1548- 2
3.0000+ 4 ~ 4.0000+ 4	1.4295+ 1	1.3873+ 1				0.0000+ 0			4.2224- 1				4.3146- 2
4.0000+ 4 ~ 5.0000+ 4	1.3765+ 1	1.3390+ 1				0.0000+ 0			3.7436- 1				5.4936- 2
5.0000+ 4 ~ 6.0000+ 4	1.3353+ 1	1.3002+ 1	1.7689- 2			0.0000+ 0			3.3271- 1				6.5869- 2
6.0000+ 4 ~ 8.0000+ 4	1.2894+ 1	1.2489+ 1	1.2387- 1			0.0000+ 0			2.7920- 1				8.1579- 2
8.0000+ 4 ~ 1.0000+ 5	1.2365+ 1	1.1895+ 1	2.3995- 1			0.0000+ 0			2.2883- 1				1.0151- 1
1.0000+ 5 ~ 1.5000+ 5	1.1633+ 1	1.1068+ 1	3.8457- 1			0.0000+ 0			1.8789- 1				1.3323- 1
1.5000+ 5 ~ 2.0000+ 5	1.0824+ 1	1.0132+ 1	5.3204- 1			0.0000+ 0			1.5908- 1				1.7083- 1
2.0000+ 5 ~ 3.0000+ 5	9.9001+ 0	9.0705+ 0	6.8258- 1			0.0000+ 0			1.4269- 1				2.1517- 1
3.0000+ 5 ~ 4.0000+ 5	8.9844+ 0	8.0250+ 0	8.2338- 1			0.0000+ 0			1.3528- 1				2.5968- 1
4.0000+ 5 ~ 5.0000+ 5	8.2214+ 0	7.1943+ 0	8.9230- 1			0.0000+ 0			1.3331- 1				2.9562- 1
5.0000+ 5 ~ 6.0000+ 5	7.6982+ 0	6.5273+ 0	1.0388+ 0			0.0000+ 0			1.3101- 1				3.2642- 1
6.0000+ 5 ~ 8.0000+ 5	7.2579+ 0	5.7757+ 0	1.3258+ 0			3.1762- 2			1.2360- 1				3.8827- 1
8.0000+ 5 ~ 1.0000+ 6	6.8775+ 0	5.0984+ 0	1.5896+ 0			7.2600- 2			1.1648- 1				4.1726- 1
1.0000+ 6 ~ 1.5000+ 6	6.9415+ 0	4.8714+ 0	1.8256+ 0			3.3020- 1			1.1169- 1				4.8680- 1
1.5000+ 6 ~ 2.0000+ 6	7.1111+ 0	4.5809+ 0	2.1651+ 0			2.6800- 1			9.9991- 2				5.7335- 1
2.0000+ 6 ~ 3.0000+ 6	7.5498+ 0	4.8546+ 0	2.4398+ 0			1.9850- 1			5.7091- 2				6.7821- 1
3.0000+ 6 ~ 4.0000+ 6	7.7851+ 0	5.0460+ 0	2.5280+ 0			1.8900- 1			1.9742- 2				7.6099- 1
4.0000+ 6 ~ 5.0000+ 6	7.6208+ 0	4.8098+ 0	2.5124+ 0			1.8750- 1			6.2598- 3				7.9001- 1
5.0000+ 6 ~ 6.0000+ 6	7.1027+ 0	4.4164+ 0	2.4963+ 0			1.8450- 1			1.3029- 3				7.9842- 1
6.0000+ 6 ~ 8.0000+ 6	6.2231+ 0	3.8119+ 0	1.8691+ 0	2.1969- 1		3.3035- 1			2.2970- 4				7.9219- 1
8.0000+ 6 ~ 1.0000+ 7	5.8833+ 0	3.2091+ 0	7.8819- 1	1.3048+ 0		5.7825- 1			1.6381- 5				7.7822- 1
1.0000+ 7 ~ 1.5000+ 7	5.5756+ 0	3.0654+ 0	9.8247- 2	1.6017+ 0	2.1164- 1	5.9715- 1			4.5814- 7				8.0449- 1
1.5000+ 7 ~ 2.0000+ 7	5.1560+ 0	3.6984+ 0	1.4143- 3	3.6950- 1	1.3463+ 0	7.3985- 1			7.6675-10				8.7658- 1

CROSS SECTION

MATERIAL =2903 TH-232

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	3.4806+ 1	1.2169+ 1				0.0000+ 0			2.2637+ 1				3.8895- 3
1.0000- 2 ~ 1.5000- 2	2.2642+ 1	1.2166+ 1				0.0000+ 0			1.0476+ 1				3.8614- 3
1.5000- 2 ~ 2.0000- 2	2.0957+ 1	1.2164+ 1				0.0000+ 0			8.7926+ 0				3.8969- 3
2.0000- 2 ~ 3.0000- 2	1.9542+ 1	1.2161+ 1				0.0000+ 0			7.3806+ 0				3.9442- 3
3.0000- 2 ~ 4.0000- 2	1.8346+ 1	1.2157+ 1				0.0000+ 0			6.1882+ 0				3.9897- 3
4.0000- 2 ~ 5.0000- 2	1.7576+ 1	1.2154+ 1				0.0000+ 0			5.4223+ 0				4.0236- 3
5.0000- 2 ~ 6.0000- 2	1.7033+ 1	1.2150+ 1				0.0000+ 0			4.8827+ 0				4.0504- 3
6.0000- 2 ~ 8.0000- 2	1.6466+ 1	1.2144+ 1				0.0000+ 0			4.3214+ 0				4.0824- 3
8.0000- 2 ~ 1.0000- 1	1.5917+ 1	1.2137+ 1				0.0000+ 0			3.7787+ 0				4.1162- 3
1.0000- 1 ~ 1.5000- 1	1.5309+ 1	1.2124+ 1				0.0000+ 0			3.1865+ 0				4.1596- 3
1.5000- 1 ~ 2.0000- 1	1.4736+ 1	1.2106+ 1				0.0000+ 0			2.6299+ 0				4.2051- 3
2.0000- 1 ~ 3.0000- 1	1.4233+ 1	1.2079+ 1				0.0000+ 0			2.1540+ 0				4.2523- 3
3.0000- 1 ~ 4.0000- 1	1.3799+ 1	1.2045+ 1				0.0000+ 0			1.7543+ 0				4.2978- 3
4.0000- 1 ~ 5.0000- 1	1.3511+ 1	1.2011+ 1				0.0000+ 0			1.4994+ 0				4.3316- 3
5.0000- 1 ~ 6.0000- 1	1.3290+ 1	1.1979+ 1				0.0000+ 0			1.3108+ 0				4.3586- 3
6.0000- 1 ~ 8.0000- 1	1.3044+ 1	1.1933+ 1				0.0000+ 0			1.1109+ 0				4.3906- 3
8.0000- 1 ~ 1.0000+ 0	1.2795+ 1	1.1874+ 1				0.0000+ 0			9.2080- 1				4.4244- 3
1.0000+ 0 ~ 1.5000+ 0	1.2496+ 1	1.1781+ 1				0.0000+ 0			7.1511- 1				4.4677- 3
1.5000+ 0 ~ 2.0000+ 0	1.2190+ 1	1.1660+ 1				0.0000+ 0			5.3026- 1				4.5132- 3
2.0000+ 0 ~ 3.0000+ 0	1.1885+ 1	1.1506+ 1				0.0000+ 0			3.7928- 1				4.5605- 3
3.0000+ 0 ~ 4.0000+ 0	1.1598+ 1	1.1331+ 1				0.0000+ 0			2.6645- 1				4.6060- 3
4.0000+ 0 ~ 5.0000+ 0	1.1386+ 1	1.1183+ 1				0.0000+ 0			2.0253- 1				4.6398- 3
5.0000+ 0 ~ 6.0000+ 0	1.1217+ 1	1.1054+ 1				0.0000+ 0			1.6292- 1				4.6667- 3
6.0000+ 0 ~ 8.0000+ 0	1.1012+ 1	1.0883+ 1				0.0000+ 0			1.2890- 1				4.6987- 3
8.0000+ 0 ~ 1.0000+ 1	1.0835+ 1	1.0676+ 1				0.0000+ 0			1.5926- 1				4.7328- 3
1.0000+ 1 ~ 1.5000+ 1	1.0423+ 1	1.0314+ 1				0.0000+ 0			1.0876- 1				4.7759- 3
1.5000+ 1 ~ 2.0000+ 1	9.6865+ 0	9.4589+ 0				0.0000+ 0			2.2759- 1				4.8214- 3
2.0000+ 1 ~ 3.0000+ 1	1.0408+ 2	2.0546+ 1				0.0000+ 0			8.3536+ 1				4.8687- 3
3.0000+ 1 ~ 4.0000+ 1	1.0463+ 1	1.0395+ 1				0.0000+ 0			6.6808- 2				4.9141- 3
4.0000+ 1 ~ 5.0000+ 1	9.6417+ 0	9.5743+ 0				0.0000+ 0			6.7368- 2				4.9479- 3
5.0000+ 1 ~ 6.0000+ 1	3.5146+ 1	1.1661+ 1				0.0000+ 0			2.3486+ 1				4.9749- 3
6.0000+ 1 ~ 8.0000+ 1	1.4204+ 2	9.4455+ 1				0.0000+ 0			4.7584+ 1				5.0069- 3
8.0000+ 1 ~ 1.0000+ 2	1.1386+ 1	1.1313+ 1				0.0000+ 0			7.3418- 2				5.0407- 3
1.0000+ 2 ~ 1.5000+ 2	3.9017+ 1	2.3407+ 1				0.0000+ 0			1.5610+ 1				5.0840- 3
1.5000+ 2 ~ 2.0000+ 2	5.4887+ 1	3.8934+ 1				0.0000+ 0			1.5964+ 1				5.1295- 3
2.0000+ 2 ~ 3.0000+ 2	3.0196+ 1	2.2107+ 1				0.0000+ 0			8.0885+ 0				5.1768- 3
3.0000+ 2 ~ 4.0000+ 2	3.5031+ 1	2.6833+ 1				0.0000+ 0			8.1979+ 0				5.2223- 3
4.0000+ 2 ~ 5.0000+ 2	2.3359+ 1	1.9862+ 1				0.0000+ 0			3.4965+ 0				5.2561- 3
5.0000+ 2 ~ 6.0000+ 2	1.5678+ 1	1.3247+ 1				0.0000+ 0			2.4305+ 0				5.2831- 3
6.0000+ 2 ~ 8.0000+ 2	2.1806+ 1	1.8781+ 1				0.0000+ 0			3.0251+ 0				5.3151- 3
8.0000+ 2 ~ 1.0000+ 3	2.1440+ 1	1.8958+ 1				0.0000+ 0			2.4822+ 0				5.3489- 3
1.0000+ 3 ~ 1.5000+ 3	1.7208+ 1	1.5475+ 1				0.0000+ 0			1.7324+ 0				5.3922- 3
1.5000+ 3 ~ 2.0000+ 3	2.4729+ 1	2.2752+ 1				0.0000+ 0			1.9775+ 0				5.4377- 3
2.0000+ 3 ~ 3.0000+ 3	1.8838+ 1	1.7650+ 1				0.0000+ 0			1.1881+ 0				5.4850- 3
3.0000+ 3 ~ 4.0000+ 3	1.8543+ 1	1.7517+ 1				0.0000+ 0			1.0260+ 0				6.0743- 3
4.0000+ 3 ~ 5.0000+ 3	1.8614+ 1	1.7528+ 1				0.0000+ 0			1.0852+ 0				7.1590- 3
5.0000+ 3 ~ 6.0000+ 3	1.7911+ 1	1.6926+ 1				0.0000+ 0			9.8508- 1				8.2759- 3
6.0000+ 3 ~ 8.0000+ 3	1.7248+ 1	1.6358+ 1				0.0000+ 0			8.9010- 1				9.9982- 3
8.0000+ 3 ~ 1.0000+ 4	1.6498+ 1	1.5705+ 1				0.0000+ 0			7.9268- 1				1.2341- 2
1.0000+ 4 ~ 1.5000+ 4	1.5935+ 1	1.5223+ 1				0.0000+ 0			7.1262- 1				1.7299- 2
1.5000+ 4 ~ 2.0000+ 4	1.5277+ 1	1.4660+ 1				0.0000+ 0			6.1758- 1				2.3233- 2
2.0000+ 4 ~ 3.0000+ 4	1.4721+ 1	1.4196+ 1				0.0000+ 0			5.2509- 1				3.2047- 2
3.0000+ 4 ~ 4.0000+ 4	1.4224+ 1	1.3773+ 1				0.0000+ 0			4.5016- 1				4.3786- 2
4.0000+ 4 ~ 5.0000+ 4	1.3577+ 1	1.3186+ 1	4.6082- 4			0.0000+ 0			3.9025- 1				5.5146- 2
5.0000+ 4 ~ 6.0000+ 4	1.3185+ 1	1.2759+ 1	9.4611- 2			0.0000+ 0			3.3185- 1				6.6404- 2
6.0000+ 4 ~ 8.0000+ 4	1.2849+ 1	1.2324+ 1	2.5231- 1			0.0000+ 0			2.7247- 1				8.2676- 2
8.0000+ 4 ~ 1.0000+ 5	1.2345+ 1	1.1706+ 1	4.0797- 1			0.0000+ 0			2.3081- 1				1.0311- 1
1.0000+ 5 ~ 1.5000+ 5	1.1668+ 1	1.0888+ 1	5.8702- 1			0.0000+ 0			1.8892- 1				1.3596- 1
1.5000+ 5 ~ 2.0000+ 5	1.0963+ 1	1.0034+ 1	7.6940- 1			0.0000+ 0			1.5881- 1				1.7353- 1
2.0000+ 5 ~ 3.0000+ 5	1.0059+ 1	8.9676+ 0	9.5169- 1			0.0000+ 0			1.3822- 1				2.1796- 1
3.0000+ 5 ~ 4.0000+ 5	9.1938+ 0	7.9451+ 0	1.1200+ 0			0.0000+ 0			1.2830- 1				2.6212- 1
4.0000+ 5 ~ 5.0000+ 5	8.5931+ 0	7.2167+ 0	1.2448+ 0			0.0000+ 0			1.3102- 1				2.9487- 1
5.0000+ 5 ~ 6.0000+ 5	7.9885+ 0	6.5017+ 0	1.3504+ 0			0.0000+ 0			1.3602- 1				3.2047- 1
6.0000+ 5 ~ 8.0000+ 5	7.4149+ 0	5.7440+ 0	1.5221+ 0			0.0000+ 0			1.4851- 1				3.5207- 1
8.0000+ 5 ~ 1.0000+ 6	6.9335+ 0	4.9374+ 0	1.8529+ 0			1.1260- 3			1.4183- 1				4.0066- 1
1.0000+ 6 ~ 1.5000+ 6	8.7113+ 0	4.9368+ 0	2.2337+ 0			2.7010- 2			1.1959- 1				4.7049- 1
1.5000+ 6 ~ 2.0000+ 6	6.8240+ 0	4.1165+ 0	2.6247+ 0			1.0366- 1			7.9110- 2				5.8320- 1
2.0000+ 6 ~ 3.0000+ 6	7.3533+ 0	4.5621+ 0	2.6231+ 0			1.2715- 1			4.0912- 2				6.7510- 1
3.0000+ 6 ~ 4.0000+ 6	7.8544+ 0	5.0851+ 0	2.6037+ 0			1.4670- 1			1.9840- 2				7.6096- 1
4.0000+ 6 ~ 5.0000+ 6	7.7162+ 0	4.9992+ 0	2.5563+ 0			1.4795- 1			1.1586- 2				7.9497- 1
5.0000+ 6 ~ 6.0000+ 6	7.2271+ 0	4.5624+ 0	2.5186+ 0			1.4800- 1			7.8265- 3				8.0364- 1
6.0000+ 6 ~ 8.0000+ 6	6.4990+ 0	3.8555+ 0	1.9141+ 0	3.8403- 1		3.3905- 1			4.8491- 3				7.9469- 1
8.0000+ 6 ~ 1.0000+ 7	5.8018+ 0	3.1817+ 0	7.5841- 1	1.5173+ 0		3.4055- 1			2.8578- 3				7.7852- 1
1.0000+ 7 ~ 1.5000+ 7	5.6893+ 0	3.1728+ 0	2.3116- 1	1.6104+ 0	3.4189- 1	3.3283- 1			1.1500- 4				8.0411- 1
1.5000+ 7 ~ 2.0000+ 7	6.1752+ 0	3.7108+ 0	7.0732- 2	2.9950- 1	1.6133+ 0	4.8080- 1			0.0000+ 0				8.7577- 1

CROSS SECTION

MATERIAL =2904 TH-233

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	4.5303+ 3	1.2998+ 1				4.5763+ 1			4.4714+ 3				4.7990- 3
1.0000- 2 ~ 1.5000- 2	2.1079+ 3	1.2998+ 1				2.1324+ 1			2.0734+ 3				5.1108- 3
1.5000- 2 ~ 2.0000- 2	1.7793+ 3	1.2999+ 1				1.8027+ 1			1.7479+ 3				5.2170- 3
2.0000- 2 ~ 3.0000- 2	1.4944+ 3	1.3000+ 1				1.5167+ 1			1.4661+ 3				5.3274- 3
3.0000- 2 ~ 4.0000- 2	1.2620+ 3	1.3001+ 1				1.2844+ 1			1.2360+ 3				5.4335- 3
4.0000- 2 ~ 5.0000- 2	1.1134+ 3	1.3002+ 1				1.1356+ 1			1.0889+ 3				5.5124- 3
5.0000- 2 ~ 6.0000- 2	1.0078+ 3	1.3002+ 1				1.0296+ 1			9.8443+ 2				5.5753- 3
6.0000- 2 ~ 8.0000- 2	8.9632+ 2	1.3004+ 1				9.1719+ 0			8.7397+ 2				5.6600- 3
8.0000- 2 ~ 1.0000- 1	7.9118+ 2	1.3005+ 1				8.1091+ 0			7.6998+ 2				5.7289- 3
1.0000- 1 ~ 1.5000- 1	6.7597+ 2	1.3008+ 1				6.9671+ 0			6.5566+ 2				5.8301- 3
1.5000- 1 ~ 2.0000- 1	5.7223+ 2	1.3012+ 1				5.9448+ 0			5.5275+ 2				5.9362- 3
2.0000- 1 ~ 3.0000- 1	4.8199+ 2	1.3018+ 1				5.0481+ 0			4.6362+ 2				6.0466- 3
3.0000- 1 ~ 4.0000- 1	4.0838+ 2	1.3026+ 1				4.3074+ 0			3.9085+ 2				6.1528- 3
4.0000- 1 ~ 5.0000- 1	3.6169+ 2	1.3034+ 1				3.8289+ 0			3.4435+ 2				6.2317- 3
5.0000- 1 ~ 6.0000- 1	3.2837+ 2	1.3043+ 1				3.4862+ 0			3.1130+ 2				6.2946- 3
6.0000- 1 ~ 8.0000- 1	2.9297+ 2	1.3055+ 1				3.1210+ 0			2.7637+ 2				6.3693- 3
8.0000- 1 ~ 1.0000+ 0	2.5949+ 2	1.3071+ 1				2.7743+ 0			2.4349+ 2				6.4482- 3
1.0000+ 0 ~ 1.5000+ 0	2.2321+ 2	1.3100+ 1				2.4196+ 0			2.0734+ 2				6.5494- 3
1.5000+ 0 ~ 2.0000+ 0	1.9059+ 2	1.3140+ 1				2.1077+ 0			1.7479+ 2				6.6555- 3
2.0000+ 0 ~ 3.0000+ 0	1.6196+ 2	1.3201+ 1				1.8279+ 0			1.4661+ 2				6.7659- 3
3.0000+ 0 ~ 4.0000+ 0	1.3870+ 2	1.3282+ 1				1.5923+ 0			1.2360+ 2				6.8720- 3
4.0000+ 0 ~ 5.0000+ 0	1.2426+ 2	1.3364+ 1				1.4373+ 0			1.0889+ 2				6.9509- 3
5.0000+ 0 ~ 6.0000+ 0	1.1386+ 2	1.3445+ 1				1.3247+ 0			9.8444+ 1				7.0138- 3
6.0000+ 0 ~ 8.0000+ 0	1.0268+ 2	1.3567+ 1				1.2030+ 0			8.7398+ 1				7.0886- 3
8.0000+ 0 ~ 1.0000+ 1	9.2006+ 1	1.3730+ 1				1.0858+ 0			7.6999+ 1				7.1875- 3
1.0000+ 1 ~ 1.5000+ 1	8.0850+ 1	1.4014+ 1				9.7242- 1			6.5567+ 1				7.2686- 3
1.5000+ 1 ~ 2.0000+ 1	7.0901+ 1	1.4421+ 1				8.7480- 1			5.5275+ 1				7.3747- 3
2.0000+ 1 ~ 3.0000+ 1	6.2279+ 1	1.5030+ 1				7.8418- 1			4.6363+ 1				7.4851- 3
3.0000+ 1 ~ 4.0000+ 1	5.5724+ 1	1.5843+ 1				7.0546- 1			3.9086+ 1				7.5913- 3
4.0000+ 1 ~ 5.0000+ 1	5.1857+ 1	1.6656+ 1				6.5216- 1			3.4435+ 1				7.6702- 3
5.0000+ 1 ~ 6.0000+ 1	4.9324+ 1	1.7469+ 1				6.1660- 1			3.1131+ 1				7.7331- 3
6.0000+ 1 ~ 8.0000+ 1	4.7009+ 1	1.8689+ 1				5.8221- 1			2.7638+ 1				7.8078- 3
8.0000+ 1 ~ 1.0000+ 2	4.5347+ 1	2.0315+ 1				5.4784- 1			2.4349+ 1				7.8867- 3
1.0000+ 2 ~ 1.5000+ 2	4.4543+ 1	2.3160+ 1				5.1154- 1			2.0734+ 1				7.9878- 3
1.5000+ 2 ~ 2.0000+ 2	4.5375+ 1	2.7223+ 1				4.7818- 1			1.7480+ 1				8.0940- 3
2.0000+ 2 ~ 3.0000+ 2	4.2576+ 1	2.8120+ 1				4.4897- 1			1.3968+ 1				8.2044- 3
3.0000+ 2 ~ 4.0000+ 2	3.7732+ 1	2.6412+ 1				4.2661- 1			1.0878+ 1				8.3106- 3
4.0000+ 2 ~ 5.0000+ 2	3.4689+ 1	2.5212+ 1				4.1061- 1			9.0366+ 0				8.3894- 3
5.0000+ 2 ~ 6.0000+ 2	3.2512+ 1	2.4299+ 1				3.9970- 1			7.7890+ 0				8.4523- 3
6.0000+ 2 ~ 8.0000+ 2	3.0203+ 1	2.3269+ 1				3.8868- 1			6.5340+ 0				8.5270- 3
8.0000+ 2 ~ 1.0000+ 3	2.8035+ 1	2.2238+ 1				3.7831- 1			5.4128+ 0				8.6059- 3
1.0000+ 3 ~ 1.5000+ 3	2.5671+ 1	2.1018+ 1				3.6648- 1			4.2704+ 0				8.7071- 3
1.5000+ 3 ~ 2.0000+ 3	2.3515+ 1	1.9831+ 1				3.5579- 1			3.3221+ 0				8.8132- 3
2.0000+ 3 ~ 3.0000+ 3	2.1661+ 1	1.8717+ 1				3.4718- 1			2.5880+ 0				8.9236- 3
3.0000+ 3 ~ 4.0000+ 3	2.0127+ 1	1.7737+ 1				3.3985- 1			2.0468+ 0				9.0298- 3
4.0000+ 3 ~ 5.0000+ 3	1.9159+ 1	1.7079+ 1				3.3499- 1			1.7400+ 0				9.1087- 3
5.0000+ 3 ~ 6.0000+ 3	1.8462+ 1	1.6589+ 1				3.3151- 1			1.5382+ 0				9.1716- 3
6.0000+ 3 ~ 8.0000+ 3	1.7711+ 1	1.6040+ 1				3.2790- 1			1.3407+ 0				1.0469- 2
8.0000+ 3 ~ 1.0000+ 4	1.6994+ 1	1.5499+ 1				3.2444- 1			1.1697+ 0				1.2904- 2
1.0000+ 4 ~ 1.5000+ 4	1.6195+ 1	1.4872+ 1				3.2086- 1			9.9985- 1				1.7450- 2
1.5000+ 4 ~ 2.0000+ 4	1.5370+ 1	1.4142+ 1	9.5981- 2			3.1743- 1			8.1331- 1				2.3907- 2
2.0000+ 4 ~ 3.0000+ 4	1.4737+ 1	1.3426+ 1	3.6164- 1			3.0303- 1			6.4292- 1				3.4016- 2
3.0000+ 4 ~ 4.0000+ 4	1.4105+ 1	1.2866+ 1	4.3258- 1			2.7925- 1			5.2546- 1				4.6623- 2
4.0000+ 4 ~ 5.0000+ 4	1.3841+ 1	1.2487+ 1	4.6908- 1			2.5016- 1			4.5207- 1				5.9376- 2
5.0000+ 4 ~ 6.0000+ 4	1.3274+ 1	1.2149+ 1	5.0241- 1			2.2157- 1			4.0016- 1				7.1174- 2
6.0000+ 4 ~ 8.0000+ 4	1.2844+ 1	1.1735+ 1	5.7750- 1			1.8834- 1			3.4120- 1				8.7979- 2
8.0000+ 4 ~ 1.0000+ 5	1.2356+ 1	1.1248+ 1	6.6130- 1			1.6211- 1			2.8425- 1				1.0925- 1
1.0000+ 5 ~ 1.5000+ 6	1.1674+ 1	1.0507+ 1	7.7938- 1			1.5660- 1			2.2748- 1				1.4344- 1
1.5000+ 5 ~ 2.0000+ 5	1.0904+ 1	9.6554+ 0	8.9447- 1			1.6777- 1			1.8462- 1				1.8439- 1
2.0000+ 5 ~ 3.0000+ 5	1.0001+ 1	8.6375+ 0	9.8405- 1			2.1386- 1			1.5900- 1				2.3333- 1
3.0000+ 5 ~ 4.0000+ 5	9.0899+ 0	7.6290+ 0	1.0562+ 0			2.5830- 1			1.4569- 1				2.8247- 1
4.0000+ 5 ~ 5.0000+ 5	8.3794+ 0	6.8586+ 0	1.1583+ 0			2.0939- 1			1.4622- 1				3.1972- 1
5.0000+ 5 ~ 6.0000+ 5	7.8332+ 0	6.2591+ 0	1.2579+ 0			1.6162- 1			1.5156- 1				3.4979- 1
6.0000+ 5 ~ 8.0000+ 5	7.2951+ 0	5.5562+ 0	1.4633+ 0			1.2428- 1			1.5089- 1				3.9034- 1
8.0000+ 5 ~ 1.0000+ 6	6.9347+ 0	4.9244+ 0	1.7548+ 0			1.0220- 1			1.5314- 1				4.3522- 1
1.0000+ 6 ~ 1.5000+ 6	6.8900+ 0	4.5298+ 0	2.1479+ 0			9.2124- 2			1.2147- 1				4.9922- 1
1.5000+ 6 ~ 2.0000+ 6	7.1285+ 0	4.4525+ 0	2.5187+ 0			8.5889- 2			7.0581- 2				5.8248- 1
2.0000+ 6 ~ 3.0000+ 6	7.5657+ 0	4.7933+ 0	2.6739+ 0			8.4000- 2			2.9569- 2				6.8297- 1
3.0000+ 6 ~ 4.0000+ 6	7.8314+ 0	5.0619+ 0	2.6768+ 0			8.3475- 2			8.4381- 3				7.6228- 1
4.0000+ 6 ~ 5.0000+ 6	7.2108+ 0	4.8646+ 0	2.2971+ 0	8.0926- 3		8.2426- 2			1.8852- 3				7.9123- 1
5.0000+ 6 ~ 6.0000+ 6	6.8825+ 0	4.4917+ 0	1.6705+ 0	6.4900- 1		8.1432- 2			3.8589- 4				8.0033- 1
6.0000+ 6 ~ 8.0000+ 6	6.6430+ 0	3.8857+ 0	8.2619- 1	1.8142+ 0		1.1449- 1			4.2605- 5				7.9494- 1
8.0000+ 6 ~ 1.0000+ 7	5.8912+ 0	3.2551+ 0	1.9071- 1	2.2978+ 0		1.4649- 1			1.1678- 6				7.8027- 1
1.0000+ 7 ~ 1.5000+ 7	5.6051+ 0	3.0744+ 0	3.3875- 2	1.7907+ 0	4.1911- 1	2.8543- 1			3.7307- 8				8.0396- 1
1.5000+ 7 ~ 2.0000+ 7	6.1670+ 0	3.6935+ 0	6.9975- 3	3.3930- 1	1.7801+ 0	3.4647- 1			1.3165- 9				8.7537- 1

CROSS SECTION

MATERIAL =2905 TH-234

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.8462+ 1	1.3000+ 1				0.0000+ 0			5.3941+ 0				4.6450- 3
1.0000- 2 ~ 1.5000- 2	1.5546+ 1	1.3000+ 1				0.0000+ 0			2.5021+ 0				5.0073- 3
1.5000- 2 ~ 2.0000- 2	1.5161+ 1	1.3000+ 1				0.0000+ 0			2.1095+ 0				5.1091- 3
2.0000- 2 ~ 3.0000- 2	1.4788+ 1	1.3000+ 1				0.0000+ 0			1.7694+ 0				5.2149- 3
3.0000- 2 ~ 4.0000- 2	1.4540+ 1	1.3000+ 1				0.0000+ 0			1.4916+ 0				5.3167- 3
4.0000- 2 ~ 5.0000- 2	1.4376+ 1	1.3000+ 1				0.0000+ 0			1.3140+ 0				5.3924- 3
5.0000- 2 ~ 6.0000- 2	1.4247+ 1	1.3000+ 1				0.0000+ 0			1.1879+ 0				5.4527- 3
6.0000- 2 ~ 8.0000- 2	1.4096+ 1	1.3000+ 1				0.0000+ 0			1.0645+ 0				5.6244- 3
8.0000- 2 ~ 1.0000- 1	1.3939+ 1	1.3000+ 1				0.0000+ 0			9.2900- 1				5.6001- 3
1.0000- 1 ~ 1.5000- 1	1.3813+ 1	1.3000+ 1				0.0000+ 0			7.9101- 1				5.6971- 3
1.5000- 1 ~ 2.0000- 1	1.3700+ 1	1.3000+ 1				0.0000+ 0			6.6680- 1				5.7989- 3
2.0000- 1 ~ 3.0000- 1	1.3564+ 1	1.3000+ 1				0.0000+ 0			5.5923- 1				5.9047- 3
3.0000- 1 ~ 4.0000- 1	1.3478+ 1	1.3000+ 1				0.0000+ 0			4.7142- 1				6.0065- 3
4.0000- 1 ~ 5.0000- 1	1.3436+ 1	1.3000+ 1				0.0000+ 0			4.1530- 1				6.0822- 3
5.0000- 1 ~ 6.0000- 1	1.3410+ 1	1.3000+ 1				0.0000+ 0			3.7543- 1				6.1425- 3
6.0000- 1 ~ 8.0000- 1	1.3378+ 1	1.3000+ 1				0.0000+ 0			3.3329- 1				6.2142- 3
8.0000- 1 ~ 1.0000+ 0	1.3345+ 1	1.3000+ 1				0.0000+ 0			2.9361- 1				6.2899- 3
1.0000+ 0 ~ 1.5000+ 0	1.3303+ 1	1.3000+ 1				0.0000+ 0			2.5000- 1				6.3869- 3
1.5000+ 0 ~ 2.0000+ 0	1.3260+ 1	1.3000+ 1				0.0000+ 0			2.1074- 1				6.4887- 3
2.0000+ 0 ~ 3.0000+ 0	1.3214+ 1	1.3000+ 1				0.0000+ 0			1.7675- 1				6.5945- 3
3.0000+ 0 ~ 4.0000+ 0	1.3170+ 1	1.3000+ 1				0.0000+ 0			1.4899- 1				6.6963- 3
4.0000+ 0 ~ 5.0000+ 0	1.3138+ 1	1.3000+ 1				0.0000+ 0			1.3126- 1				6.7720- 3
5.0000+ 0 ~ 6.0000+ 0	1.3120+ 1	1.3000+ 1				0.0000+ 0			1.1866- 1				6.8323- 3
6.0000+ 0 ~ 8.0000+ 0	1.3108+ 1	1.3000+ 1				0.0000+ 0			1.0534- 1				6.9039- 3
8.0000+ 0 ~ 1.0000+ 1	1.3096+ 1	1.3000+ 1				0.0000+ 0			9.2810- 2				6.9796- 3
1.0000+ 1 ~ 1.5000+ 1	1.3081+ 1	1.3000+ 1				0.0000+ 0			7.9030- 2				7.0766- 3
1.5000+ 1 ~ 2.0000+ 1	1.2270+ 2	6.2061+ 1				0.0000+ 0			6.0588+ 1				7.1784- 3
2.0000+ 1 ~ 3.0000+ 1	1.0487+ 2	5.7405+ 1				0.0000+ 0			4.7385+ 1				7.2843- 3
3.0000+ 1 ~ 4.0000+ 1	9.0281+ 1	5.3108+ 1				0.0000+ 0			3.7136+ 1				7.3861- 3
4.0000+ 1 ~ 5.0000+ 1	8.0990+ 1	5.0035+ 1				0.0000+ 0			3.0888+ 1				7.4618- 3
5.0000+ 1 ~ 6.0000+ 1	7.4372+ 1	4.7683+ 1				0.0000+ 0			2.6635+ 1				7.5221- 3
6.0000+ 1 ~ 8.0000+ 1	6.7362+ 1	4.5007+ 1				0.0000+ 0			2.2329+ 1				7.5937- 3
8.0000+ 1 ~ 1.0000+ 2	6.0771+ 1	4.2304+ 1				0.0000+ 0			1.8453+ 1				7.6694- 3
1.0000+ 2 ~ 1.5000+ 2	5.3556+ 1	3.9065+ 1				0.0000+ 0			1.4451+ 1				7.7664- 3
1.5000+ 2 ~ 2.0000+ 2	4.7023+ 1	3.5910+ 1				0.0000+ 0			1.1096+ 1				7.8682- 3
2.0000+ 2 ~ 3.0000+ 2	4.1395+ 1	3.2934+ 1				0.0000+ 0			8.4342+ 0				7.9741- 3
3.0000+ 2 ~ 4.0000+ 2	3.6773+ 1	3.0322+ 1				0.0000+ 0			6.4403+ 0				8.0758- 3
4.0000+ 2 ~ 5.0000+ 2	3.3843+ 1	2.8554+ 1				0.0000+ 0			5.2695+ 0				8.1515- 3
5.0000+ 2 ~ 6.0000+ 2	3.1746+ 1	2.7239+ 1				0.0000+ 0			4.4919+ 0				8.2119- 3
6.0000+ 2 ~ 8.0000+ 2	2.9524+ 1	2.5790+ 1				0.0000+ 0			3.7270+ 0				8.2835- 3
8.0000+ 2 ~ 1.0000+ 3	2.7436+ 1	2.4374+ 1				0.0000+ 0			3.0585+ 0				8.3592- 3
1.0000+ 3 ~ 1.5000+ 3	2.5160+ 1	2.2752+ 1				0.0000+ 0			2.3997+ 0				8.4562- 3
1.5000+ 3 ~ 2.0000+ 3	2.3086+ 1	2.1215+ 1				0.0000+ 0			1.8678+ 0				8.5580- 3
2.0000+ 3 ~ 3.0000+ 3	2.1302+ 1	1.9825+ 1				0.0000+ 0			1.4731+ 0				8.6638- 3
3.0000+ 3 ~ 4.0000+ 3	1.9826+ 1	1.8635+ 1				0.0000+ 0			1.1904+ 0				8.7656- 3
4.0000+ 3 ~ 5.0000+ 3	1.8896+ 1	1.7859+ 1				0.0000+ 0			1.0356+ 0				8.8413- 3
5.0000+ 3 ~ 6.0000+ 3	1.8227+ 1	1.7292+ 1				0.0000+ 0			9.3416- 1				8.9016- 3
6.0000+ 3 ~ 8.0000+ 3	1.7506+ 1	1.6671+ 1				0.0000+ 0			8.3442- 1				1.0161- 2
8.0000+ 3 ~ 1.0000+ 4	1.6818+ 1	1.6071+ 1				0.0000+ 0			7.4667- 1				1.2527- 2
1.0000+ 4 ~ 1.5000+ 4	1.6051+ 1	1.5395+ 1				0.0000+ 0			6.5499- 1				1.6942- 2
1.5000+ 4 ~ 2.0000+ 4	1.5324+ 1	1.4753+ 1				0.0000+ 0			5.7127- 1				2.3008- 2
2.0000+ 4 ~ 3.0000+ 4	1.4653+ 1	1.4157+ 1				0.0000+ 0			4.9539- 1				3.2428- 2
3.0000+ 4 ~ 4.0000+ 4	1.4046+ 1	1.3615+ 1				0.0000+ 0			4.3108- 1				4.4311- 2
4.0000+ 4 ~ 5.0000+ 4	1.3577+ 1	1.3199+ 1	1.4608- 3			0.0000+ 0			3.7621- 1				5.6498- 2
5.0000+ 4 ~ 6.0000+ 4	1.3237+ 1	1.2852+ 1	5.7847- 2			0.0000+ 0			3.2673- 1				6.7726- 2
6.0000+ 4 ~ 8.0000+ 4	1.2830+ 1	1.2388+ 1	1.6902- 1			0.0000+ 0			2.7175- 1				8.3949- 2
8.0000+ 4 ~ 1.0000+ 5	1.2359+ 1	1.1847+ 1	2.8739- 1			0.0000+ 0			2.2343- 1				1.0454- 1
1.0000+ 5 ~ 1.5000+ 5	1.1689+ 1	1.1072+ 1	4.3006- 1			0.0000+ 0			1.8437- 1				1.3735- 1
1.5000+ 5 ~ 2.0000+ 5	1.0931+ 1	1.0199+ 1	5.7390- 1			0.0000+ 0			1.5669- 1				1.7629- 1
2.0000+ 5 ~ 3.0000+ 5	1.0037+ 1	9.1795+ 0	7.1775- 1			0.0000+ 0			1.4132- 1				2.2213- 1
3.0000+ 5 ~ 4.0000+ 5	9.1303+ 0	8.1429+ 0	8.5164- 1			0.0000+ 0			1.3519- 1				2.6781- 1
4.0000+ 5 ~ 5.0000+ 5	8.4468+ 0	7.3496+ 0	9.5018- 1			0.0000+ 0			1.4069- 1				3.0164- 1
5.0000+ 5 ~ 6.0000+ 5	7.9227+ 0	6.7387+ 0	1.0300+ 0			0.0000+ 0			1.5054- 1				3.2816- 1
6.0000+ 5 ~ 8.0000+ 5	7.3265+ 0	6.0448+ 0	1.1152+ 0			0.0000+ 0			1.6545- 1				3.6135- 1
8.0000+ 5 ~ 1.0000+ 6	6.9326+ 0	5.3226+ 0	1.4412+ 0			0.0000+ 0			1.6847- 1				4.0464- 1
1.0000+ 6 ~ 1.5000+ 6	6.8290+ 0	4.7412+ 0	1.9353+ 0			0.0000+ 0			1.5215- 1				4.7666- 1
1.5000+ 6 ~ 2.0000+ 6	7.1409+ 0	4.6389+ 0	2.4331+ 0			5.9600- 2			1.1050- 1				5.7013- 1
2.0000+ 6 ~ 3.0000+ 6	7.5919+ 0	4.8117+ 0	2.6524+ 0			7.6300- 2			5.0398- 2				6.7958- 1
3.0000+ 6 ~ 4.0000+ 6	7.8455+ 0	5.0695+ 0	2.6952+ 0			6.2500- 2			1.6215- 2				7.6211- 1
4.0000+ 6 ~ 5.0000+ 6	7.6203+ 0	4.8825+ 0	2.6670+ 0			6.1750- 2			4.4228- 3				7.9148- 1
5.0000+ 6 ~ 6.0000+ 6	7.2264+ 0	4.5162+ 0	2.6442+ 0			6.1250- 2			1.2146- 3				8.0088- 1
6.0000+ 6 ~ 8.0000+ 6	6.4636+ 0	3.9100+ 0	1.7762+ 0	6.7330- 1		1.0200- 1			2.3199- 4				7.9580- 1
8.0000+ 6 ~ 1.0000+ 7	5.9454+ 0	3.2708+ 0	8.1168- 1	1.9233+ 0		1.3725- 1			1.9169- 5				7.8096- 1
1.0000+ 7 ~ 1.5000+ 7	5.6214+ 0	3.0782+ 0	9.8548- 2	1.6978+ 0	6.0661- 1	1.4040- 1			8.7703- 7				8.0383- 1
1.5000+ 7 ~ 2.0000+ 7	6.1693+ 0	3.6915+ 0	1.4003- 2	2.6660- 1	2.0099+ 0	1.8680- 1			2.9128- 8				8.7497- 1

CROSS SECTION

MATERIAL =2911

PA-233

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.6667+ 2	1.1020+ 1				0.0000+ 0			1.5530+ 2				3.1348- 3
1.0000- 2 ~ 1.5000- 2	7.7796+ 1	1.1020+ 1				0.0000+ 0			6.6731+ 1				3.1868- 3
1.5000- 2 ~ 2.0000- 2	6.5264+ 1	1.1020+ 1				0.0000+ 0			5.4219+ 1				3.2001- 3
2.0000- 2 ~ 3.0000- 2	5.4412+ 1	1.1020+ 1				0.0000+ 0			4.3379+ 1				3.2160- 3
3.0000- 2 ~ 4.0000- 2	4.5573+ 1	1.1020+ 1				0.0000+ 0			3.4625+ 1				3.2294- 3
4.0000- 2 ~ 5.0000- 2	4.0098+ 1	1.1020+ 1				0.0000+ 0			2.9062+ 1				3.2400- 3
5.0000- 2 ~ 6.0000- 2	3.5347+ 1	1.1020+ 1				0.0000+ 0			2.5318+ 1				3.2485- 3
6.0000- 2 ~ 8.0000- 2	3.2661+ 1	1.1020+ 1				0.0000+ 0			2.1639+ 1				3.2586- 3
8.0000- 2 ~ 1.0000- 1	2.9266+ 1	1.1020+ 1				0.0000+ 0			1.8245+ 1				3.2692- 3
1.0000- 1 ~ 1.5000- 1	2.6110+ 1	1.1020+ 1				0.0000+ 0			1.5086+ 1				3.2829- 3
1.5000- 1 ~ 2.0000- 1	2.3820+ 1	1.1022+ 1				0.0000+ 0			1.2797+ 1				3.2972- 3
2.0000- 1 ~ 3.0000- 1	2.2929+ 1	1.1030+ 1				0.0000+ 0			1.1899+ 1				3.3121- 3
3.0000- 1 ~ 4.0000- 1	2.8642+ 1	1.1030+ 1				0.0000+ 0			1.7584+ 1				3.3264- 3
4.0000- 1 ~ 5.0000- 1	4.7388+ 1	1.1038+ 1				0.0000+ 0			3.6307+ 1				3.3371- 3
5.0000- 1 ~ 6.0000- 1	2.4460+ 1	1.1044+ 1				0.0000+ 0			1.3411+ 1				3.3456- 3
6.0000- 1 ~ 8.0000- 1	3.2973+ 1	1.1060+ 1				0.0000+ 0			2.1852+ 1				3.3556- 3
8.0000- 1 ~ 1.0000+ 0	3.8696+ 1	1.1099+ 1				0.0000+ 0			2.7545+ 1				3.3663- 3
1.0000+ 0 ~ 1.5000+ 0	4.3810+ 2	1.3020+ 1				0.0000+ 0			4.2387+ 2				3.3799- 3
1.5000+ 0 ~ 2.0000+ 0	6.5110+ 2	1.8050+ 1				0.0000+ 0			6.3187+ 2				3.3943- 3
2.0000+ 0 ~ 3.0000+ 0	1.7502+ 2	1.1083+ 1				0.0000+ 0			1.6390+ 2				3.4092- 3
3.0000+ 0 ~ 4.0000+ 0	2.6068+ 2	1.3619+ 1				0.0000+ 0			2.4706+ 2				3.4235- 3
4.0000+ 0 ~ 5.0000+ 0	7.7663+ 1	1.0359+ 1				0.0000+ 0			6.7304+ 1				3.4341- 3
5.0000+ 0 ~ 6.0000+ 0	2.0899+ 2	1.3466+ 1				0.0000+ 0			1.9552+ 2				3.4426- 3
6.0000+ 0 ~ 8.0000+ 0	4.3139+ 1	1.0377+ 1				0.0000+ 0			3.2762+ 1				3.4527- 3
8.0000+ 0 ~ 1.0000+ 1	2.0526+ 2	1.3479+ 1				0.0000+ 0			1.9178+ 2				3.4633- 3
1.0000+ 1 ~ 1.5000+ 1	6.8834+ 1	1.1245+ 1				0.0000+ 0			5.7589+ 1				3.4770- 3
1.5000+ 1 ~ 2.0000+ 1	9.1655+ 1	1.1964+ 1				0.0000+ 0			7.9691+ 1				3.4913- 3
2.0000+ 1 ~ 3.0000+ 1	7.2610+ 1	1.1820+ 1				0.0000+ 0			6.0790+ 1				3.5062- 3
3.0000+ 1 ~ 4.0000+ 1	6.2795+ 1	1.1807+ 1				0.0000+ 0			5.0988+ 1				3.5205- 3
4.0000+ 1 ~ 5.0000+ 1	5.6496+ 1	1.1796+ 1				0.0000+ 0			4.4701+ 1				3.5312- 3
5.0000+ 1 ~ 6.0000+ 1	5.2241+ 1	1.1786+ 1				0.0000+ 0			4.0456+ 1				3.5397- 3
6.0000+ 1 ~ 8.0000+ 1	4.7399+ 1	1.1772+ 1				0.0000+ 0			3.5627+ 1				3.5497- 3
8.0000+ 1 ~ 1.0000+ 2	4.2956+ 1	1.1757+ 1				0.0000+ 0			3.1199+ 1				3.5604- 3
1.0000+ 2 ~ 1.5000+ 2	3.8139+ 1	1.1734+ 1				0.0000+ 0			2.6404+ 1				3.5740- 3
1.5000+ 2 ~ 2.0000+ 2	3.3752+ 1	1.1707+ 1				0.0000+ 0			2.2045+ 1				3.5884- 3
2.0000+ 2 ~ 3.0000+ 2	3.0010+ 1	1.1674+ 1				0.0000+ 0			1.8336+ 1				3.6033- 3
3.0000+ 2 ~ 4.0000+ 2	2.8896+ 1	1.1637+ 1				0.0000+ 0			1.5269+ 1				3.6176- 3
4.0000+ 2 ~ 5.0000+ 2	2.4985+ 1	1.1606+ 1				0.0000+ 0			1.3379+ 1				3.6282- 3
5.0000+ 2 ~ 6.0000+ 2	2.3555+ 1	1.1578+ 1				0.0000+ 0			1.1976+ 1				3.6367- 3
6.0000+ 2 ~ 8.0000+ 2	2.2072+ 1	1.1543+ 1				0.0000+ 0			1.0529+ 1				3.6468- 3
8.0000+ 2 ~ 1.0000+ 3	2.0729+ 1	1.1503+ 1				0.0000+ 0			9.2256+ 0				3.6575- 3
1.0000+ 3 ~ 1.5000+ 3	1.9821+ 1	1.2100+ 1				0.0000+ 0			7.7171+ 0				4.2520- 3
1.5000+ 3 ~ 2.0000+ 3	1.8470+ 1	1.2100+ 1				0.0000+ 0			6.3694+ 0				5.1785- 3
2.0000+ 3 ~ 3.0000+ 3	1.7490+ 1	1.2100+ 1				0.0000+ 0			5.3876+ 0				6.1420- 3
3.0000+ 3 ~ 4.0000+ 3	1.6680+ 1	1.2100+ 1				0.0000+ 0			4.5787+ 0				7.0685- 3
4.0000+ 3 ~ 5.0000+ 3	1.6123+ 1	1.2100+ 1				0.0000+ 0			4.0221+ 0				7.7574- 3
5.0000+ 3 ~ 6.0000+ 3	1.5765+ 1	1.2100+ 1				0.0000+ 0			3.6634+ 0				8.9109- 3
6.0000+ 3 ~ 8.0000+ 3	1.5447+ 1	1.2100+ 1	2.9842- 2			0.0000+ 0			3.3169+ 0				1.1102- 2
8.0000+ 3 ~ 1.0000+ 4	1.5193+ 1	1.2024+ 1	1.5234- 1			0.0000+ 0			3.0158+ 0				1.3417- 2
1.0000+ 4 ~ 1.5000+ 4	1.4923+ 1	1.2000+ 1	2.0489- 1			1.2077- 3			2.7139+ 0				1.7884- 2
1.5000+ 4 ~ 2.0000+ 4	1.4656+ 1	1.2000+ 1	1.9220- 1			3.1042- 3			2.4600+ 0				2.4406- 2
2.0000+ 4 ~ 3.0000+ 4	1.4130+ 1	1.1696+ 1	1.7280- 1			5.0762- 3			2.2548+ 0				3.4258- 2
3.0000+ 4 ~ 4.0000+ 4	1.3971+ 1	1.1795+ 1	1.6589- 1			6.9727- 3			2.0019+ 0				4.7148- 2
4.0000+ 4 ~ 5.0000+ 4	1.3550+ 1	1.1598+ 1	1.7079- 1			8.3829- 3			1.7736+ 0				5.9121- 2
5.0000+ 4 ~ 6.0000+ 4	1.3220+ 1	1.1448+ 1	1.8116- 1			9.5067- 3			1.5809+ 0				7.0568- 2
6.0000+ 4 ~ 8.0000+ 4	1.2827+ 1	1.1299+ 1	2.7233- 1			1.0000- 2			1.2428+ 0				8.6281- 2
8.0000+ 4 ~ 1.0000+ 5	1.2504+ 1	1.1099+ 1	5.3224- 1			1.2544- 2			8.5979- 1				1.0689- 1
1.0000+ 5 ~ 1.5000+ 5	1.2084+ 1	1.0568+ 1	8.5426- 1			2.0000- 2			6.3810- 1				1.4208- 1
1.5000+ 5 ~ 2.0000+ 5	1.1444+ 1	9.8291+ 0	1.0665+ 0			2.5239- 2			5.2341- 1				1.8443- 1
2.0000+ 5 ~ 3.0000+ 5	1.0659+ 1	8.8865+ 0	1.3054+ 0			5.0338- 2			4.1623- 1				2.3713- 1
3.0000+ 5 ~ 4.0000+ 5	9.8634+ 0	7.7664+ 0	1.5544+ 0			2.4290- 1			2.9732- 1				2.9170- 1
4.0000+ 5 ~ 5.0000+ 5	9.1252+ 0	6.9311+ 0	1.5429+ 0			4.2074- 1			2.3118- 1				3.3614- 1
5.0000+ 5 ~ 6.0000+ 5	8.4135+ 0	6.2860+ 0	1.4910+ 0			4.4515- 1			1.8888- 1				3.7309- 1
6.0000+ 5 ~ 8.0000+ 5	7.6758+ 0	5.4400+ 0	1.5078+ 0			5.7726- 1			1.4873- 1				4.1647- 1
8.0000+ 5 ~ 1.0000+ 6	7.1062+ 0	4.6956+ 0	1.3917+ 0			9.0268- 1			1.1526- 1				4.6427- 1
1.0000+ 6 ~ 1.5000+ 6	6.6031+ 0	3.9311+ 0	1.6659+ 0			1.0204+ 0			8.3783- 2				5.2394- 1
1.5000+ 6 ~ 2.0000+ 6	6.6843+ 0	3.7430+ 0	1.8879+ 0			1.1934+ 0			5.9915- 2				6.0450- 1
2.0000+ 6 ~ 3.0000+ 6	7.3461+ 0	4.3905+ 0	1.6352+ 0			1.2781+ 0			4.2101- 2				6.9903- 1
3.0000+ 6 ~ 4.0000+ 6	7.6455+ 0	4.8509+ 0	1.4544+ 0			1.3101+ 0			2.9772- 2				7.5959- 1
4.0000+ 6 ~ 5.0000+ 6	7.4850+ 0	4.7681+ 0	1.3710+ 0			1.3225+ 0			2.3177- 2				7.8930- 1
5.0000+ 6 ~ 6.0000+ 6	7.1420+ 0	4.4177+ 0	1.3651+ 0			1.3401+ 0			1.8922- 2				8.1074- 1
6.0000+ 6 ~ 8.0000+ 6	6.5147+ 0	3.7979+ 0	1.1835+ 0	1.5122- 1		1.3663+ 0			1.4886- 2				8.3327- 1
8.0000+ 6 ~ 1.0000+ 7	5.8507+ 0	3.1052+ 0	7.3980- 1	6.2237- 1		1.3712+ 0			1.1544- 2				8.4359- 1
1.0000+ 7 ~ 1.5000+ 7	5.6521+ 0	2.9620+ 0	9.9554- 1	6.0287- 1	1.7255- 1	1.5106+ 0			8.4076- 3				8.4289- 1
1.5000+ 7 ~ 2.0000+ 7	5.7182+ 0	3.0500+ 0	1.2151- 2	1.9957- 1	5.8953- 1	1.8600+ 0			6.9000- 3				8.4419- 1

CROSS SECTION

MATERIAL =2921 U -233

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.6046+ 3	1.3924+ 1				1.6612+ 3			1.3940+ 2				3.3928- 3
1.0000- 2 ~ 1.5000- 2	8.4251+ 2	1.2830+ 1				7.6496+ 2			6.4684+ 1				3.4242- 3
1.5000- 2 ~ 2.0000- 2	7.1332+ 2	1.2785+ 1				6.4804+ 2			5.4471+ 1				3.4499- 3
2.0000- 2 ~ 3.0000- 2	5.9699+ 2	1.2700+ 1				5.3862+ 2			4.5661+ 1				3.4766- 3
3.0000- 2 ~ 4.0000- 2	5.0606+ 2	1.2683+ 1				4.5458+ 2			3.8757+ 1				3.5023- 3
4.0000- 2 ~ 5.0000- 2	4.4628+ 2	1.2666+ 1				3.9767+ 2			3.4924+ 1				3.5214- 3
5.0000- 2 ~ 6.0000- 2	4.0361+ 2	1.2649+ 1				3.5900+ 2			3.1948+ 1				3.5367- 3
6.0000- 2 ~ 8.0000- 2	3.5796+ 2	1.2629+ 1				3.1632+ 2			2.8008+ 1				3.5647- 3
8.0000- 2 ~ 1.0000- 1	3.1671+ 2	1.2589+ 1				2.7691+ 2			2.7208+ 1				3.5738- 3
1.0000- 1 ~ 1.5000- 1	2.7411+ 2	1.2531+ 1				2.3433+ 2			2.7237+ 1				3.5983- 3
1.5000- 1 ~ 2.0000- 1	2.4151+ 2	1.2464+ 1				2.0916+ 2			2.5891+ 1				3.6240- 3
2.0000- 1 ~ 3.0000- 1	2.1179+ 2	1.2360+ 1				1.8150+ 2			1.7886+ 1				3.6507- 3
3.0000- 1 ~ 4.0000- 1	1.8265+ 2	1.2183+ 1				1.5800+ 2			1.2461+ 1				3.6764- 3
4.0000- 1 ~ 5.0000- 1	1.6370+ 2	1.2011+ 1				1.4072+ 2			1.0958+ 1				3.6955- 3
5.0000- 1 ~ 6.0000- 1	1.5145+ 2	1.1839+ 1				1.2931+ 2			1.0304+ 1				3.7108- 3
6.0000- 1 ~ 8.0000- 1	1.4120+ 2	1.1565+ 1				1.1926+ 2			1.0377+ 1				3.7289- 3
8.0000- 1 ~ 1.0000+ 0	1.4981+ 2	1.1179+ 1				1.2643+ 2			1.2195+ 1				3.7480- 3
1.0000+ 0 ~ 1.5000+ 0	2.6811+ 2	1.0395+ 1				2.3137+ 2			2.6346+ 1				3.7724- 3
1.5000+ 0 ~ 2.0000+ 0	6.8991+ 2	1.2085+ 1				5.6122+ 2			1.1661+ 2				3.7981- 3
2.0000+ 0 ~ 3.0000+ 0	2.6343+ 2	1.3491+ 1				1.7240+ 2			7.7535+ 1				3.8249- 3
3.0000+ 0 ~ 4.0000+ 0	1.3009+ 2	1.1979+ 1				9.8368+ 1			1.9747+ 1				3.8506- 3
4.0000+ 0 ~ 5.0000+ 0	1.0103+ 2	1.1499+ 1				8.3239+ 1			6.2905+ 0				3.8697- 3
5.0000+ 0 ~ 6.0000+ 0	9.7686+ 1	1.0882+ 1				7.6688+ 1			8.1163+ 0				3.8849- 3
6.0000+ 0 ~ 8.0000+ 0	2.0167+ 2	1.2465+ 1				1.5052+ 2			3.8687+ 1				3.9030- 3
8.0000+ 0 ~ 1.0000+ 1	6.7251+ 1	1.0618+ 1				4.9648+ 1			6.9858+ 0				3.9221- 3
1.0000+ 1 ~ 1.5000+ 1	1.5048+ 2	1.2211+ 1				1.1652+ 2			2.1747+ 1				3.9466- 3
1.5000+ 1 ~ 2.0000+ 1	1.3317+ 2	1.1966+ 1				1.0686+ 2			1.5349+ 1				3.9723- 3
2.0000+ 1 ~ 3.0000+ 1	1.1500+ 2	1.2896+ 1				9.1892+ 1			1.0213+ 1				3.9990- 3
3.0000+ 1 ~ 4.0000+ 1	7.1530+ 1	1.2849+ 1				5.3384+ 1			5.2975+ 0				4.0247- 3
4.0000+ 1 ~ 5.0000+ 1	4.3923+ 1	1.2509+ 1				2.7013+ 1			4.4008+ 0				4.0438- 3
5.0000+ 1 ~ 6.0000+ 1	6.2384+ 1	1.2266+ 1				4.6234+ 1			3.8948+ 0				4.0590- 3
6.0000+ 1 ~ 8.0000+ 1	5.6062+ 1	1.2741+ 1				3.8701+ 1			4.6204+ 0				4.0771- 3
8.0000+ 1 ~ 1.0000+ 2	5.4116+ 1	1.3397+ 1				3.5023+ 1			5.6954+ 0				4.0962- 3
1.0000+ 2 ~ 1.5000+ 2	4.2249+ 1	1.2677+ 1				2.5675+ 1			3.8964+ 0				4.1207- 3
1.5000+ 2 ~ 2.0000+ 2	3.9133+ 1	1.2689+ 1				2.3169+ 1			3.2845+ 0				4.1464- 3
2.0000+ 2 ~ 3.0000+ 2	3.7006+ 1	1.2725+ 1				2.1364+ 1			2.9168+ 0				4.1731- 3
3.0000+ 2 ~ 4.0000+ 2	3.1092+ 1	1.2566+ 1				1.6927+ 1			1.6084+ 0				4.1988- 3
4.0000+ 2 ~ 5.0000+ 2	2.6521+ 1	1.2496+ 1				1.1817+ 1			1.2086+ 0				4.2179- 3
5.0000+ 2 ~ 6.0000+ 2	2.7408+ 1	1.2686+ 1				1.2699+ 1			2.0226+ 0				4.2331- 3
6.0000+ 2 ~ 8.0000+ 2	2.7945+ 1	1.2691+ 1				1.3522+ 1			1.7327+ 0				4.2512- 3
8.0000+ 2 ~ 1.0000+ 3	2.5831+ 1	1.2639+ 1				1.1764+ 1			1.4282+ 0				4.2703- 3
1.0000+ 3 ~ 1.5000+ 3	2.3039+ 1	1.2544+ 1				9.4091+ 0			1.0806+ 0				4.2948- 3
1.5000+ 3 ~ 2.0000+ 3	2.1783+ 1	1.2515+ 1				8.3705+ 0			8.9710- 1				4.6039- 3
2.0000+ 3 ~ 3.0000+ 3	2.0518+ 1	1.2518+ 1				7.1277+ 0			8.7143- 1				5.3474- 3
3.0000+ 3 ~ 4.0000+ 3	1.9043+ 1	1.2440+ 1				5.8967+ 0			7.0631- 1				6.3682- 3
4.0000+ 3 ~ 5.0000+ 3	1.8243+ 1	1.2373+ 1				5.2757+ 0			5.9364- 1				7.4129- 3
5.0000+ 3 ~ 6.0000+ 3	1.7365+ 1	1.2310+ 1				4.5427+ 0			5.1218- 1				8.4786- 3
6.0000+ 3 ~ 8.0000+ 3	1.7156+ 1	1.2230+ 1				4.4925+ 0			4.3370- 1				1.0105- 2
8.0000+ 3 ~ 1.0000+ 4	1.6769+ 1	1.2143+ 1				4.2464+ 0			3.7995- 1				1.2303- 2
1.0000+ 4 ~ 1.5000+ 4	1.6005+ 1	1.2024+ 1				3.6463+ 0			3.3395- 1				1.6438- 2
1.5000+ 4 ~ 2.0000+ 4	1.5419+ 1	1.1871+ 1				3.2518+ 0			2.9644- 1				2.2117- 2
2.0000+ 4 ~ 3.0000+ 4	1.4896+ 1	1.1689+ 1				2.9211+ 0			2.8644- 1				3.0813- 2
3.0000+ 4 ~ 4.0000+ 4	1.3825+ 1	1.0863+ 1				2.6762+ 0			2.8589- 1				4.2527- 2
4.0000+ 4 ~ 5.0000+ 4	1.3480+ 1	1.0648+ 1	1.2829- 2			2.5418+ 0			2.7781- 1				5.4288- 2
5.0000+ 4 ~ 6.0000+ 4	1.3181+ 1	1.0431+ 1	2.7957- 2			2.4496+ 0			2.7224- 1				6.5910- 2
6.0000+ 4 ~ 8.0000+ 4	1.2746+ 1	1.0078+ 1	4.4924- 2			2.3548+ 0			2.6873- 1				8.2961- 2
8.0000+ 4 ~ 1.0000+ 5	1.2297+ 1	9.6913+ 0	6.5835- 2			2.2799+ 0			2.5982- 1				1.0495- 1
1.0000+ 5 ~ 1.5000+ 5	1.1692+ 1	9.1459+ 0	1.0644- 1			2.1991+ 0			2.4042- 1				1.4100- 1
1.5000+ 5 ~ 2.0000+ 5	1.1008+ 1	8.4813+ 0	1.5320- 1			2.1561+ 0			2.1768- 1				1.8673- 1
2.0000+ 5 ~ 3.0000+ 5	1.0229+ 1	7.6785+ 0	1.7807- 1			2.1950+ 0			1.7685- 1				2.4484- 1
3.0000+ 5 ~ 4.0000+ 5	9.3609+ 0	6.8226+ 0	2.7290- 1			2.1091+ 0			1.5601- 1				3.0514- 1
4.0000+ 5 ~ 5.0000+ 5	8.6132+ 0	6.0649+ 0	4.0646- 1			2.0069+ 0			1.3455- 1				3.5152- 1
5.0000+ 5 ~ 6.0000+ 5	8.0096+ 0	5.4478+ 0	5.0010- 1			1.9348+ 0			1.2644- 1				3.8674- 1
6.0000+ 5 ~ 8.0000+ 5	7.3824+ 0	4.7668+ 0	6.9133- 1			1.9062+ 0			1.1782- 1				4.2438- 1
8.0000+ 5 ~ 1.0000+ 6	6.8757+ 0	4.1633+ 0	7.3344- 1			1.8737+ 0			1.1505- 1				4.5641- 1
1.0000+ 6 ~ 1.5000+ 6	6.7280+ 0	3.7698+ 0	9.8122- 1			1.8779+ 0			1.0854- 1				4.8960- 1
1.5000+ 6 ~ 2.0000+ 6	7.0395+ 0	3.8602+ 0	1.1588+ 0			1.9378+ 0			8.2329- 2				5.7995- 1
2.0000+ 6 ~ 3.0000+ 6	7.6099+ 0	4.5198+ 0	1.1599+ 0			1.8871+ 0			4.2096- 2				6.9092- 1
3.0000+ 6 ~ 4.0000+ 6	8.0258+ 0	5.1615+ 0	1.1551+ 0			1.7035+ 0			1.4564- 2				7.6641- 1
4.0000+ 6 ~ 5.0000+ 6	7.8979+ 0	5.1431+ 0	1.1957+ 0			1.5542+ 0			4.5371- 3				7.9526- 1
5.0000+ 6 ~ 6.0000+ 6	7.4400+ 0	4.7098+ 0	1.1783+ 0	2.5094- 3		1.5475+ 0			1.2774- 3				8.0267- 1
6.0000+ 6 ~ 8.0000+ 6	6.6938+ 0	3.9795+ 0	6.2039- 1	1.4609- 1		2.0472+ 0			1.5259- 4				7.9561- 1
8.0000+ 6 ~ 1.0000+ 7	5.9604+ 0	3.4930+ 0	2.0406- 2	2.4325- 1		2.2037+ 0			9.8975- 6				7.8276- 1
1.0000+ 7 ~ 1.5000+ 7	5.7255+ 0	3.2644+ 0	3.1196- 4	2.1485- 1	1.5438- 2	2.2305+ 0			1.2719- 6				8.0924- 1
1.5000+ 7 ~ 2.0000+ 7	6.1581+ 0	3.7288+ 0	8.3025- 7	3.2865- 2	2.1002- 1	2.1864+ 0			2.7241- 7				8.7992- 1

CROSS SECTION

MATERIAL =2922 U -234

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	3.1718+ 2	1.4840+ 1				1.9670- 2			3.0232+ 2				2.8871- 3
1.0000- 2 ~ 1.5000- 2	1.5383+ 2	1.4796+ 1				9.1112- 3			1.3902+ 2				2.8900- 3
1.5000- 2 ~ 2.0000- 2	1.3104+ 2	1.4787+ 1				7.6728- 3			1.1626+ 2				2.8908- 3
2.0000- 2 ~ 3.0000- 2	1.1169+ 2	1.4729+ 1				6.4635- 3			9.6963+ 1				2.8916- 3
3.0000- 2 ~ 4.0000- 2	9.5412+ 1	1.4666+ 1				5.4568- 3			8.0741+ 1				2.8924- 3
4.0000- 2 ~ 5.0000- 2	8.5070+ 1	1.4610+ 1				4.8265- 3			7.0455+ 1				2.8930- 3
5.0000- 2 ~ 6.0000- 2	7.7520+ 1	1.4554+ 1				4.3723- 3			6.2961+ 1				2.8935- 3
6.0000- 2 ~ 8.0000- 2	6.9642+ 1	1.4472+ 1				3.9068- 3			5.5166+ 1				2.8941- 3
8.0000- 2 ~ 1.0000- 1	6.1940+ 1	1.4364+ 1				3.4603- 3			4.7572+ 1				2.8947- 3
1.0000- 1 ~ 1.5000- 1	5.3275+ 1	1.4189+ 1				2.9746- 3			3.9089+ 1				2.8954- 3
1.5000- 1 ~ 2.0000- 1	4.5407+ 1	1.3936+ 1				2.5527- 3			3.1469+ 1				2.8962- 3
2.0000- 1 ~ 3.0000- 1	3.8243+ 1	1.3591+ 1				2.1916- 3			2.4650+ 1				2.8971- 3
3.0000- 1 ~ 4.0000- 1	3.2268+ 1	1.3170+ 1				1.9124- 3			1.9095+ 1				2.8979- 3
4.0000- 1 ~ 5.0000- 1	2.8277+ 1	1.2787+ 1				1.7411- 3			1.5488+ 1				2.8985- 3
5.0000- 1 ~ 6.0000- 1	2.5423+ 1	1.2438+ 1				1.6295- 3			1.2983+ 1				2.8989- 3
6.0000- 1 ~ 8.0000- 1	2.2453+ 1	1.1972+ 1				1.5294- 3			1.0480+ 1				2.8995- 3
8.0000- 1 ~ 1.0000+ 0	1.9635+ 1	1.1418+ 1				1.4548- 3			8.2152+ 0				2.9001- 3
1.0000+ 0 ~ 1.5000+ 0	1.6648+ 1	1.0607+ 1				1.4338- 3			6.0387+ 0				2.9009- 3
1.5000+ 0 ~ 2.0000+ 0	1.4146+ 1	9.6262+ 0				1.5394- 3			4.5182+ 0				2.9017- 3
2.0000+ 0 ~ 3.0000+ 0	1.2400+ 1	8.2872+ 0				2.0719- 3			4.1113+ 0				2.9026- 3
3.0000+ 0 ~ 4.0000+ 0	1.2661+ 1	6.0499+ 0				4.4840- 3			6.6072+ 0				2.9033- 3
4.0000+ 0 ~ 5.0000+ 0	6.0320+ 1	2.5630+ 0				4.3556- 2			5.7714+ 1				2.9039- 3
5.0000+ 0 ~ 6.0000+ 0	3.0462+ 3	4.3257+ 2				1.9847+ 0			2.6116+ 3				2.9044- 3
6.0000+ 0 ~ 8.0000+ 0	2.1245+ 1	1.6150+ 1				3.7753- 3			5.0907+ 0				2.9049- 3
8.0000+ 0 ~ 1.0000+ 1	1.2034+ 1	1.1978+ 1				8.1546- 4			8.5497- 1				2.9055- 3
1.0000+ 1 ~ 1.5000+ 1	1.0654+ 1	1.0389+ 1				2.0387- 4			2.6483- 1				2.9063- 3
1.5000+ 1 ~ 2.0000+ 1	9.5278+ 0	9.4106+ 0				1.0427- 4			1.1702- 1				2.9071- 3
2.0000+ 1 ~ 3.0000+ 1	1.1541+ 1	8.1064+ 0				1.9214- 4			3.4347+ 0				2.9079- 3
3.0000+ 1 ~ 4.0000+ 1	9.6078+ 1	2.7449+ 1				9.2656- 2			6.8596+ 1				2.9087- 3
4.0000+ 1 ~ 5.0000+ 1	7.8264+ 1	2.4511+ 1				1.9591- 2			5.3733+ 1				2.9093- 3
5.0000+ 1 ~ 6.0000+ 1	1.0270+ 1	1.0060+ 1				9.4976- 5			2.1023- 1				2.9098- 3
6.0000+ 1 ~ 8.0000+ 1	2.9099+ 1	1.3142+ 1				7.0861- 3			1.5949+ 1				2.9104- 3
8.0000+ 1 ~ 1.0000+ 2	9.7204+ 1	6.3359+ 1				5.4138- 2			3.3790+ 1				2.9110- 3
1.0000+ 2 ~ 1.5000+ 2	3.0043+ 1	1.6605+ 1				1.0124- 1			1.3436+ 1				2.9246- 3
1.5000+ 2 ~ 2.0000+ 2	7.4020+ 1	4.7561+ 1				8.1135- 2			2.6378+ 1				2.9504- 3
2.0000+ 2 ~ 3.0000+ 2	4.2403+ 1	3.1493+ 1				1.8059- 4			1.0905+ 1				2.9933- 3
3.0000+ 2 ~ 4.0000+ 2	4.1338+ 1	3.2157+ 1				1.0000- 4			9.1669+ 0				3.0670- 3
4.0000+ 2 ~ 5.0000+ 2	3.7761+ 1	3.0254+ 1				1.0000- 4			7.5188+ 0				3.1238- 3
5.0000+ 2 ~ 6.0000+ 2	3.5254+ 1	2.8832+ 1				1.0000- 4			6.4178+ 0				3.1949- 3
6.0000+ 2 ~ 8.0000+ 2	3.2582+ 1	2.7255+ 1				1.0000- 4			5.3251+ 0				3.3130- 3
8.0000+ 2 ~ 1.0000+ 3	3.0067+ 1	2.5702+ 1				1.0000- 4			4.3638+ 0				3.4710- 3
1.0000+ 3 ~ 1.5000+ 3	2.7302+ 1	2.3898+ 1				1.4704- 4			3.4022+ 0				3.7245- 3
1.5000+ 3 ~ 2.0000+ 3	2.4805+ 1	2.2183+ 1				1.7644- 3			2.6197+ 0				4.1532- 3
2.0000+ 3 ~ 3.0000+ 3	2.2641+ 1	2.0609+ 1				4.0169- 3			2.0265+ 0				4.8507- 3
3.0000+ 3 ~ 4.0000+ 3	2.0860+ 1	1.9253+ 1				6.0120- 3			1.6003+ 0				5.8219- 3
4.0000+ 3 ~ 5.0000+ 3	1.9717+ 1	1.8347+ 1				8.0093- 3			1.3617+ 0				6.8401- 3
5.0000+ 3 ~ 6.0000+ 3	1.8902+ 1	1.7682+ 1				9.5152- 3			1.2090+ 0				7.9058- 3
6.0000+ 3 ~ 8.0000+ 3	1.8028+ 1	1.6955+ 1				1.0000- 2			1.0627+ 0				9.5288- 3
8.0000+ 3 ~ 1.0000+ 4	1.7195+ 1	1.6247+ 1				1.0000- 2			9.3806- 1				1.1750- 2
1.0000+ 4 ~ 1.5000+ 4	1.6265+ 1	1.5437+ 1				1.1067- 2			8.1651- 1				1.5940- 2
1.5000+ 4 ~ 2.0000+ 4	1.5386+ 1	1.4661+ 1				1.2524- 2			7.1220- 1				2.1679- 2
2.0000+ 4 ~ 3.0000+ 4	1.4577+ 1	1.3938+ 1				1.4017- 2			6.2487- 1				3.0369- 2
3.0000+ 4 ~ 4.0000+ 4	1.3859+ 1	1.3290+ 1				1.6048- 2			5.5294- 1				4.2013- 2
4.0000+ 4 ~ 5.0000+ 4	1.3341+ 1	1.2819+ 1	1.1457- 2			1.7519- 2			4.9294- 1				5.3145- 2
5.0000+ 4 ~ 6.0000+ 4	1.2951+ 1	1.2427+ 1	7.0395- 2			1.8515- 2			4.3439- 1				6.4021- 2
6.0000+ 4 ~ 8.0000+ 4	1.2476+ 1	1.1930+ 1	1.5691- 1			2.0267- 2			3.6921- 1				7.9741- 2
8.0000+ 4 ~ 1.0000+ 5	1.1965+ 1	1.1375+ 1	2.5323- 1			2.3009- 2			3.1357- 1				9.9554- 2
1.0000+ 5 ~ 1.5000+ 5	1.1268+ 1	1.0596+ 1	3.7610- 1			2.8803- 2			2.6526- 1				1.3132- 1
1.5000+ 5 ~ 2.0000+ 5	1.0512+ 1	9.7392+ 0	5.0372- 1			3.8763- 2			2.2918- 1				1.6907- 1
2.0000+ 5 ~ 3.0000+ 5	9.6699+ 0	8.7605+ 0	6.2783- 1			7.4953- 2			2.0545- 1				2.1435- 1
3.0000+ 5 ~ 4.0000+ 5	8.8257+ 0	7.7191+ 0	7.1365- 1			2.0059- 1			1.8853- 1				2.6275- 1
4.0000+ 5 ~ 5.0000+ 5	8.2076+ 0	6.8948+ 0	7.3106- 1			4.0098- 1			1.7639- 1				3.0284- 1
5.0000+ 5 ~ 6.0000+ 5	7.7426+ 0	6.2416+ 0	7.2000- 1			6.0882- 1			1.6974- 1				3.3707- 1
6.0000+ 5 ~ 8.0000+ 5	7.2636+ 0	5.4553+ 0	6.2256- 1			1.0318+ 0			1.5141- 1				3.8638- 1
8.0000+ 5 ~ 1.0000+ 6	6.8911+ 0	4.8253+ 0	7.4440- 1			1.1732+ 0			1.4802- 1				4.3241- 1
1.0000+ 6 ~ 1.5000+ 6	6.7809+ 0	4.3164+ 0	1.1322+ 0			1.1959+ 0			1.3700- 1				4.9840- 1
1.5000+ 6 ~ 2.0000+ 6	6.9688+ 0	4.1053+ 0	1.3190+ 0			1.4389+ 0			1.0562- 1				5.9119- 1
2.0000+ 6 ~ 3.0000+ 6	7.2462+ 0	4.3382+ 0	1.3487+ 0			1.4965+ 0			5.6904- 2				6.8953- 1
3.0000+ 6 ~ 4.0000+ 6	7.4106+ 0	4.6180+ 0	1.2972+ 0			1.4715+ 0			2.1091- 2				7.5771- 1
4.0000+ 6 ~ 5.0000+ 6	7.3998+ 0	4.6771+ 0	1.2702+ 0			1.4449+ 0			6.8676- 3				7.8829- 1
5.0000+ 6 ~ 6.0000+ 6	7.2957+ 0	4.5637+ 0	1.1561+ 0			1.5738+ 0			1.9750- 3				8.1064- 1
6.0000+ 6 ~ 8.0000+ 6	6.9849+ 0	4.2504+ 0	5.3825- 1	3.8553- 2		2.1572+ 0			2.1803- 4				8.3383- 1
8.0000+ 6 ~ 1.0000+ 7	6.5861+ 0	3.8284+ 0	3.1837- 1	2.4471- 1		2.1935+ 0			1.9799- 5				8.4430- 1
1.0000+ 7 ~ 1.5000+ 7	5.9601+ 0	3.2648+ 0	3.6450- 1	2.8927- 1	5.0195- 2	1.9913+ 0			4.5915- 6				8.4362- 1
1.5000+ 7 ~ 2.0000+ 7	5.6709+ 0	2.9947+ 0	3.0640- 1	1.2584- 1	2.2356- 1	2.0204+ 0			1.6677- 6				8.4496- 1

MATERIAL =2923

CROSS SECTION

U -235

ENERGY	TOTAL	ELASTIC	INELA	(N.2N)	(N.3N)	FISSION	(N.NA)	(N.NP)	CAPTURE	(N.P)	(N.D)	(N.A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	2.2850+ 3	1.7000+ 1				1.9510+ 3			3.0809+ 2				2.8892- 3
1.0000- 2 ~ 1.5000- 2	1.0143+ 3	1.7000+ 1				8.5572+ 2			1.3868+ 2				2.8950- 3
1.5000- 2 ~ 2.0000- 2	8.4947+ 2	1.7000+ 1				7.1149+ 2			1.1632+ 2				2.8966- 3
2.0000- 2 ~ 3.0000- 2	7.0576+ 2	1.7000+ 1				5.8869+ 2			9.7000+ 1				2.8983- 3
3.0000- 2 ~ 4.0000- 2	5.7935+ 2	1.7000+ 1				4.7960+ 2			8.0826+ 1				2.8999- 3
4.0000- 2 ~ 5.0000- 2	5.0101+ 2	1.7000+ 1				4.1112+ 2			7.1067+ 1				2.9011- 3
5.0000- 2 ~ 6.0000- 2	4.4751+ 2	1.7000+ 1				3.8478+ 2			6.4644+ 1				2.9021- 3
6.0000- 2 ~ 8.0000- 2	3.9400+ 2	1.6500+ 1				3.1806+ 2			5.7167+ 1				2.9033- 3
8.0000- 2 ~ 1.0000- 1	3.4175+ 2	1.6000+ 1				2.7439+ 2			5.0098+ 1				2.9045- 3
1.0000- 1 ~ 1.5000- 1	2.8430+ 2	1.6000+ 1				2.2554+ 2			4.2091+ 1				2.9060- 3
1.5000- 1 ~ 2.0000- 1	2.3681+ 2	1.6000+ 1				1.8426+ 2			3.5761+ 1				2.9076- 3
2.0000- 1 ~ 3.0000- 1	2.4237+ 2	1.5975+ 1				1.8310+ 2			4.3292+ 1				2.9093- 3
3.0000- 1 ~ 4.0000- 1	1.9532+ 2	1.5125+ 1				1.5110+ 2			2.9030+ 1				2.9109- 3
4.0000- 1 ~ 5.0000- 1	1.2215+ 2	1.5000+ 1				9.4313+ 1			1.2723+ 1				2.9122- 3
5.0000- 1 ~ 6.0000- 1	9.4550+ 1	1.4800+ 1				7.1268+ 1			8.1204+ 0				2.9131- 3
6.0000- 1 ~ 8.0000- 1	8.1950+ 1	1.4300+ 1				6.1664+ 1			5.8825+ 0				2.9143- 3
8.0000- 1 ~ 1.0000+ 0	8.2800+ 1	1.3775+ 1				6.2253+ 1			6.7357+ 0				2.9155- 3
1.0000+ 0 ~ 1.5000+ 0	7.7637+ 1	1.3391+ 1				5.0169+ 1			1.4077+ 1				2.9170- 3
1.5000+ 0 ~ 2.0000+ 0	3.3588+ 1	1.2672+ 1				1.4976+ 1			5.9390+ 0				2.9186- 3
2.0000+ 0 ~ 3.0000+ 0	3.3425+ 1	1.2009+ 1				1.3439+ 1			7.9770+ 0				2.9203- 3
3.0000+ 0 ~ 4.0000+ 0	5.6696+ 1	1.1551+ 1				2.9739+ 1			1.5406+ 1				2.9220- 3
4.0000+ 0 ~ 5.0000+ 0	4.1090+ 1	1.1015+ 1				6.0546+ 0			2.4020+ 1				2.9232- 3
5.0000+ 0 ~ 6.0000+ 0	2.7939+ 1	1.0529+ 1				1.2996+ 1			4.4148+ 0				2.9241- 3
6.0000+ 0 ~ 8.0000+ 0	8.3371+ 1	1.0671+ 1				2.6939+ 1			4.5761+ 1				2.9253- 3
8.0000+ 0 ~ 1.0000+ 1	1.7445+ 2	1.1920+ 1				1.0777+ 2			5.4768+ 1				2.9265- 3
1.0000+ 1 ~ 1.5000+ 1	1.0357+ 2	1.1896+ 1				3.9896+ 1			5.1776+ 1				2.9280- 3
1.5000+ 1 ~ 2.0000+ 1	1.1330+ 2	1.2204+ 1				5.7295+ 1			4.3802+ 1				2.9297- 3
2.0000+ 1 ~ 3.0000+ 1	7.3445+ 1	1.1754+ 1				3.5576+ 1			2.6116+ 1				2.9313- 3
3.0000+ 1 ~ 4.0000+ 1	1.1237+ 2	1.3070+ 1				5.9706+ 1			3.9595+ 1				2.9330- 3
4.0000+ 1 ~ 5.0000+ 1	7.1813+ 1	1.1750+ 1				3.5143+ 1			2.4919+ 1				2.9342- 3
5.0000+ 1 ~ 6.0000+ 1	1.0154+ 2	1.3803+ 1				6.0844+ 1			2.6890+ 1				2.9361- 3
6.0000+ 1 ~ 8.0000+ 1	4.7819+ 1	1.2804+ 1	4.4305-10			2.3302+ 1			1.1714+ 1				2.9379- 3
8.0000+ 1 ~ 1.0000+ 2	5.6554+ 1	1.3802+ 1	1.0953- 8			2.5469+ 1			1.7283+ 1				2.9621- 3
1.0000+ 2 ~ 1.5000+ 2	4.7160+ 1	1.1307+ 1	3.1110- 8			2.2209+ 1			1.3644+ 1				3.0090- 3
1.5000+ 2 ~ 2.0000+ 2	4.6830+ 1	1.1975+ 1	5.2261- 8			2.1099+ 1			1.2756+ 1				3.0755- 3
2.0000+ 2 ~ 3.0000+ 2	4.3922+ 1	1.2842+ 1	7.4255- 8			2.0869+ 1			1.0211+ 1				3.1699- 3
3.0000+ 2 ~ 4.0000+ 2	3.2996+ 1	1.1468+ 1	9.6406- 8			1.4221+ 1			6.7060+ 0				3.2812- 3
4.0000+ 2 ~ 5.0000+ 2	3.0095+ 1	1.0866+ 1	1.1113- 7			1.4065+ 1			5.1641+ 0				3.4146- 3
5.0000+ 2 ~ 6.0000+ 2	3.1079+ 1	1.0924+ 1	1.2367- 7			1.5409+ 1			4.7454+ 0				3.5569- 3
6.0000+ 2 ~ 8.0000+ 2	2.7969+ 1	1.1439+ 1	1.3855- 7			1.1709+ 1			4.8207+ 0				3.7274- 3
8.0000+ 2 ~ 1.0000+ 3	2.4600+ 1	1.2120+ 1	1.5428- 7			8.0946+ 0			4.2858+ 0				3.9488- 3
1.0000+ 3 ~ 1.5000+ 3	2.4169+ 1	1.2941+ 1	1.7443- 7			7.5243+ 0			3.7039+ 0				4.4341- 3
1.5000+ 3 ~ 2.0000+ 3	2.1624+ 1	1.1330+ 1	1.9559- 7			7.6119+ 0			2.6816+ 0				5.1123- 3
2.0000+ 3 ~ 3.0000+ 3	2.0683+ 1	1.2719+ 1	2.4913- 7			5.6960+ 0			2.2686+ 0				6.0602- 3
3.0000+ 3 ~ 4.0000+ 3	2.0361+ 1	1.3396+ 1	6.5720- 7			4.9376+ 0			2.0266+ 0				7.3813- 3
4.0000+ 3 ~ 5.0000+ 3	1.8328+ 1	1.2229+ 1	2.1365- 6			4.4130+ 0			1.6856+ 0				8.7094- 3
5.0000+ 3 ~ 6.0000+ 3	1.7495+ 1	1.2217+ 1	4.1094- 6			3.9310+ 0			1.3467+ 0				1.0029- 2
6.0000+ 3 ~ 8.0000+ 3	1.6872+ 1	1.2243+ 1	8.8636- 6			3.3563+ 0			1.2728+ 0				1.2009- 2
8.0000+ 3 ~ 1.0000+ 4	1.6713+ 1	1.2410+ 1	1.6866- 5			3.1334+ 0			1.1702+ 0				1.4760- 2
1.0000+ 4 ~ 1.5000+ 4	1.5950+ 1	1.2192+ 1	1.7415- 3			2.7298+ 0			1.0267+ 0				1.9492- 2
1.5000+ 4 ~ 2.0000+ 4	1.5286+ 1	1.1943+ 1	1.3151- 2			2.4110+ 0			9.1959- 1				2.6444- 2
2.0000+ 4 ~ 3.0000+ 4	1.4557+ 1	1.1559+ 1	2.3445- 2			2.2016+ 0			7.7231- 1				3.6752- 2
3.0000+ 4 ~ 4.0000+ 4	1.3914+ 1	1.1116+ 1	3.3824- 2			2.0332+ 0			7.3073- 1				5.0292- 2
4.0000+ 4 ~ 5.0000+ 4	1.3411+ 1	1.0785+ 1	5.3621- 2			1.9196+ 0			6.5828- 1				6.3447- 2
5.0000+ 4 ~ 6.0000+ 4	1.3047+ 1	1.0486+ 1	1.4124- 1			1.8414+ 0			5.7818- 1				7.6325- 2
6.0000+ 4 ~ 8.0000+ 4	1.2591+ 1	1.0067+ 1	2.2527- 1			1.7741+ 0			5.2512- 1				9.4774- 2
8.0000+ 4 ~ 1.0000+ 5	1.2207+ 1	9.7107+ 0	3.6769- 1			1.6453+ 0			4.8293- 1				1.1770- 1
1.0000+ 5 ~ 1.5000+ 5	1.1625+ 1	9.1181+ 0	5.5814- 1			1.5462+ 0			4.0226- 1				1.5400- 1
1.5000+ 5 ~ 2.0000+ 5	1.0897+ 1	8.3730+ 0	7.6433- 1			1.4223+ 0			3.3718- 1				1.9866- 1
2.0000+ 5 ~ 3.0000+ 5	1.0091+ 1	7.5234+ 0	9.1577- 1			1.3177+ 0			2.7431- 1				2.5223- 1
3.0000+ 5 ~ 4.0000+ 5	9.2084+ 0	6.6547+ 0	1.1011+ 0			1.2381+ 0			2.1436- 1				3.0701- 1
4.0000+ 5 ~ 5.0000+ 5	8.6666+ 0	5.9139+ 0	1.3830+ 0			1.1864+ 0			1.8269- 1				3.4881- 1
5.0000+ 5 ~ 6.0000+ 5	8.0011+ 0	5.3299+ 0	1.3464+ 0			1.1630+ 0			1.6281- 1				3.8204- 1
6.0000+ 5 ~ 8.0000+ 5	7.4394+ 0	4.7067+ 0	1.4285+ 0			1.1590+ 0			1.4519- 1				4.1938- 1
8.0000+ 5 ~ 1.0000+ 6	6.9731+ 0	4.1657+ 0	1.4729+ 0			1.1869+ 0			1.4749- 1				4.5650- 1
1.0000+ 6 ~ 1.5000+ 6	6.7492+ 0	3.8637+ 0	1.4901+ 0			1.2423+ 0			1.8308- 1				5.0827- 1
1.5000+ 6 ~ 2.0000+ 6	6.9606+ 0	3.8463+ 0	1.6787+ 0			1.2859+ 0			1.4963- 1				5.8612- 1
2.0000+ 6 ~ 3.0000+ 6	7.5260+ 0	4.1904+ 0	1.9695+ 0			1.2758+ 0			8.9972- 2				6.8968- 1
3.0000+ 6 ~ 4.0000+ 6	7.9075+ 0	4.4546+ 0	2.2270+ 0			1.1931+ 0			3.2633- 2				7.6570- 1
4.0000+ 6 ~ 5.0000+ 6	7.8121+ 0	4.4744+ 0	2.2109+ 0			1.1165+ 0			1.0105- 2				7.9718- 1
5.0000+ 6 ~ 6.0000+ 6	7.3796+ 0	4.1190+ 0	2.1386+ 0	4.8897- 2		1.0697+ 0			2.9393- 3				8.0880- 1
6.0000+ 6 ~ 8.0000+ 6	6.6346+ 0	3.4848+ 0	1.2011+ 0	4.2207- 1		1.5256+ 0			3.8778- 4				8.0941- 1
8.0000+ 6 ~ 1.0000+ 7	5.9927+ 0	3.2139+ 0	4.0255- 1	6.0488- 1		1.7714+ 0			2.6751- 5				8.0416- 1
1.0000+ 7 ~ 1.5000+ 7	5.8043+ 0	3.0068+ 0	3.9797- 1	5.0223- 1	1.8915- 2	1.8784+ 0			4.4871- 6				8.3195- 1
1.5000+ 7 ~ 2.0000+ 7	6.1972+ 0	3.4057+ 0	5.5973- 1	2.7996- 2	2.1065- 1	1.9895+ 0			1.8514- 6				8.9839- 1

MATERIAL =2924 CROSS SECTION U -238

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	2.4814+ 1	8.3413+ 0				1.3198- 1			1.6340+ 1				2.8488- 3
1.0000- 2 ~ 1.5000- 2	1.6996+ 1	8.3396+ 0				6.1454- 2			7.6953+ 0				2.8488- 3
1.5000- 2 ~ 2.0000- 2	1.4780+ 1	8.3385+ 0				5.1757- 2			6.3903+ 0				2.8488- 3
2.0000- 2 ~ 3.0000- 2	1.3757+ 1	8.3368+ 0				4.3610- 2			5.3766+ 0				2.8488- 3
3.0000- 2 ~ 4.0000- 2	1.2901+ 1	8.3346+ 0				3.6816- 2			4.5299+ 0				2.8488- 3
4.0000- 2 ~ 5.0000- 2	1.2366+ 1	8.3324+ 0				3.2584- 2			4.0014+ 0				2.8488- 3
5.0000- 2 ~ 6.0000- 2	1.1977+ 1	8.3301+ 0				2.9519- 2			3.6178+ 0				2.8488- 3
6.0000- 2 ~ 8.0000- 2	1.1576+ 1	8.3267+ 0				2.6369- 2			3.2226+ 0				2.8488- 3
8.0000- 2 ~ 1.0000- 1	1.1191+ 1	8.3222+ 0				2.3378- 2			2.8459+ 0				2.8488- 3
1.0000- 1 ~ 1.5000- 1	1.0776+ 1	8.3143+ 0				2.0186- 2			2.4411+ 0				2.8488- 3
1.5000- 1 ~ 2.0000- 1	1.0388+ 1	8.3029+ 0				1.7261- 2			2.0676+ 0				2.8488- 3
2.0000- 1 ~ 3.0000- 1	1.0055+ 1	8.2856+ 0				1.4833- 2			1.7526+ 0				2.8488- 3
3.0000- 1 ~ 4.0000- 1	9.7804+ 0	8.2621+ 0				1.2970- 2			1.5054+ 0				2.8488- 3
4.0000- 1 ~ 5.0000- 1	9.5987+ 0	8.2381+ 0				1.1824- 2			1.3488+ 0				2.8488- 3
5.0000- 1 ~ 6.0000- 1	9.4696+ 0	8.2136+ 0				1.1096- 2			1.2449+ 0				2.8488- 3
6.0000- 1 ~ 8.0000- 1	9.3288+ 0	8.1757+ 0				1.0423- 2			1.1427+ 0				2.8488- 3
8.0000- 1 ~ 1.0000+ 0	9.1888+ 0	8.1229+ 0				9.9198- 3			1.0659+ 0				2.8488- 3
1.0000+ 0 ~ 1.5000+ 0	9.0293+ 0	8.0216+ 0				9.8040- 3			9.9785- 1				2.8614- 3
1.5000+ 0 ~ 2.0000+ 0	8.8771+ 0	7.8555+ 0				1.0488- 2			1.0111+ 0				2.8555- 3
2.0000+ 0 ~ 3.0000+ 0	8.7801+ 0	7.5190+ 0				1.3734- 2			1.2474+ 0				2.8587- 3
3.0000+ 0 ~ 4.0000+ 0	9.1001+ 0	6.7464+ 0				2.6860- 2			2.3269+ 0				2.8638- 3
4.0000+ 0 ~ 5.0000+ 0	1.5313+ 1	4.5231+ 0				1.2575- 1			1.0664+ 1				2.8669- 3
5.0000+ 0 ~ 6.0000+ 0	1.6174+ 3	1.3852+ 2				1.7300+ 1			1.4616+ 3				2.8693- 3
6.0000+ 0 ~ 8.0000+ 0	1.6886+ 1	1.2606+ 1				4.9842- 2			4.2294+ 0				2.8722- 3
8.0000+ 0 ~ 1.0000+ 1	1.0527+ 1	1.0043+ 1				5.5432- 3			4.7832- 1				2.8752- 3
1.0000+ 1 ~ 1.5000+ 1	9.3791+ 0	9.2406+ 0				1.5922- 3			1.3683- 1				2.8791- 3
1.5000+ 1 ~ 2.0000+ 1	8.7906+ 0	8.7282+ 0				7.7092- 4			6.1621- 2				2.8832- 3
2.0000+ 1 ~ 3.0000+ 1	1.6075+ 1	8.1821+ 0				5.4955- 2			7.8380+ 0				2.8874- 3
3.0000+ 1 ~ 4.0000+ 1	3.6641+ 1	1.0399+ 1				2.2535- 1			2.6016+ 1				2.8915- 3
4.0000+ 1 ~ 5.0000+ 1	1.7325+ 2	8.6424+ 1				1.9015+ 0			8.4921+ 1				2.8946- 3
5.0000+ 1 ~ 6.0000+ 1	9.1959+ 0	9.1096+ 0				1.5438- 3			8.4767- 2				2.8970- 3
6.0000+ 1 ~ 8.0000+ 1	7.7289+ 1	4.3789+ 1				4.3443- 1			3.3066+ 1				2.8999- 3
8.0000+ 1 ~ 1.0000+ 2	9.5816+ 1	6.4862+ 1				4.5738- 1			3.0496+ 1				2.9029- 3
1.0000+ 2 ~ 1.5000+ 2	6.2097+ 1	4.4161+ 1				2.3627- 1			1.7680+ 1				2.9459- 3
1.5000+ 2 ~ 2.0000+ 2	3.8293+ 1	2.8039+ 1				1.5678- 1			1.0097+ 1				3.0113- 3
2.0000+ 2 ~ 3.0000+ 2	3.7526+ 1	3.0022+ 1				1.1238- 1			7.3917+ 0				3.0794- 3
3.0000+ 2 ~ 4.0000+ 2	9.7362+ 1	9.0576+ 1				7.8116- 2			6.7096+ 0				3.1449- 3
4.0000+ 2 ~ 5.0000+ 2	2.9620+ 1	2.3473+ 1				2.5662- 2			6.1213+ 0				3.1936- 3
5.0000+ 2 ~ 6.0000+ 2	3.2381+ 1	2.6768+ 1				6.1649- 6			5.6129+ 0				3.2762- 3
6.0000+ 2 ~ 8.0000+ 2	3.3149+ 1	2.7838+ 1				2.0636- 6			5.3103+ 0				3.4339- 3
8.0000+ 2 ~ 1.0000+ 3	3.6085+ 1	3.1385+ 1				7.9856- 7			3.7002+ 0				3.6005- 3
1.0000+ 3 ~ 1.5000+ 3	2.5770+ 1	2.3106+ 1				3.0044- 7			2.6635+ 0				3.9362- 3
1.5000+ 3 ~ 2.0000+ 3	2.1312+ 1	1.8546+ 1				0.0000+ 0			2.7610+ 0				4.4409- 3
2.0000+ 3 ~ 3.0000+ 3	1.9812+ 1	1.7619+ 1				0.0000+ 0			2.1869+ 0				5.2736- 3
3.0000+ 3 ~ 4.0000+ 3	1.8589+ 1	1.6811+ 1				0.0000+ 0			1.7717+ 0				6.4678- 3
4.0000+ 3 ~ 5.0000+ 3	1.7797+ 1	1.6258+ 1				0.0000+ 0			1.5338+ 0				7.6140- 3
5.0000+ 3 ~ 6.0000+ 3	1.7225+ 1	1.5845+ 1				0.0000+ 0			1.3783+ 0				8.7761- 3
6.0000+ 3 ~ 8.0000+ 3	1.6626+ 1	1.5394+ 1				0.0000+ 0			1.2312+ 0				1.0605- 2
8.0000+ 3 ~ 1.0000+ 4	1.5060+ 1	1.4954+ 1				0.0000+ 0			1.1048+ 0				1.3122- 2
1.0000+ 4 ~ 1.5000+ 4	1.5437+ 1	1.4456+ 1				0.0000+ 0			9.7762- 1				1.8203- 2
1.5000+ 4 ~ 2.0000+ 4	1.4838+ 1	1.3971+ 1				0.0000+ 0			8.6461- 1				2.4419- 2
2.0000+ 4 ~ 3.0000+ 4	1.4275+ 1	1.3512+ 1				0.0000+ 0			7.6278- 1				3.3632- 2
3.0000+ 4 ~ 4.0000+ 4	1.3776+ 1	1.3101+ 1				0.0000+ 0			6.7532- 1				4.5894- 2
4.0000+ 4 ~ 5.0000+ 4	1.3414+ 1	1.2795+ 1	7.0089- 3			0.0000+ 0			6.1152- 1				5.7705- 2
5.0000+ 4 ~ 6.0000+ 4	1.3116+ 1	1.2505+ 1	7.1704- 2			0.0000+ 0			5.3671- 1				6.9944- 2
6.0000+ 4 ~ 8.0000+ 4	1.2751+ 1	1.2117+ 1	1.7822- 1			0.0000+ 0			4.5338- 1				8.6890- 2
8.0000+ 4 ~ 1.0000+ 5	1.2336+ 1	1.1656+ 1	2.9544- 1			0.0000+ 0			3.8175- 1				1.0843- 1
1.0000+ 5 ~ 1.5000+ 5	1.1750+ 1	1.0992+ 1	4.4088- 1			0.0000+ 0			3.1601- 1				1.4137- 1
1.5000+ 5 ~ 2.0000+ 5	1.1039+ 1	1.0182+ 1	5.8383- 1			0.0000+ 0			2.7131- 1				1.8237- 1
2.0000+ 5 ~ 3.0000+ 5	1.0194+ 1	9.2252+ 0	7.2350- 1			0.0000+ 0			2.4446- 1				2.2992- 1
3.0000+ 5 ~ 4.0000+ 5	9.2963+ 0	8.2109+ 0	8.5066- 1			0.0000+ 0			2.3438- 1				2.7753- 1
4.0000+ 5 ~ 5.0000+ 5	8.6000+ 0	7.4134+ 0	9.4432- 1			0.0000+ 0			2.4027- 1				3.1229- 1
5.0000+ 5 ~ 6.0000+ 5	8.0681+ 0	6.7845+ 0	1.0189+ 0			1.0291- 2			2.5360- 1				3.3911- 1
6.0000+ 5 ~ 8.0000+ 5	7.5058+ 0	6.0341+ 0	1.1393+ 0			5.8096- 2			2.7366- 1				3.7209- 1
8.0000+ 5 ~ 1.0000+ 6	7.0921+ 0	5.2645+ 0	1.3019+ 0			2.7204- 1			2.6358- 1				4.1383- 1
1.0000+ 6 ~ 1.5000+ 6	5.9422+ 0	4.5418+ 0	1.8123+ 0			6.0922- 1			1.7081- 1				4.6820- 1
1.5000+ 6 ~ 2.0000+ 6	7.1814+ 0	4.4180+ 0	1.8818+ 0			7.8227- 1			1.1839- 1				5.7871- 1
2.0000+ 6 ~ 3.0000+ 6	7.6501+ 0	4.7585+ 0	1.9408+ 0			8.8769- 1			6.1289- 2				6.8674- 1
3.0000+ 6 ~ 4.0000+ 6	7.9248+ 0	5.1010+ 0	1.8969+ 0			9.0653- 1			1.9744- 2				7.5524- 1
4.0000+ 6 ~ 5.0000+ 6	7.7807+ 0	5.0217+ 0	1.8861+ 0			8.8701- 1			5.4730- 3				7.9796- 1
5.0000+ 6 ~ 6.0000+ 6	7.3721+ 0	4.6512+ 0	1.8308+ 0			8.8848- 1			1.3753- 3				8.0889- 1
6.0000+ 6 ~ 8.0000+ 6	6.7481+ 0	4.0001+ 0	1.1400+ 0	2.2640- 1		1.3828+ 0			1.9672- 4				8.0771- 1
8.0000+ 6 ~ 1.0000+ 7	6.0584+ 0	3.3179+ 0	2.5484- 1	9.0712- 1		1.5789+ 0			5.6869- 6				7.9817- 1
1.0000+ 7 ~ 1.5000+ 7	5.7699+ 0	3.0523+ 0	2.0788- 2	8.3733- 1	2.8949- 1	1.5699+ 0			7.9165- 8				8.2313- 1
1.5000+ 7 ~ 2.0000+ 7	6.2199+ 0	3.5107+ 0	3.8493- 4	5.8480- 2	8.7564- 1	1.7747+ 0			1.0630-10				8.8991- 1

CROSS SECTION

MATERIAL =2925 U -238

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.7198+ 1	8.8756+ 0				9.9479- 6			8.3225+ 0				2.8248- 3
1.0000- 2 ~ 1.5000- 2	1.2746+ 1	8.8747+ 0				4.8219- 6			3.8712+ 0				2.8248- 3
1.5000- 2 ~ 2.0000- 2	1.2132+ 1	8.8741+ 0				3.8878- 6			3.2577+ 0				2.8248- 3
2.0000- 2 ~ 3.0000- 2	1.1618+ 1	8.8731+ 0				3.2746- 6			2.7462+ 0				2.8248- 3
3.0000- 2 ~ 4.0000- 2	1.1187+ 1	8.8719+ 0				2.7585- 6			2.3151+ 0				2.8248- 3
4.0000- 2 ~ 5.0000- 2	1.0910+ 1	8.8707+ 0				2.4278- 6			2.0396+ 0				2.8248- 3
5.0000- 2 ~ 6.0000- 2	1.0715+ 1	8.8694+ 0				2.1948- 6			1.8455+ 0				2.8248- 3
6.0000- 2 ~ 8.0000- 2	1.0614+ 1	8.8675+ 0				1.8664- 6			1.6462+ 0				2.8248- 3
8.0000- 2 ~ 1.0000- 1	1.0319+ 1	8.8650+ 0				1.7244- 6			1.4544+ 0				2.8248- 3
1.0000- 1 ~ 1.5000- 1	1.0110+ 1	8.8606+ 0				1.4764- 6			1.2494+ 0				2.8248- 3
1.5000- 1 ~ 2.0000- 1	9.9195+ 0	8.8543+ 0				1.2480- 6			1.0592+ 0				2.8248- 3
2.0000- 1 ~ 3.0000- 1	9.7457+ 0	8.8447+ 0				1.0529- 6			9.0098- 1				2.8249- 3
3.0000- 1 ~ 4.0000- 1	9.6046+ 0	8.8317+ 0				8.9476- 7			7.7289- 1				2.8249- 3
4.0000- 1 ~ 5.0000- 1	9.5128+ 0	8.8185+ 0				7.9636- 7			6.9433- 1				2.8249- 3
5.0000- 1 ~ 6.0000- 1	9.4449+ 0	8.8050+ 0				7.2689- 7			6.3988- 1				2.8250- 3
6.0000- 1 ~ 8.0000- 1	9.3686+ 0	8.7843+ 0				6.5389- 7			5.8424- 1				2.8250- 3
8.0000- 1 ~ 1.0000+ 0	9.2927+ 0	8.7557+ 0				5.8867- 7			5.3694- 1				2.8251- 3
1.0000+ 0 ~ 1.5000+ 0	9.1958+ 0	8.7027+ 0				5.1994- 7			4.9315- 1				2.8252- 3
1.5000+ 0 ~ 2.0000+ 0	9.0907+ 0	8.6189+ 0				4.6716- 7			4.7183- 1				2.8254- 3
2.0000+ 0 ~ 3.0000+ 0	8.9669+ 0	8.4691+ 0				4.4025- 7			4.9780- 1				2.8257- 3
3.0000+ 0 ~ 4.0000+ 0	8.8394+ 0	8.2009+ 0				4.6737- 7			6.3855- 1				2.8260- 3
4.0000+ 0 ~ 5.0000+ 0	8.9433+ 0	7.7526+ 0				6.2758- 7			1.1908+ 0				2.8264- 3
5.0000+ 0 ~ 6.0000+ 0	1.0191+ 1	6.6564+ 0				1.5712- 6			3.5346+ 0				2.8268- 3
6.0000+ 0 ~ 8.0000+ 0	4.6948+ 2	3.6926+ 1				1.6811- 4			4.3255+ 2				2.8273- 3
8.0000+ 0 ~ 1.0000+ 1	1.0563+ 1	9.7156+ 0				5.4074- 7			8.4700- 1				2.8280- 3
1.0000+ 1 ~ 1.5000+ 1	8.8366+ 0	8.3745+ 0				4.3863- 7			4.6204- 1				2.8293- 3
1.5000+ 1 ~ 2.0000+ 1	7.4424+ 0	5.7625+ 0				3.2778- 6			1.6799+ 0				2.8311- 3
2.0000+ 1 ~ 3.0000+ 1	2.0861+ 2	7.0520+ 1				2.8797- 4			1.3809+ 2				2.8338- 3
3.0000+ 1 ~ 4.0000+ 1	3.8183+ 2	2.2726+ 2				7.9033- 5			1.5457+ 2				2.8374- 3
4.0000+ 1 ~ 5.0000+ 1	1.4085+ 1	1.3732+ 1				2.4587- 7			3.5353- 1				2.8410- 3
5.0000+ 1 ~ 6.0000+ 1	1.0100+ 1	9.9793+ 0				2.0990- 7			1.2107- 1				2.8446- 3
6.0000+ 1 ~ 8.0000+ 1	8.8264+ 1	5.0944+ 1				8.3028- 5			3.7320+ 1				2.8500- 3
8.0000+ 1 ~ 1.0000+ 2	1.3075+ 1	8.1951+ 0				1.2096- 5			4.8799+ 0				2.8572- 3
1.0000+ 2 ~ 1.5000+ 2	8.7565+ 1	6.3630+ 1				7.1331- 6			2.3936+ 1				2.8756- 3
1.5000+ 2 ~ 2.0000+ 2	8.6999+ 1	7.6600+ 1				1.8462- 5			1.0399+ 1				2.9052- 3
2.0000+ 2 ~ 3.0000+ 2	3.3543+ 1	2.4926+ 1				1.7505- 5			8.6187+ 0				2.9497- 3
3.0000+ 2 ~ 4.0000+ 2	2.1686+ 1	1.8740+ 1				2.5786- 6			2.9468+ 0				3.0089- 3
4.0000+ 2 ~ 5.0000+ 2	1.4748+ 1	1.2153+ 1				2.8507- 6			2.5954+ 0				3.0681- 3
5.0000+ 2 ~ 6.0000+ 2	2.5826+ 1	2.0910+ 1				9.3857- 5			4.9165+ 0				3.1355- 3
6.0000+ 2 ~ 8.0000+ 2	1.8326+ 1	1.5667+ 1				2.4487- 3			2.6562+ 0				3.2489- 3
8.0000+ 2 ~ 1.0000+ 3	3.1733+ 1	2.8153+ 1				3.8353- 5			3.5798+ 0				3.3999- 3
1.0000+ 3 ~ 1.5000+ 3	2.0590+ 1	1.8528+ 1				5.8607- 4			2.0630+ 0				3.6882- 3
1.5000+ 3 ~ 2.0000+ 3	2.5899+ 1	2.4311+ 1				9.1720- 9			1.5881+ 0				4.1292- 3
2.0000+ 3 ~ 3.0000+ 3	2.2586+ 1	2.1216+ 1				1.5409- 9			1.3700+ 0				4.8420- 3
3.0000+ 3 ~ 4.0000+ 3	2.1080+ 1	1.9909+ 1				4.0936-10			1.1711+ 0				5.8512- 3
4.0000+ 3 ~ 5.0000+ 3	1.6384+ 1	1.5443+ 1				0.0000+ 0			9.4052- 1				6.9100- 3
5.0000+ 3 ~ 6.0000+ 3	1.5788+ 1	1.4941+ 1				0.0000+ 0			8.4696- 1				8.0049- 3
6.0000+ 3 ~ 8.0000+ 3	1.5149+ 1	1.4396+ 1				1.8375- 4			7.5336- 1				9.6976- 3
8.0000+ 3 ~ 1.0000+ 4	1.4616+ 1	1.3941+ 1				5.2193- 5			6.7527- 1				1.2012- 2
1.0000+ 4 ~ 1.5000+ 4	1.4142+ 1	1.3541+ 1				9.5273- 5			6.0130- 1				1.6166- 2
1.5000+ 4 ~ 2.0000+ 4	1.3834+ 1	1.3298+ 1				1.2125- 4			5.3557- 1				2.2177- 2
2.0000+ 4 ~ 3.0000+ 4	1.3561+ 1	1.3084+ 1				8.3625- 5			4.7725- 1				3.1199- 2
3.0000+ 4 ~ 4.0000+ 4	1.3298+ 1	1.2878+ 1				3.6750- 5			4.1974- 1				4.3045- 2
4.0000+ 4 ~ 5.0000+ 4	1.3101+ 1	1.2696+ 1	2.7500- 2			8.0875- 5			3.7669- 1				5.4823- 2
5.0000+ 4 ~ 6.0000+ 4	1.3120+ 1	1.2601+ 1	1.9600- 1			9.5300- 5			3.2216- 1				6.6193- 2
6.0000+ 4 ~ 8.0000+ 4	1.2787+ 1	1.2136+ 1	3.8962- 1			6.0581- 5			2.6120- 1				8.3332- 2
8.0000+ 4 ~ 1.0000+ 5	1.2349+ 1	1.1597+ 1	5.4112- 1			3.2328- 6			2.1018- 1				1.0523- 1
1.0000+ 5 ~ 1.5000+ 5	1.1756+ 1	1.0876+ 1	7.0700- 1			7.3136- 5			1.6962- 1				1.3778- 1
1.5000+ 5 ~ 2.0000+ 5	1.0965+ 1	9.9361+ 0	8.8200- 1			9.6250- 5			1.4049- 1				1.8081- 1
2.0000+ 5 ~ 3.0000+ 5	1.0132+ 1	8.9092+ 0	1.1003+ 0			1.0325- 4			1.2227- 1				2.3269- 1
3.0000+ 5 ~ 4.0000+ 5	9.3502+ 0	7.8813+ 0	1.3558+ 0			1.9537- 4			1.1174- 1				2.8541- 1
4.0000+ 5 ~ 5.0000+ 5	8.8075+ 0	7.1453+ 0	1.5520+ 0			3.2750- 4			1.0889- 1				3.2498- 1
5.0000+ 5 ~ 6.0000+ 5	8.3747+ 0	6.5434+ 0	1.7185+ 0			6.1250- 4			1.1181- 1				3.5806- 1
6.0000+ 5 ~ 8.0000+ 5	7.8503+ 0	5.8488+ 0	1.8796+ 0			2.0900- 3			1.1944- 1				3.9566- 1
8.0000+ 5 ~ 1.0000+ 6	7.3611+ 0	5.0677+ 0	2.1644+ 0			1.1875- 2			1.2658- 1				4.4324- 1
1.0000+ 6 ~ 1.5000+ 6	7.0131+ 0	4.2295+ 0	2.5891+ 0			1.1250- 1			8.7814- 2				5.1984- 1
1.5000+ 6 ~ 2.0000+ 6	7.1497+ 0	4.1567+ 0	2.4752+ 0			4.7280- 1			4.4842- 2				6.1888- 1
2.0000+ 6 ~ 3.0000+ 6	7.5525+ 0	4.6708+ 0	2.3069+ 0			5.5035- 1			2.4456- 2				7.0560- 1
3.0000+ 6 ~ 4.0000+ 6	7.8932+ 0	5.1034+ 0	2.2240+ 0			5.5200- 1			1.3827- 2				7.6248- 1
4.0000+ 6 ~ 5.0000+ 6	7.7910+ 0	5.1357+ 0	2.0889+ 0			5.5780- 1			9.3357- 3				7.9283- 1
5.0000+ 6 ~ 6.0000+ 6	7.3856+ 0	4.9044+ 0	1.9015+ 0			5.7300- 1			7.2159- 3				8.1074- 1
6.0000+ 6 ~ 8.0000+ 6	6.6163+ 0	4.0099+ 0	1.1902+ 0	5.0493- 1		9.0475- 1			6.5359- 3				8.1902- 1
8.0000+ 6 ~ 1.0000+ 7	6.0149+ 0	3.3048+ 0	3.8950- 1	1.3139+ 0		1.0020+ 0			4.4604- 3				8.0650- 1
1.0000+ 7 ~ 1.5000+ 7	5.8130+ 0	3.0156+ 0	3.2006- 1	1.1981+ 0	2.3098- 1	1.0448+ 0			3.6165- 3				8.1298- 1
1.5000+ 7 ~ 2.0000+ 7	5.9720+ 0	3.7745+ 0	3.1789- 1	1.4480- 1	4.8160- 1	1.2497+ 0			2.9851- 3				8.6738- 1

MATERIAL =2931

CROSS SECTION

NP-237

ENERGY	TOTAL	ELASTIC	INELA	(N.2N)	(N.3N)	FISSION	(N.NA)	(N.NP)	CAPTURE	(N.P)	(N.D)	(N.A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	6.2773+ 2	2.7600+ 1				6.3961- 2			6.9987+ 2				2.8863- 3
1.0000- 2 ~ 1.5000- 2	2.9798+ 2	2.7694+ 1				2.8771- 2			2.7026+ 2				2.8964- 3
1.5000- 2 ~ 2.0000- 2	2.5134+ 2	2.7624+ 1				2.3788- 2			2.2369+ 2				2.8992- 3
2.0000- 2 ~ 3.0000- 2	2.1184+ 2	2.7520+ 1				1.9563- 2			1.8430+ 2				2.9022- 3
3.0000- 2 ~ 4.0000- 2	1.7831+ 2	2.7385+ 1				1.5970- 2			1.5091+ 2				2.9051- 3
4.0000- 2 ~ 5.0000- 2	1.5704+ 2	2.7253+ 1				1.3683- 2			1.2978+ 2				2.9072- 3
5.0000- 2 ~ 6.0000- 2	1.4222+ 2	2.7124+ 1				1.2082- 2			1.1508+ 2				2.9089- 3
6.0000- 2 ~ 8.0000- 2	1.2662+ 2	2.6934+ 1				1.0387- 2			9.8678+ 1				2.9108- 3
8.0000- 2 ~ 1.0000- 1	1.1205+ 2	2.6687+ 1				8.7849- 3			8.6355+ 1				2.9130- 3
1.0000- 1 ~ 1.5000- 1	9.7427+ 1	2.6272+ 1				7.1181- 3			7.1148+ 1				2.9157- 3
1.5000- 1 ~ 2.0000- 1	8.6138+ 1	2.5698+ 1				5.6994- 3			6.0434+ 1				2.9185- 3
2.0000- 1 ~ 3.0000- 1	8.3371+ 1	2.4851+ 1				4.7450- 3			5.8515+ 1				2.9215- 3
3.0000- 1 ~ 4.0000- 1	1.1621+ 2	2.3582+ 1				6.1073- 3			9.2628+ 1				2.9243- 3
4.0000- 1 ~ 5.0000- 1	9.5939+ 2	2.2548+ 1				3.0675- 2			9.3681+ 2				2.9266- 3
5.0000- 1 ~ 6.0000- 1	5.2143+ 2	2.5901+ 1				1.6828- 2			4.9552+ 2				2.9281- 3
6.0000- 1 ~ 8.0000- 1	6.5357+ 1	2.2859+ 1				2.6435- 3			4.2495+ 1				2.9301- 3
8.0000- 1 ~ 1.0000+ 0	4.3573+ 1	2.1174+ 1				1.9058- 3			2.2398+ 1				2.9323- 3
1.0000+ 0 ~ 1.5000+ 0	4.5272+ 2	1.9751+ 1				2.5738- 2			4.3295+ 2				2.9350- 3
1.5000+ 0 ~ 2.0000+ 0	1.4943+ 2	2.0900+ 1				7.7641- 3			1.2852+ 2				2.9378- 3
2.0000+ 0 ~ 3.0000+ 0	2.5284+ 1	1.7130+ 1				9.1482- 4			8.1528+ 0				2.9408- 3
3.0000+ 0 ~ 4.0000+ 0	1.4299+ 2	1.5288+ 1				9.4716- 3			1.2770+ 2				2.9436- 3
4.0000+ 0 ~ 5.0000+ 0	5.0057+ 1	1.4575+ 1				8.0446- 4			3.5481+ 1				2.9457- 3
5.0000+ 0 ~ 6.0000+ 0	2.2715+ 2	1.5312+ 1				2.3644- 2			2.1181+ 2				2.9474- 3
6.0000+ 0 ~ 8.0000+ 0	5.5594+ 1	1.3424+ 1				2.7942- 3			4.2167+ 1				2.9494- 3
8.0000+ 0 ~ 1.0000+ 1	9.5497+ 1	1.2519+ 1				3.8356- 3			8.2960+ 1				2.9516- 3
1.0000+ 1 ~ 1.5000+ 1	1.2210+ 2	1.4274+ 1				2.1382- 3			1.0782+ 2				2.9543- 3
1.5000+ 1 ~ 2.0000+ 1	5.2306+ 1	1.1310+ 1				9.5756- 4			4.0995+ 1				2.9571- 3
2.0000+ 1 ~ 3.0000+ 1	1.1886+ 2	1.6391+ 1				1.7444- 2			1.0245+ 2				2.9601- 3
3.0000+ 1 ~ 4.0000+ 1	7.8498+ 1	1.3811+ 1				2.3778- 1			6.4449+ 1				2.9629- 3
4.0000+ 1 ~ 5.0000+ 1	7.3530+ 1	1.3623+ 1				9.3616- 2			5.9813+ 1				2.9650- 3
5.0000+ 1 ~ 6.0000+ 1	7.2768+ 1	1.7847+ 1				1.8292- 2			5.4903+ 1				2.9667- 3
6.0000+ 1 ~ 8.0000+ 1	6.8650+ 1	1.5057+ 1				3.1251- 3			5.3590+ 1				2.9687- 3
8.0000+ 1 ~ 1.0000+ 2	6.1824+ 1	1.5207+ 1				2.8205- 3			4.6614+ 1				2.9708- 3
1.0000+ 2 ~ 1.5000+ 2	4.7585+ 1	1.4197+ 1				2.6484- 2			3.3362+ 1				3.0947- 3
1.5000+ 2 ~ 2.0000+ 2	4.2711+ 1	1.2825+ 1				9.0009- 3			2.9877+ 1				3.2879- 3
2.0000+ 2 ~ 3.0000+ 2	3.7438+ 1	1.2757+ 1				9.0008- 3			2.4672+ 1				3.4887- 3
3.0000+ 2 ~ 4.0000+ 2	3.3082+ 1	1.2683+ 1				9.0007- 3			2.0400+ 1				3.6819- 3
4.0000+ 2 ~ 5.0000+ 2	3.0365+ 1	1.2622+ 1				9.0007- 3			1.7733+ 1				3.8255- 3
5.0000+ 2 ~ 6.0000+ 2	2.8443+ 1	1.2570+ 1				9.0008- 3			1.5864+ 1				3.9399- 3
6.0000+ 2 ~ 8.0000+ 2	2.6484+ 1	1.2505+ 1				9.0008- 3			1.3970+ 1				4.0759- 3
8.0000+ 2 ~ 1.0000+ 3	2.4562+ 1	1.2430+ 1				9.0008- 3			1.2123+ 1				4.2195- 3
1.0000+ 3 ~ 1.5000+ 3	2.2574+ 1	1.2327+ 1				9.0009- 3			1.0238+ 1				5.6904- 3
1.5000+ 3 ~ 2.0000+ 3	2.0649+ 1	1.2206+ 1				9.0009- 3			8.4340+ 0				7.9042- 3
2.0000+ 3 ~ 3.0000+ 3	1.9083+ 1	1.2070+ 1				9.0009- 3			7.0040+ 0				1.0206- 2
3.0000+ 3 ~ 4.0000+ 3	1.7733+ 1	1.1925+ 1				9.0009- 3			5.7992+ 0				1.2420- 2
4.0000+ 3 ~ 5.0000+ 3	1.6889+ 1	1.1809+ 1				8.9998- 3			5.0704+ 0				1.4086- 2
5.0000+ 3 ~ 6.0000+ 3	1.6296+ 1	1.1713+ 1				8.9993- 3			4.5740+ 0				1.5378- 2
6.0000+ 3 ~ 8.0000+ 3	1.5692+ 1	1.1594+ 1				9.0004- 3			4.0889+ 0				1.6936- 2
8.0000+ 3 ~ 1.0000+ 4	1.5101+ 1	1.1461+ 1				9.0008- 3			3.6307+ 0				1.8582- 2
1.0000+ 4 ~ 1.5000+ 4	1.4488+ 1	1.1289+ 1				9.0007- 3			3.1901+ 0				2.6131- 2
1.5000+ 4 ~ 2.0000+ 4	1.3888+ 1	1.1094+ 1				9.0009- 3			2.7854+ 0				3.6887- 2
2.0000+ 4 ~ 3.0000+ 4	1.3366+ 1	1.0892+ 1				9.0011- 3			2.4652+ 0				4.8072- 2
3.0000+ 4 ~ 4.0000+ 4	1.2940+ 1	1.0723+ 1	2.4984- 2			1.2046- 2			2.1798+ 0				6.2974- 2
4.0000+ 4 ~ 5.0000+ 4	1.2764+ 1	1.0654+ 1	1.1912- 1			1.4123- 2			1.9769+ 0				7.9775- 2
5.0000+ 4 ~ 6.0000+ 4	1.2625+ 1	1.0592+ 1	1.9666- 1			1.4382- 2			1.8210+ 0				9.4998- 2
6.0000+ 4 ~ 8.0000+ 4	1.2449+ 1	1.0453+ 1	3.9600- 1			1.5880- 2			1.5839+ 0				1.1801- 1
8.0000+ 4 ~ 1.0000+ 5	1.2239+ 1	1.0259+ 1	6.1800- 1			1.7646- 2			1.3436+ 0				1.4731- 1
1.0000+ 5 ~ 1.5000+ 5	1.1912+ 1	9.8984+ 0	9.3316- 1			2.1502- 2			1.0570+ 0				1.9251- 1
1.5000+ 5 ~ 2.0000+ 5	1.1473+ 1	9.4150+ 0	1.2092+ 0			3.0015- 2			8.1879- 1				2.4764- 1
2.0000+ 5 ~ 3.0000+ 5	1.0885+ 1	8.7987+ 0	1.3852+ 0			4.4090- 2			6.6676- 1				3.1019- 1
3.0000+ 5 ~ 4.0000+ 5	1.0193+ 1	8.0176+ 0	1.5449+ 0			1.0861- 1			5.2165- 1				3.7360- 1
4.0000+ 5 ~ 5.0000+ 5	9.6022+ 0	7.2409+ 0	1.6498+ 0			3.0222- 1			4.0198- 1				4.2506- 1
5.0000+ 5 ~ 6.0000+ 5	9.1119+ 0	6.5698+ 0	1.8151+ 0			6.1421- 1			3.1157- 1				4.6650- 1
6.0000+ 5 ~ 8.0000+ 5	8.5293+ 0	5.7946+ 0	1.4604+ 0			1.0480+ 0			2.2586- 1				5.1026- 1
8.0000+ 5 ~ 1.0000+ 6	7.9544+ 0	6.0825+ 0	1.3641+ 0			1.3377+ 0			1.7004- 1				5.4561- 1
1.0000+ 6 ~ 1.5000+ 6	7.3898+ 0	4.4159+ 0	1.3367+ 0			1.5123+ 0			1.2429- 1				6.0069- 1
1.5000+ 6 ~ 2.0000+ 6	6.9880+ 0	3.9901+ 0	1.3176+ 0			1.5982+ 0			8.2005- 2				6.2189- 1
2.0000+ 6 ~ 3.0000+ 6	6.9106+ 0	4.0144+ 0	1.2693+ 0			1.5861+ 0			4.0489- 2				6.7754- 1
3.0000+ 6 ~ 4.0000+ 6	7.1055+ 0	4.2827+ 0	1.2819+ 0			1.5272+ 0			1.3071- 2				7.3690- 1
4.0000+ 6 ~ 5.0000+ 6	7.2667+ 0	4.4411+ 0	1.3790+ 0			1.4423+ 0			4.0539- 3				7.8259- 1
5.0000+ 6 ~ 6.0000+ 6	7.2634+ 0	4.4548+ 0	1.3171+ 0			1.4692+ 0			1.1132- 3				8.1593- 1
6.0000+ 6 ~ 8.0000+ 6	6.9693+ 0	4.1238+ 0	8.1358- 1	7.2107- 2		1.9586+ 0			1.6162- 4				8.4108- 1
8.0000+ 6 ~ 1.0000+ 7	6.4201+ 0	3.5800+ 0	3.4167- 1	3.8262- 1		2.1151+ 0			1.0026- 5				8.4617- 1
1.0000+ 7 ~ 1.5000+ 7	5.7466+ 0	2.9577+ 0	1.6284- 1	5.1776- 1	3.1403- 2	2.0768+ 0			9.0751- 7				8.4267- 1
1.5000+ 7 ~ 2.0000+ 7	5.5697+ 0	2.8750+ 0	4.3094- 2	1.7791- 1	4.0046- 1	2.0732+ 0			5.1056- 8				8.7209- 1

CROSS SECTION

MATERIAL =2932

NP-239

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.2502+ 2	1.0500+ 1				0.0000+ 0			1.1410+ 2				2.8140- 3
1.0000- 2 ~ 1.5000- 2	6.3593+ 1	1.0500+ 1				0.0000+ 0			5.2955+ 1				2.8142- 3
1.5000- 2 ~ 2.0000- 2	5.5385+ 1	1.0500+ 1				0.0000+ 0			4.4634+ 1				2.8143- 3
2.0000- 2 ~ 3.0000- 2	4.8016+ 1	1.0500+ 1				0.0000+ 0			3.7420+ 1				2.8143- 3
3.0000- 2 ~ 4.0000- 2	4.2200+ 1	1.0500+ 1				0.0000+ 0			3.1534+ 1				2.8144- 3
4.0000- 2 ~ 5.0000- 2	3.8350+ 1	1.0500+ 1				0.0000+ 0			2.7784+ 1				2.8144- 3
5.0000- 2 ~ 6.0000- 2	3.5650+ 1	1.0500+ 1				0.0000+ 0			2.5097+ 1				2.8145- 3
6.0000- 2 ~ 8.0000- 2	3.2900+ 1	1.0500+ 1				0.0000+ 0			2.2285+ 1				2.8145- 3
8.0000- 2 ~ 1.0000- 1	3.0200+ 1	1.0500+ 1				0.0000+ 0			1.9639+ 1				2.8146- 3
1.0000- 1 ~ 1.5000- 1	2.7400+ 1	1.0500+ 1				0.0000+ 0			1.6728+ 1				2.8146- 3
1.5000- 1 ~ 2.0000- 1	2.4700+ 1	1.0500+ 1				0.0000+ 0			1.4129+ 1				2.8147- 3
2.0000- 1 ~ 3.0000- 1	2.2450+ 1	1.0500+ 1				0.0000+ 0			1.1822+ 1				2.8147- 3
3.0000- 1 ~ 4.0000- 1	2.0500+ 1	1.0500+ 1				0.0000+ 0			9.9502+ 0				2.8148- 3
4.0000- 1 ~ 5.0000- 1	1.9300+ 1	1.0500+ 1				0.0000+ 0			8.7719+ 0				2.8148- 3
5.0000- 1 ~ 6.0000- 1	1.8450+ 1	1.0500+ 1				0.0000+ 0			7.9340+ 0				2.8149- 3
6.0000- 1 ~ 8.0000- 1	1.7600+ 1	1.0500+ 1				0.0000+ 0			7.0643+ 0				2.8149- 3
8.0000- 1 ~ 1.0000+ 0	1.6750+ 1	1.0500+ 1				0.0000+ 0			6.2305+ 0				2.8150- 3
1.0000+ 0 ~ 1.5000+ 0	1.5850+ 1	1.0500+ 1				0.0000+ 0			5.2941+ 0				2.8150- 3
1.5000+ 0 ~ 2.0000+ 0	1.5000+ 1	1.0500+ 1				0.0000+ 0			4.4790+ 0				2.8151- 3
2.0000+ 0 ~ 3.0000+ 0	1.4300+ 1	1.0500+ 1				0.0000+ 0			3.7590+ 0				2.8152- 3
3.0000+ 0 ~ 4.0000+ 0	1.3650+ 1	1.0500+ 1				0.0000+ 0			3.1314+ 0				2.8152- 3
4.0000+ 0 ~ 5.0000+ 0	2.3281+ 2	2.7449+ 1				0.0000+ 0			2.0536+ 2				2.8157- 3
5.0000+ 0 ~ 6.0000+ 0	2.1138+ 2	2.5722+ 1				0.0000+ 0			1.8566+ 2				2.8164- 3
6.0000+ 0 ~ 8.0000+ 0	1.8874+ 2	2.3893+ 1				0.0000+ 0			1.6485+ 2				2.8176- 3
8.0000+ 0 ~ 1.0000+ 1	1.6741+ 2	2.2157+ 1				0.0000+ 0			1.4525+ 2				2.8194- 3
1.0000+ 1 ~ 1.5000+ 1	1.4400+ 2	2.0312+ 1				0.0000+ 0			1.2367+ 2				2.8234- 3
1.5000+ 1 ~ 2.0000+ 1	1.2288+ 2	1.8609+ 1				0.0000+ 0			1.0426+ 2				2.8284- 3
2.0000+ 1 ~ 3.0000+ 1	1.0462+ 2	1.7157+ 1				0.0000+ 0			8.7445+ 1				2.8376- 3
3.0000+ 1 ~ 4.0000+ 1	8.9683+ 1	1.5956+ 1				0.0000+ 0			7.3720+ 1				2.8489- 3
4.0000+ 1 ~ 5.0000+ 1	8.0122+ 1	1.5171+ 1				0.0000+ 0			6.4946+ 1				2.8607- 3
5.0000+ 1 ~ 6.0000+ 1	7.3355+ 1	1.4623+ 1				0.0000+ 0			5.8728+ 1				2.8732- 3
6.0000+ 1 ~ 8.0000+ 1	6.6209+ 1	1.4073+ 1				0.0000+ 0			5.2126+ 1				2.8943- 3
8.0000+ 1 ~ 1.0000+ 2	5.9472+ 1	1.3558+ 1				0.0000+ 0			4.5908+ 1				2.9204- 3
1.0000+ 2 ~ 1.5000+ 2	5.2104+ 1	1.2990+ 1				0.0000+ 0			3.9096+ 1				2.9759- 3
1.5000+ 2 ~ 2.0000+ 2	4.5439+ 1	1.2449+ 1				0.0000+ 0			3.2982+ 1				3.0457- 3
2.0000+ 2 ~ 3.0000+ 2	3.9702+ 1	1.2020+ 1				0.0000+ 0			2.7661+ 1				3.1518- 3
3.0000+ 2 ~ 4.0000+ 2	3.6063+ 1	1.1711+ 1				0.0000+ 0			2.3332+ 1				3.3393- 3
4.0000+ 2 ~ 5.0000+ 2	3.2102+ 1	1.1610+ 1				0.0000+ 0			2.0586+ 1				3.5393- 3
5.0000+ 2 ~ 6.0000+ 2	2.9968+ 1	1.1353+ 1				0.0000+ 0			1.8611+ 1				3.6987- 3
6.0000+ 2 ~ 8.0000+ 2	2.7691+ 1	1.1168+ 1				0.0000+ 0			1.6514+ 1				3.8880- 3
8.0000+ 2 ~ 1.0000+ 3	2.5557+ 1	1.0996+ 1				0.0000+ 0			1.4556+ 1				4.1633- 3
1.0000+ 3 ~ 1.5000+ 3	2.3284+ 1	1.0896+ 1				0.0000+ 0			1.2367+ 1				5.2140- 3
1.5000+ 3 ~ 2.0000+ 3	2.1243+ 1	1.0838+ 1				0.0000+ 0			1.0396+ 1				6.6204- 3
2.0000+ 3 ~ 3.0000+ 3	1.9502+ 1	1.0777+ 1				0.0000+ 0			8.7087+ 0				8.0830- 3
3.0000+ 3 ~ 4.0000+ 3	1.8090+ 1	1.0719+ 1				0.0000+ 0			7.3648+ 0				9.4894- 3
4.0000+ 3 ~ 5.0000+ 3	1.7211+ 1	1.0676+ 1				0.0000+ 0			6.5308+ 0				1.0535- 2
5.0000+ 3 ~ 6.0000+ 3	1.6561+ 1	1.0672+ 1				0.0000+ 0			5.8857+ 0				1.2134- 2
6.0000+ 3 ~ 8.0000+ 3	1.5938+ 1	1.0707+ 1				0.0000+ 0			5.2255+ 0				1.5073- 2
8.0000+ 3 ~ 1.0000+ 4	1.5383+ 1	1.0743+ 1				0.0000+ 0			4.6362+ 0				1.8179- 2
1.0000+ 4 ~ 1.5000+ 4	1.4799+ 1	1.0828+ 1				0.0000+ 0			3.9597+ 0				2.4773- 2
1.5000+ 4 ~ 2.0000+ 4	1.4485+ 1	1.0938+ 1				0.0000+ 0			3.5474+ 0				3.3054- 2
2.0000+ 4 ~ 3.0000+ 4	1.4035+ 1	1.1073+ 1				0.0000+ 0			2.9384+ 0				4.5129- 2
3.0000+ 4 ~ 4.0000+ 4	1.3505+ 1	1.1047+ 1	1.0065- 1			1.5000- 2			2.3396+ 0				6.2016- 2
4.0000+ 4 ~ 5.0000+ 4	1.3313+ 1	1.0943+ 1	2.9152- 1			3.5000- 2			2.0407+ 0				7.8858- 2
5.0000+ 4 ~ 6.0000+ 4	1.3158+ 1	1.0867+ 1	4.0172- 1			4.0000- 2			1.8480+ 0				9.5234- 2
6.0000+ 4 ~ 8.0000+ 4	1.2950+ 1	1.0744+ 1	5.4340- 1			4.0000- 2			1.6219+ 0				1.1879- 1
8.0000+ 4 ~ 1.0000+ 5	1.2755+ 1	1.0365+ 1	8.6739- 1			4.7500- 2			1.4743+ 0				1.5133- 1
1.0000+ 5 ~ 1.5000+ 5	1.2349+ 1	9.8577+ 0	1.1671+ 0			6.0000- 2			1.2625+ 0				2.0317- 1
1.5000+ 5 ~ 2.0000+ 5	1.1938+ 1	9.3002+ 0	1.5053+ 0			9.5000- 2			1.0364+ 0				2.6352- 1
2.0000+ 5 ~ 3.0000+ 5	1.1395+ 1	8.6509+ 0	1.6648+ 0			2.4000- 1			7.8553- 1				3.3143- 1
3.0000+ 5 ~ 4.0000+ 5	1.0586+ 1	7.8658+ 0	1.5965+ 0			5.5000- 1			5.6673- 1				3.9773- 1
4.0000+ 5 ~ 5.0000+ 5	9.8462+ 0	7.1484+ 0	1.4520+ 0			9.1000- 1			4.3063- 1				4.4804- 1
5.0000+ 5 ~ 6.0000+ 5	9.4359+ 0	6.4967+ 0	1.4204+ 0			1.1700+ 0			3.4275- 1				4.8855- 1
6.0000+ 5 ~ 8.0000+ 5	8.7902+ 0	5.6936+ 0	1.4434+ 0			1.3876+ 0			2.6131- 1				5.3468- 1
8.0000+ 5 ~ 1.0000+ 6	8.1336+ 0	4.9052+ 0	1.4425+ 0			1.5925+ 0			1.9199- 1				5.7514- 1
1.0000+ 6 ~ 1.5000+ 6	7.4382+ 0	4.1425+ 0	1.4876+ 0			1.6700+ 0			1.2312- 1				6.0890- 1
1.5000+ 6 ~ 2.0000+ 6	6.9012+ 0	3.6265+ 0	1.4645+ 0			1.7350+ 0			7.3274- 2				6.4368- 1
2.0000+ 6 ~ 3.0000+ 6	6.7206+ 0	3.5636+ 0	1.4234+ 0			1.6875+ 0			4.6756- 2				6.9049- 1
3.0000+ 6 ~ 4.0000+ 6	6.8956+ 0	3.8114+ 0	1.5215+ 0			1.5400+ 0			2.4425- 2				7.4993- 1
4.0000+ 6 ~ 5.0000+ 6	7.0685+ 0	3.9899+ 0	1.5942+ 0			1.4650+ 0			2.0000- 2				7.9936- 1
5.0000+ 6 ~ 6.0000+ 6	7.0668+ 0	3.9829+ 0	1.5674+ 0			1.5000+ 0			1.4277- 2				8.3417- 1
6.0000+ 6 ~ 8.0000+ 6	6.7280+ 0	3.6914+ 0	1.0757+ 0	1.1425- 1		1.8437+ 0			5.6890- 3				8.5743- 1
8.0000+ 6 ~ 1.0000+ 7	6.1973+ 0	3.1692+ 0	5.3537- 1	3.2849- 1		2.1650+ 0			1.0000- 5				8.5903- 1
1.0000+ 7 ~ 1.5000+ 7	5.6434+ 0	2.7070+ 0	2.1780- 1	2.7569- 1	1.0909- 1	2.3340+ 0			1.0000- 5				8.6746- 1
1.5000+ 7 ~ 2.0000+ 7	5.5454+ 0	2.6882+ 0	4.7562- 2	7.5070- 2	3.1462- 1	2.4200+ 0			1.0000- 5				8.7219- 1

CROSS SECTION

MATERIAL =2941

PU-236

ENERGY	TOTAL	ELASTIC	INELA	(N.2N)	(N.3N)	FISSION	(N.NA)	(N.NP)	CAPTURE	(N.P)	(N.D)	(N.A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	2.3249+ 3	3.8350+ 0				1.8292+ 2			2.1383+ 3				2.8488- 3
1.0000- 2 ~ 1.5000- 2	1.1259+ 3	3.5409+ 0				8.8446+ 1			1.0339+ 3				2.8488- 3
1.5000- 2 ~ 2.0000- 2	9.6957+ 2	3.4771+ 0				7.8129+ 1			8.8996+ 2				2.8488- 3
2.0000- 2 ~ 3.0000- 2	8.4435+ 2	3.3794+ 0				6.8270+ 1			7.7470+ 2				2.8488- 3
3.0000- 2 ~ 4.0000- 2	7.4550+ 2	3.2463+ 0				5.8491+ 1			6.8377+ 2				2.8488- 3
4.0000- 2 ~ 5.0000- 2	6.9230+ 2	3.1092+ 0				5.4309+ 1			6.3488+ 2				2.8488- 3
5.0000- 2 ~ 6.0000- 2	6.5685+ 2	2.9688+ 0				5.1527+ 1			6.0235+ 2				2.8488- 3
6.0000- 2 ~ 8.0000- 2	6.2963+ 2	2.7609+ 0				4.9399+ 1			5.7748+ 2				2.8488- 3
8.0000- 2 ~ 1.0000- 1	6.2074+ 2	2.4465+ 0				4.8722+ 1			5.6957+ 2				2.8488- 3
1.0000- 1 ~ 1.5000- 1	6.4869+ 2	1.8897+ 0				5.0969+ 1			5.9584+ 2				2.8488- 3
1.5000- 1 ~ 2.0000- 1	7.6827+ 2	1.0512+ 0				6.0458+ 1			7.0676+ 2				2.8488- 3
2.0000- 1 ~ 3.0000- 1	1.2778+ 3	4.1501- 1				1.0066+ 2			1.1760+ 3				2.8488- 3
3.0000- 1 ~ 4.0000- 1	5.3256+ 3	2.1577+ 1				4.1796+ 2			4.8861+ 3				2.8488- 3
4.0000- 1 ~ 5.0000- 1	3.5373+ 4	4.2662+ 2				2.7538+ 3			3.2193+ 4				2.8488- 3
5.0000- 1 ~ 6.0000- 1	3.5673+ 3	9.7072+ 1				2.7346+ 2			3.1967+ 3				2.8488- 3
6.0000- 1 ~ 8.0000- 1	5.4997+ 2	3.6189+ 1				4.0486+ 1			4.7329+ 2				2.8488- 3
8.0000- 1 ~ 1.0000+ 0	1.4903+ 2	2.2877+ 1				9.9414+ 0			1.1622+ 2				2.8488- 3
1.0000+ 0 ~ 1.5000+ 0	5.4112+ 1	1.7448+ 1				2.8891+ 0			3.3774+ 1				2.8488- 3
1.5000+ 0 ~ 2.0000+ 0	2.5727+ 1	1.4821+ 1				8.5943- 1			1.0047+ 1				2.8488- 3
2.0000+ 0 ~ 3.0000+ 0	1.7287+ 1	1.3478+ 1				3.0014- 1			3.5086+ 0				2.8488- 3
3.0000+ 0 ~ 4.0000+ 0	1.4097+ 1	1.2707+ 1				1.0955- 1			1.2807+ 0				2.8488- 3
4.0000+ 0 ~ 5.0000+ 0	1.3021+ 1	1.2334+ 1				5.4132- 2			6.3281- 1				2.8488- 3
5.0000+ 0 ~ 6.0000+ 0	1.2509+ 1	1.2113+ 1				3.1207- 2			3.6481- 1				2.8488- 3
6.0000+ 0 ~ 8.0000+ 0	1.9535+ 2	3.2649+ 1				1.2504+ 1			1.5005+ 2				2.8518- 3
8.0000+ 0 ~ 1.0000+ 1	1.7366+ 2	3.2231+ 1				1.0965+ 1			1.3043+ 2				2.8554- 3
1.0000+ 1 ~ 1.5000+ 1	1.4984+ 2	3.1640+ 1				9.1692+ 0			1.0894+ 2				2.8582- 3
1.5000+ 1 ~ 2.0000+ 1	1.2834+ 2	3.0980+ 1				7.5644+ 0			8.9759+ 1				2.8621- 3
2.0000+ 1 ~ 3.0000+ 1	1.0977+ 2	3.0230+ 1				6.1835+ 0			7.3284+ 1				2.8684- 3
3.0000+ 1 ~ 4.0000+ 1	9.4576+ 1	2.9469+ 1				5.0687+ 0			6.0002+ 1				2.8768- 3
4.0000+ 1 ~ 5.0000+ 1	8.4867+ 1	2.8872+ 1				4.3633+ 0			5.1610+ 1				2.8855- 3
5.0000+ 1 ~ 6.0000+ 1	7.7973+ 1	2.8379+ 1				3.8671+ 0			4.5713+ 1				2.8944- 3
6.0000+ 1 ~ 8.0000+ 1	7.0697+ 1	2.7775+ 1				3.3474+ 0			3.9543+ 1				2.9084- 3
8.0000+ 1 ~ 1.0000+ 2	6.3831+ 1	2.7125+ 1				2.8652+ 0			3.3823+ 1				2.9271- 3
1.0000+ 2 ~ 1.5000+ 2	5.6316+ 1	2.6266+ 1				2.3444+ 0			2.7652+ 1				2.9826- 3
1.5000+ 2 ~ 2.0000+ 2	4.9515+ 1	2.5358+ 1				1.8874+ 0			2.2245+ 1				3.0126- 3
2.0000+ 2 ~ 3.0000+ 2	4.3655+ 1	2.4401+ 1				1.5037+ 0			1.7707+ 1				3.0946- 3
3.0000+ 2 ~ 4.0000+ 2	3.8844+ 1	2.3488+ 1				1.2016+ 0			1.4136+ 1				3.2097- 3
4.0000+ 2 ~ 5.0000+ 2	3.5773+ 1	2.2814+ 1				1.0154+ 0			1.1934+ 1				3.3176- 3
5.0000+ 2 ~ 6.0000+ 2	3.3595+ 1	2.2283+ 1				8.8711- 1			1.0418+ 1				3.4349- 3
6.0000+ 2 ~ 8.0000+ 2	3.1302+ 1	2.1669+ 1				7.5605- 1			8.8683+ 0				3.6215- 3
8.0000+ 2 ~ 1.0000+ 3	2.9133+ 1	2.1022+ 1				6.3742- 1			7.4650+ 0				3.8709- 3
1.0000+ 3 ~ 1.5000+ 3	2.6770+ 1	2.0228+ 1				5.1431- 1			6.0070+ 0				4.3456- 3
1.5000+ 3 ~ 2.0000+ 3	2.4618+ 1	1.9426+ 1				4.1026- 1			4.7736+ 0				5.0152- 3
2.0000+ 3 ~ 3.0000+ 3	2.2772+ 1	1.8633+ 1				3.2823- 1			3.7979+ 0				6.1104- 3
3.0000+ 3 ~ 4.0000+ 3	2.1247+ 1	1.7909+ 1				2.6690- 1			3.0668+ 0				7.5620- 3
4.0000+ 3 ~ 5.0000+ 3	2.0273+ 1	1.7397+ 1				2.3153- 1			2.6427+ 0				9.0653- 3
5.0000+ 3 ~ 6.0000+ 3	1.9580+ 1	1.7005+ 1				2.0853- 1			2.3650+ 0				1.0604- 2
6.0000+ 3 ~ 8.0000+ 3	1.8847+ 1	1.6561+ 1				1.8670- 1			2.0978+ 0				1.3029- 2
8.0000+ 3 ~ 1.0000+ 4	1.8145+ 1	1.6111+ 1				1.6739- 1			1.8653+ 0				1.6206- 2
1.0000+ 4 ~ 1.5000+ 4	1.7381+ 1	1.5578+ 1				1.5145- 1			1.6463+ 0				2.2851- 2
1.5000+ 4 ~ 2.0000+ 4	1.6641+ 1	1.5045+ 1				1.3872- 1			1.4545+ 0				3.0849- 2
2.0000+ 4 ~ 3.0000+ 4	1.5948+ 1	1.4524+ 1				1.3041- 1			1.2925+ 0				4.2611- 2
3.0000+ 4 ~ 4.0000+ 4	1.5333+ 1	1.4045+ 1				1.2726- 1			1.1605+ 0				5.8128- 2
4.0000+ 4 ~ 5.0000+ 4	1.4878+ 1	1.3689+ 1	7.9308- 3			1.2840- 1			1.0598+ 0				7.3083- 2
5.0000+ 4 ~ 6.0000+ 4	1.4528+ 1	1.3367+ 1	6.5948- 2			1.3172- 1			9.6276- 1				8.7475- 2
6.0000+ 4 ~ 8.0000+ 4	1.4087+ 1	1.2940+ 1	1.6821- 1			1.3926- 1			8.3906- 1				1.0794- 1
8.0000+ 4 ~ 1.0000+ 5	1.3595+ 1	1.2436+ 1	2.8411- 1			1.5201- 1			7.2233- 1				1.3329- 1
1.0000+ 5 ~ 1.5000+ 5	1.2832+ 1	1.1620+ 1	4.0873- 1			1.8652- 1			6.1262- 1				1.7407- 1
1.5000+ 5 ~ 2.0000+ 5	1.2040+ 1	1.0748+ 1	5.3028- 1			2.3759- 1			5.2022- 1				2.1948- 1
2.0000+ 5 ~ 3.0000+ 5	1.1134+ 1	9.7140+ 0	6.1690- 1			3.4115- 1			4.4999- 1				2.7064- 1
3.0000+ 5 ~ 4.0000+ 5	1.0174+ 1	8.5885+ 0	6.4432- 1			5.3477- 1			3.9561- 1				3.2325- 1
4.0000+ 5 ~ 5.0000+ 5	9.4536+ 0	7.6834+ 0	6.0958- 1			7.9503- 1			3.5232- 1				3.6436- 1
5.0000+ 5 ~ 6.0000+ 5	8.9003+ 0	6.9481+ 0	5.3715- 1			1.1019+ 0			3.0833- 1				3.9897- 1
6.0000+ 5 ~ 8.0000+ 5	8.3460+ 0	6.1396+ 0	4.1228- 1			1.5491+ 0			2.4115- 1				4.4193- 1
8.0000+ 5 ~ 1.0000+ 6	7.9185+ 0	5.4664+ 0	3.1203- 1			1.9717+ 0			1.6645- 1				4.8340- 1
1.0000+ 6 ~ 1.5000+ 6	7.7405+ 0	5.0490+ 0	3.0543- 1			2.2700+ 0			1.1444- 1				5.3985- 1
1.5000+ 6 ~ 2.0000+ 6	7.9032+ 0	5.0028+ 0	3.7398- 1			2.4400+ 0			8.6057- 2				6.0361- 1
2.0000+ 6 ~ 3.0000+ 6	8.2422+ 0	5.2064+ 0	4.5223- 1			2.5286+ 0			5.4487- 2				6.9410- 1
3.0000+ 6 ~ 4.0000+ 6	8.3708+ 0	5.2582+ 0	4.9196- 1			2.5839+ 0			3.6371- 2				7.7057- 1
4.0000+ 6 ~ 5.0000+ 6	8.1753+ 0	5.0185+ 0	4.9586- 1			2.6199+ 0			3.9834- 2				8.0968- 1
5.0000+ 6 ~ 6.0000+ 6	7.7957+ 0	4.6305+ 0	4.5373- 1			2.6714+ 0			3.9446- 2				8.2479- 1
6.0000+ 6 ~ 8.0000+ 6	7.1693+ 0	4.0270+ 0	1.3422- 1	2.1280- 3		2.9949+ 0			9.9426- 3				8.1977- 1
8.0000+ 6 ~ 1.0000+ 7	6.5858+ 0	3.4754+ 0	3.8342- 2	4.9149- 2		3.0204+ 0			2.2995- 3				8.1160- 1
1.0000+ 7 ~ 1.5000+ 7	6.4110+ 0	3.3447+ 0	3.8128- 3	5.4877- 2	5.9107- 4	3.0070+ 0			1.7094- 4				8.4850- 1
1.5000+ 7 ~ 2.0000+ 7	6.9833+ 0	3.8816+ 0	9.4201- 5	3.4884- 3	1.1739- 2	3.0860+ 0			3.5319- 6				9.0833- 1

MATERIAL =2942

CROSS SECTION

PU-238

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	1.9682+ 3	2.8147+ 1				5.6697+ 1			1.8834+ 3				2.8274- 3
1.0000- 2 ~ 1.5000- 2	8.9089+ 2	2.7938+ 1				2.5299+ 1			8.3771+ 2				2.8280- 3
1.5000- 2 ~ 2.0000- 2	7.3629+ 2	2.7809+ 1				2.0731+ 1			6.8775+ 2				2.8281- 3
2.0000- 2 ~ 3.0000- 2	6.0349+ 2	2.7607+ 1				1.6862+ 1			5.5902+ 2				2.8283- 3
3.0000- 2 ~ 4.0000- 2	4.9004+ 2	2.7357+ 1				1.3560+ 1			4.4913+ 2				2.8284- 3
4.0000- 2 ~ 5.0000- 2	4.1810+ 2	2.7119+ 1				1.1469+ 1			3.7951+ 2				2.8286- 3
5.0000- 2 ~ 6.0000- 2	3.6479+ 2	2.6892+ 1				9.9219+ 0			3.2798+ 2				2.8287- 3
6.0000- 2 ~ 8.0000- 2	3.0808+ 2	2.6571+ 1				8.2782+ 0			2.7923+ 2				2.8288- 3
8.0000- 2 ~ 1.0000- 1	2.5475+ 2	2.6175+ 1				6.7354+ 0			2.2184+ 2				2.8289- 3
1.0000- 1 ~ 1.5000- 1	1.9685+ 2	2.5566+ 1				6.0655+ 0			1.6622+ 2				2.8290- 3
1.5000- 1 ~ 2.0000- 1	1.4551+ 2	2.4818+ 1				3.5899+ 0			1.1710+ 2				2.8292- 3
2.0000- 1 ~ 3.0000- 1	1.0452+ 2	2.3933+ 1				2.4186+ 0			7.8184+ 1				2.8293- 3
3.0000- 1 ~ 4.0000- 1	7.4649+ 1	2.3019+ 1				1.5712+ 0			5.0058+ 1				2.8295- 3
4.0000- 1 ~ 5.0000- 1	5.8188+ 1	2.2321+ 1				1.1083+ 0			3.4758+ 1				2.8296- 3
5.0000- 1 ~ 6.0000- 1	4.8129+ 1	2.1769+ 1				8.2791- 1			2.5532+ 1				2.8297- 3
6.0000- 1 ~ 8.0000- 1	3.9273+ 1	2.1134+ 1				5.8406- 1			1.7556+ 1				2.8298- 3
8.0000- 1 ~ 1.0000+ 0	3.2401+ 1	2.0488+ 1				3.9778- 1			1.1515+ 1				2.8299- 3
1.0000+ 0 ~ 1.5000+ 0	2.6771+ 1	1.9710+ 1				2.4985- 1			6.8108+ 0				2.8301- 3
1.5000+ 0 ~ 2.0000+ 0	2.3228+ 1	1.8920+ 1				1.6148- 1			4.1458+ 0				2.8302- 3
2.0000+ 0 ~ 3.0000+ 0	1.1985+ 2	1.8055+ 1				2.2064+ 0			9.9593+ 1				2.8304- 3
3.0000+ 0 ~ 4.0000+ 0	2.5358+ 1	1.8679+ 1				1.8223- 1			6.4968+ 0				2.8305- 3
4.0000+ 0 ~ 5.0000+ 0	1.8721+ 1	1.7718+ 1				5.7092- 2			9.4619- 1				2.8306- 3
5.0000+ 0 ~ 6.0000+ 0	1.7965+ 1	1.7300+ 1				4.7855- 2			6.1704- 1				2.8307- 3
6.0000+ 0 ~ 8.0000+ 0	1.7324+ 1	1.6814+ 1				4.8098- 2			4.6246- 1				2.8308- 3
8.0000+ 0 ~ 1.0000+ 1	4.8425+ 1	1.5751+ 1				5.8496+ 0			2.8024+ 1				2.8309- 3
1.0000+ 1 ~ 1.5000+ 1	2.0589+ 1	1.6153+ 1				7.6762- 1			3.6691+ 0				2.8381- 3
1.5000+ 1 ~ 2.0000+ 1	1.8073+ 2	3.0936+ 1				6.7463+ 0			1.4304+ 2				2.8492- 3
2.0000+ 1 ~ 3.0000+ 1	1.7367+ 1	1.7031+ 1				2.7699- 2			3.0739- 1				2.8607- 3
3.0000+ 1 ~ 4.0000+ 1	1.7006+ 1	1.5739+ 1				1.7115- 1			1.1017+ 0				2.8719- 3
4.0000+ 1 ~ 5.0000+ 1	1.5201+ 1	1.5156+ 1				1.3577- 2			3.1987- 2				2.8801- 3
5.0000+ 1 ~ 6.0000+ 1	2.3107+ 1	1.4598+ 1				1.7780- 1			8.3313+ 0				2.8867- 3
6.0000+ 1 ~ 8.0000+ 1	2.1351+ 1	1.4080+ 1				1.2827+ 0			5.9886+ 0				2.8945- 3
8.0000+ 1 ~ 1.0000+ 2	6.6591+ 1	3.2986+ 1				3.1717+ 0			3.0433+ 1				2.9028- 3
1.0000+ 2 ~ 1.5000+ 2	7.0730+ 1	3.5202+ 1				4.4768+ 0			3.1051+ 1				2.9321- 3
1.5000+ 2 ~ 2.0000+ 2	7.4456+ 1	4.0390+ 1				9.7704+ 0			2.4296+ 1				2.9815- 3
2.0000+ 2 ~ 3.0000+ 2	4.7079+ 1	2.6576+ 1				9.9713+ 0			1.0532+ 1				3.0608- 3
3.0000+ 2 ~ 4.0000+ 2	6.6491+ 1	4.2382+ 1				4.6166+ 0			9.4929+ 0				3.1745- 3
4.0000+ 2 ~ 5.0000+ 2	4.6017+ 1	3.2795+ 1				3.2607+ 0			9.9609+ 0				3.2911- 3
5.0000+ 2 ~ 6.0000+ 2	3.5980+ 1	2.5435+ 1				1.4518+ 0			9.0843+ 0				3.4111- 3
6.0000+ 2 ~ 8.0000+ 2	3.4937+ 1	2.4512+ 1				2.7500+ 0			7.6664+ 0				3.6013- 3
8.0000+ 2 ~ 1.0000+ 3	3.2181+ 1	2.3578+ 1				2.2134+ 0			6.3991+ 0				3.8631- 3
1.0000+ 3 ~ 1.5000+ 3	2.8910+ 1	2.2455+ 1				1.3449+ 0			5.1069+ 0				4.3523- 3
1.5000+ 3 ~ 2.0000+ 3	2.6635+ 1	2.1352+ 1				1.2430+ 0			4.0358+ 0				5.0797- 3
2.0000+ 3 ~ 3.0000+ 3	2.5048+ 1	2.0297+ 1				1.5456+ 0			3.2041+ 0				6.2026- 3
3.0000+ 3 ~ 4.0000+ 3	2.3062+ 1	1.9366+ 1				1.1001+ 0			2.6003+ 0				7.7939- 3
4.0000+ 3 ~ 5.0000+ 3	2.1895+ 1	1.8728+ 1				9.1245- 1			2.2568+ 0				9.4316- 3
5.0000+ 3 ~ 6.0000+ 3	2.1588+ 1	1.8247+ 1				1.2998+ 0			2.0332+ 0				1.1094- 2
6.0000+ 3 ~ 8.0000+ 3	2.0615+ 1	1.7715+ 1				1.0864+ 0			1.8181+ 0				1.3636- 2
8.0000+ 3 ~ 1.0000+ 4	1.9609+ 1	1.7195+ 1				7.7922- 1			1.6341+ 0				1.7177- 2
1.0000+ 4 ~ 1.5000+ 4	1.8845+ 1	1.6588+ 1				8.0923- 1			1.4460+ 0				2.3332- 2
1.5000+ 4 ~ 2.0000+ 4	1.8110+ 1	1.6011+ 1				8.1629- 1			1.2829+ 0				3.2114- 2
2.0000+ 4 ~ 3.0000+ 4	1.7421+ 1	1.5467+ 1				8.1567- 1			1.1373+ 0				4.5122- 2
3.0000+ 4 ~ 4.0000+ 4	1.6761+ 1	1.4971+ 1				7.8223- 1			1.0097+ 0				6.1945- 2
4.0000+ 4 ~ 5.0000+ 4	1.6211+ 1	1.4596+ 1	1.4575- 2			6.9272- 1			9.0785- 1				7.7535- 2
5.0000+ 4 ~ 6.0000+ 4	1.5784+ 1	1.4236+ 1	1.0592- 1			6.3438- 1			8.0340- 1				9.3689- 2
6.0000+ 4 ~ 8.0000+ 4	1.5308+ 1	1.3768+ 1	2.4277- 1			6.1028- 1			6.8247- 1				1.1517- 1
8.0000+ 4 ~ 1.0000+ 5	1.4786+ 1	1.3206+ 1	3.8090- 1			6.0748- 1			5.8142- 1				1.4216- 1
1.0000+ 5 ~ 1.5000+ 5	1.4102+ 1	1.2428+ 1	5.4768- 1			6.3773- 1			4.8371- 1				1.8130- 1
1.5000+ 5 ~ 2.0000+ 5	1.3351+ 1	1.1517+ 1	6.9639- 1			7.1940- 1			4.1489- 1				2.2709- 1
2.0000+ 5 ~ 3.0000+ 5	1.2547+ 1	1.0465+ 1	8.2149- 1			8.8369- 1			3.7366- 1				2.7715- 1
3.0000+ 5 ~ 4.0000+ 5	1.1736+ 1	9.3803+ 0	9.1968- 1			1.0756+ 0			3.5783- 1				3.2391- 1
4.0000+ 5 ~ 5.0000+ 5	1.1195+ 1	8.5585+ 0	9.8517- 1			1.2844+ 0			3.6443- 1				3.5604- 1
5.0000+ 5 ~ 6.0000+ 5	1.0857+ 1	7.9059+ 0	1.0297+ 0			1.5386+ 0			3.8104- 1				3.8003- 1
6.0000+ 5 ~ 8.0000+ 5	1.0604+ 1	7.1191+ 0	1.2417+ 0			1.8541+ 0			3.8693- 1				4.1047- 1
8.0000+ 5 ~ 1.0000+ 6	1.0378+ 1	6.4241+ 0	1.4491+ 0			2.0877+ 0			4.0534- 1				4.4199- 1
1.0000+ 6 ~ 1.5000+ 6	1.0206+ 1	5.7415+ 0	1.9187+ 0			2.1579+ 0			3.8894- 1				5.0186- 1
1.5000+ 6 ~ 2.0000+ 6	1.0261+ 1	6.4480+ 0	2.2429+ 0			2.1842+ 0			3.8641- 1				5.8601- 1
2.0000+ 6 ~ 3.0000+ 6	1.0782+ 1	5.4169+ 0	2.8871+ 0			2.2361+ 0			2.3395- 1				6.9215- 1
3.0000+ 6 ~ 4.0000+ 6	1.0961+ 1	5.3462+ 0	3.1822+ 0			2.3072+ 0			1.2347- 1				7.7968- 1
4.0000+ 6 ~ 5.0000+ 6	1.0626+ 1	5.0690+ 0	3.1806+ 0			2.1851+ 0			1.9542- 1				8.2104- 1
5.0000+ 6 ~ 6.0000+ 6	1.0307+ 1	4.6656+ 0	3.1376+ 0			2.2571+ 0			2.4584- 1				8.3397- 1
6.0000+ 6 ~ 8.0000+ 6	1.0181+ 1	4.0974+ 0	3.1180+ 0	4.3325- 2		2.6891+ 0			2.1908- 1				8.2526- 1
8.0000+ 6 ~ 1.0000+ 7	1.0001+ 1	3.5825+ 0	3.1300+ 0	3.8289- 1		2.7275+ 0			1.7790- 1				8.1786- 1
1.0000+ 7 ~ 1.5000+ 7	9.9666+ 0	3.4690+ 0	3.1182+ 0	4.8526- 1	6.5161- 2	2.6878+ 0			1.4109- 1				8.6019- 1
1.5000+ 7 ~ 2.0000+ 7	1.0624+ 1	4.0395+ 0	3.1770+ 0	8.0230- 2	4.9543- 1	2.7153+ 0			1.1634- 1				9.1451- 1

MATERIAL =2943

CROSS SECTION

PU-239

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	3.0949+ 3	8.1068+ 0				2.3330+ 3			7.5383+ 2				3.1361- 3
1.0000- 2 ~ 1.5000- 2	1.4091+ 3	8.0691+ 0				1.0471+ 3			3.5397+ 2				3.2022- 3
1.5000- 2 ~ 2.0000- 2	1.2035+ 3	8.0428+ 0				8.8615+ 2			3.0936+ 2				3.2207- 3
2.0000- 2 ~ 3.0000- 2	1.0303+ 3	8.0015+ 0				7.5004+ 2			2.7227+ 2				3.2400- 3
3.0000- 2 ~ 4.0000- 2	8.9464+ 2	7.9439+ 0				6.4260+ 2			2.4410+ 2				3.2586- 3
4.0000- 2 ~ 5.0000- 2	8.1341+ 2	7.8811+ 0				5.7709+ 2			2.2844+ 2				3.2724- 3
5.0000- 2 ~ 6.0000- 2	7.6157+ 2	7.8145+ 0				5.3405+ 2			2.1970+ 2				3.2834- 3
6.0000- 2 ~ 8.0000- 2	7.1963+ 2	7.7062+ 0				4.9638+ 2			2.1644+ 2				3.2965- 3
8.0000- 2 ~ 1.0000- 1	7.0315+ 2	7.5420+ 0				4.7340+ 2			2.2221+ 2				3.3103- 3
1.0000- 1 ~ 1.5000- 1	7.8563+ 2	7.1882+ 0				4.9012+ 2			2.8822+ 2				3.3280- 3
1.5000- 1 ~ 2.0000- 1	1.0975+ 3	6.5536+ 0				6.6932+ 2			4.2167+ 2				3.3466- 3
2.0000- 1 ~ 3.0000- 1	3.3536+ 3	7.9749+ 0				1.9895+ 3			1.3562+ 3				3.3658- 3
3.0000- 1 ~ 4.0000- 1	2.8335+ 3	1.6340+ 1				1.6841+ 3			1.1331+ 3				3.3844- 3
4.0000- 1 ~ 5.0000- 1	5.5713+ 2	1.3352+ 1				3.5461+ 2			1.8917+ 2				3.3982- 3
5.0000- 1 ~ 6.0000- 1	2.2532+ 2	1.1808+ 1				1.4563+ 2			6.7886+ 1				3.4092- 3
6.0000- 1 ~ 8.0000- 1	1.1324+ 2	1.1074+ 1				7.3672+ 1			2.8495+ 1				3.4223- 3
8.0000- 1 ~ 1.0000+ 0	6.8019+ 1	1.0574+ 1				4.4170+ 1			1.3275+ 1				3.4361- 3
1.0000+ 0 ~ 1.5000+ 0	4.3372+ 1	1.0068+ 1				2.7235+ 1			6.0682+ 0				3.4538- 3
1.5000+ 0 ~ 2.0000+ 0	3.0894+ 1	9.7111+ 0				1.8222+ 1			2.9604+ 0				3.4723- 3
2.0000+ 0 ~ 3.0000+ 0	2.4878+ 1	8.4170+ 0				1.3702+ 1			1.7597+ 0				3.4916- 3
3.0000+ 0 ~ 4.0000+ 0	2.1542+ 1	9.1246+ 0				1.1165+ 1			1.2518+ 0				3.5102- 3
4.0000+ 0 ~ 5.0000+ 0	1.9626+ 1	8.8490+ 0				9.6740+ 0			1.1031+ 0				3.5240- 3
5.0000+ 0 ~ 6.0000+ 0	1.8218+ 1	8.4922+ 0				8.5500+ 0			1.1763+ 0				3.5350- 3
6.0000+ 0 ~ 8.0000+ 0	1.5848+ 2	8.2788+ 0				8.3649+ 1			6.6551+ 1				3.5481- 3
8.0000+ 0 ~ 1.0000+ 1	2.5168+ 1	6.9103+ 0				1.0939+ 1			7.3180+ 0				3.5619- 3
1.0000+ 1 ~ 1.5000+ 1	2.6665+ 2	1.0623+ 1				1.4417+ 2			1.1186+ 2				3.5796- 3
1.5000+ 1 ~ 2.0000+ 1	9.8976+ 1	1.0670+ 1				5.2598+ 1			3.5707+ 1				3.5981- 3
2.0000+ 1 ~ 3.0000+ 1	6.6820+ 1	9.4242+ 0				3.1801+ 1			2.5595+ 1				3.6174- 3
3.0000+ 1 ~ 4.0000+ 1	1.5713+ 1	6.8910+ 0				4.0542+ 0			4.7680+ 0				3.6360- 3
4.0000+ 1 ~ 5.0000+ 1	1.1598+ 2	1.4419+ 1				2.8526+ 1			7.3046+ 1				3.6498- 3
5.0000+ 1 ~ 6.0000+ 1	1.7009+ 2	1.9787+ 1				7.9162+ 1			7.1142+ 1				3.6608- 3
6.0000+ 1 ~ 8.0000+ 1	1.0646+ 2	1.8479+ 1				5.9316+ 1			2.8670+ 1				3.6739- 3
8.0000+ 1 ~ 1.0000+ 2	9.7730+ 1	1.6814+ 1				5.1513+ 1			2.9403+ 1				3.6877- 3
1.0000+ 2 ~ 1.5000+ 2	5.4545+ 1	1.3780+ 1				2.0274+ 1			2.0491+ 1				3.7063- 3
1.5000+ 2 ~ 2.0000+ 2	4.5531+ 1	1.4476+ 1				1.7078+ 1			1.3976+ 1				3.7239- 3
2.0000+ 2 ~ 3.0000+ 2	4.9711+ 1	1.5517+ 1				1.7213+ 1			1.6981+ 1				3.7432- 3
3.0000+ 2 ~ 4.0000+ 2	3.3053+ 1	1.3844+ 1				8.0948+ 0			1.0114+ 1				3.7618- 3
4.0000+ 2 ~ 5.0000+ 2	2.5809+ 1	1.1213+ 1				9.6477+ 0			4.9486+ 0				3.7756- 3
5.0000+ 2 ~ 6.0000+ 2	4.4958+ 1	1.8363+ 1				1.5695+ 1			1.0900+ 1				3.7866- 3
6.0000+ 2 ~ 8.0000+ 2	2.5484+ 1	1.3941+ 1				5.4791+ 0			6.0642+ 0				3.7997- 3
8.0000+ 2 ~ 1.0000+ 3	2.5083+ 1	1.3934+ 1				6.3657+ 0			4.7827+ 0				3.8136- 3
1.0000+ 3 ~ 1.5000+ 3	2.3363+ 1	1.3854+ 1				5.3251+ 0			4.1844+ 0				4.3273- 3
1.5000+ 3 ~ 2.0000+ 3	2.0764+ 1	1.3542+ 1				3.6602+ 0			3.5616+ 0				5.1250- 3
2.0000+ 3 ~ 3.0000+ 3	2.0298+ 1	1.3867+ 1				3.3105+ 0			3.1210+ 0				5.9544- 3
3.0000+ 3 ~ 4.0000+ 3	1.8474+ 1	1.3130+ 1				3.0534+ 0			2.2903+ 0				7.1288- 3
4.0000+ 3 ~ 5.0000+ 3	1.7381+ 1	1.2911+ 1				2.4379+ 0			2.0316+ 0				8.3534- 3
5.0000+ 3 ~ 6.0000+ 3	1.7107+ 1	1.2950+ 1				2.2749+ 0			1.8821+ 0				9.6025- 3
6.0000+ 3 ~ 8.0000+ 3	1.5922+ 1	1.2331+ 1	1.2475- 3			2.1045+ 0			1.4848+ 0				1.1557- 2
8.0000+ 3 ~ 1.0000+ 4	1.5387+ 1	1.1991+ 1	1.0966- 1			2.1109+ 0			1.1747+ 0				1.4323- 2
1.0000+ 4 ~ 1.5000+ 4	1.4627+ 1	1.1625+ 1	1.6025- 1			1.8706+ 0			9.7084- 1				1.9328- 2
1.5000+ 4 ~ 2.0000+ 4	1.4079+ 1	1.1323+ 1	1.6971- 1			1.7904+ 0			7.9565- 1				2.6221- 2
2.0000+ 4 ~ 3.0000+ 4	1.3426+ 1	1.0921+ 1	1.6996- 1			1.7058+ 0			6.2907- 1				3.6595- 2
3.0000+ 4 ~ 4.0000+ 4	1.3525+ 1	1.1235+ 1	1.7435- 1			1.6354+ 0			4.8000- 1				5.0528- 2
4.0000+ 4 ~ 5.0000+ 4	1.3264+ 1	1.1050+ 1	1.7905- 1			1.6206+ 0			4.1362- 1				6.3959- 2
5.0000+ 4 ~ 6.0000+ 4	1.2973+ 1	1.0752+ 1	1.8328- 1			1.6509+ 0			3.8753- 1				7.7019- 2
6.0000+ 4 ~ 8.0000+ 4	1.2613+ 1	1.0407+ 1	2.0581- 1			1.6486+ 0			3.5142- 1				9.5986- 2
8.0000+ 4 ~ 1.0000+ 5	1.2207+ 1	1.0042+ 1	2.5605- 1			1.6003+ 0			3.0906- 1				1.1964- 1
1.0000+ 5 ~ 1.5000+ 5	1.1646+ 1	9.4743+ 0	3.4222- 1			1.5626+ 0			2.6703- 1				1.5703- 1
1.5000+ 5 ~ 2.0000+ 5	1.0992+ 1	8.7765+ 0	4.3024- 1			1.5506+ 0			2.3498- 1				2.0321- 1
2.0000+ 5 ~ 3.0000+ 5	1.0186+ 1	7.9088+ 0	5.2746- 1			1.5526+ 0			1.9718- 1				2.5831- 1
3.0000+ 5 ~ 4.0000+ 5	9.3146+ 0	6.9573+ 0	6.3164- 1			1.5689+ 0			1.5579- 1				3.1492- 1
4.0000+ 5 ~ 5.0000+ 5	8.6292+ 0	6.1978+ 0	7.0944- 1			1.5943+ 0			1.2778- 1				3.5774- 1
5.0000+ 5 ~ 6.0000+ 5	8.0962+ 0	5.5576+ 0	8.0694- 1			1.6264+ 0			1.0529- 1				3.9226- 1
6.0000+ 5 ~ 8.0000+ 5	7.5464+ 0	4.8504+ 0	9.1459- 1			1.6962+ 0			8.5167- 2				4.3086- 1
8.0000+ 5 ~ 1.0000+ 6	7.1125+ 0	4.2000+ 0	1.1065+ 0			1.7366+ 0			7.0479- 2				4.6740- 1
1.0000+ 6 ~ 1.5000+ 6	6.8935+ 0	3.5817+ 0	1.3912+ 0			1.8652+ 0			5.5908- 2				5.1923- 1
1.5000+ 6 ~ 2.0000+ 6	7.0306+ 0	3.3314+ 0	1.6806+ 0			1.9779+ 0			4.0879- 2				5.9728- 1
2.0000+ 6 ~ 3.0000+ 6	7.5694+ 0	3.7818+ 0	1.8268+ 0			1.9396+ 0			2.2102- 2				6.9635- 1
3.0000+ 6 ~ 4.0000+ 6	7.9206+ 0	4.2818+ 0	1.8053+ 0			1.8254+ 0			7.7439- 3				7.6779- 1
4.0000+ 6 ~ 5.0000+ 6	7.7743+ 0	4.2663+ 0	1.7668+ 0			1.7386+ 0			2.3570- 3				7.9864- 1
5.0000+ 6 ~ 6.0000+ 6	7.3844+ 0	3.9486+ 0	1.7262+ 0	1.5125- 2		1.6936+ 0			7.4779- 4				8.1196- 1
6.0000+ 6 ~ 8.0000+ 6	6.7506+ 0	3.3677+ 0	9.8994- 1	3.7912- 1		2.0134+ 0			8.8197- 5				8.1628- 1
8.0000+ 6 ~ 1.0000+ 7	6.0889+ 0	2.8077+ 0	5.1715- 1	5.4437- 1		2.2196+ 0			1.6662- 6				8.1410- 1
1.0000+ 7 ~ 1.5000+ 7	5.8337+ 0	2.5920+ 0	4.1301- 1	5.0708- 1	6.9380- 2	2.2522+ 0			2.6103- 8				8.4090- 1
1.5000+ 7 ~ 2.0000+ 7	6.2228+ 0	2.9959+ 0	3.7309- 1	5.9837- 2	4.9324- 1	2.2788+ 0			8.3506-10				9.0109- 1

MATERIAL =2944

CROSS SECTION

PU-240

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	8.6037+ 2	1.6036+ 0				2.0264- 1			8.5857+ 2				2.8012- 3
1.0000- 2 ~ 1.5000- 2	4.0664+ 2	1.5686+ 0				9.5300- 2			4.0498+ 2				2.8012- 3
1.5000- 2 ~ 2.0000- 2	3.4523+ 2	1.5452+ 0				8.0722- 2			3.4361+ 2				2.8012- 3
2.0000- 2 ~ 3.0000- 2	2.9456+ 2	1.5101+ 0				6.8665- 2			2.9289+ 2				2.8012- 3
3.0000- 2 ~ 4.0000- 2	2.5261+ 2	1.4631+ 0				5.8651- 2			2.5108+ 2				2.8012- 3
4.0000- 2 ~ 5.0000- 2	2.2734+ 2	1.4160+ 0				5.2592- 2			2.2587+ 2				2.8013- 3
5.0000- 2 ~ 6.0000- 2	2.0923+ 2	1.3689+ 0				4.8228- 2			2.0781+ 2				2.8013- 3
6.0000- 2 ~ 8.0000- 2	1.9083+ 2	1.2990+ 0				4.3769- 2			1.8949+ 2				2.8013- 3
8.0000- 2 ~ 1.0000- 1	1.7477+ 2	1.2035+ 0				3.9822- 2			1.7353+ 2				2.8013- 3
1.0000- 1 ~ 1.5000- 1	1.5954+ 2	1.0383+ 0				3.5970- 2			1.5846+ 2				2.8013- 3
1.5000- 1 ~ 2.0000- 1	1.4970+ 2	8.0654- 1				3.3272- 2			1.4886+ 2				2.8014- 3
2.0000- 1 ~ 3.0000- 1	1.4817+ 2	4.7897- 1				3.2273- 2			1.4766+ 2				2.8015- 3
3.0000- 1 ~ 4.0000- 1	1.6089+ 2	1.2916- 1				3.4167- 2			1.6073+ 2				2.8016- 3
4.0000- 1 ~ 5.0000- 1	1.9133+ 2	4.5860- 2				3.9665- 2			1.9125+ 2				2.8017- 3
5.0000- 1 ~ 6.0000- 1	2.4812+ 2	6.4895- 1				5.0196- 2			2.4742+ 2				2.8018- 3
6.0000- 1 ~ 8.0000- 1	4.7820+ 2	7.2417+ 0				9.2549- 2			4.6887+ 2				2.8019- 3
8.0000- 1 ~ 1.0000+ 0	3.3877+ 3	1.7330+ 2				6.2086- 1			3.2138+ 3				2.8021- 3
1.0000+ 0 ~ 1.5000+ 0	1.7148+ 4	1.3627+ 3				3.0409+ 0			1.5783+ 4				2.8025- 3
1.5000+ 0 ~ 2.0000+ 0	1.2109+ 2	3.4897+ 1				1.8023- 2			8.6172+ 1				2.8030- 3
2.0000+ 0 ~ 3.0000+ 0	3.5907+ 1	1.8777+ 1				4.5089- 3			1.7126+ 1				2.8037- 3
3.0000+ 0 ~ 4.0000+ 0	1.8480+ 1	1.3633+ 1				1.9773- 3			4.8453+ 0				2.8047- 3
4.0000+ 0 ~ 5.0000+ 0	1.3959+ 1	1.1717+ 1				1.3797- 3			2.2411+ 0				2.8057- 3
5.0000+ 0 ~ 6.0000+ 0	1.1961+ 1	1.0672+ 1				1.1367- 3			1.2881+ 0				2.8067- 3
6.0000+ 0 ~ 8.0000+ 0	1.0482+ 1	9.7557+ 0				9.8193- 4			7.2531- 1				2.8083- 3
8.0000+ 0 ~ 1.0000+ 1	9.4030+ 0	8.9858+ 0				9.0804- 4			4.1634- 1				2.8103- 3
1.0000+ 1 ~ 1.5000+ 1	8.4047+ 0	8.1412+ 0				1.0181- 3			2.6247- 1				2.8138- 3
1.5000+ 1 ~ 2.0000+ 1	7.7044+ 0	6.6841+ 0				7.1120- 3			1.0132+ 0				2.8188- 3
2.0000+ 1 ~ 3.0000+ 1	5.1267+ 1	1.0234+ 1				2.9862- 1			4.0735+ 1				2.8264- 3
3.0000+ 1 ~ 4.0000+ 1	1.8631+ 2	6.9263+ 1				8.5180- 1			1.1619+ 2				2.8364- 3
4.0000+ 1 ~ 5.0000+ 1	1.6442+ 2	5.9712+ 1				6.9380- 1			1.0401+ 2				2.8466- 3
5.0000+ 1 ~ 6.0000+ 1	7.1779+ 0	6.9092+ 0				1.9378- 3			2.6670- 1				2.8566- 3
6.0000+ 1 ~ 8.0000+ 1	2.2268+ 2	1.2733+ 2				6.6409- 1			9.4683+ 1				2.8717- 3
8.0000+ 1 ~ 1.0000+ 2	4.5695+ 1	1.8789+ 1				1.9911- 1			2.6707+ 1				2.8918- 3
1.0000+ 2 ~ 1.5000+ 2	6.7059+ 1	3.6079+ 1				3.6489- 1			3.0615+ 1				2.9270- 3
1.5000+ 2 ~ 2.0000+ 2	3.9744+ 1	1.8858+ 1				3.0920- 1			2.0579+ 1				2.9774- 3
2.0000+ 2 ~ 3.0000+ 2	3.4799+ 1	2.5504+ 1				2.2175- 1			9.0741+ 0				3.0528- 3
3.0000+ 2 ~ 4.0000+ 2	2.4326+ 1	1.4176+ 1				2.2763- 1			9.9230+ 0				3.1536- 3
4.0000+ 2 ~ 5.0000+ 2	2.7570+ 1	2.0339+ 1				1.8782- 1			7.0437+ 0				3.2542- 3
5.0000+ 2 ~ 6.0000+ 2	2.3141+ 1	1.5819+ 1				1.8437- 1			7.1377+ 0				3.3548- 3
6.0000+ 2 ~ 8.0000+ 2	2.1870+ 1	1.7278+ 1				6.1317- 1			3.9784+ 0				3.5058- 3
8.0000+ 2 ~ 1.0000+ 3	2.9981+ 1	2.3824+ 1				4.2406- 1			5.7327+ 0				3.7071- 3
1.0000+ 3 ~ 1.5000+ 3	2.2941+ 1	1.9223+ 1				2.5689- 1			3.4610+ 0				4.0932- 3
1.5000+ 3 ~ 2.0000+ 3	2.2545+ 1	1.9074+ 1				4.2169- 1			3.0488+ 0				4.6639- 3
2.0000+ 3 ~ 3.0000+ 3	1.9421+ 1	1.6692+ 1				3.3223- 1			2.3969+ 0				5.5200- 3
3.0000+ 3 ~ 4.0000+ 3	1.6005+ 1	1.4001+ 1				1.1592- 1			1.8882+ 0				6.7149- 3
4.0000+ 3 ~ 5.0000+ 3	1.8594+ 1	1.6748+ 1				8.8101- 2			1.7577+ 0				7.9633- 3
5.0000+ 3 ~ 6.0000+ 3	1.8224+ 1	1.6556+ 1				8.5843- 2			1.6818+ 0				9.2116- 3
6.0000+ 3 ~ 8.0000+ 3	1.7811+ 1	1.6386+ 1				2.3794- 2			1.4006+ 0				1.1084- 2
8.0000+ 3 ~ 1.0000+ 4	1.7403+ 1	1.6099+ 1				5.7196- 2			1.2467+ 0				1.3581- 2
1.0000+ 4 ~ 1.5000+ 4	1.6856+ 1	1.5690+ 1				9.1272- 2			1.0742+ 0				1.8038- 2
1.5000+ 4 ~ 2.0000+ 4	1.6260+ 1	1.5261+ 1				7.4723- 2			9.2429- 1				2.4454- 2
2.0000+ 4 ~ 3.0000+ 4	1.5508+ 1	1.4743+ 1				7.8912- 2			7.8607- 1				3.4079- 2
3.0000+ 4 ~ 4.0000+ 4	1.4958+ 1	1.4177+ 1				1.0062- 1			6.8085- 1				4.6528- 2
4.0000+ 4 ~ 5.0000+ 4	1.4474+ 1	1.3749+ 1	9.2628- 2			8.0638- 2			6.1200- 1				5.8593- 2
5.0000+ 4 ~ 6.0000+ 4	1.4060+ 1	1.3260+ 1	2.0238- 1			5.5902- 2			5.4160- 1				7.0659- 2
6.0000+ 4 ~ 8.0000+ 4	1.3558+ 1	1.2563+ 1	4.4965- 1			8.1155- 2			4.6499- 1				8.8606- 2
8.0000+ 4 ~ 1.0000+ 5	1.2994+ 1	1.1794+ 1	7.2432- 1			7.8604- 2			3.9654- 1				1.1168- 1
1.0000+ 5 ~ 1.5000+ 5	1.2192+ 1	1.0757+ 1	1.0348+ 0			6.8104- 2			3.3173- 1				1.4593- 1
1.5000+ 5 ~ 2.0000+ 5	1.1259+ 1	9.6025+ 0	1.3076+ 0			8.2148- 2			2.6632- 1				1.9154- 1
2.0000+ 5 ~ 3.0000+ 5	1.0266+ 1	8.4062+ 0	1.5391+ 0			1.1185- 1			2.0906- 1				2.4563- 1
3.0000+ 5 ~ 4.0000+ 5	9.3499+ 0	7.2814+ 0	1.7142+ 0			1.6905- 1			1.8529- 1				2.9642- 1
4.0000+ 5 ~ 5.0000+ 5	8.6490+ 0	6.4177+ 0	1.7519+ 0			3.0106- 1			1.7889- 1				3.3372- 1
5.0000+ 5 ~ 6.0000+ 5	8.1119+ 0	5.7065+ 0	1.6532+ 0			5.8516- 1			1.6809- 1				3.5628- 1
6.0000+ 5 ~ 8.0000+ 5	7.5594+ 0	4.7514+ 0	1.5970+ 0			9.7380- 1			1.3719- 1				3.7759- 1
8.0000+ 5 ~ 1.0000+ 6	7.1398+ 0	4.0960+ 0	1.5360+ 0			1.3996+ 0			1.0823- 1				4.0227- 1
1.0000+ 6 ~ 1.5000+ 6	7.0065+ 0	3.8186+ 0	1.5199+ 0			1.5761+ 0			9.0848- 2				4.5083- 1
1.5000+ 6 ~ 2.0000+ 6	7.2719+ 0	3.9962+ 0	1.5247+ 0			1.6713+ 0			7.9709- 2				5.2307- 1
2.0000+ 6 ~ 3.0000+ 6	7.7443+ 0	4.6224+ 0	1.3477+ 0			1.7221+ 0			5.1830- 2				6.1796- 1
3.0000+ 6 ~ 4.0000+ 6	8.0093+ 0	5.1139+ 0	1.2148+ 0			1.6618+ 0			1.8748- 2				6.8638- 1
4.0000+ 6 ~ 5.0000+ 6	7.8586+ 0	5.0706+ 0	1.2222+ 0			1.5602+ 0			5.6092- 3				7.3648- 1
5.0000+ 6 ~ 6.0000+ 6	7.4951+ 0	4.7190+ 0	1.2707+ 0			1.5034+ 0			1.9785- 3				7.7934- 1
6.0000+ 6 ~ 8.0000+ 6	6.8459+ 0	4.0636+ 0	7.2979- 1	1.0114- 1		1.9504+ 0			9.5205- 4				8.1066- 1
8.0000+ 6 ~ 1.0000+ 7	6.1147+ 0	3.3583+ 0	1.6578- 1	4.1557- 1		2.1740+ 0			1.0668- 3				8.0467- 1
1.0000+ 7 ~ 1.5000+ 7	5.8262+ 0	3.0964+ 0	2.6089- 2	5.3188- 1	5.3606- 2	2.1172+ 0			1.0251- 3				8.1134- 1
1.5000+ 7 ~ 2.0000+ 7	6.2739+ 0	3.5322+ 0	1.7539- 3	1.2524- 1	4.3438- 1	2.1767+ 0			3.6630- 4				4.1971- 1

MATERIAL =2945

CROSS SECTION

PU-241

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	4.4498+ 3	1.0486+ 1				3.1400+ 3			1.2993+ 3				2.8366- 3
1.0000- 2 ~ 1.5000- 2	2.0397+ 3	1.0388+ 1				1.4690+ 3			5.6042+ 2				2.8449- 3
1.5000- 2 ~ 2.0000- 2	1.7038+ 3	1.0325+ 1				1.2390+ 3			4.5446+ 2				2.8476- 3
2.0000- 2 ~ 3.0000- 2	1.4113+ 3	1.0230+ 1				1.0344+ 3			3.6667+ 2				2.8503- 3
3.0000- 2 ~ 4.0000- 2	1.1883+ 3	1.0108+ 1				8.7902+ 2			2.9917+ 2				2.8528- 3
4.0000- 2 ~ 5.0000- 2	1.0469+ 3	9.9885+ 0				7.7731+ 2			2.5962+ 2				2.8549- 3
5.0000- 2 ~ 6.0000- 2	9.5666+ 2	9.8665+ 0				7.1580+ 2			2.3096+ 2				2.8565- 3
6.0000- 2 ~ 8.0000- 2	8.7481+ 2	9.6919+ 0				6.6140+ 2			2.0372+ 2				2.8583- 3
8.0000- 2 ~ 1.0000- 1	8.2369+ 2	9.4590+ 0				6.3014+ 2			1.8400+ 2				2.8603- 3
1.0000- 1 ~ 1.5000- 1	8.5258+ 2	9.0545+ 0				6.6060+ 2			1.8292+ 2				2.8628- 3
1.5000- 1 ~ 2.0000- 1	1.1766+ 3	8.6288+ 0				8.9608+ 2			2.7185+ 2				2.8654- 3
2.0000- 1 ~ 3.0000- 1	2.0098+ 3	1.0947+ 1				1.4411+ 3			5.5773+ 2				2.8682- 3
3.0000- 1 ~ 4.0000- 1	6.4617+ 2	1.2994+ 1				4.0208+ 2			2.3107+ 2				2.8708- 3
4.0000- 1 ~ 5.0000- 1	1.6734+ 2	1.1847+ 1				9.0774+ 1			6.4707+ 1				2.8728- 3
5.0000- 1 ~ 6.0000- 1	8.9933+ 1	1.1184+ 1				5.1091+ 1			2.7645+ 1				2.8743- 3
6.0000- 1 ~ 8.0000- 1	6.4368+ 1	1.0657+ 1				4.0277+ 1			1.3429+ 1				2.8762- 3
8.0000- 1 ~ 1.0000+ 0	5.2013+ 1	1.0244+ 1				3.4630+ 1			7.1365+ 0				2.8782- 3
1.0000+ 0 ~ 1.5000+ 0	4.2081+ 1	9.8185+ 0				2.8117+ 1			4.1456+ 0				2.8807- 3
1.5000+ 0 ~ 2.0000+ 0	3.7582+ 1	9.3720+ 0				2.5223+ 1			2.9868+ 0				2.8833- 3
2.0000+ 0 ~ 3.0000+ 0	4.0779+ 1	8.7028+ 0				2.8729+ 1			3.3473+ 0				2.8861- 3
3.0000+ 0 ~ 4.0000+ 0	7.0817+ 1	6.9486+ 0				5.1433+ 1			1.2435+ 1				2.8887- 3
4.0000+ 0 ~ 5.0000+ 0	5.5310+ 2	1.1926+ 1				3.1381+ 2			2.2736+ 2				2.8907- 3
5.0000+ 0 ~ 6.0000+ 0	2.7072+ 2	9.2300+ 0				2.4885+ 2			1.2632+ 1				2.8922- 3
6.0000+ 0 ~ 8.0000+ 0	3.5591+ 2	1.2238+ 1				3.0932+ 2			3.4346+ 1				2.8941- 3
8.0000+ 0 ~ 1.0000+ 1	2.6212+ 2	1.1589+ 1				2.0665+ 2			4.3877+ 1				2.8961- 3
1.0000+ 1 ~ 1.5000+ 1	3.2224+ 2	1.6282+ 1				2.0445+ 2			1.0151+ 2				2.8986- 3
1.5000+ 1 ~ 2.0000+ 1	1.7320+ 2	1.8766+ 1				9.3746+ 1			6.0684+ 1				2.9012- 3
2.0000+ 1 ~ 3.0000+ 1	1.1570+ 2	1.3096+ 1				8.3856+ 1			1.8751+ 1				2.9040- 3
3.0000+ 1 ~ 4.0000+ 1	7.3189+ 1	1.3407+ 1				4.9116+ 1			1.0665+ 1				2.9066- 3
4.0000+ 1 ~ 5.0000+ 1	6.1287+ 1	1.3321+ 1				4.0582+ 1			7.3835+ 0				2.9086- 3
5.0000+ 1 ~ 6.0000+ 1	3.1726+ 1	1.2002+ 1				1.6714+ 1			3.0101+ 0				2.9101- 3
6.0000+ 1 ~ 8.0000+ 1	6.7506+ 1	1.3239+ 1				3.9581+ 1			1.4685+ 1				2.9120- 3
8.0000+ 1 ~ 1.0000+ 2	7.6946+ 1	1.5728+ 1				4.7134+ 1			1.4083+ 1				2.9160- 3
1.0000+ 2 ~ 1.5000+ 2	4.4449+ 1	1.2749+ 1				2.6477+ 1			6.2287+ 0				2.9600- 3
1.5000+ 2 ~ 2.0000+ 2	4.5909+ 1	1.3135+ 1				2.5872+ 1			6.9022+ 0				3.0364- 3
2.0000+ 2 ~ 3.0000+ 2	4.6517+ 1	1.3594+ 1				2.5915+ 1			7.0075+ 0				3.1462- 3
3.0000+ 2 ~ 4.0000+ 2	4.1860+ 1	1.3804+ 1				2.1342+ 1			6.7140+ 0				3.2878- 3
4.0000+ 2 ~ 5.0000+ 2	3.8344+ 1	1.3879+ 1				1.8223+ 1			6.2425+ 0				3.4278- 3
5.0000+ 2 ~ 6.0000+ 2	3.4291+ 1	1.3580+ 1				1.5577+ 1			5.1338+ 0				3.5629- 3
6.0000+ 2 ~ 8.0000+ 2	2.7613+ 1	1.2942+ 1				1.1196+ 1			3.4746+ 0				3.7470- 3
8.0000+ 2 ~ 1.0000+ 3	2.6118+ 1	1.2861+ 1				1.0445+ 1			2.8129+ 0				4.0382- 3
1.0000+ 3 ~ 1.5000+ 3	2.5728+ 1	1.3061+ 1				9.9095+ 0			2.7668+ 0				4.6813- 3
1.5000+ 3 ~ 2.0000+ 3	2.3761+ 1	1.3014+ 1				8.3384+ 0			2.4079+ 0				5.3289- 3
2.0000+ 3 ~ 3.0000+ 3	2.1451+ 1	1.2782+ 1				6.8785+ 0			1.7911+ 0				6.3985- 3
3.0000+ 3 ~ 4.0000+ 3	2.0581+ 1	1.2769+ 1				6.2740+ 0			1.5379+ 0				7.8918- 3
4.0000+ 3 ~ 5.0000+ 3	1.9624+ 1	1.2700+ 1				5.5512+ 0			1.3729+ 0				9.3581- 3
5.0000+ 3 ~ 6.0000+ 3	1.8597+ 1	1.2575+ 1				4.8077+ 0			1.2141+ 0				1.0802- 2
6.0000+ 3 ~ 8.0000+ 3	1.7984+ 1	1.2497+ 1				4.3914+ 0			1.0951+ 0				1.3052- 2
8.0000+ 3 ~ 1.0000+ 4	1.7159+ 1	1.2290+ 1				3.9972+ 0			8.8221- 1				1.6066- 2
1.0000+ 4 ~ 1.5000+ 4	1.6455+ 1	1.2122+ 1				3.5412+ 0			7.9275- 1				2.1604- 2
1.5000+ 4 ~ 2.0000+ 4	1.5961+ 1	1.1984+ 1				3.2082+ 0			7.6961- 1				2.9162- 2
2.0000+ 4 ~ 3.0000+ 4	1.5176+ 1	1.1676+ 1				2.8752+ 0			6.2475- 1				4.0423- 2
3.0000+ 4 ~ 4.0000+ 4	1.4147+ 1	1.1003+ 1				2.6544+ 0			4.8964- 1				5.5298- 2
4.0000+ 4 ~ 5.0000+ 4	1.3818+ 1	1.0779+ 1	5.7780- 3			2.5090+ 0			5.2464- 1				6.9601- 2
5.0000+ 4 ~ 6.0000+ 4	1.3446+ 1	1.0588+ 1	1.5602- 2			2.3673+ 0			4.7441- 1				8.3652- 2
6.0000+ 4 ~ 8.0000+ 4	1.3051+ 1	1.0289+ 1	2.2267- 2			2.3177+ 0			4.2155- 1				1.0386- 1
8.0000+ 4 ~ 1.0000+ 5	1.2542+ 1	9.9508+ 0	3.3792- 2			2.2205+ 0			3.3679- 1				1.2890- 1
1.0000+ 5 ~ 1.5000+ 5	1.1924+ 1	9.4242+ 0	5.8240- 2			2.1170+ 0			3.2430- 1				1.6804- 1
1.5000+ 5 ~ 2.0000+ 5	1.1162+ 1	8.7989+ 0	1.0620- 1			1.9600+ 0			2.9731- 1				2.1469- 1
2.0000+ 5 ~ 3.0000+ 5	1.0284+ 1	7.9899+ 0	2.1544- 1			1.8077+ 0			2.7063- 1				2.6963- 1
3.0000+ 5 ~ 4.0000+ 5	9.3707+ 0	7.1109+ 0	3.6822- 1			1.6318+ 0			2.5976- 1				3.2456- 1
4.0000+ 5 ~ 5.0000+ 5	8.6643+ 0	6.4139+ 0	4.5410- 1			1.5448+ 0			2.5194- 1				3.6503- 1
5.0000+ 5 ~ 6.0000+ 5	8.1219+ 0	5.8605+ 0	5.0441- 1			1.5106+ 0			2.4614- 1				3.9595- 1
6.0000+ 5 ~ 8.0000+ 5	7.5614+ 0	5.2448+ 0	5.6696- 1			1.5192+ 0			2.3024- 1				4.3071- 1
8.0000+ 5 ~ 1.0000+ 6	7.1326+ 0	4.7020+ 0	6.5780- 1			1.5620+ 0			2.1067- 1				4.6477- 1
1.0000+ 6 ~ 1.5000+ 6	6.9939+ 0	4.3268+ 0	8.1498- 1			1.6893+ 0			1.8295- 1				5.1262- 1
1.5000+ 6 ~ 2.0000+ 6	7.2688+ 0	4.3678+ 0	1.0220+ 0			1.7324+ 0			1.4660- 1				5.8896- 1
2.0000+ 6 ~ 3.0000+ 6	7.7696+ 0	4.8470+ 0	1.2178+ 0			1.6107+ 0			9.3724- 2				6.9124- 1
3.0000+ 6 ~ 4.0000+ 6	8.0569+ 0	5.2387+ 0	1.2919+ 0			1.4859+ 0			3.9592- 2				7.6621- 1
4.0000+ 6 ~ 5.0000+ 6	7.8955+ 0	5.1612+ 0	1.3217+ 0			1.3979+ 0			1.4218- 2				7.9649- 1
5.0000+ 6 ~ 6.0000+ 6	7.4720+ 0	4.7818+ 0	1.1008+ 0	1.8626- 1		1.3973+ 0			4.1087- 3				8.0388- 1
6.0000+ 6 ~ 8.0000+ 6	6.7694+ 0	4.0807+ 0	2.0601- 1	6.9493- 1		1.7869+ 0			2.6559- 4				7.9439- 1
8.0000+ 6 ~ 1.0000+ 7	5.9472+ 0	3.3489+ 0	7.3269- 3	6.2838- 1		1.9626+ 0			1.9263- 6				7.7333- 1
1.0000+ 7 ~ 1.5000+ 7	5.6948+ 0	3.1628+ 0	2.6031- 4	3.8037- 1	6.6755- 2	2.0846+ 0			1.7885- 8				7.9469- 1
1.5000+ 7 ~ 2.0000+ 7	6.2606+ 0	3.8348+ 0	2.2559- 4	3.0749- 2	4.1208- 1	1.9741+ 0			4.5440- 9				8.6934- 1

CROSS SECTION

MATERIAL =2946 PU-242

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	6.4578+ 1	8.1267+ 0				3.7445- 1			5.6074+ 1				2.7780- 3
1.0000- 2 ~ 1.5000- 2	3.4503+ 1	8.1210+ 0				1.7397- 1			2.6206+ 1				2.7780- 3
1.5000- 2 ~ 2.0000- 2	3.0383+ 1	8.1171+ 0				1.4633- 1			2.2117+ 1				2.7780- 3
2.0000- 2 ~ 3.0000- 2	2.6927+ 1	8.1113+ 0				1.2306- 1			1.8691+ 1				2.7780- 3
3.0000- 2 ~ 4.0000- 2	2.4057+ 1	8.1036+ 0				1.0364- 1			1.5847+ 1				2.7780- 3
4.0000- 2 ~ 5.0000- 2	2.2272+ 1	8.0956+ 0				9.1475- 2			1.4081+ 1				2.7781- 3
5.0000- 2 ~ 6.0000- 2	2.0985+ 1	8.0877+ 0				8.2667- 2			1.2811+ 1				2.7781- 3
6.0000- 2 ~ 8.0000- 2	1.9671+ 1	8.0758+ 0				7.3697- 2			1.1619+ 1				2.7781- 3
8.0000- 2 ~ 1.0000- 1	1.8422+ 1	8.0596+ 0				6.4898- 2			1.0297+ 1				2.7781- 3
1.0000- 1 ~ 1.5000- 1	1.7109+ 1	8.0307+ 0				5.6554- 2			9.0215+ 0				2.7781- 3
1.5000- 1 ~ 2.0000- 1	1.5929+ 1	7.9882+ 0				4.6929- 2			7.8923+ 0				2.7782- 3
2.0000- 1 ~ 3.0000- 1	1.4982+ 1	7.9212+ 0				3.9599- 2			7.0195+ 0				2.7782- 3
3.0000- 1 ~ 4.0000- 1	1.4300+ 1	7.8259+ 0				3.3778- 2			6.4402+ 0				2.7783- 3
4.0000- 1 ~ 5.0000- 1	1.3937+ 1	7.7232+ 0				3.0055- 2			6.1825+ 0				2.7784- 3
5.0000- 1 ~ 6.0000- 1	1.3774+ 1	7.6104+ 0				2.7577- 2			6.1344+ 0				2.7785- 3
6.0000- 1 ~ 8.0000- 1	1.3751+ 1	7.4218+ 0				2.5054- 2			6.3012+ 0				2.7786- 3
8.0000- 1 ~ 1.0000+ 0	1.4021+ 1	7.1294+ 0				2.2919- 2			6.8659+ 0				2.7788- 3
1.0000+ 0 ~ 1.5000+ 0	1.5673+ 1	6.4234+ 0				2.1760- 2			9.2243+ 0				2.7790- 3
1.5000+ 0 ~ 2.0000+ 0	2.4039+ 1	4.7096+ 0				2.6048- 2			1.9300+ 1				2.7795- 3
2.0000+ 0 ~ 3.0000+ 0	2.9932+ 3	2.2058+ 2				1.8654+ 0			2.7707+ 3				2.7801- 3
3.0000+ 0 ~ 4.0000+ 0	4.6246+ 1	2.0784+ 1				2.6310- 2			2.5434+ 1				2.7809- 3
4.0000+ 0 ~ 5.0000+ 0	1.7014+ 1	1.3865+ 1				1.0284- 2			3.1372+ 0				2.7817- 3
5.0000+ 0 ~ 6.0000+ 0	1.3580+ 1	1.2427+ 1				8.1669- 3			1.1445+ 0				2.7826- 3
6.0000+ 0 ~ 8.0000+ 0	1.2059+ 1	1.1588+ 1				6.8846- 3			4.6444- 1				2.7838- 3
8.0000+ 0 ~ 1.0000+ 1	1.1257+ 1	1.1048+ 1				5.9316- 3			2.0177- 1				2.7656- 3
1.0000+ 1 ~ 1.5000+ 1	1.4092+ 1	1.0587+ 1				1.2025- 2			3.4913+ 0				2.7889- 3
1.5000+ 1 ~ 2.0000+ 1	1.0349+ 1	1.0255+ 1				4.2836- 3			8.7354- 2				2.7925- 3
2.0000+ 1 ~ 3.0000+ 1	1.5132+ 1	9.9348+ 0				1.6380- 2			5.1792+ 0				2.7987- 3
3.0000+ 1 ~ 4.0000+ 1	9.0560+ 0	8.9621+ 0				3.0860- 3			8.8862- 2				2.8069- 3
4.0000+ 1 ~ 5.0000+ 1	1.1505+ 1	6.6890+ 0				1.0914- 2			4.8032+ 0				2.8152- 3
5.0000+ 1 ~ 6.0000+ 1	4.1179+ 2	2.8587+ 2				2.3895- 1			1.2567+ 2				2.8235- 3
6.0000+ 1 ~ 8.0000+ 1	2.7518+ 1	1.5822+ 1				2.5139- 2			1.1669+ 1				2.8359- 3
8.0000+ 1 ~ 1.0000+ 2	1.2912+ 1	1.1426+ 1				4.1725- 3			1.4793+ 0				2.8524- 3
1.0000+ 2 ~ 1.5000+ 2	3.5595+ 1	2.0083+ 1				3.5930- 2			1.5474+ 1				2.8813- 3
1.5000+ 2 ~ 2.0000+ 2	1.1312+ 1	1.0922+ 1				2.1358- 3			3.8620- 1				2.9227- 3
2.0000+ 2 ~ 3.0000+ 2	2.6564+ 1	1.9377+ 1				2.8068- 2			7.1476+ 0				2.9847- 3
3.0000+ 2 ~ 4.0000+ 2	6.0286+ 1	5.0780+ 1				9.4866- 2			9.4696+ 0				3.0673- 3
4.0000+ 2 ~ 5.0000+ 2	1.4088+ 1	1.2088+ 1				3.4407- 2			1.9649+ 0				3.1500- 3
5.0000+ 2 ~ 6.0000+ 2	4.2944+ 1	3.6194+ 1				4.3231- 2			6.7057+ 0				3.2326- 3
6.0000+ 2 ~ 8.0000+ 2	3.0900+ 1	2.6900+ 1				2.2384- 1			3.7753+ 0				3.3566- 3
8.0000+ 2 ~ 1.0000+ 3	1.9815+ 1	1.7167+ 1				7.1401- 3			2.6397+ 0				3.5220- 3
1.0000+ 3 ~ 1.5000+ 3	2.4555+ 1	2.1622+ 1				1.3906- 2			2.9193+ 0				3.8900- 3
1.5000+ 3 ~ 2.0000+ 3	1.9156+ 1	1.6175+ 1				2.7084- 2			2.9521+ 0				4.4607- 3
2.0000+ 3 ~ 3.0000+ 3	2.0638+ 1	1.8325+ 1				1.1333- 2			2.3018+ 0				5.3167- 3
3.0000+ 3 ~ 4.0000+ 3	2.1252+ 1	1.9396+ 1				1.5631- 2			1.8390+ 0				6.5116- 3
4.0000+ 3 ~ 5.0000+ 3	2.1471+ 1	1.9871+ 1				1.2603- 2			1.5873+ 0				7.7600- 3
5.0000+ 3 ~ 6.0000+ 3	1.9102+ 1	1.7664+ 1				9.0026- 3			1.4291+ 0				9.0083- 3
6.0000+ 3 ~ 8.0000+ 3	1.7952+ 1	1.6664+ 1				5.0016- 3			1.2828+ 0				1.0881- 2
8.0000+ 3 ~ 1.0000+ 4	1.7534+ 1	1.6367+ 1				5.8976- 3			1.1609+ 0				1.3377- 2
1.0000+ 4 ~ 1.5000+ 4	1.7206+ 1	1.6172+ 1				8.5588- 3			1.0253+ 0				1.7834- 2
1.5000+ 4 ~ 2.0000+ 4	1.6894+ 1	1.5991+ 1				1.0391- 2			8.9221- 1				2.4251- 2
2.0000+ 4 ~ 3.0000+ 4	1.6575+ 1	1.5810+ 1				1.1603- 2			7.5309- 1				3.3876- 2
3.0000+ 4 ~ 4.0000+ 4	1.6162+ 1	1.5509+ 1				1.2698- 2			6.3996- 1				4.6325- 2
4.0000+ 4 ~ 5.0000+ 4	1.5712+ 1	1.5119+ 1	2.1079- 2			1.3219- 2			5.5896- 1				5.8990- 2
5.0000+ 4 ~ 6.0000+ 4	1.5239+ 1	1.4594+ 1	1.6488- 1			1.2749- 2			4.6753- 1				7.0455- 2
6.0000+ 4 ~ 8.0000+ 4	1.4542+ 1	1.3772+ 1	3.9284- 1			1.4377- 2			3.6282- 1				8.8403- 2
8.0000+ 4 ~ 1.0000+ 5	1.3716+ 1	1.2790+ 1	6.1673- 1			1.6911- 2			2.9155- 1				1.1148- 1
1.0000+ 5 ~ 1.5000+ 5	1.2624+ 1	1.1428+ 1	8.3611- 1			1.9879- 2			2.3760- 1				1.4572- 1
1.5000+ 5 ~ 2.0000+ 5	1.1140+ 1	9.9347+ 0	9.9914- 1			2.8559- 2			1.7706- 1				1.9134- 1
2.0000+ 5 ~ 3.0000+ 5	9.9196+ 0	8.6944+ 0	1.1287+ 0			5.1490- 2			1.4438- 1				2.4543- 1
3.0000+ 5 ~ 4.0000+ 5	8.9252+ 0	7.4673+ 0	1.2270+ 0			9.2699- 2			1.3796- 1				2.9623- 1
4.0000+ 5 ~ 5.0000+ 5	8.3236+ 0	6.7398+ 0	1.2781+ 0			1.6867- 1			1.3862- 1				3.3356- 1
5.0000+ 5 ~ 6.0000+ 5	7.9286+ 0	6.1938+ 0	1.2724+ 0			3.2176- 1			1.4022- 1				3.5613- 1
6.0000+ 5 ~ 8.0000+ 5	7.5607+ 0	5.5858+ 0	1.1851+ 0			6.4910- 1			1.4027- 1				3.7746- 1
8.0000+ 5 ~ 1.0000+ 6	7.1747+ 0	4.8641+ 0	9.9563- 1			1.2006+ 0			1.1419- 1				4.0211- 1
1.0000+ 6 ~ 1.5000+ 6	7.0447+ 0	4.4075+ 0	1.0771+ 0			1.4848+ 0			9.5191- 2				4.5049- 1
1.5000+ 6 ~ 2.0000+ 6	7.3112+ 0	4.4119+ 0	1.3806+ 0			1.4255+ 0			9.3731- 2				5.2260- 1
2.0000+ 6 ~ 3.0000+ 6	7.7854+ 0	4.8206+ 0	1.4993+ 0			1.4097+ 0			5.5444- 2				6.1735- 1
3.0000+ 6 ~ 4.0000+ 6	8.0448+ 0	5.1723+ 0	1.5218+ 0			1.3926+ 0			1.7923- 2				6.8684- 1
4.0000+ 6 ~ 5.0000+ 6	7.8909+ 0	5.0994+ 0	1.5373+ 0			1.2491+ 0			5.0499- 3				7.3589- 1
5.0000+ 6 ~ 6.0000+ 6	7.5342+ 0	4.7467+ 0	1.5077+ 0			1.2780+ 0			1.6843- 3				7.7684- 1
6.0000+ 6 ~ 8.0000+ 6	6.8716+ 0	4.0806+ 0	8.2813- 1	1.9243- 1		1.7694+ 0			9.2978- 4				8.1071- 1
8.0000+ 6 ~ 1.0000+ 7	6.1436+ 0	3.3806+ 0	2.0064- 1	6.4163- 1		1.9195+ 0			1.0898- 3				8.0463- 1
1.0000+ 7 ~ 1.5000+ 7	5.8554+ 0	3.1001+ 0	3.1046- 2	6.8020- 1	1.3118- 1	1.9119+ 0			1.0252- 3				8.0724- 1
1.5000+ 7 ~ 2.0000+ 7	6.3059+ 0	3.5548+ 0	1.9980- 3	1.2027- 1	5.9427- 1	1.9868+ 0			3.6899- 4				8.2220- 1

MATERIAL =2951

CROSS SECTION

AM-241

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	2.0426+ 3	1.1656+ 1				9.9808+ 0			2.0210+ 3				2.7662- 3
1.0000- 2 ~ 1.5000- 2	9.1950+ 2	1.1604+ 1				4.4930+ 0			9.0350+ 2				2.7662- 3
1.5000- 2 ~ 2.0000- 2	7.6036+ 2	1.1406+ 1				3.7212+ 0			7.4524+ 2				2.7662- 3
2.0000- 2 ~ 3.0000- 2	6.2651+ 2	1.1264+ 1				3.0753+ 0			6.1218+ 2				2.7662- 3
3.0000- 2 ~ 4.0000- 2	5.1407+ 2	1.1081+ 1				2.5362+ 0			5.0046+ 2				2.7662- 3
4.0000- 2 ~ 5.0000- 2	4.4306+ 2	1.0905+ 1				2.1991+ 0			4.2996+ 2				2.7662- 3
5.0000- 2 ~ 6.0000- 2	3.9453+ 2	1.0734+ 1				1.9718+ 0			3.8183+ 2				2.7662- 3
6.0000- 2 ~ 8.0000- 2	3.4805+ 2	1.0487+ 1				1.7600+ 0			3.3680+ 2				2.7662- 3
8.0000- 2 ~ 1.0000- 1	3.0847+ 2	1.0165+ 1				1.6891+ 0			2.9671+ 2				2.7662- 3
1.0000- 1 ~ 1.5000- 1	2.8560+ 2	9.6013+ 0				1.5317+ 0			2.7447+ 2				2.7662- 3
1.5000- 1 ~ 2.0000- 1	3.2850+ 2	8.7126+ 0				1.8890+ 0			3.1790+ 2				2.7662- 3
2.0000- 1 ~ 3.0000- 1	1.4817+ 3	7.5314+ 0				9.5223+ 0			1.4647+ 3				2.7662- 3
3.0000- 1 ~ 4.0000- 1	2.1976+ 3	1.6107+ 1				1.4143+ 1			2.1673+ 3				2.7662- 3
4.0000- 1 ~ 5.0000- 1	3.2194+ 2	1.0177+ 1				1.5109+ 0			3.1025+ 2				2.7662- 3
5.0000- 1 ~ 6.0000- 1	1.9000+ 3	1.1641+ 1				6.2233+ 0			1.8821+ 3				2.7662- 3
6.0000- 1 ~ 8.0000- 1	3.1540+ 2	1.2833+ 1				1.1009+ 0			3.0146+ 2				2.7662- 3
8.0000- 1 ~ 1.0000+ 0	7.3551+ 1	9.4611+ 0				3.9552- 1			6.3694+ 1				2.7662- 3
1.0000+ 0 ~ 1.5000+ 0	1.0026+ 3	1.6750+ 1				7.7347+ 0			9.7816+ 2				2.7662- 3
1.5000+ 0 ~ 2.0000+ 0	2.5449+ 2	1.1446+ 1				5.8614- 1			2.4246+ 2				2.7662- 3
2.0000+ 0 ~ 3.0000+ 0	2.0099+ 2	1.1437+ 1				7.2826- 1			1.8882+ 2				2.7662- 3
3.0000+ 0 ~ 4.0000+ 0	9.8356+ 1	9.7921+ 0				3.3053- 1			8.8233+ 1				2.7662- 3
4.0000+ 0 ~ 5.0000+ 0	9.5939+ 1	9.8670+ 0				7.1998- 1			8.5352+ 1				2.7662- 3
5.0000+ 0 ~ 6.0000+ 0	3.0945+ 2	1.5618+ 1				4.0475+ 0			2.8979+ 2				2.7662- 3
6.0000+ 0 ~ 8.0000+ 0	4.1908+ 1	1.0561+ 1				2.4313- 1			3.1103+ 1				2.7662- 3
8.0000+ 0 ~ 1.0000+ 1	1.0775+ 2	1.0155+ 1				1.0654+ 0			9.6526+ 1				2.7662- 3
1.0000+ 1 ~ 1.5000+ 1	1.1552+ 2	1.3735+ 1				5.3289- 1			1.0125+ 2				2.7662- 3
1.5000+ 1 ~ 2.0000+ 1	8.0736+ 1	1.2672+ 1				3.0347- 1			6.7860+ 1				2.7662- 3
2.0000+ 1 ~ 3.0000+ 1	6.4922+ 1	1.1112+ 1				2.3962- 1			5.3570+ 1				2.7662- 3
3.0000+ 1 ~ 4.0000+ 1	7.0857+ 1	1.2087+ 1				3.8791- 1			5.8383+ 1				2.7662- 3
4.0000+ 1 ~ 5.0000+ 1	4.1744+ 1	1.1136+ 1				1.8570- 1			3.0423+ 1				2.7662- 3
5.0000+ 1 ~ 6.0000+ 1	6.1087+ 1	1.1486+ 1				1.3339- 1			4.9467+ 1				2.7662- 3
6.0000+ 1 ~ 8.0000+ 1	5.7135+ 1	1.2196+ 1				1.5502- 1			4.4784+ 1				2.7662- 3
8.0000+ 1 ~ 1.0000+ 2	4.7048+ 1	1.2700+ 1				1.6045- 1			3.4188+ 1				2.7662- 3
1.0000+ 2 ~ 1.5000+ 2	6.5632+ 1	1.5619+ 1				1.9740- 1			3.9816+ 1				3.8658- 3
1.5000+ 2 ~ 2.0000+ 2	3.7604+ 1	1.2565+ 1				3.1020- 1			2.4738+ 1				5.5924- 3
2.0000+ 2 ~ 3.0000+ 2	3.5089+ 1	1.2752+ 1				2.4311- 1			2.2093+ 1				7.3879- 3
3.0000+ 2 ~ 4.0000+ 2	3.3032+ 1	1.2966+ 1				2.4966- 1			1.9817+ 1				9.1146- 3
4.0000+ 2 ~ 5.0000+ 2	3.0815+ 1	1.2993+ 1				1.7999- 1			1.7642+ 1				1.0398- 2
5.0000+ 2 ~ 6.0000+ 2	2.7258+ 1	1.2629+ 1				1.4822- 1			1.4481+ 1				1.1421- 2
6.0000+ 2 ~ 8.0000+ 2	2.6324+ 1	1.2760+ 1				1.3636- 1			1.3427+ 1				1.2637- 2
8.0000+ 2 ~ 1.0000+ 3	2.3376+ 1	1.2441+ 1				9.8832- 2			1.0837+ 1				1.3920- 2
1.0000+ 3 ~ 1.5000+ 3	2.2567+ 1	1.2624+ 1				9.7325- 2			9.8451+ 0				1.5566- 2
1.5000+ 3 ~ 2.0000+ 3	2.1010+ 1	1.2578+ 1				5.6897- 2			8.3751+ 0				1.7292- 2
2.0000+ 3 ~ 3.0000+ 3	1.9800+ 1	1.2557+ 1				5.7357- 2			7.1853+ 0				1.9088- 2
3.0000+ 3 ~ 4.0000+ 3	1.8378+ 1	1.2381+ 1				4.5768- 2			5.9510+ 0				2.0815- 2
4.0000+ 3 ~ 5.0000+ 3	1.7405+ 1	1.2218+ 1				4.3046- 2			5.1437+ 0				2.2098- 2
5.0000+ 3 ~ 6.0000+ 3	1.7064+ 1	1.2210+ 1				4.7652- 2			4.8066+ 0				2.3122- 2
6.0000+ 3 ~ 8.0000+ 3	1.6285+ 1	1.2032+ 1				4.2670- 2			4.2106+ 0				2.4337- 2
8.0000+ 3 ~ 1.0000+ 4	1.5516+ 1	1.1823+ 1				6.7123- 2			3.6258+ 0				2.5621- 2
1.0000+ 4 ~ 1.5000+ 4	1.5136+ 1	1.1749+ 1				2.4408- 2			3.3627+ 0				2.7266- 2
1.5000+ 4 ~ 2.0000+ 4	1.4690+ 1	1.1614+ 1				1.6058- 2			3.0599+ 0				2.8993- 2
2.0000+ 4 ~ 3.0000+ 4	1.3959+ 1	1.1329+ 1				1.4437- 2			2.6153+ 0				3.0788- 2
3.0000+ 4 ~ 4.0000+ 4	1.3776+ 1	1.1325+ 1				1.4047- 2			2.4367+ 0				3.7437- 2
4.0000+ 4 ~ 5.0000+ 4	1.3514+ 1	1.1191+ 1	4.1412- 2			1.4206- 2			2.2674+ 0				4.8248- 2
5.0000+ 4 ~ 6.0000+ 4	1.3308+ 1	1.1064+ 1	1.2300- 1			1.4707- 2			2.1057+ 0				5.9295- 2
6.0000+ 4 ~ 8.0000+ 4	1.3051+ 1	1.0901+ 1	2.0500- 1			1.6027- 2			1.9279+ 0				7.6703- 2
8.0000+ 4 ~ 1.0000+ 5	1.2756+ 1	1.0693+ 1	3.0180- 1			1.7599- 2			1.7436+ 0				8.6861- 2
1.0000+ 5 ~ 1.5000+ 5	1.2301+ 1	1.0300+ 1	4.7862- 1			1.9484- 2			1.5015+ 0				1.3214- 1
1.5000+ 5 ~ 2.0000+ 5	1.1712+ 1	9.7360+ 0	6.7570- 1			2.2445- 2			1.2775+ 0				1.7765- 1
2.0000+ 5 ~ 3.0000+ 5	1.0913+ 1	8.8634+ 0	8.8626- 1			3.0165- 2			1.0424+ 0				2.3670- 1
3.0000+ 5 ~ 4.0000+ 5	9.9773+ 0	7.7992+ 0	1.2929+ 0			4.7373- 2			8.3747- 1				2.9972- 1
4.0000+ 5 ~ 5.0000+ 5	9.1894+ 0	6.9467+ 0	1.4045+ 0			7.6879- 2			7.5902- 1				3.4533- 1
5.0000+ 5 ~ 6.0000+ 5	8.5493+ 0	6.1895+ 0	1.6250+ 0			1.3569- 1			6.9755- 1				3.8193- 1
6.0000+ 5 ~ 8.0000+ 5	7.8274+ 0	5.1996+ 0	1.6349+ 0			4.0494- 1			5.8362- 1				4.2802- 1
8.0000+ 5 ~ 1.0000+ 6	7.2558+ 0	4.2461+ 0	1.5351+ 0			1.0454+ 0			4.1765- 1				4.7307- 1
1.0000+ 6 ~ 1.5000+ 6	6.9364+ 0	3.5309+ 0	1.3275+ 0			1.8542+ 0			2.2004- 1				5.1864- 1
1.5000+ 6 ~ 2.0000+ 6	7.0014+ 0	3.6089+ 0	1.3365+ 0			2.0332+ 0			1.2067- 1				5.8257- 1
2.0000+ 6 ~ 3.0000+ 6	7.3560+ 0	4.1345+ 0	1.1219+ 0			2.0473+ 0			4.9654- 2				6.7663- 1
3.0000+ 6 ~ 4.0000+ 6	7.6987+ 0	4.7812+ 0	8.7437- 1			2.0257+ 0			1.2956- 2				7.4932- 1
4.0000+ 6 ~ 5.0000+ 6	7.7385+ 0	4.9467+ 0	7.5963- 1			2.0284+ 0			3.5083- 3				7.8794- 1
5.0000+ 6 ~ 6.0000+ 6	7.4927+ 0	4.6775+ 0	8.4886- 1			1.9633+ 0			1.1543- 3				8.0630- 1
6.0000+ 6 ~ 8.0000+ 6	6.8762+ 0	4.0207+ 0	5.3374- 1	5.8900- 3		2.3141+ 0			2.1793- 4				8.1392- 1
8.0000+ 6 ~ 1.0000+ 7	6.0734+ 0	3.2067+ 0	1.2630- 2	6.7497- 2		2.7854+ 0			9.5533- 7				8.1254- 1
1.0000+ 7 ~ 1.5000+ 7	5.7402+ 0	2.7557+ 0	9.2946- 4	2.6029- 1	2.2872- 2	2.7000+ 0			1.6301- 8				8.6424- 1
1.5000+ 7 ~ 2.0000+ 7	6.0183+ 0	2.9044+ 0	5.9816- 5	6.0049- 2	4.6937- 1	2.5840+ 0			2.0719-10				9.1991- 1

CROSS SECTION

MATERIAL =2952

AM-242

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	2.3468+ 4	1.1440+ 1				6.4751+ 3			1.6959+ 4				2.7780- 3
1.0000- 2 ~ 1.5000- 2	1.0882+ 4	1.1440+ 1				3.0027+ 3			7.8644+ 3				2.7780- 3
1.5000- 2 ~ 2.0000- 2	9.1747+ 3	1.1440+ 1				2.6315+ 3			6.8301+ 3				2.7780- 3
2.0000- 2 ~ 3.0000- 2	7.6961+ 3	1.1440+ 1				2.1233+ 3			5.5610+ 3				2.7780- 3
3.0000- 2 ~ 4.0000- 2	6.4907+ 3	1.1440+ 1				1.7900+ 3			4.6881+ 3				2.7780- 3
4.0000- 2 ~ 5.0000- 2	5.7203+ 3	1.1440+ 1				1.5771+ 3			4.1302+ 3				2.7780- 3
5.0000- 2 ~ 6.0000- 2	5.1728+ 3	1.1440+ 1				1.4257+ 3			3.7338+ 3				2.7780- 3
6.0000- 2 ~ 8.0000- 2	4.5938+ 3	1.1440+ 1				1.2658+ 3			3.3148+ 3				2.7780- 3
8.0000- 2 ~ 1.0000- 1	4.0485+ 3	1.1440+ 1				1.1152+ 3			2.9203+ 3				2.7780- 3
1.0000- 1 ~ 1.5000- 1	3.4489+ 3	1.1440+ 1				9.4959+ 2			2.4867+ 3				2.7780- 3
1.5000- 1 ~ 2.0000- 1	2.9088+ 3	1.1440+ 1				8.0054+ 2			2.0963+ 3				2.7780- 3
2.0000- 1 ~ 3.0000- 1	1.7049+ 3	1.3128+ 1				8.2891+ 2			8.6282+ 2				2.7780- 3
3.0000- 1 ~ 4.0000- 1	1.1478+ 3	1.3407+ 1				7.4785+ 2			3.8641+ 2				2.7780- 3
4.0000- 1 ~ 5.0000- 1	9.7054+ 2	1.3165+ 1				6.5885+ 2			2.9846+ 2				2.7780- 3
5.0000- 1 ~ 6.0000- 1	8.5169+ 2	1.2975+ 1				5.9563+ 2			2.4305+ 2				2.7780- 3
6.0000- 1 ~ 8.0000- 1	7.3254+ 2	1.2753+ 1				5.2876+ 2			1.9101+ 2				2.7780- 3
8.0000- 1 ~ 1.0000+ 0	6.2591+ 2	1.2523+ 1				4.6582+ 2			1.4753+ 2				2.7780- 3
1.0000+ 0 ~ 1.5000+ 0	5.2739+ 2	1.2422+ 1				3.9662+ 2			1.1834+ 2				2.7780- 3
1.5000+ 0 ~ 2.0000+ 0	4.4629+ 2	1.2418+ 1				3.3434+ 2			9.9527+ 1				2.7780- 3
2.0000+ 0 ~ 3.0000+ 0	3.7596+ 2	1.2411+ 1				2.8040+ 2			8.3142+ 1				2.7780- 3
3.0000+ 0 ~ 4.0000+ 0	3.1849+ 2	1.2402+ 1				2.3635+ 2			6.9726+ 1				2.7780- 3
4.0000+ 0 ~ 5.0000+ 0	2.8218+ 2	1.2402+ 1				2.0821+ 2			6.1562+ 1				2.7780- 3
5.0000+ 0 ~ 6.0000+ 0	2.5639+ 2	1.2401+ 1				1.8822+ 2			5.5768+ 1				2.7780- 3
6.0000+ 0 ~ 8.0000+ 0	2.2859+ 2	1.2389+ 1				1.6709+ 2			4.9115+ 1				2.7801- 3
8.0000+ 0 ~ 1.0000+ 1	2.0308+ 2	1.2391+ 1				1.4719+ 2			4.3498+ 1				2.7873- 3
1.0000+ 1 ~ 1.5000+ 1	1.7447+ 2	1.2378+ 1				1.2531+ 2			3.6778+ 1				2.7911- 3
1.5000+ 1 ~ 2.0000+ 1	1.4878+ 2	1.2364+ 1				1.0562+ 2			3.0792+ 1				2.7964- 3
2.0000+ 1 ~ 3.0000+ 1	1.2668+ 2	1.2353+ 1				8.8569+ 1			2.5752+ 1				2.8049- 3
3.0000+ 1 ~ 4.0000+ 1	1.0866+ 2	1.2337+ 1				7.4646+ 1			2.1569+ 1				2.8161- 3
4.0000+ 1 ~ 5.0000+ 1	9.6947+ 1	1.2322+ 1				6.6750+ 1			1.8872+ 1				2.8255- 3
5.0000+ 1 ~ 6.0000+ 1	8.8736+ 1	1.2310+ 1				5.9436+ 1			1.6988+ 1				2.8361- 3
6.0000+ 1 ~ 8.0000+ 1	8.0056+ 1	1.2295+ 1				5.2756+ 1			1.5003+ 1				2.8521- 3
8.0000+ 1 ~ 1.0000+ 2	7.1860+ 1	1.2277+ 1				4.6469+ 1			1.3112+ 1				2.8737- 3
1.0000+ 2 ~ 1.5000+ 2	6.2845+ 1	1.2249+ 1				3.9558+ 1			1.1032+ 1				2.9121- 3
1.5000+ 2 ~ 2.0000+ 2	5.4749+ 1	1.2218+ 1				3.3343+ 1			9.1866+ 0				2.9672- 3
2.0000+ 2 ~ 3.0000+ 2	4.7739+ 1	1.2181+ 1				2.7965+ 1			7.5912+ 0				3.0480- 3
3.0000+ 2 ~ 4.0000+ 2	4.2019+ 1	1.2140+ 1				2.3679+ 1			6.2969+ 0				3.1688- 3
4.0000+ 2 ~ 5.0000+ 2	3.8355+ 1	1.2106+ 1				2.0780+ 1			5.4677+ 0				3.2703- 3
5.0000+ 2 ~ 6.0000+ 2	3.5748+ 1	1.2074+ 1				1.8795+ 1			4.8781+ 0				3.3819- 3
6.0000+ 2 ~ 8.0000+ 2	3.2990+ 1	1.2093+ 1				1.6698+ 1			4.2573+ 0				3.5509- 3
8.0000+ 2 ~ 1.0000+ 3	3.0414+ 1	1.1989+ 1				1.4731+ 1			3.6925+ 0				3.7817- 3
1.0000+ 3 ~ 1.5000+ 3	2.7614+ 1	1.1930+ 1				1.2575+ 1			3.1039+ 0				4.1936- 3
1.5000+ 3 ~ 2.0000+ 3	2.5060+ 1	1.1854+ 1				1.0646+ 1			2.5579+ 0				4.7907- 3
2.0000+ 3 ~ 3.0000+ 3	2.2840+ 1	1.1762+ 1				8.9902+ 0			2.0876+ 0				5.6739- 3
3.0000+ 3 ~ 4.0000+ 3	2.1039+ 1	1.1661+ 1				7.6542+ 0			1.7216+ 0				6.9103- 3
4.0000+ 3 ~ 5.0000+ 3	1.9888+ 1	1.1578+ 1				6.8132+ 0			1.4966+ 0				8.1428- 3
5.0000+ 3 ~ 6.0000+ 3	1.9073+ 1	1.1505+ 1				6.2241+ 0			1.3436+ 0				9.3951- 3
6.0000+ 3 ~ 8.0000+ 3	1.8207+ 1	1.1409+ 1				5.6124+ 0			1.1856+ 0				1.1307- 2
8.0000+ 3 ~ 1.0000+ 4	1.7386+ 1	1.1294+ 1				5.0606+ 0			1.0416+ 0				1.3937- 2
1.0000+ 4 ~ 1.5000+ 4	1.6478+ 1	1.1124+ 1				4.4585+ 0			8.9492- 1				1.8673- 2
1.5000+ 4 ~ 2.0000+ 4	1.5647+ 1	1.0918+ 1				3.9537+ 0			7.7514- 1				2.5547- 2
2.0000+ 4 ~ 3.0000+ 4	1.4903+ 1	1.0667+ 1				3.5563+ 0			6.7996- 1				3.5689- 2
3.0000+ 4 ~ 4.0000+ 4	1.4250+ 1	1.0375+ 1				3.2693+ 0			6.0562- 1				4.9719- 2
4.0000+ 4 ~ 5.0000+ 4	1.3800+ 1	1.0126+ 1	4.6131- 3			3.1106+ 0			5.5890- 1				6.3237- 2
5.0000+ 4 ~ 6.0000+ 4	1.3452+ 1	9.8968+ 0	1.6803- 2			3.0126+ 0			5.2426- 1				7.7028- 2
6.0000+ 4 ~ 8.0000+ 4	1.3036+ 1	9.5945+ 0	3.2349- 2			2.9235+ 0			4.8555- 1				9.6897- 2
8.0000+ 4 ~ 1.0000+ 5	1.2582+ 1	9.2252+ 0	6.8931- 2			2.8498+ 0			4.3862- 1				1.2282- 1
1.0000+ 5 ~ 1.5000+ 5	1.1956+ 1	8.6829+ 0	1.1385- 1			2.7676+ 0			3.9168- 1				1.6391- 1
1.5000+ 5 ~ 2.0000+ 5	1.1231+ 1	8.0318+ 0	1.6919- 1			2.6635+ 0			3.6670- 1				2.1571- 1
2.0000+ 5 ~ 3.0000+ 5	1.0380+ 1	7.2711+ 0	2.4695- 1			2.4865+ 0			3.7331- 1				2.7697- 1
3.0000+ 5 ~ 4.0000+ 5	9.4689+ 0	6.4671+ 0	3.9380- 1			2.2305+ 0			3.8720- 1				3.3919- 1
4.0000+ 5 ~ 5.0000+ 5	8.7627+ 0	5.8138+ 0	5.4013- 1			1.9988+ 0			4.0967- 1				3.8476- 1
5.0000+ 5 ~ 6.0000+ 5	8.2129+ 0	5.3002+ 0	6.5340- 1			1.8174+ 0			4.4146- 1				4.1889- 1
6.0000+ 5 ~ 8.0000+ 5	7.6348+ 0	4.7115+ 0	7.7551- 1			1.6736+ 0			4.7289- 1				4.5688- 1
8.0000+ 5 ~ 1.0000+ 6	7.1988+ 0	4.1341+ 0	1.0623+ 0			1.5866+ 0			4.1460- 1				4.9857- 1
1.0000+ 6 ~ 1.5000+ 6	6.9956+ 0	3.7201+ 0	1.5123+ 0			1.4878+ 0			2.7329- 1				5.5601- 1
1.5000+ 6 ~ 2.0000+ 6	7.1789+ 0	3.7612+ 0	1.7017+ 0			1.5710+ 0			1.4416- 1				6.3236- 1
2.0000+ 6 ~ 3.0000+ 6	7.5568+ 0	4.2220+ 0	1.5627+ 0			1.7108+ 0			6.0801- 2				7.2190- 1
3.0000+ 6 ~ 4.0000+ 6	7.7602+ 0	4.6207+ 0	1.3214+ 0			1.8000+ 0			1.7324- 2				7.8682- 1
4.0000+ 6 ~ 5.0000+ 6	7.6092+ 0	4.5720+ 0	1.2728+ 0			1.7589+ 0			5.3969- 3				8.1644- 1
5.0000+ 6 ~ 6.0000+ 6	7.2311+ 0	4.2293+ 0	1.2933+ 0	8.8882- 3		1.6972+ 0			1.8322- 3				8.2793- 1
6.0000+ 6 ~ 8.0000+ 6	6.6422+ 0	3.5981+ 0	9.9782- 1	1.4988- 1		1.6947+ 0			4.0081- 4				8.3028- 1
8.0000+ 6 ~ 1.0000+ 7	6.0063+ 0	2.9727+ 0	4.6577- 1	2.5022- 1		2.3172+ 0			3.9531- 5				8.3315- 1
1.0000+ 7 ~ 1.5000+ 7	5.8564+ 0	2.7724+ 0	3.3632- 1	2.1137- 1	5.7101- 2	2.4791+ 0			6.1178- 6				8.7619- 1
1.5000+ 7 ~ 2.0000+ 7	6.1962+ 0	2.8994+ 0	6.1672- 1	2.1781- 2	2.4884- 1	2.3093+ 0			4.2119- 6				9.3117- 1

MATERIAL =2953

CROSS SECTION

AM-242 M

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	2.1388+ 4	6.5220+ 0	0.0000+ 0			1.7802+ 4			3.6796+ 3				2.7780- 3
1.0000- 2 ~ 1.5000- 2	1.0519+ 4	6.5737+ 0	0.0000+ 0			8.7471+ 3			1.7651+ 3				2.7780- 3
1.5000- 2 ~ 2.0000- 2	9.1406+ 3	6.6166+ 0	0.0000+ 0			7.5978+ 3			1.5362+ 3				2.7780- 3
2.0000- 2 ~ 3.0000- 2	8.0712+ 3	6.6971+ 0	0.0000+ 0			6.7061+ 3			1.3595+ 3				2.7780- 3
3.0000- 2 ~ 4.0000- 2	7.2593+ 3	6.8307+ 0	0.0000+ 0			6.0261+ 3			1.2263+ 3				2.7780- 3
4.0000- 2 ~ 5.0000- 2	6.8424+ 3	7.0075+ 0	0.0000+ 0			5.6763+ 3			1.1591+ 3				2.7780- 3
5.0000- 2 ~ 6.0000- 2	6.6086+ 3	7.2229+ 0	0.0000+ 0			5.4790+ 3			1.1224+ 3				2.7780- 3
6.0000- 2 ~ 8.0000- 2	6.4488+ 3	7.6480+ 0	0.0000+ 0			5.3419+ 3			1.0992+ 3				2.7780- 3
8.0000- 2 ~ 1.0000- 1	6.4229+ 3	8.4112+ 0	0.0000+ 0			5.3151+ 3			1.0994+ 3				2.7780- 3
1.0000- 1 ~ 1.5000- 1	6.4938+ 3	1.0395+ 1	0.0000+ 0			5.3667+ 3			1.1167+ 3				2.7780- 3
1.5000- 1 ~ 2.0000- 1	6.1032+ 3	1.3848+ 1	0.0000+ 0			5.0390+ 3			1.0504+ 3				2.7780- 3
2.0000- 1 ~ 3.0000- 1	4.1602+ 3	1.6508+ 1	0.0000+ 0			3.4378+ 3			7.0589+ 2				2.7780- 3
3.0000- 1 ~ 4.0000- 1	2.1025+ 3	1.5558+ 1	0.0000+ 0			1.7459+ 3			3.4105+ 2				2.7780- 3
4.0000- 1 ~ 5.0000- 1	1.3849+ 3	1.3709+ 1	0.0000+ 0			1.1534+ 3			2.1777+ 2				2.7780- 3
5.0000- 1 ~ 6.0000- 1	1.3743+ 3	1.2885+ 1	0.0000+ 0			1.1338+ 3			2.2762+ 2				2.7780- 3
6.0000- 1 ~ 8.0000- 1	1.0718+ 3	1.3715+ 1	0.0000+ 0			8.9904+ 2			1.5902+ 2				2.7780- 3
8.0000- 1 ~ 1.0000+ 0	6.6519+ 2	1.3024+ 1	0.0000+ 0			5.9043+ 2			6.1736+ 1				2.7780- 3
1.0000+ 0 ~ 1.5000+ 0	4.8948+ 2	1.2526+ 1	0.0000+ 0			4.3960+ 2			3.7350+ 1				2.7780- 3
1.5000+ 0 ~ 2.0000+ 0	4.1541+ 2	1.2226+ 1	0.0000+ 0			3.6326+ 2			3.9919+ 1				2.7780- 3
2.0000+ 0 ~ 3.0000+ 0	2.9292+ 2	1.2424+ 1	0.0000+ 0			2.5348+ 2			2.7022+ 1				2.7780- 3
3.0000+ 0 ~ 4.0000+ 0	3.8721+ 2	1.2423+ 1	0.0000+ 0			3.4095+ 2			3.3637+ 1				2.7780- 3
4.0000+ 0 ~ 5.0000+ 0	3.2738+ 2	1.1559+ 1	0.0000+ 0			2.7952+ 2			3.6301+ 1				2.7780- 3
5.0000+ 0 ~ 6.0000+ 0	3.1595+ 2	1.1571+ 1	0.0000+ 0			2.6939+ 2			3.4986+ 1				2.7780- 3
6.0000+ 0 ~ 8.0000+ 0	1.6435+ 2	1.1478+ 1	1.9343-10			1.2645+ 2			1.6422+ 1				2.7801- 3
8.0000+ 0 ~ 1.0000+ 1	1.1274+ 2	1.1460+ 1	9.6982-10			8.9842+ 1			1.1642+ 1				2.7874- 3
1.0000+ 1 ~ 1.5000+ 1	1.5300+ 2	1.1512+ 1	1.9166- 9			1.2522+ 2			1.6263+ 1				2.7913- 3
1.5000+ 1 ~ 2.0000+ 1	1.5815+ 2	1.1537+ 1	3.8306- 9			1.2976+ 2			1.6852+ 1				2.7967- 3
2.0000+ 1 ~ 3.0000+ 1	9.5249+ 1	1.1499+ 1	7.6160- 9			7.4124+ 1			9.6265+ 0				2.8047- 3
3.0000+ 1 ~ 4.0000+ 1	8.4078+ 1	1.1497+ 1	1.4989- 8			6.4238+ 1			8.3426+ 0				2.8156- 3
4.0000+ 1 ~ 5.0000+ 1	5.6996+ 1	1.1471+ 1	2.4452- 8			4.0293+ 1			5.2328+ 0				2.8262- 3
5.0000+ 1 ~ 6.0000+ 1	8.4501+ 1	1.1518+ 1	3.6213- 8			6.4694+ 1			8.3688+ 0				2.8370- 3
6.0000+ 1 ~ 8.0000+ 1	5.7686+ 1	1.1476+ 1	5.8662- 8			4.0898+ 1			5.3114+ 0				2.8531- 3
8.0000+ 1 ~ 1.0000+ 2	5.2387+ 1	1.1479+ 1	9.7580- 8			3.6206+ 1			4.7020+ 0				2.8750- 3
1.0000+ 2 ~ 1.5000+ 2	4.4927+ 1	1.1474+ 1	1.9277- 7			2.9607+ 1			3.8451+ 0				2.9139- 3
1.5000+ 2 ~ 2.0000+ 2	4.4915+ 1	1.1488+ 1	3.8039- 7			2.9584+ 1			3.8421+ 0				2.9696- 3
2.0000+ 2 ~ 3.0000+ 2	4.5099+ 1	1.1509+ 1	7.5553- 7			2.9729+ 1			3.8609+ 0				3.0514- 3
3.0000+ 2 ~ 4.0000+ 2	3.3657+ 1	1.1480+ 1	1.4892- 6			1.9639+ 1			2.6376+ 0				3.1644- 3
4.0000+ 2 ~ 5.0000+ 2	2.9925+ 1	1.1475+ 1	2.4424- 6			1.6329+ 1			2.1206+ 0				3.2759- 3
5.0000+ 2 ~ 6.0000+ 2	2.5832+ 1	1.1466+ 1	3.6321- 6			1.2715+ 1			1.6513+ 0				3.3884- 3
6.0000+ 2 ~ 8.0000+ 2	2.4745+ 1	1.1469+ 1	5.8566- 6			1.1750+ 1			1.5259+ 0				3.5590- 3
8.0000+ 2 ~ 1.0000+ 3	2.5963+ 1	1.1484+ 1	9.6372- 6			1.2814+ 1			1.6641+ 0				3.7923- 3
1.0000+ 3 ~ 1.5000+ 3	2.8200+ 1	1.1525+ 1	1.9182- 5			1.4758+ 1			1.9167+ 0				4.2081- 3
1.5000+ 3 ~ 2.0000+ 3	2.5078+ 1	1.1745+ 1	3.7680- 5			1.1263+ 1			2.0693+ 0				4.8092- 3
2.0000+ 3 ~ 3.0000+ 3	2.2847+ 1	1.1658+ 1	7.3662- 5			9.6095+ 0			1.6789+ 0				5.6997- 3
3.0000+ 3 ~ 4.0000+ 3	2.1041+ 1	1.1564+ 1	1.4934- 4			8.0941+ 0			1.3812+ 0				6.9451- 3
4.0000+ 3 ~ 5.0000+ 3	1.9889+ 1	1.1486+ 1	2.4496- 4			7.2028+ 0			1.1996+ 0				8.1857- 3
5.0000+ 3 ~ 6.0000+ 3	1.9073+ 1	1.1418+ 1	3.5771- 4			6.5782+ 0			1.0767+ 0				9.4459- 3
6.0000+ 3 ~ 8.0000+ 3	1.8204+ 1	1.1326+ 1	5.6217- 4			5.9293+ 0			9.4837- 1				1.1369- 2
8.0000+ 3 ~ 1.0000+ 4	1.7390+ 1	1.1219+ 1	9.0335- 4			5.3329+ 0			8.3701- 1				1.4012- 2
1.0000+ 4 ~ 1.5000+ 4	1.6482+ 1	1.1056+ 1	1.6469- 3			4.7032+ 0			7.1993- 1				1.8769- 2
1.5000+ 4 ~ 2.0000+ 4	1.5648+ 1	1.0858+ 1	2.9085- 3			4.1651+ 0			6.2149- 1				2.5673- 2
2.0000+ 4 ~ 3.0000+ 4	1.4899+ 1	1.0613+ 1	5.0119- 3			3.7391+ 0			5.4145- 1				3.5813- 2
3.0000+ 4 ~ 4.0000+ 4	1.4250+ 1	1.0330+ 1	8.4559- 3			3.4282+ 0			4.8325- 1				4.9924- 2
4.0000+ 4 ~ 5.0000+ 4	1.3800+ 1	1.0087+ 1	1.2047- 2			3.2532+ 0			4.4811- 1				6.3651- 2
5.0000+ 4 ~ 6.0000+ 4	1.3453+ 1	9.8692+ 0	1.5644- 2			3.1427+ 0			4.2546- 1				7.7232- 2
6.0000+ 4 ~ 8.0000+ 4	1.3033+ 1	9.5704+ 0	3.1433- 2			3.0385+ 0			3.9303- 1				9.7125- 2
8.0000+ 4 ~ 1.0000+ 5	1.2581+ 1	9.2127+ 0	5.6014- 2			2.9480+ 0			3.6480- 1				1.2295- 1
1.0000+ 5 ~ 1.5000+ 5	1.1966+ 1	8.6611+ 0	1.3214- 1			2.8424+ 0			3.1939- 1				1.6469- 1
1.5000+ 5 ~ 2.0000+ 5	1.1231+ 1	8.0056+ 0	2.2511- 1			2.7134+ 0			2.8565- 1				2.1655- 1
2.0000+ 5 ~ 3.0000+ 5	1.0376+ 1	7.2291+ 0	3.6262- 1			2.5187+ 0			2.6490- 1				2.7862- 1
3.0000+ 5 ~ 4.0000+ 5	9.4679+ 0	6.3831+ 0	5.6985- 1			2.2646+ 0			2.5002- 1				3.4313- 1
4.0000+ 5 ~ 5.0000+ 5	8.7654+ 0	5.7147+ 0	7.5342- 1			2.0514+ 0			2.4538- 1				3.9144- 1
5.0000+ 5 ~ 6.0000+ 5	8.2161+ 0	5.1085+ 0	8.8084- 1			1.8958+ 0			2.5044- 1				4.2797- 1
6.0000+ 5 ~ 8.0000+ 5	7.6532+ 0	4.5951+ 0	1.0174+ 0			1.7971+ 0			2.4284- 1				4.6846- 1
8.0000+ 5 ~ 1.0000+ 6	7.1884+ 0	4.0425+ 0	1.2596+ 0			1.6978+ 0			1.8503- 1				5.0970- 1
1.0000+ 6 ~ 1.5000+ 6	7.0003+ 0	3.8804+ 0	1.5575+ 0			1.8464+ 0			1.1988- 1				5.8179- 1
1.5000+ 6 ~ 2.0000+ 6	7.1878+ 0	3.7506+ 0	1.6226+ 0			1.7552+ 0			5.8021- 2				6.3404- 1
2.0000+ 6 ~ 3.0000+ 6	7.5638+ 0	4.2207+ 0	1.4595+ 0			1.8575+ 0			2.4338- 2				7.2162- 1
3.0000+ 6 ~ 4.0000+ 6	7.7609+ 0	4.6206+ 0	1.2954+ 0			1.8371+ 0			7.1743- 3				7.8684- 1
4.0000+ 6 ~ 5.0000+ 6	7.5963+ 0	4.5720+ 0	1.2915+ 0			1.7302+ 0			2.2181- 3				8.1644- 1
5.0000+ 6 ~ 6.0000+ 6	7.2254+ 0	4.2293+ 0	1.2784+ 0	8.8882- 3		1.7078+ 0			6.8273- 4				8.2793- 1
6.0000+ 6 ~ 8.0000+ 6	6.6409+ 0	3.5981+ 0	8.7926- 1	1.4988- 1		2.0121+ 0			1.2138- 4				8.3029- 1
8.0000+ 6 ~ 1.0000+ 7	6.0067+ 0	2.9727+ 0	3.9854- 1	2.6022- 1		2.3862+ 0			8.9910- 6				8.3315- 1
1.0000+ 7 ~ 1.5000+ 7	5.8581+ 0	2.7724+ 0	3.5382- 1	2.1137- 1	5.7101- 2	2.4640+ 0			1.1115- 6				8.7619- 1
1.5000+ 7 ~ 2.0000+ 7	6.1551+ 0	2.9994+ 0	5.9094- 1	2.1781- 2	2.4884- 1	2.2944+ 0			5.6269- 7				9.3117- 1

MATERIAL =2954

CROSS SECTION

AM-249

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	2.4692+ 2	7.5677+ 0				6.9421- 1			2.3866+ 2				2.7435- 3
1.0000- 2 ~ 1.5000- 2	1.1947+ 2	7.6529+ 0				3.2449- 1			1.1160+ 2				2.7435- 3
1.5000- 2 ~ 2.0000- 2	1.0203+ 2	7.6430+ 0				2.7390- 1			9.4217+ 1				2.7435- 3
2.0000- 2 ~ 3.0000- 2	8.7462+ 1	7.5281+ 0				2.3164- 1			7.9703+ 1				2.7435- 3
3.0000- 2 ~ 4.0000- 2	7.5305+ 1	7.5082+ 0				1.9639- 1			6.7600+ 1				2.7435- 3
4.0000- 2 ~ 5.0000- 2	6.7913+ 1	7.4881+ 0				1.7497- 1			6.0250+ 1				2.7435- 3
5.0000- 2 ~ 6.0000- 2	6.2494+ 1	7.4679+ 0				1.5927- 1			5.4867+ 1				2.7435- 3
6.0000- 2 ~ 8.0000- 2	5.6916+ 1	7.4376+ 0				1.4313- 1			4.9334+ 1				2.7435- 3
8.0000- 2 ~ 1.0000- 1	5.1943+ 1	7.3963+ 0				1.2878- 1			4.4418+ 1				2.7435- 3
1.0000- 1 ~ 1.5000- 1	4.6667+ 1	7.3229+ 0				1.1360- 1			3.9230+ 1				2.7435- 3
1.5000- 1 ~ 2.0000- 1	4.2363+ 1	7.2147+ 0				1.0133- 1			3.5047+ 1				2.7435- 3
2.0000- 1 ~ 3.0000- 1	3.9891+ 1	7.0417+ 0				9.4575- 2			3.2755+ 1				2.7435- 3
3.0000- 1 ~ 4.0000- 1	4.6075+ 1	6.7774+ 0				1.1424- 1			3.9183+ 1				2.7435- 3
4.0000- 1 ~ 5.0000- 1	6.6321+ 1	6.6792+ 0				1.7641- 1			5.9665+ 1				2.7435- 3
5.0000- 1 ~ 6.0000- 1	4.3286+ 1	6.2640+ 0				1.0573- 1			3.6915+ 1				2.7435- 3
6.0000- 1 ~ 8.0000- 1	5.2995+ 1	5.6835+ 0				1.3457- 1			4.7177+ 1				2.7435- 3
8.0000- 1 ~ 1.0000+ 0	1.8977+ 2	4.6732+ 0				5.5630- 1			1.8454+ 2				2.7435- 3
1.0000+ 0 ~ 1.5000+ 0	3.1823+ 3	8.4393+ 1				8.6308+ 0			3.0893+ 3				2.7435- 3
1.5000+ 0 ~ 2.0000+ 0	6.7425+ 2	2.1774+ 1				1.9694+ 0			6.5050+ 2				2.7435- 3
2.0000+ 0 ~ 3.0000+ 0	2.7961+ 1	1.1263+ 1				4.9178- 2			1.6648+ 1				2.7435- 3
3.0000+ 0 ~ 4.0000+ 0	1.9554+ 2	1.0942+ 1				5.8130- 1			1.8401+ 2				2.7435- 3
4.0000+ 0 ~ 5.0000+ 0	1.7732+ 1	8.5930+ 0				2.7901- 2			9.1108+ 0				2.7435- 3
5.0000+ 0 ~ 6.0000+ 0	1.3196+ 2	9.6501+ 0				3.7544- 1			1.2193+ 2				2.7435- 3
6.0000+ 0 ~ 8.0000+ 0	3.3582+ 2	1.7424+ 1				9.9996- 1			3.1739+ 2				2.7435- 3
8.0000+ 0 ~ 1.0000+ 1	5.1332+ 1	1.0608+ 1				1.2661- 1			4.0597+ 1				2.7435- 3
1.0000+ 1 ~ 1.5000+ 1	1.6878+ 2	1.5764+ 1				4.7542- 1			1.5254+ 2				2.7435- 3
1.5000+ 1 ~ 2.0000+ 1	8.0445+ 1	1.1295+ 1				1.9248- 1			6.8957+ 1				2.7435- 3
2.0000+ 1 ~ 3.0000+ 1	8.2975+ 1	1.1320+ 1				2.1979- 1			7.1434+ 1				2.7435- 3
3.0000+ 1 ~ 4.0000+ 1	6.7146+ 1	1.1315+ 1				1.7126- 1			5.5660+ 1				2.7435- 3
4.0000+ 1 ~ 5.0000+ 1	5.7654+ 1	1.2063+ 1				1.3985- 1			4.5451+ 1				2.7435- 3
5.0000+ 1 ~ 6.0000+ 1	4.6407+ 1	1.0662+ 1				1.0965- 1			3.5635+ 1				2.7435- 3
6.0000+ 1 ~ 8.0000+ 1	5.3588+ 1	1.2024+ 1				1.2750- 1			4.1436+ 1				2.7435- 3
8.0000+ 1 ~ 1.0000+ 2	4.4971+ 1	1.2395+ 1				9.9927- 2			3.2476+ 1				2.7435- 3
1.0000+ 2 ~ 1.5000+ 2	5.2998+ 1	1.6539+ 1				1.1184- 1			3.6347+ 1				3.8383- 3
1.5000+ 2 ~ 2.0000+ 2	4.5404+ 1	1.5456+ 1				9.1867- 2			2.9867+ 1				5.5576- 3
2.0000+ 2 ~ 3.0000+ 2	3.5627+ 1	1.3847+ 1				6.6501- 2			2.1713+ 1				7.3454- 3
3.0000+ 2 ~ 4.0000+ 2	3.2982+ 1	1.3781+ 1				5.8685- 2			1.9142+ 1				9.0646- 3
4.0000+ 2 ~ 5.0000+ 2	2.9840+ 1	1.3686+ 1				4.9294- 2			1.6105+ 1				1.0343- 2
5.0000+ 2 ~ 6.0000+ 2	2.7772+ 1	1.3611+ 1				4.3216- 2			1.4118+ 1				1.1362- 2
6.0000+ 2 ~ 8.0000+ 2	2.6283+ 1	1.3529+ 1				3.8922- 2			1.2715+ 1				1.2572- 2
8.0000+ 2 ~ 1.0000+ 3	2.4296+ 1	1.3419+ 1				3.3197- 2			1.0843+ 1				1.3850- 2
1.0000+ 3 ~ 1.5000+ 3	2.2434+ 1	1.3285+ 1				2.7926- 2			9.1208+ 0				1.5489- 2
1.5000+ 3 ~ 2.0000+ 3	2.0696+ 1	1.3126+ 1				2.3109- 2			7.5467+ 0				1.7208- 2
2.0000+ 3 ~ 3.0000+ 3	1.9324+ 1	1.2967+ 1				1.9410- 2			6.3382+ 0				1.8995- 2
3.0000+ 3 ~ 4.0000+ 3	1.8318+ 1	1.2806+ 1				1.6829- 2			5.4952+ 0				2.0715- 2
4.0000+ 3 ~ 5.0000+ 3	1.7312+ 1	1.2645+ 1				1.4249- 2			4.6522+ 0				2.1993- 2
5.0000+ 3 ~ 6.0000+ 3	1.6662+ 1	1.2526+ 1				1.2629- 2			4.1231+ 0				2.3012- 2
6.0000+ 3 ~ 8.0000+ 3	1.6221+ 1	1.2409+ 1				1.1640- 2			3.8002+ 0				2.4222- 2
8.0000+ 3 ~ 1.0000+ 4	1.5634+ 1	1.2254+ 1				1.0322- 2			3.3696+ 0				2.5500- 2
1.0000+ 4 ~ 1.5000+ 4	1.5087+ 1	1.2086+ 1				9.1667- 3			2.9923+ 0				2.7139- 2
1.5000+ 4 ~ 2.0000+ 4	1.4582+ 1	1.1905+ 1				8.1742- 3			2.6680+ 0				2.8858- 2
2.0000+ 4 ~ 3.0000+ 4	1.4101+ 1	1.1728+ 1				7.2492- 3			2.3658+ 0				3.0646- 2
3.0000+ 4 ~ 4.0000+ 4	1.3809+ 1	1.1599+ 1				6.7040- 3			2.2025+ 0				3.7286- 2
4.0000+ 4 ~ 5.0000+ 4	1.3574+ 1	1.1501+ 1	3.3802- 2			6.5480- 3			2.0313+ 0				4.8367- 2
5.0000+ 4 ~ 6.0000+ 4	1.3390+ 1	1.1392+ 1	1.3527- 1			6.5000- 3			1.8554+ 0				5.9584- 2
6.0000+ 4 ~ 8.0000+ 4	1.3162+ 1	1.1242+ 1	2.5114- 1			6.6561- 3			1.6607+ 0				7.5943- 2
8.0000+ 4 ~ 1.0000+ 5	1.2897+ 1	1.1013+ 1	4.3494- 1			6.9545- 3			1.4417+ 0				9.7342- 2
1.0000+ 5 ~ 1.5000+ 5	1.2468+ 1	1.0487+ 1	8.5773- 1			7.7815- 3			1.1130+ 0				1.3525- 1
1.5000+ 5 ~ 2.0000+ 5	1.1903+ 1	9.7887+ 0	1.2725+ 0			8.9788- 3			8.3099- 1				1.8478- 1
2.0000+ 5 ~ 3.0000+ 5	1.1120+ 1	8.9328+ 0	1.5140+ 0			1.1381- 2			6.6086- 1				2.4568- 1
3.0000+ 5 ~ 4.0000+ 5	1.0188+ 1	7.8545+ 0	1.7861+ 0			1.8774- 2			5.2789- 1				3.1233- 1
4.0000+ 5 ~ 5.0000+ 5	9.3890+ 0	6.8803+ 0	2.0218+ 0			3.5744- 2			4.4578- 1				3.6695- 1
5.0000+ 5 ~ 6.0000+ 5	8.7412+ 0	6.0919+ 0	2.1771+ 0			7.4989- 2			3.9264- 1				4.0591- 1
6.0000+ 5 ~ 8.0000+ 5	8.0273+ 0	5.1716+ 0	2.2793+ 0			2.3852- 1			3.3042- 1				4.4888- 1
8.0000+ 5 ~ 1.0000+ 6	7.4178+ 0	4.2654+ 0	2.0533+ 0			8.6871- 1			2.3645- 1				4.8938- 1
1.0000+ 6 ~ 1.5000+ 6	7.0320+ 0	3.5822+ 0	1.6815+ 0			1.8488+ 0			1.4034- 1				5.2898- 1
1.5000+ 6 ~ 2.0000+ 6	7.0238+ 0	3.5176+ 0	1.7207+ 0			1.6908+ 0			9.2921- 2				5.8376- 1
2.0000+ 6 ~ 3.0000+ 6	7.3414+ 0	4.1172+ 0	1.4587+ 0			1.7066+ 0			3.9979- 2				6.7131- 1
3.0000+ 6 ~ 4.0000+ 6	7.6782+ 0	4.7673+ 0	1.1663+ 0			1.7295+ 0			1.1229- 2				7.4563- 1
4.0000+ 6 ~ 5.0000+ 6	7.7502+ 0	4.9596+ 0	1.1047+ 0			1.6824+ 0			3.1842- 3				7.8589- 1
5.0000+ 6 ~ 6.0000+ 6	7.6518+ 0	4.7265+ 0	1.1138+ 0			1.7113+ 0			9.1191- 4				8.0683- 1
6.0000+ 6 ~ 8.0000+ 6	6.9583+ 0	4.0653+ 0	6.4068- 1	9.6820- 2		2.1541+ 0			1.3671- 4				8.1586- 1
8.0000+ 6 ~ 1.0000+ 7	6.1307+ 0	3.2478+ 0	7.1966- 2	3.9319- 1		2.4153+ 0			2.2795- 6				8.1477- 1
1.0000+ 7 ~ 1.5000+ 7	5.7503+ 0	2.7717+ 0	1.4622- 3	5.0566- 1	9.7183- 2	2.3738+ 0			1.1280- 8				8.5466- 1
1.5000+ 7 ~ 2.0000+ 7	6.0140+ 0	2.9099+ 0	4.6895- 5	5.6321- 2	6.8583- 1	2.3606+ 0			5.8470-11				9.1970- 1

CROSS SECTION

MATERIAL =2961

CM-242

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	7.6939+ 1	1.1620+ 1				1.5472+ 1			4.9846+ 1				2.7879- 3
1.0000- 2 ~ 1.5000- 2	4.1831+ 1	1.1616+ 1				7.1836+ 0			2.3032+ 1				2.7899- 3
1.5000- 2 ~ 2.0000- 2	3.6966+ 1	1.1619+ 1				6.0400+ 0			1.9313+ 1				2.7904- 3
2.0000- 2 ~ 3.0000- 2	3.2874+ 1	1.1609+ 1				5.0803+ 0			1.6180+ 1				2.7910- 3
3.0000- 2 ~ 4.0000- 2	2.9413+ 1	1.1604+ 1				4.2714+ 0			1.3530+ 1				2.7916- 3
4.0000- 2 ~ 5.0000- 2	2.7273+ 1	1.1599+ 1				3.7801+ 0			1.1911+ 1				2.7920- 3
5.0000- 2 ~ 6.0000- 2	2.6667+ 1	1.1594+ 1				3.4059+ 0			1.0674+ 1				2.7923- 3
6.0000- 2 ~ 8.0000- 2	2.4003+ 1	1.1586+ 1				3.0207+ 0			9.3922+ 0				2.7927- 3
8.0000- 2 ~ 1.0000- 1	2.2463+ 1	1.1575+ 1				2.6723+ 0			8.2238+ 0				2.7932- 3
1.0000- 1 ~ 1.5000- 1	2.0684+ 1	1.1558+ 1				2.2676+ 0			6.8532+ 0				2.7937- 3
1.5000- 1 ~ 2.0000- 1	1.9068+ 1	1.1533+ 1				1.9100+ 0			5.6245+ 0				2.7943- 3
2.0000- 1 ~ 3.0000- 1	1.7664+ 1	1.1497+ 1				1.6041+ 0			4.5524+ 0				2.7949- 3
3.0000- 1 ~ 4.0000- 1	1.6458+ 1	1.1451+ 1				1.3527+ 0			3.6553+ 0				2.7954- 3
4.0000- 1 ~ 5.0000- 1	1.5672+ 1	1.1408+ 1				1.1919+ 0			3.0715+ 0				2.7958- 3
5.0000- 1 ~ 6.0000- 1	1.5092+ 1	1.1366+ 1				1.0764+ 0			2.6477+ 0				2.7962- 3
6.0000- 1 ~ 8.0000- 1	1.4463+ 1	1.1308+ 1				9.5474- 1			2.1992+ 0				2.7966- 3
8.0000- 1 ~ 1.0000+ 0	1.3864+ 1	1.1236+ 1				8.4192- 1			1.7840+ 0				2.7970- 3
1.0000+ 0 ~ 1.5000+ 0	1.3173+ 1	1.1124+ 1				7.1659- 1			1.3319+ 0				2.7975- 3
1.5000+ 0 ~ 2.0000+ 0	1.2535+ 1	1.0986+ 1				6.0351- 1			9.4302- 1				2.7981- 3
2.0000+ 0 ~ 3.0000+ 0	1.1971+ 1	1.0818+ 1				5.0657- 1			6.4469- 1				2.7987- 3
3.0000+ 0 ~ 4.0000+ 0	1.1503+ 1	1.0639+ 1				4.2679- 1			4.3550- 1				2.7993- 3
4.0000+ 0 ~ 5.0000+ 0	1.1196+ 1	1.0489+ 1				3.7590- 1			3.3003- 1				2.7997- 3
5.0000+ 0 ~ 6.0000+ 0	1.0972+ 1	1.0357+ 1				3.4008- 1			2.7496- 1				2.8000- 3
6.0000+ 0 ~ 8.0000+ 0	1.0714+ 1	1.0165+ 1				3.0161- 1			2.4573- 1				2.8004- 3
8.0000+ 0 ~ 1.0000+ 1	1.0424+ 1	9.8682+ 0				2.6574- 1			2.8956- 1				2.8008- 3
1.0000+ 1 ~ 1.5000+ 1	1.1977+ 2	1.5283+ 1				2.2822- 1			1.0426+ 2				2.8014- 3
1.5000+ 1 ~ 2.0000+ 1	1.1384+ 1	1.0796+ 1				1.9072- 1			3.9682- 1				2.8019- 3
2.0000+ 1 ~ 3.0000+ 1	1.0595+ 1	9.2287+ 0				1.5998- 1			1.2060+ 0				2.8025- 3
3.0000+ 1 ~ 4.0000+ 1	9.9832+ 1	1.5386+ 1				1.3487- 1			8.4311+ 1				2.8031- 3
4.0000+ 1 ~ 5.0000+ 1	1.0677+ 1	1.0297+ 1				1.1882- 1			2.6086- 1				2.8035- 3
5.0000+ 1 ~ 6.0000+ 1	1.9335+ 1	9.2492+ 0				1.0743- 1			9.9781+ 0				2.8038- 3
6.0000+ 1 ~ 8.0000+ 1	8.7612+ 1	4.1578+ 1				9.5372- 2			4.5939+ 1				2.8042- 3
8.0000+ 1 ~ 1.0000+ 2	3.9840+ 1	1.7744+ 1				8.4026- 2			2.2012+ 1				2.8047- 3
1.0000+ 2 ~ 1.5000+ 2	3.0174+ 1	1.5942+ 1				7.1553- 2			1.4160+ 1				2.8157- 3
1.5000+ 2 ~ 2.0000+ 2	1.7808+ 1	1.2919+ 1				6.0324- 2			4.8284+ 0				2.8327- 3
2.0000+ 2 ~ 3.0000+ 2	4.8025+ 1	3.3356+ 1				1.1405- 1			1.4554+ 1				2.8603- 3
3.0000+ 2 ~ 4.0000+ 2	3.2047+ 1	2.3381+ 1				2.7404- 1			8.3798+ 0				2.9004- 3
4.0000+ 2 ~ 5.0000+ 2	2.9564+ 1	2.2341+ 1				2.4258- 1			6.9737+ 0				2.9433- 3
5.0000+ 2 ~ 6.0000+ 2	2.7803+ 1	2.1552+ 1				2.2042- 1			6.0273+ 0				2.9884- 3
6.0000+ 2 ~ 8.0000+ 2	2.5947+ 1	2.0664+ 1				1.9731- 1			5.0831+ 0				3.0597- 3
8.0000+ 2 ~ 1.0000+ 3	2.4204+ 1	1.9778+ 1				1.7601- 1			4.2486+ 0				3.1599- 3
1.0000+ 3 ~ 1.5000+ 3	2.2300+ 1	1.8732+ 1				1.5422- 1			3.4120+ 0				3.3502- 3
1.5000+ 3 ~ 2.0000+ 3	2.0600+ 1	1.7725+ 1				1.3741- 1			2.7330+ 0				3.6451- 3
2.0000+ 3 ~ 3.0000+ 3	1.9131+ 1	1.6789+ 1				1.2186- 1			2.2178+ 0				4.1138- 3
3.0000+ 3 ~ 4.0000+ 3	1.7952+ 1	1.5989+ 1				1.0875- 1			1.8528+ 0				4.8062- 3
4.0000+ 3 ~ 5.0000+ 3	1.7201+ 1	1.5452+ 1				1.0304- 1			1.6444+ 0				5.5148- 3
5.0000+ 3 ~ 6.0000+ 3	1.6686+ 1	1.5074+ 1				9.7543- 2			1.5123+ 0				6.3232- 3
6.0000+ 3 ~ 8.0000+ 3	1.6126+ 1	1.4657+ 1				9.0869- 2			1.3763+ 0				7.4424- 3
8.0000+ 3 ~ 1.0000+ 4	1.5613+ 1	1.4279+ 1				8.3487- 2			1.2554+ 0				9.0614- 3
1.0000+ 4 ~ 1.5000+ 4	1.5064+ 1	1.3866+ 1				7.6823- 2			1.1210+ 0				1.2125- 2
1.5000+ 4 ~ 2.0000+ 4	1.4574+ 1	1.3512+ 1				7.0622- 2			9.9102- 1				1.6641- 2
2.0000+ 4 ~ 3.0000+ 4	1.4151+ 1	1.3220+ 1				6.5810- 2			8.6357- 1				2.3796- 2
3.0000+ 4 ~ 4.0000+ 4	1.3791+ 1	1.2978+ 1				6.2428- 2			7.4890- 1				3.3432- 2
4.0000+ 4 ~ 5.0000+ 4	1.3549+ 1	1.2788+ 1	9.9487- 2			6.0345- 2			6.5419- 1				4.2997- 2
5.0000+ 4 ~ 6.0000+ 4	1.3345+ 1	1.2555+ 1	1.7311- 1			5.8799- 2			5.5297- 1				5.3721- 2
6.0000+ 4 ~ 8.0000+ 4	1.3102+ 1	1.2229+ 1	3.6051- 1			5.7181- 2			4.5135- 1				6.9212- 2
8.0000+ 4 ~ 1.0000+ 5	1.2809+ 1	1.1831+ 1	5.4282- 1			5.6426- 2			3.7253- 1				9.0523- 2
1.0000+ 5 ~ 1.5000+ 5	1.2384+ 1	1.1268+ 1	7.6540- 1			5.6854- 2			3.0172- 1				1.2346- 1
1.5000+ 5 ~ 2.0000+ 5	1.1798+ 1	1.0539+ 1	9.3712- 1			6.4735- 2			2.5503- 1				1.6810- 1
2.0000+ 5 ~ 3.0000+ 5	1.1017+ 1	9.6134+ 0	1.0763+ 0			1.0216- 1			2.2503- 1				2.2311- 1
3.0000+ 5 ~ 4.0000+ 5	1.0079+ 1	8.6195+ 0	1.1596+ 0			1.8846- 1			2.0909- 1				2.8100- 1
4.0000+ 5 ~ 5.0000+ 5	9.2920+ 0	7.5347+ 0	1.1914+ 0			3.6360- 1			1.9699- 1				3.2641- 1
5.0000+ 5 ~ 6.0000+ 5	8.6469+ 0	6.5822+ 0	1.1541+ 0			7.2713- 1			1.7524- 1				3.6779- 1
6.0000+ 5 ~ 8.0000+ 5	7.9353+ 0	5.3480+ 0	9.5226- 1			1.5012+ 0			1.2817- 1				4.2579- 1
8.0000+ 5 ~ 1.0000+ 6	7.3410+ 0	4.2632+ 0	6.9309- 1			2.3005+ 0			7.8626- 2				4.8016- 1
1.0000+ 6 ~ 1.5000+ 6	8.9899+ 0	3.6725+ 0	9.8201- 1			2.2487+ 0			8.5317- 2				5.0809- 1
1.5000+ 6 ~ 2.0000+ 6	7.0076+ 0	3.5702+ 0	1.1451+ 0			2.2197+ 0			7.2240- 2				5.7117- 1
2.0000+ 6 ~ 3.0000+ 6	7.3423+ 0	4.1438+ 0	1.0636+ 0			2.0945+ 0			3.9844- 2				6.7233- 1
3.0000+ 6 ~ 4.0000+ 6	7.7106+ 0	4.8085+ 0	8.2987- 1			1.9566+ 0			1.4454- 2				7.4822- 1
4.0000+ 6 ~ 5.0000+ 6	7.7481+ 0	4.9574+ 0	8.4507- 1			1.9409+ 0			4.7517- 3				7.8700- 1
5.0000+ 6 ~ 6.0000+ 6	7.6300+ 0	4.7102+ 0	8.5391- 1			1.9640+ 0			1.5652- 3				8.0686- 1
6.0000+ 6 ~ 8.0000+ 6	6.8974+ 0	4.0427+ 0	4.6740- 1	3.6561- 2		2.3484+ 0			2.5802- 4				8.1488- 1
8.0000+ 6 ~ 1.0000+ 7	6.1039+ 0	3.2275+ 0	4.7471- 2	2.0845- 1		2.6182+ 0			4.3140- 6				8.1371- 1
1.0000+ 7 ~ 1.5000+ 7	5.7562+ 0	2.7700+ 0	2.8156- 3	2.5673- 1	8.3220- 3	2.7189+ 0			5.4506- 8				8.5549- 1
1.5000+ 7 ~ 2.0000+ 7	6.0297+ 0	2.9078+ 0	1.1080- 4	4.6720- 2	2.2921- 1	2.8451+ 0			6.5042-10				9.2468- 1

MATERIAL =2962

CROSS SECTION

CM-243

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 6 ~ 1.0000- 2	2.3311+ 3	9.7323+ 0				1.9007+ 3			4.2069+ 2				3.0845- 3
1.0000- 2 ~ 1.5000- 2	1.0833+ 3	9.7044+ 0				8.8104+ 2			1.9251+ 2				3.1495- 3
1.5000- 2 ~ 2.0000- 2	9.1063+ 2	9.6859+ 0				7.4027+ 2			1.6057+ 2				3.1677- 3
2.0000- 2 ~ 3.0000- 2	7.6494+ 2	9.6586+ 0				6.2182+ 2			1.3346+ 2				3.1867- 3
3.0000- 2 ~ 4.0000- 2	6.4319+ 2	9.6227+ 0				5.2287+ 2			1.1060+ 2				3.2050- 3
4.0000- 2 ~ 5.0000- 2	5.6714+ 2	9.5874+ 0				4.6138+ 2			9.6170+ 1				3.2186- 3
5.0000- 2 ~ 6.0000- 2	5.1203+ 2	9.5525+ 0				4.1686+ 2			8.5618+ 1				3.2294- 3
6.0000- 2 ~ 8.0000- 2	4.5649+ 2	9.5014+ 0				3.7133+ 2			7.4648+ 1				3.2422- 3
8.0000- 2 ~ 1.0000- 1	4.0194+ 2	9.4347+ 0				3.2840+ 2			6.4109+ 1				3.2558- 3
1.0000- 1 ~ 1.5000- 1	3.4425+ 2	9.3223+ 0				2.8247+ 2			5.2452+ 1				3.2732- 3
1.5000- 1 ~ 2.0000- 1	2.9677+ 2	9.1692+ 0				2.4434+ 2			4.2263+ 1				3.2915- 3
2.0000- 1 ~ 3.0000- 1	2.5788+ 2	8.9629+ 0				2.1524+ 2			3.3679+ 1				3.3105- 3
3.0000- 1 ~ 4.0000- 1	2.3386+ 2	8.6798+ 0				1.9783+ 2			2.7350+ 1				3.3287- 3
4.0000- 1 ~ 5.0000- 1	2.2591+ 2	8.4174+ 0				1.9345+ 2			2.4043+ 1				3.3423- 3
5.0000- 1 ~ 6.0000- 1	2.2690+ 2	8.1580+ 0				1.9645+ 2			2.2290+ 1				3.3531- 3
6.0000- 1 ~ 8.0000- 1	2.4277+ 2	7.7610+ 0				2.1323+ 2			2.1776+ 1				3.3660- 3
8.0000- 1 ~ 1.0000+ 0	2.8113+ 2	7.1949+ 0				2.5967+ 2			2.4266+ 1				3.3796- 3
1.0000+ 0 ~ 1.5000+ 0	6.2618+ 2	6.5761+ 0				5.5318+ 2			6.6428+ 1				3.3970- 3
1.5000+ 0 ~ 2.0000+ 0	4.7916+ 2	5.9121+ 0				3.7167+ 2			1.0157+ 2				3.4152- 3
2.0000+ 0 ~ 3.0000+ 0	1.5104+ 3	1.3009+ 1				1.2836+ 3			2.1380+ 2				3.4342- 3
3.0000+ 0 ~ 4.0000+ 0	1.0304+ 3	1.7963+ 1				5.8427+ 2			4.4814+ 2				3.4525- 3
4.0000+ 0 ~ 5.0000+ 0	8.0354+ 1	1.1646+ 1				4.6786+ 1			2.1921+ 1				3.4661- 3
5.0000+ 0 ~ 6.0000+ 0	9.6992+ 2	1.1848+ 1				7.9600+ 2			1.6207+ 2				3.4769- 3
6.0000+ 0 ~ 8.0000+ 0	2.5468+ 2	1.7379+ 1				2.1576+ 2			2.1545+ 1				3.4897- 3
8.0000+ 0 ~ 1.0000+ 1	1.9825+ 2	1.0103+ 1				1.5864+ 2			3.1507+ 1				3.5033- 3
1.0000+ 1 ~ 1.5000+ 1	3.3394+ 2	1.9123+ 1				2.4114+ 2			7.3677+ 1				3.5207- 3
1.5000+ 1 ~ 2.0000+ 1	7.0865+ 1	1.4928+ 1				4.4042+ 1			1.1896+ 1				3.5390- 3
2.0000+ 1 ~ 3.0000+ 1	1.2627+ 2	1.4735+ 1				8.3335+ 1			2.8197+ 1				3.5580- 3
3.0000+ 1 ~ 4.0000+ 1	7.4501+ 1	1.2275+ 1				5.6155+ 1			6.0708+ 0				3.5762- 3
4.0000+ 1 ~ 5.0000+ 1	4.9423+ 1	1.2181+ 1				3.3609+ 1			3.6334+ 0				3.5898- 3
5.0000+ 1 ~ 6.0000+ 1	6.6517+ 1	1.2269+ 1				4.1736+ 1			4.5120+ 0				3.6006- 3
6.0000+ 1 ~ 8.0000+ 1	9.1911+ 1	1.2713+ 1				7.1471+ 1			7.7265+ 0				3.6135- 3
8.0000+ 1 ~ 1.0000+ 2	6.7872+ 1	1.2478+ 1				4.9989+ 1			5.4042+ 0				3.6271- 3
1.0000+ 2 ~ 1.5000+ 2	5.0018+ 1	1.2336+ 1				3.4006+ 1			3.6764+ 0				3.6445- 3
1.5000+ 2 ~ 2.0000+ 2	3.9282+ 1	1.2263+ 1				2.4382+ 1			2.6360+ 0				3.6627- 3
2.0000+ 2 ~ 3.0000+ 2	3.8300+ 1	1.2324+ 1				2.3442+ 1			2.5343+ 0				3.6817- 3
3.0000+ 2 ~ 4.0000+ 2	3.1138+ 1	1.2268+ 1				1.7039+ 1			1.8420+ 0				3.7000- 3
4.0000+ 2 ~ 5.0000+ 2	3.0143+ 1	1.2283+ 1				1.6118+ 1			1.7424+ 0				3.7136- 3
5.0000+ 2 ~ 6.0000+ 2	2.9383+ 1	1.2306+ 1				1.5410+ 1			1.6660+ 0				3.7244- 3
6.0000+ 2 ~ 8.0000+ 2	2.9818+ 1	1.2375+ 1				1.5741+ 1			1.7018+ 0				3.7372- 3
8.0000+ 2 ~ 1.0000+ 3	2.8327+ 1	1.2397+ 1				1.4375+ 1			1.5541+ 0				3.7508- 3
1.0000+ 3 ~ 1.5000+ 3	2.7361+ 1	1.3244+ 1				1.2122+ 1			1.9292+ 0				4.0985- 3
1.5000+ 3 ~ 2.0000+ 3	2.4840+ 1	1.2998+ 1				1.0263+ 1			1.5313+ 0				4.6353- 3
2.0000+ 3 ~ 3.0000+ 3	2.2643+ 1	1.2748+ 1				8.6644+ 0			1.2148+ 0				5.4612- 3
3.0000+ 3 ~ 4.0000+ 3	2.0869+ 1	1.2505+ 1				7.3841+ 0			9.7305- 1				6.6116- 3
4.0000+ 3 ~ 5.0000+ 3	1.9739+ 1	1.2325+ 1				6.5802+ 0			8.3044- 1				7.7960- 3
5.0000+ 3 ~ 6.0000+ 3	1.8937+ 1	1.2186+ 1				6.0112+ 0			7.3849- 1				9.0036- 3
6.0000+ 3 ~ 8.0000+ 3	1.8090+ 1	1.2017+ 1				5.4243+ 0			6.4667- 1				1.0854- 2
8.0000+ 3 ~ 1.0000+ 4	1.7289+ 1	1.1836+ 1				4.8875+ 0			5.6517- 1				1.3372- 2
1.0000+ 4 ~ 1.5000+ 4	1.6435+ 1	1.1599+ 1				4.3442+ 0			4.8479- 1				1.8741- 2
1.5000+ 4 ~ 2.0000+ 4	1.5617+ 1	1.1336+ 1				3.8571+ 0			4.1390- 1				2.5188- 2
2.0000+ 4 ~ 3.0000+ 4	1.4874+ 1	1.1049+ 1				3.4705+ 0			3.5303- 1				3.4970- 2
3.0000+ 4 ~ 4.0000+ 4	1.4241+ 1	1.0742+ 1				3.1960+ 0			3.0296- 1				4.8312- 2
4.0000+ 4 ~ 5.0000+ 4	1.3803+ 1	1.0472+ 1	1.9855- 2			3.0475+ 0			2.6265- 1				6.1631- 2
5.0000+ 4 ~ 6.0000+ 4	1.3464+ 1	1.0220+ 1	6.0072- 2			2.9574+ 0			2.2605- 1				7.5156- 2
6.0000+ 4 ~ 8.0000+ 4	1.3058+ 1	9.9018+ 0	8.5212- 2			2.8779+ 0			1.9289- 1				9.4738- 2
8.0000+ 4 ~ 1.0000+ 5	1.2617+ 1	9.5245+ 0	1.1354- 1			2.8162+ 0			1.6250- 1				1.1987- 1
1.0000+ 5 ~ 1.5000+ 5	1.1998+ 1	8.9161+ 0	2.0400- 1			2.7583+ 0			1.1890- 1				1.6168- 1
1.5000+ 5 ~ 2.0000+ 5	1.1287+ 1	8.1905+ 0	3.1429- 1			2.6978+ 0			8.3495- 2				2.1425- 1
2.0000+ 5 ~ 3.0000+ 5	1.0435+ 1	7.3413+ 0	4.1359- 1			2.6169+ 0			6.2402- 2				2.7835- 1
3.0000+ 5 ~ 4.0000+ 5	9.5258+ 0	6.4487+ 0	4.8994- 1			2.5334+ 0			5.1121- 2				3.4427- 1
4.0000+ 5 ~ 5.0000+ 5	8.8234+ 0	5.7856+ 0	5.2155- 1			2.4886+ 0			4.5962- 2				3.9338- 1
5.0000+ 5 ~ 6.0000+ 5	8.2732+ 0	5.2218+ 0	5.2167- 1			2.4866+ 0			4.2776- 2				4.3126- 1
6.0000+ 5 ~ 8.0000+ 5	7.6881+ 0	4.6171+ 0	4.9920- 1			2.5305+ 0			4.0628- 2				4.7172- 1
8.0000+ 5 ~ 1.0000+ 6	7.2196+ 0	4.0882+ 0	6.3601- 1			2.5538+ 0			4.1338- 2				5.0762- 1
1.0000+ 6 ~ 1.5000+ 6	7.0196+ 0	3.7304+ 0	8.0432- 1			2.4389+ 0			4.5230- 2				5.5181- 1
1.5000+ 6 ~ 2.0000+ 6	7.1831+ 0	3.7510+ 0	1.0588+ 0			2.3352+ 0			3.7855- 2				6.2419- 1
2.0000+ 6 ~ 3.0000+ 6	7.5599+ 0	4.2281+ 0	1.0225+ 0			2.2876+ 0			1.8552- 2				7.1887- 1
3.0000+ 6 ~ 4.0000+ 6	7.7559+ 0	4.6239+ 0	8.0369- 1			2.2212+ 0			5.6930- 3				7.8562- 1
4.0000+ 6 ~ 5.0000+ 6	7.6198+ 0	4.5841+ 0	9.1037- 1			2.1227+ 0			1.7161- 3				8.1584- 1
5.0000+ 6 ~ 6.0000+ 6	7.2833+ 0	4.2579+ 0	9.3624- 1	1.3629- 2		2.0744+ 0			5.1818- 4				8.2839- 1
6.0000+ 6 ~ 8.0000+ 6	6.6845+ 0	3.6169+ 0	3.8118- 1	5.3346- 1		2.1167+ 0			5.3997- 5				8.3106- 1
8.0000+ 6 ~ 1.0000+ 7	6.0246+ 0	2.9857+ 0	8.0622- 2	9.3500- 1		2.0220+ 0			1.4033- 6				8.3373- 1
1.0000+ 7 ~ 1.5000+ 7	5.8571+ 0	2.7669+ 0	3.5187- 2	8.4138- 1	3.9843- 2	2.1736+ 0			7.8966- 8				8.7583- 1
1.5000+ 7 ~ 2.0000+ 7	6.1660+ 0	3.0032+ 0	1.5311- 2	1.2251- 1	7.3742- 1	2.2865+ 0			5.1162- 9				9.3135- 1

CROSS SECTION

MATERIAL =2963

CM-244

ENERGY	TOTAL	ELASTIC	INELA	(N.2N)	(N.3N)	FISSION	(N.NA)	(N.NP)	CAPTURE	(N.P)	(N.D)	(N.A)	NU-BAR
1.0000- 5 ~ 1.0000- 2	5.4968+ 1	6.6671+ 0				3.6634+ 0			4.4658+ 1				2.7791- 3
1.0000- 2 ~ 1.5000- 2	2.9064+ 1	6.6544+ 0				1.6941+ 0			2.0716+ 1				2.7768- 3
1.5000- 2 ~ 2.0000- 2	2.5497+ 1	6.6526+ 0				1.4257+ 0			1.7418+ 1				2.7778- 3
2.0000- 2 ~ 3.0000- 2	2.2498+ 1	6.6500+ 0				1.1994+ 0			1.4649+ 1				2.7789- 3
3.0000- 2 ~ 4.0000- 2	1.9969+ 1	6.6465+ 0				1.0085+ 0			1.2314+ 1				2.7799- 3
4.0000- 2 ~ 5.0000- 2	1.8419+ 1	6.6429+ 0				8.9166- 1			1.0886+ 1				2.7807- 3
5.0000- 2 ~ 6.0000- 2	1.7251+ 1	6.6394+ 0				8.0361- 1			9.8077+ 0				2.7813- 3
6.0000- 2 ~ 8.0000- 2	1.6044+ 1	6.6341+ 0				7.1278- 1			8.6967+ 0				2.7820- 3
8.0000- 2 ~ 1.0000- 1	1.4915+ 1	6.6271+ 0				6.2697- 1			7.6609+ 0				2.7828- 3
1.0000- 1 ~ 1.5000- 1	1.3664+ 1	6.6149+ 0				5.3379- 1			6.6162+ 0				2.7838- 3
1.5000- 1 ~ 2.0000- 1	1.2529+ 1	6.5976+ 0				4.4941- 1			5.4826+ 0				2.7848- 3
2.0000- 1 ~ 3.0000- 1	1.1558+ 1	6.5717+ 0				3.7721- 1			4.6094+ 0				2.7859- 3
3.0000- 1 ~ 4.0000- 1	1.0748+ 1	6.5374+ 0				3.1736- 1			3.8937+ 0				2.7869- 3
4.0000- 1 ~ 5.0000- 1	1.0247+ 1	6.5031+ 0				2.8059- 1			3.4630+ 0				2.7877- 3
5.0000- 1 ~ 6.0000- 1	9.8720+ 0	6.4888+ 0				2.5332- 1			3.1499+ 0				2.7883- 3
6.0000- 1 ~ 8.0000- 1	9.4801+ 0	6.4169+ 0				2.2512- 1			2.8381+ 0				2.7890- 3
8.0000- 1 ~ 1.0000+ 0	9.1199+ 0	6.3464+ 0				1.9966- 1			2.5739+ 0				2.7898- 3
1.0000+ 0 ~ 1.5000+ 0	8.7039+ 0	6.2175+ 0				1.7122- 1			2.3152+ 0				2.7908- 3
1.5000+ 0 ~ 2.0000+ 0	8.3338+ 0	6.0165+ 0				1.4765- 1			2.1696+ 0				2.7918- 3
2.0000+ 0 ~ 3.0000+ 0	8.0031+ 0	5.6593+ 0				1.2918- 1			2.2146+ 0				2.7929- 3
3.0000+ 0 ~ 4.0000+ 0	7.8041+ 0	5.0342+ 0				1.1992- 1			2.6499+ 0				2.7939- 3
4.0000+ 0 ~ 5.0000+ 0	8.0348+ 0	4.1107+ 0				1.2632- 1			3.7978+ 0				2.7947- 3
5.0000+ 0 ~ 6.0000+ 0	9.9166+ 0	2.6042+ 0				1.6660- 1			7.1458+ 0				2.7953- 3
6.0000+ 0 ~ 8.0000+ 0	2.4658+ 3	5.4979+ 2				2.6629+ 1			1.8894+ 3				2.7960- 3
8.0000+ 0 ~ 1.0000+ 1	6.6365+ 1	3.3530+ 1				5.0769- 1			3.2348+ 1				2.7968- 3
1.0000+ 1 ~ 1.5000+ 1	1.3656+ 1	1.1882+ 1				7.4186- 2			1.6998+ 0				2.7978- 3
1.5000+ 1 ~ 2.0000+ 1	1.0260+ 2	1.4537+ 1				3.2406+ 0			8.4826+ 1				2.7988- 3
2.0000+ 1 ~ 3.0000+ 1	2.5775+ 1	9.9446+ 0				1.4476+ 0			1.4383+ 1				2.7999- 3
3.0000+ 1 ~ 4.0000+ 1	5.0578+ 1	1.2582+ 1				2.4310+ 0			3.5565+ 1				2.8009- 3
4.0000+ 1 ~ 5.0000+ 1	9.3292+ 0	9.1476+ 0				2.6728- 2			1.5487- 1				2.8017- 3
5.0000+ 1 ~ 6.0000+ 1	1.3249+ 1	8.8085+ 0				2.1155- 1			4.2290+ 0				2.8023- 3
6.0000+ 1 ~ 8.0000+ 1	1.0145+ 1	7.9878+ 0				1.7029- 1			1.9867+ 0				2.8030- 3
8.0000+ 1 ~ 1.0000+ 2	8.3308+ 1	3.4524+ 1				1.1560+ 0			4.7628+ 1				2.8038- 3
1.0000+ 2 ~ 1.5000+ 2	2.0063+ 1	1.1727+ 1				3.2297- 1			8.0126+ 0				2.8191- 3
1.5000+ 2 ~ 2.0000+ 2	3.1455+ 1	1.7878+ 1				4.7794- 1			1.3099+ 1				2.8501- 3
2.0000+ 2 ~ 3.0000+ 2	3.8298+ 1	2.3415+ 1				3.1628- 1			1.4567+ 1				2.9000- 3
3.0000+ 2 ~ 4.0000+ 2	3.4880+ 1	2.2329+ 1				3.6183- 1			1.2189+ 1				2.8714- 3
4.0000+ 2 ~ 5.0000+ 2	4.9589+ 1	3.6757+ 1				3.0645- 1			1.2525+ 1				3.0462- 3
5.0000+ 2 ~ 6.0000+ 2	3.0655+ 1	2.6038+ 1				1.2209- 1			4.4952+ 0				3.1243- 3
6.0000+ 2 ~ 8.0000+ 2	3.4560+ 1	2.7069+ 1				1.6060- 1			7.3469+ 0				3.2466- 3
8.0000+ 2 ~ 1.0000+ 3	2.8847+ 1	2.3610+ 1				2.0033- 1			5.0360+ 0				3.4173- 3
1.0000+ 3 ~ 1.5000+ 3	2.3536+ 1	1.9752+ 1				1.3631- 1			3.6461+ 0				3.7336- 3
1.5000+ 3 ~ 2.0000+ 3	2.1642+ 1	1.8647+ 1				1.4320- 1			2.8503+ 0				4.2071- 3
2.0000+ 3 ~ 3.0000+ 3	2.0004+ 1	1.7646+ 1				1.0513- 1			2.2519+ 0				4.9561- 3
3.0000+ 3 ~ 4.0000+ 3	1.8658+ 1	1.6759+ 1				9.2787- 2			1.8151+ 0				6.0120- 3
4.0000+ 3 ~ 5.0000+ 3	1.7810+ 1	1.6152+ 1				9.1451- 2			1.5670+ 0				7.1039- 3
5.0000+ 3 ~ 6.0000+ 3	1.7201+ 1	1.5699+ 1				9.6501- 2			1.4055+ 0				8.2287- 3
6.0000+ 3 ~ 8.0000+ 3	1.6553+ 1	1.5200+ 1				1.0309- 1			1.2500+ 0				9.9612- 3
8.0000+ 3 ~ 1.0000+ 4	1.5940+ 1	1.4735+ 1				8.3064- 2			1.1221+ 0				1.2320- 2
1.0000+ 4 ~ 1.5000+ 4	1.5255+ 1	1.4195+ 1				6.8421- 2			9.9165- 1				1.6554- 2
1.5000+ 4 ~ 2.0000+ 4	1.4620+ 1	1.3670+ 1				7.6091- 2			8.7348- 1				2.2662- 2
2.0000+ 4 ~ 3.0000+ 4	1.4037+ 1	1.3196+ 1				6.9219- 2			7.7157- 1				3.1827- 2
3.0000+ 4 ~ 4.0000+ 4	1.3520+ 1	1.2778+ 1				5.7733- 2			6.8404- 1				4.3931- 2
4.0000+ 4 ~ 5.0000+ 4	1.3150+ 1	1.2459+ 1	1.6835- 2			6.1150- 2			6.1229- 1				5.5693- 2
5.0000+ 4 ~ 6.0000+ 4	1.2855+ 1	1.2169+ 1	8.7440- 2			6.4068- 2			5.3446- 1				6.7299- 2
6.0000+ 4 ~ 8.0000+ 4	1.2496+ 1	1.1790+ 1	1.9568- 1			5.8162- 2			4.5206- 1				8.4080- 2
8.0000+ 4 ~ 1.0000+ 5	1.2097+ 1	1.1355+ 1	3.1228- 1			4.6643- 2			3.8271- 1				1.0534- 1
1.0000+ 5 ~ 1.5000+ 5	1.1536+ 1	1.0720+ 1	4.5319- 1			4.2697- 2			3.1988- 1				1.3895- 1
1.5000+ 5 ~ 2.0000+ 5	1.0880+ 1	9.9638+ 0	5.8895- 1			5.2755- 2			2.7468- 1				1.8050- 1
2.0000+ 5 ~ 3.0000+ 5	1.0103+ 1	9.0569+ 0	7.1193- 1			8.8766- 2			2.4574- 1				2.3021- 1
3.0000+ 5 ~ 4.0000+ 5	9.2830+ 0	8.0780+ 0	8.0888- 1			1.6390- 1			2.3013- 1				2.8158- 1
4.0000+ 5 ~ 5.0000+ 5	8.6530+ 0	7.2670+ 0	8.4514- 1			3.1505- 1			2.2158- 1				3.2234- 1
5.0000+ 5 ~ 6.0000+ 5	8.1661+ 0	6.5238+ 0	8.0047- 1			6.3122- 1			2.0467- 1				3.5997- 1
6.0000+ 5 ~ 8.0000+ 5	7.6572+ 0	5.5735+ 0	6.1994- 1			1.2983+ 0			1.6118- 1				4.1437- 1
8.0000+ 5 ~ 1.0000+ 6	7.2521+ 0	4.7423+ 0	4.1895- 1			1.9699+ 0			1.1667- 1				4.7098- 1
1.0000+ 6 ~ 1.5000+ 6	7.0329+ 0	4.3093+ 0	8.3917- 1			1.9358+ 0			1.5404- 1				5.1474- 1
1.5000+ 6 ~ 2.0000+ 6	7.0520+ 0	4.0774+ 0	9.1842- 1			1.9221+ 0			1.3376- 1				5.9377- 1
2.0000+ 6 ~ 3.0000+ 6	7.2055+ 0	4.2649+ 0	1.0549+ 0			1.8139+ 0			7.1491- 2				6.8464- 1
3.0000+ 6 ~ 4.0000+ 6	7.3781+ 0	4.5942+ 0	1.0615+ 0			1.6946+ 0			2.7040- 2				7.4218- 1
4.0000+ 6 ~ 5.0000+ 6	7.4736+ 0	4.7079+ 0	1.0748+ 0			1.6809+ 0			9.7179- 3				7.7882- 1
5.0000+ 6 ~ 6.0000+ 6	7.4548+ 0	4.6604+ 0	1.0902+ 0			1.7009+ 0			3.1610- 3				8.1069- 1
6.0000+ 6 ~ 8.0000+ 6	7.2392+ 0	4.4400+ 0	7.5052- 1	1.1440- 2		2.0362+ 0			5.7108- 4				8.3916- 1
8.0000+ 6 ~ 1.0000+ 7	6.8704+ 0	4.0583+ 0	4.7000- 1	7.1982- 2		2.2698+ 0			6.2742- 5				8.5025- 1
1.0000+ 7 ~ 1.5000+ 7	6.2304+ 0	3.4735+ 0	2.5388- 1	8.1952- 2	1.5523- 2	2.4029+ 0			8.7528- 6				8.5084- 1
1.5000+ 7 ~ 2.0000+ 7	5.7134+ 0	3.0189+ 0	1.4506- 2	1.0351- 2	8.9605- 2	2.5798+ 0			1.2468- 7				8.5703- 1

MATERIAL =2964

CROSS SECTION

CM-246

ENERGY	TOTAL	ELASTIC	INELA	(N,2N)	(N,3N)	FISSION	(N,NA)	(N,NP)	CAPTURE	(N,P)	(N,D)	(N,A)	MU-BAR
1.0000- 5 ~ 1.0000- 2	8.4391+ 3	1.1608+ 1				7.1661+ 3			1.2614+ 3				2.7661- 3
1.0000- 2 ~ 1.5000- 2	3.6934+ 3	1.1606+ 1				3.1337+ 3			5.4809+ 2				2.7706- 3
1.5000- 2 ~ 2.0000- 2	3.0027+ 3	1.1602+ 1				2.5473+ 3			4.4382+ 2				2.7719- 3
2.0000- 2 ~ 3.0000- 2	2.4045+ 3	1.1590+ 1				2.0396+ 3			3.5330+ 2				2.7732- 3
3.0000- 2 ~ 4.0000- 2	1.8959+ 3	1.1567+ 1				1.6082+ 3			2.7617+ 2				2.7745- 3
4.0000- 2 ~ 5.0000- 2	1.5674+ 3	1.1539+ 1				1.3297+ 3			2.2625+ 2				2.7754- 3
5.0000- 2 ~ 6.0000- 2	1.3302+ 3	1.1507+ 1				1.1286+ 3			1.9014+ 2				2.7762- 3
6.0000- 2 ~ 8.0000- 2	1.0815+ 3	1.1462+ 1				9.1781+ 2			1.6221+ 2				2.7771- 3
8.0000- 2 ~ 1.0000- 1	8.5642+ 2	1.1373+ 1				7.2720+ 2			1.1785+ 2				2.7780- 3
1.0000- 1 ~ 1.5000- 1	6.2049+ 2	1.1234+ 1				5.2750+ 2			8.1754+ 1				2.7792- 3
1.5000- 1 ~ 2.0000- 1	4.3373+ 2	1.1048+ 1				3.6962+ 2			5.3064+ 1				2.7805- 3
2.0000- 1 ~ 3.0000- 1	3.0990+ 2	1.0817+ 1				2.6541+ 2			3.3580+ 1				2.7818- 3
3.0000- 1 ~ 4.0000- 1	2.4189+ 2	1.0577+ 1				2.0908+ 2			2.2237+ 1				2.7831- 3
4.0000- 1 ~ 5.0000- 1	2.2219+ 2	1.0402+ 1				1.9415+ 2			1.7636+ 1				2.7841- 3
5.0000- 1 ~ 6.0000- 1	2.2369+ 2	1.0285+ 1				1.9756+ 2			1.5841+ 1				2.7848- 3
6.0000- 1 ~ 8.0000- 1	2.3713+ 2	1.0236+ 1				2.1174+ 2			1.5155+ 1				2.7857- 3
8.0000- 1 ~ 1.0000+ 0	2.2638+ 2	1.0322+ 1				2.0209+ 2			1.3975+ 1				2.7867- 3
1.0000+ 0 ~ 1.5000+ 0	1.4373+ 2	1.0121+ 1				1.2252+ 2			1.1084+ 1				2.7879- 3
1.5000+ 0 ~ 2.0000+ 0	3.1542+ 2	9.1493+ 0				2.5495+ 2			5.1322+ 1				2.7891- 3
2.0000+ 0 ~ 3.0000+ 0	2.1181+ 2	1.1309+ 1				1.7096+ 2			2.9536+ 1				2.7905- 3
3.0000+ 0 ~ 4.0000+ 0	7.7818+ 1	9.3326+ 0				6.0900+ 1			7.5852+ 0				2.7917- 3
4.0000+ 0 ~ 5.0000+ 0	7.2003+ 2	1.3050+ 1				6.2953+ 2			7.7452+ 1				2.7927- 3
5.0000+ 0 ~ 6.0000+ 0	1.6338+ 2	1.4567+ 1				1.3229+ 2			1.6521+ 1				2.7934- 3
6.0000+ 0 ~ 8.0000+ 0	2.5972+ 2	1.2494+ 1				2.1851+ 2			2.8714+ 1				2.7943- 3
8.0000+ 0 ~ 1.0000+ 1	1.4084+ 2	1.3463+ 1				1.1224+ 2			1.5134+ 1				2.7953- 3
1.0000+ 1 ~ 1.5000+ 1	7.2759+ 1	1.2916+ 1				4.8786+ 1			1.1057+ 1				2.7965- 3
1.5000+ 1 ~ 2.0000+ 1	3.2500+ 1	1.1793+ 1				1.8901+ 1			1.8062+ 0				2.7978- 3
2.0000+ 1 ~ 3.0000+ 1	8.7396+ 1	1.2071+ 1				6.5110+ 1			1.0214+ 1				2.7991- 3
3.0000+ 1 ~ 4.0000+ 1	6.7869+ 1	1.2043+ 1				4.8427+ 1			7.3982+ 0				2.8004- 3
4.0000+ 1 ~ 5.0000+ 1	1.1599+ 2	1.8909+ 1				6.8248+ 1			2.8830+ 1				2.8013- 3
5.0000+ 1 ~ 6.0000+ 1	1.2901+ 2	1.8188+ 1				1.0216+ 2			8.6638+ 0				2.8078- 3
6.0000+ 1 ~ 8.0000+ 1	6.1116+ 1	1.2900+ 1				4.1009+ 1			7.2039+ 0				2.8255- 3
8.0000+ 1 ~ 1.0000+ 2	5.5195+ 1	1.2849+ 1				3.6129+ 1			6.2148+ 0				2.8492- 3
1.0000+ 2 ~ 1.5000+ 2	4.8745+ 1	1.2791+ 1				3.0766+ 1			5.1864+ 0				2.8916- 3
1.5000+ 2 ~ 2.0000+ 2	4.2855+ 1	1.2706+ 1				2.5941+ 1			4.2045+ 0				2.9518- 3
2.0000+ 2 ~ 3.0000+ 2	3.7772+ 1	1.2617+ 1				2.1768+ 1			3.3856+ 0				3.0437- 3
3.0000+ 2 ~ 4.0000+ 2	3.3663+ 1	1.2538+ 1				1.8364+ 1			2.7596+ 0				3.1671- 3
4.0000+ 2 ~ 5.0000+ 2	3.1051+ 1	1.2481+ 1				1.6193+ 1			2.3759+ 0				3.2930- 3
5.0000+ 2 ~ 6.0000+ 2	2.9168+ 1	1.2423+ 1				1.4652+ 1			2.0873+ 0				3.4183- 3
6.0000+ 2 ~ 8.0000+ 2	2.7143+ 1	1.2342+ 1				1.3027+ 1			1.7714+ 0				3.6089- 3
8.0000+ 2 ~ 1.0000+ 3	2.5267+ 1	1.2266+ 1				1.1600+ 1			1.5000+ 0				3.8648- 3
1.0000+ 3 ~ 1.5000+ 3	2.3233+ 1	1.2174+ 1				9.8296+ 0			1.2285+ 0				4.3229- 3
1.5000+ 3 ~ 2.0000+ 3	2.1394+ 1	1.2069+ 1				8.3350+ 0			9.8754- 1				4.9773- 3
2.0000+ 3 ~ 3.0000+ 3	1.9791+ 1	1.1950+ 1				7.0539+ 0			7.8772- 1				5.9820- 3
3.0000+ 3 ~ 4.0000+ 3	1.8488+ 1	1.1831+ 1				6.0200+ 0			6.3720- 1				7.3386- 3
4.0000+ 3 ~ 5.0000+ 3	1.7660+ 1	1.1739+ 1				5.3710+ 0			5.4970- 1				8.7296- 3
5.0000+ 3 ~ 6.0000+ 3	1.7070+ 1	1.1660+ 1				4.9177+ 0			4.8963- 1				1.0112- 2
6.0000+ 3 ~ 8.0000+ 3	1.6437+ 1	1.1560+ 1				4.4469+ 0			4.2912- 1				1.2212- 2
8.0000+ 3 ~ 1.0000+ 4	1.5842+ 1	1.1449+ 1				4.0154+ 0			3.7725- 1				1.5038- 2
1.0000+ 4 ~ 1.5000+ 4	1.5177+ 1	1.1290+ 1				3.5624+ 0			3.2471- 1				2.0099- 2
1.5000+ 4 ~ 2.0000+ 4	1.4566+ 1	1.1104+ 1				3.1801+ 0			2.8073- 1				2.7280- 2
2.0000+ 4 ~ 3.0000+ 4	1.4000+ 1	1.0876+ 1				2.8815+ 0			2.4333- 1				3.8134- 2
3.0000+ 4 ~ 4.0000+ 4	1.3502+ 1	1.0620+ 1				2.6686+ 0			2.1383- 1				5.2457- 2
4.0000+ 4 ~ 5.0000+ 4	1.3143+ 1	1.0395+ 1				2.5542+ 0			1.9415- 1				6.6666- 2
5.0000+ 4 ~ 6.0000+ 4	1.2858+ 1	1.0190+ 1	4.1760- 3			2.4856+ 0			1.7767- 1				8.0238- 2
6.0000+ 4 ~ 8.0000+ 4	1.2510+ 1	9.9044+ 0	2.7327- 2			2.4238+ 0			1.5478- 1				1.0026- 1
8.0000+ 4 ~ 1.0000+ 5	1.2123+ 1	9.5679+ 0	4.4565- 2			2.3743+ 0			1.3641- 1				1.2544- 1
1.0000+ 5 ~ 1.5000+ 5	1.1569+ 1	9.0593+ 0	6.8979- 2			2.3212+ 0			1.1921- 1				1.6546- 1
1.5000+ 5 ~ 2.0000+ 5	1.0926+ 1	8.4564+ 0	1.0845- 1			2.2527+ 0			1.0886- 1				2.1450- 1
2.0000+ 5 ~ 3.0000+ 5	1.0152+ 1	7.7366+ 0	1.7161- 1			2.1373+ 0			1.0681- 1				2.7225- 1
3.0000+ 5 ~ 4.0000+ 5	9.3355+ 0	6.9436+ 0	3.1261- 1			1.9783+ 0			1.0066- 1				3.3152- 1
4.0000+ 5 ~ 5.0000+ 5	8.7095+ 0	6.2803+ 0	4.8881- 1			1.8447+ 0			8.9110- 2				3.7755- 1
5.0000+ 5 ~ 6.0000+ 5	8.2183+ 0	5.7376+ 0	6.4244- 1			1.7587+ 0			7.9353- 2				4.1408- 1
6.0000+ 5 ~ 8.0000+ 5	7.7074+ 0	5.1180+ 0	7.4981- 1			1.7692+ 0			6.8528- 2				4.5652- 1
8.0000+ 5 ~ 1.0000+ 6	7.2946+ 0	4.5598+ 0	8.8830- 1			1.7824+ 0			6.3434- 2				4.9419- 1
1.0000+ 6 ~ 1.5000+ 6	7.0652+ 0	4.0998+ 0	1.0239+ 0			1.8850+ 0			5.8059- 2				5.4448- 1
1.5000+ 6 ~ 2.0000+ 6	7.0637+ 0	3.9501+ 0	9.4706- 1			2.1292+ 0			3.6893- 2				6.1349- 1
2.0000+ 6 ~ 3.0000+ 6	7.2030+ 0	4.2287+ 0	8.8053- 1			2.0740+ 0			1.9464- 2				6.8778- 1
3.0000+ 6 ~ 4.0000+ 6	7.3706+ 0	4.5860+ 0	1.1595+ 0			1.6154+ 0			9.9402- 3				7.4077- 1
4.0000+ 6 ~ 5.0000+ 6	7.4638+ 0	4.6983+ 0	1.4744+ 0			1.2870+ 0			4.0683- 3				7.7837- 1
5.0000+ 6 ~ 6.0000+ 6	7.4449+ 0	4.6624+ 0	1.3959+ 0	4.7381- 3		1.3805+ 0			1.1987- 3				8.1042- 1
6.0000+ 6 ~ 8.0000+ 6	7.2544+ 0	4.4532+ 0	8.3859- 1	1.0048- 1		1.8644+ 0			1.5996- 4				8.3907- 1
8.0000+ 6 ~ 1.0000+ 7	6.8966+ 0	4.0798+ 0	8.8740- 1	2.0208- 1		1.7267+ 0			2.5070- 5				8.5073- 1
1.0000+ 7 ~ 1.5000+ 7	6.2510+ 0	3.4935+ 0	5.1272- 1	2.1301- 1	2.8872- 2	2.0047+ 0			3.1167- 6				8.5147- 1
1.5000+ 7 ~ 2.0000+ 7	5.7395+ 0	3.0355+ 0	2.4181- 1	5.4070- 2	1.9538- 1	2.2125+ 0			2.5668- 7				8.5757- 1

Appendix 3

Correction of Numerical Data

The corrections of errors found in JENDL-2 (Rev0) are described in this appendix. They are classified into two; one is correction commonly done for almost all nuclides and another done case by case.

Common corrections

1. Corrections of Angular Distributions of Secondary Neutrons

In the case of isotropic angular distributions, data are given in the center-of-mass system for almost all nuclides of JENDL-2 (Rev0), because that was considered to be physically correct. However, this representation is not convenient for data applications where the data in the laboratory system are required.

In JENDL-2 (Rev1), the angular distribution data of neutrons from multiparticle emission reactions are given in the laboratory system by assuming to be isotropic. In the case where the isotropic distributions in the center-of-mass system were given for the neutrons from inelastic scattering to continuum levels, the data were transformed into the laboratory system by

$$\frac{d\sigma}{d\Omega_L}=\frac{(1+\gamma^2+2\gamma\cos\theta)^{3/2}}{|1+\gamma\cos\theta|}\times\frac{d\sigma}{d\Omega_{CM}},$$

$$\gamma\equiv\frac{1}{AWR}\sqrt{E_C/(E_C+Q)},$$

where E_C is an incident neutron energy in the center-of-mass system and AWR weight of a target nuclide in the neutron mass unit. A Q-value was assumed in this work to be

$$Q=-(E_{C,th}+E_C)/2,$$

where $E_{C,th}$ is a threshold energy in the center-of-mass system. At energies near a threshold energy, γ is sometimes greater than 1.0. In such cases, isotropic distributions were assumed in the laboratory system. As a result of this calculation, it was found that the transformed distributions in the laboratory systems were almost the same as those in the center-of-mass system if their mass numbers were greater than 40. Therefore, the distributions calculated from the above equation were used for the nuclides lighter than or equal to calcium. For the others, the isotropic distributions were assumed in the laboratory system.

For some nuclides, the distributions were calculated with optical and statistical model code, CASTHY[1]. In such cases, the angular distributions of elastically and inelastically scattered neutrons were represented with Legendre expansion in the center-of-mass system. Only changed for these data were the flag of LCT from '2' to '1', i.e. from the center-of-mass to the laboratory systems, for the neutrons from inelastic scattering to continuum levels.

In the case where Legendre coefficients are given, the number of coefficients should be even according to the ENDF/B-IV rule. However, in JENDL-2 (Rev0), the number is sometimes odd. This problem was automatically solved with CRECTJ5[2]. By this correction, the number of elements of a transformation matrix became incorrect for some nuclides. In such cases, the transformation matrix was recalculated and replaced by CRECTJ5.

2. Q-values and Threshold Energies

Inconsistency between Q-values and threshold energies was found especially in the case of natural element data. The reason is that they were constructed from data of their isotopes and the same Q-values and threshold energies as those of isotope data were adopted even if AWR was replaced for natural element.

This inconsistency was removed for almost all cases by recalculating Q-values from threshold energies and AWR. It was considered that threshold energies should have been the same as those of JENDL-2 (Rev0) to keep the same curves as JENDL-2 (Rev0) cross sections.

3. Number of Energy Points of The Total Cross Section

In the complete evaluated data file in the ENDF/B format, energy points of the total cross section should cover all energies of partial cross sections. However, in JENDL-2 (Rev0), data of many nuclides do not satisfy this rule. For such data the total cross section was reconstructed as a sum of partial cross sections with CRECTJ5 by assuming that all cross section data in JENDL-2 (Rev0) were consistent one another. Therefore the results of summation were expected to reproduce completely the same total cross sections as JENDL-2 (Rev0). CRECTJ5 automatically selects energies where partial cross sections are given and which are needed to represent the results of summation within accuracy of 1.0 percent. In the case where inconsistency among cross sections were found and the reason was incorrect compilation of partial cross sections, correction of the partial cross sections was made first, and then the total cross section was recalculated with CRECTJ5.

Individual Corrections

In the remaining part of this appendix, the corrections made for each nuclide data are described except the corrections of angular distributions mentioned above.

1. Hydrogen (MAT=2011)

MF=2 was added to give the effective scattering radius which was estimated from the elastic scattering cross section of 20.44 barns at 0.0253 eV.

A transformation matrix of Legendre coefficients of elastically scattered neutrons was calculated and added with CRECTJ5.

2. Deuterium (MAT=2012)

MF=2 was added.

3. Lithium-6 (MAT=2031)

The Q-value and threshold energy of the (n,2nα) cross section were corrected. Q-values of the other threshold reactions were replaced with values calculated from threshold energies. The total cross section was recalculated from partial cross sections.

4. Lithium-7 (MAT=2032)

MF=2 was added. Q-values were modified to be consistent with threshold energies. A transformation matrix was replaced with that newly calculated by CRECTJ5.

5. Beryllium-9 (MAT=2041)

MF=2 was added. Q-values were modified. The total cross section was reconstructed from partial cross sections.

6. Boron-10 (MAT=2051)

The Q-values were calculated from threshold energies. The total cross section was reconstructed from partial cross sections.

7. Carbon-12 (MAT=2061)

The Q-values and threshold energies of MT=4, 51 and 107 had been inconsistent. The Q-values were modified by keeping the threshold energies.

8. Fluorine-19 (MAT=2091)

The nonelastic scattering cross section was deleted. The total cross section was recalculated from partial cross sections.

The maximum energies of MT=251 and angular distributions of secondary neutrons were not 20 MeV. Sugi did recalculation of these data by using CASTHY. In this revision, the calculated data by Sugi[3] were adopted for MT=251 and the angular distribution of elastically scattered neutrons. For MT's from 51 to 56, isotropic distributions in the center-of-mass system were assumed.

9. Sodium-23 (MAT=2111)

The Q-values and threshold energies of the (n,2n) and (n,α) cross sections were replaced with correct values. The threshold energy of MT=52 was corrected to 2.16917 MeV. The double energy points of 1.5 MeV were found in the total and elastic scattering cross sections. The second energy was changed to 1.505 MeV. After then, the total cross section was recalculated as a sum of partial cross sections.

10. Aluminium-27 (MAT=2131)

A transformation matrix of MT=2 in MF=4 was recalculated with CRECTJ5, because the number of elements was not correct.

The U value of energy distribution data for the (n,2n) reaction was modified.

11. Natural Silicon (MAT=2140)

The total cross section was reconstructed from partial cross sections. Q-values of threshold reactions were corrected to be consistent their threshold energies.

The transformation matrix of MT=2 in MF=4 was recalculated with CRECTJ5.

The U values of energy distribution data for the (n,2n) and inelastic scattering to continuum levels were modified.

12. Natural Calcium (MAT=2200)

The upper energy of the resonance region for ^{48}Ca was changed to 400 keV.

The total cross section was replaced with newly evaluated data from experimental data of Perey et al.[4] and Cierjacks[5] in the energy range from 400 keV to 5.0 MeV. This evaluation was made by Asami[6] by means of eye-guide method with NDES[7]. The elastic scattering cross section was recalculated by subtracting partial cross sections from the total cross section.

Q-values were modified. By modification of Q-values, order of inelastic levels (MT=71, 72 and 73) became wrong. Their order was exchanged.

The transformation matrix was replaced with that newly calculated with CRECTJ5.

13. Calcium-40 (MAT=2201)

No modification was made except for angular distribution data.

14. Calcium-42 (MAT=2202)

No modification was made except for angular distribution data.

15. Calcium-43 (MAT=2203)

No modification was made except for angular distribution data.

16. Calcium-44 (MAT=2204)

No modification was made except for angular distribution data.

17. Calcium-46 (MAT=2205)

MF=2 was added to give an effective scattering radius. The total cross section was calculated as a sum of partial cross sections.

18. Calcium-48 (MAT=2206)

The upper boundary of the resonance region for ^{48}Ca was changed to 400 keV.

19. Scandium-45 (MAT=2211)

The Q-values of the (n,p) and (n,α) cross sections were modified. The cross section of 0.0 was inserted at 500 keV for the (n,p) cross section as an effective threshold energy. The total cross section was reconstructed from partial cross sections.

20. Vanadium-51 (MAT=2231)

The Q-values and threshold energy of the second inelastic level were modified from -320.1 keV and 326.336 keV to -929 keV and 947.394 keV, respectively. The Q-values of the (n,2n), (n,n'α), (n,n'p), (n,p), (n,d) and (n,t) were adjusted to their threshold energies. The nonelastic scattering cross section was deleted from JENDL-2. Background cross sections were corrected below 100 keV to avoid negative values of the elastic and total cross sections. The total and total inelastic cross sections were recalculated from partial cross sections.

21. Natural Chromium (MAT=2240)

The maximum energy of the elastic scattering cross section was 19 MeV in JENDL-2 (Rev0). Asami[6] recommended the elastic scattering cross section of 0.947782 barns and the total cross section of 2.16 barns at 20 MeV. These values were adopted for JENDL-2 (Rev1).

All Q-values were recalculated from threshold energies. After this modification, the order of the 35-th and 36-th inelastic levels became incorrect. The Q-values of these levels were given in JENDL-2 (Rev0) as follows.

35-th level (^{50}Cr 4-th level) Q=-3.1611 MeV E_{th}=3.22494 MeV
36-th level (^{52}Cr 7-th level) Q=-3.1617 MeV E_{th}=3.22310 MeV

In JENDL-2 (Rev1), the order of these two levels was exchanged and Q-values were adjusted as follows.

35-th level (^{52}Cr 7-th level) Q=-3.16176 MeV E_{th}=3.22310 MeV
36-th level (^{50}Cr 4-th level) Q=-3.16357 MeV E_{th}=3.22494 MeV

The total cross section was reconstructed from partial cross sections.

22. Chromium-50 (MAT=2241)

The value of AWR in MF=2 was corrected. The total cross section was recalculated as a sum of partial cross sections.

23. Chromium-52 (MAT=2242)

The value of AWR in MF=2 was corrected. The interpolation of the (n,n'p) cross section was altered.

24. Chromium-53 (MAT=2243)

The value of AWR in MF=2 was corrected.

25. Chromium-54 (MAT=2244)

The value of AWR in MF=2 was corrected. The interpolation of the elastic scattering cross section was corrected. The total cross section was recalculated as a sum of partial cross sections.

26. Manganese-55 (MAT=2251)

In JENDL-2 (Rev0), the total cross section calculated with CASTHY was stored. On the other hand, the capture cross section was evaluated on the basis of experimental data and consisted of rather many energy points. To keep consistency among cross sections, the total cross section was recalculated for JENDL-2 (Rev1) as a sum of partial cross sections. The differences between the total cross sections of JENDL-2 (Rev0) and (Rev1) are small enough because the capture cross section is relatively small.

Angular distributions for the (n,2n), (n,n'α) and (n,n'p) reactions were newly added by assuming to be isotropic in the laboratory system.

27. Natural Iron (MAT=2260)

The values of AWR's for ^{56}Fe and ^{57}Fe in MF=2 were corrected.

The Q-values were adjusted to threshold energies. The total cross section was recalculated as a sum of partial cross sections.

28. Iron-54 (MAT=2261)

The effective scattering radius of 7.5 fm was replaced with that of 5.6 fm which was adopted for resonance parameters of natural iron.

Threshold energies were recalculated from Q-values and AWR. The interpolation was corrected for the elastic scattering cross section. The elastic scattering and capture cross sections at 250 keV (the upper boundary of the resonance region) were inserted by assuming to be 3.47

barns and 9.6 mb, respectively. The total and total inelastic scattering cross sections were calculated from partial cross sections.

The angular distribution data for elastically scattered neutrons had not been given at 20 MeV in JENDL-2 (Rev0). The same distribution as that at 15 MeV was assumed. The angular distribution of neutrons from the (n,2n) reaction was put by assuming isotropic distribution in the laboratory system. All angular distributions of inelastically scattered neutrons to discrete levels were replaced with isotropic distributions in the center-of-mass system, and those to continuum levels with isotropic distribution in the laboratory system.

29. Iron-56 (MAT=2262)

In JENDL-2 (Rev0), many background data points were given for the elastic scattering and negative data for the capture cross section. For JENDL-2 (Rev1), the negative resonance at -3.75 keV was taken away and the effective scattering radius was changed from 5.4 fm to 6.5 fm in order to reproduce the low energy total and capture cross sections and the total cross section around the 24-keV window. As a result of this correction, better fitting to experimental data of the total cross section was obtained even in high energy region. The calculated capture cross section at 0.0253 eV is somewhat greater than recommended value by Mughabghab et al. However no background correction was applied. As to the elastic scattering cross section, the calculated value is smaller on the contrary. The background data in a very simple form was given for this to reproduce 12.46 barns[8] at 0.0253 eV.

Threshold energies were recalculated from Q-values and AWR. The elastic scattering cross section at 250 keV (the upper boundary of the resonance region) was corrected to be 2.99 barns. The total and total inelastic scattering cross sections were calculated from partial cross sections.

The energy range of MF=4, MT=52 was corrected.

30. Iron-57 (MAT=2263)

The value of AWR was corrected and threshold energies were recalculated from Q-values and the corrected AWR. The cross section of MT=51 was modified around its threshold energy. Then the total and total inelastic scattering cross sections were reconstructed from partial cross sections.

31. Iron-58 (MAT=2264)

The background data for the capture cross section were not correct between 100 eV and 100 keV. They were modified by inserting the background capture cross section at 100 keV. The total cross section was recalculated.

The transformation matrix of MT=2 in MF=4 was recalculated with CRECTJ5.

32. Cobalt-59 (MAT=2271)

The resonance parameters were replaced with recommended data by Mughabghab et al.[8], because the parameters of JENDL-2 (Rev0) consisted of only big resonances of which neutron width was given by Mughabghab et al. and some unreasonable capture widths were also found. For JENDL-2 (Rev1), all resonances recommended by Mughabghab et al. were adopted. The resonances whose ℓ value was not given and whose neutron width was relatively large were assumed to be s-wave resonances. The capture widths of 0.56 eV and 0.7 eV were assumed for s-wave and p-wave resonances, respectively. The effective scattering radius and parameters of the negative resonance at -500 keV were adjusted to reproduce the thermal elastic scattering and capture cross sections recommended by Mughabghab et al. The changes of parameters were very small as follows.

R = 6.795 fm (from 6.8 fm)
neutron width = 45.0 eV (from 47.75 eV)
capture width = 0.473 eV (from 0.447 eV)

For the resonance formula, the multilevel Breit-Wigner formula was applied.

The calculated total cross section is slightly smaller than experimental data about between 100 eV and 2 keV. No background correction was made for this, because the experimental data have some structure which seems to be contributions from other nuclides.

33. Natural Nickel (MAT=2280)

Q-values were recalculated from threshold energies. The total cross section was reconstructed.

Incorrect order of neutron energies of energy distributions of inelastic scattering to continuum levels was corrected.

34. Nickel-58 (MAT=2281)

The J value of 168.675-eV resonance was corrected. The value of AWR was corrected.

The (n,n'α) cross section at 18.5 MeV was slightly modified to reproduce a smooth curve. The total cross section was recalculated as a sum of partial cross sections.

35. Nickel-60 (MAT=2282)

Reconstruction of the total cross section was made.

36. Nickel-61 (MAT=2283)

Reconstruction of the total cross section was made.

37. Nickel 62 (MAT 2284)

Reconstruction of the total cross section was made.

38. Nickel-64 (MAT=2285)

Reconstruction of the total cross section was made.

39. Natural Copper (MAT=2290)

Q-values were replaced with values calculated from threshold energies.

The energy range of MT=16 of MF=4 and MF=5 was corrected to be consistent with the (n,2n) cross section data.

40. Copper-63 (MAT=2291)

The total cross section was recalculated.

The angular distributions of neutrons from the (n,2n) and (n,n'α) reactions were added by assuming to be isotropic in the laboratory system.

41. Copper-65 (MAT=2292)

The angular distributions of neutrons from the (n,2n) and (n,n'α) reactions were added by assuming to be isotropic in the laboratory system.

The energy range of MT=16 of MF=5 was corrected.

42. Niobium-93 (MAT=2411)

The total cross section was reconstructed from partial cross sections.

The value of AWR of MT=16 and MT=17 in MF=4 was modified.

Energy ranges of MT=16 and MT=17 in MF=5 were corrected.

43. Natural Molybdenum (MAT=2420)

The J value of the 4.622-keV resonance of ^{94}Mo was corrected.

The effective threshold energies were set at 144.7 keV and 1.0 MeV for the (n,p) and (n,α) cross sections, respectively. The Q-value of the (n,3n) cross section was corrected. Other Q-values were also corrected from their threshold energies. The total cross section was reconstructed from partial cross sections.

44. Molybdenum-92 (MAT=2421)

The effective threshold energies were set at 1.0 MeV for the (n,p) and (n,α) cross sections. The total cross section was recalculated.

45. Molybdenum-94 (MAT=2422)

The J value of the 4.622-keV resonance was corrected.

The cross section of 0.0 was inserted at 1.0 MeV for the (n,α)

cross section as an effective threshold energy. The Q-value of the (n,3n) cross section was modified. The total cross section was reconstructed from partial cross sections.

46. Molybdenum-95 (MAT=2423)

The cross section of 0.0 was inserted at 1.0 MeV for the (n,α) cross section as an effective threshold energy. The total cross section was reconstructed from partial cross sections.

47. Molybdenum-96 (MAT=2424)

The cross section of 0.0 was inserted at 1.0 MeV for the (n,α) cross section as an effective threshold energy. The total cross section was reconstructed from partial cross sections.

48. Molybdenum-97 (MAT=2425)

The cross section of 0.0 was inserted at 1.0 MeV for the (n,α) cross section as an effective threshold energy. The total cross section was reconstructed from partial cross sections.

49. Molybdenum-98 (MAT=2426)

The cross section of 0.0 was inserted at 1.0 MeV for the (n,α) cross section as an effective threshold energy. The total cross section was reconstructed from partial cross sections.

50. Molybdenum-100 (MAT=2427)

The cross section of 0.0 was inserted at 1.0 MeV for the (n,α) cross section as an effective threshold energy. The Q-value of the (n,p) cross section was corrected. The total cross section was reconstructed from partial cross sections.

51. Hafnium-174 (MAT=2721)

The total cross section was recalculated as a sum of partial cross sections.

52. Hafnium-176 (MAT=2722)

The total cross section was recalculated as a sum of partial cross sections.

53. Hafnium-177 (MAT=2723)

The total cross section was recalculated as a sum of partial cross sections.

54. Hafnium-178 (MAT=2724)

The elastic scattering cross section in the thermal region did not reproduce the value of 5.0 barns at 0.0253 eV recommended by the evaluator of this nuclide. This was corrected by replacing the data with newly evaluated values. The background cross section was also added to the elastic scattering cross section to connect cross sections calculated from resonance parameters to the pointwise data below 0.5 eV. The total cross section was recalculated as a sum of partial cross sections.

55. Hafnium-179 (MAT=2725)

The total cross section was recalculated as a sum of partial cross sections.

56. Hafnium-180 (MAT=2726)

The total cross section was recalculated as a sum of partial cross sections.

57. Tantalum-181 (MAT=2731)

Large inconsistency was found between the total and partial cross sections in the energy range from 7 to 50 keV where is in the resonance region. The total cross section was recalculated as a sum of partial cross sections.

58. Natural Lead (MAT=2820)

The J values of 527.4-keV and 721.4-keV resonances of ^{208}Pb were incorrect. They were altered from p-wave to d-wave resonances.

The total cross section was replaced with the eye-guided values based on experimental data in the energy range from 500 keV to 15 MeV. The elastic scattering cross section was modified to keep consistency among cross sections.

Inconsistencies of energy ranges among MF=3, MF=4 and MF=5 were corrected.

59. Lead-204 (MAT=2821)

The interpolation tables of the total, elastic scattering and capture cross sections were corrected. The capture cross section at 50 keV (background cross section) was modified. After them, the total cross section was reconstructed from partial cross sections.

The first energy of secondary neutrons in MF=5, MT=22 was corrected.

60. Lead-206 (MAT=2822)

The total cross section was recalculated as a sum of partial cross sections.

The first energies of secondary neutrons of MT=22 and MT=91 in MF=5 were corrected.

61. Lead-207 (MAT=2823)

The interpolation of the elastic scattering cross section was corrected. The elastic scattering cross section was inserted at 500 keV where is an upper boundary of the resonance region. The total cross section was recalculated as a sum of partial cross sections.

The energy range of MT=22 in MF=5 was modified to be the same as that of the (n,n'α) cross section.

62. Lead-208 (MAT=2824)

The J values of 527.4-keV and 721.4-keV resonances were incorrect. They were changed from p-wave to d-wave resonances.

The total cross section was recalculated as a sum of partial cross sections.

The energy range of MT=22 in MF=5 was modified to be the same as that of the (n,n'α) cross section.

63. Thorium-228 (MAT=2901)

The resonance formula was changed to the multilevel Breit-Wigner formula, because negative elastic scattering cross sections were found from the JENDL-2 (Rev0).

The cross-section shape of the (n,2n) and (n,3n) cross sections were corrected to be the same curve as recommendation by Ohsawa who was an evaluator of this nuclide. Interpolation tables were modified for the elastic and capture cross sections. At 2 keV, two values were given for the elastic scattering and capture cross sections in JENDL-2 (Rev0); one was the evaluated value by Ohsawa and another calculated with CASTHY. For JENDL-2 (Rev1), Ohsawa's evaluated value was adopted at 2 keV to give a smooth curve for each cross section. The total and total inelastic scattering cross sections were reconstructed from partial cross sections.

The fission spectrum was added by assuming the Maxwellian spectrum determined from Z^2/A systematics by Smith et al[9].

64. Thorium-230 (MAT=2902)

The J values of resonance parameters were replaced with J=1/2 for all resonances. The effective scattering radius of 19.25 fm was corrected to be 10.925 fm. The resonance formula was changed to the multilevel Breit-Wigner formula to avoid negative elastic scattering cross sections. The background cross section of the capture cross section was recalculated as

$$\sigma_{(n,\gamma)}(E)=0.257425/\sqrt{E(eV)}$$

to reproduce the recommended 0.0253-eV cross section by Ohsawa. The elastic scattering cross section calculated at 0.0253 eV is 9.77 barns and that recommended by Ohsawa is 9.403 brans. However no background cross section was applied, because no experimental data existed and the difference was not so large.

The interpolation tables were changed to be log-log between 564.26 eV and 4 keV. The cross sections at 4 keV were slightly modified so as to join to the values calculated with CASTHY above 4 keV. The curves of the (n,2n) and (n,3n) cross sections were corrected. The total cross section was finally recalculated from partial cross sections.

The fission spectrum was added by assuming the Maxwellian spectrum determined from Z^2/A systematics by Smith et al.

65. Thorium-232 (MAT=2903)

The total cross section was recalculated from partial cross sections.

66. Thorium-233 (MAT=2904)

Interpolation tables were modified for the elastic and capture cross sections. The cross sections at 4 keV were modified so as to join to the values calculated with CASTHY above 4 keV. The curves of the (n,2n) and (n,3n) cross sections were corrected. The total and total inelastic scattering cross section was recalculated from partial cross sections.

The fission spectrum was added by assuming the Maxwellian spectrum determined from Z^2/A systematics by Smith et al.

67. Thorium-234 (MAT=2905)

Interpolation tables were modified for the elastic and capture cross sections. The cross sections at 4 keV were modified so as to join to the values calculated with CASTHY above 4 keV. The curves of the (n,2n) and (n,3n) cross sections were corrected. The total and total inelastic scattering cross section was recalculated from partial cross sections.

The fission spectrum was added by assuming the Maxwellian spectrum determined from Z^2/A systematics by Smith et al.

68. Protactinium-233 (MAT=2911)

The energy boundary of the resolved and unresolved resonances were inconsistent in JENDL-2 (Rev0). The boundary of two ranges was set to 17.0 eV for JENDL-2 (Rev1).

Inconsistent energy ranges among MF's were corrected. The energy distributions of the (n,2n), (n,3n) and inelastic scattering to continuum levels were replaced with the results of EVAPSPEC[10]. The fission spectrum was added by assuming the Maxwellian spectrum determined from Z^2/A systematics by Smith et al.

69. Uranium-233 (MAT=2921)

The energy of 7.47 MeV in the total number of neutrons and number of prompt neutrons per fission was changed to 7.5 MeV.

The nonelastic scattering cross section given in JENDL-2 (Rev0) was deleted. The total and total inelastic scattering cross sections were reconstructed from partial cross sections.

The energy range of angular distributions of neutrons from fission was corrected.

70. Uranium-234 (MAT=2922)

The resonance formula was altered from the single-level Breit-Wigner to the multilevel Breit-Wigner formula. The background cross sections were replaced with zero values.

The Q-values of MT=19, 20 and 21 were set to be the same as that of MT=18. MF=5 data for MT=19, 20 and 21 were taken from those of MT=18.

Energy ranges of angular distribution data were corrected.

71. Uranium-235 (MAT=2923)

Interpolation of fission yield data was changed to linear-linear.

72. Uranium-236 (MAT=2924)

No modification was made except correction of anguler distribution data.

73. Uranium-238 (MAT=2925)

Interpolation of fission yield data was changed to linear-linear.

Negative values were found in the angular distribution of elastically scattered neutrons for the incident neutron energy of 20 MeV. The same distribution as 18-MeV neutrons was used for 20-MeV neutrons to avoid this problem.

74. Neptunium-237 (MAT=2931)

The total cross section was reconstructed from partial cross sections. The energy ranges of energy distributions of neutrons from the (n,2n) and (n,3n) reactions were modified to be the same as their cross section data.

75. Neptunium-239 (MAT=2932)

The energy of 10^{-5} eV was inserted for the fission cross section.

The U value of fission spectrum was changed to -20 MeV. The energy spectra of neutrons from (n,2n), (n,3n) and inelastic scattering to continuum levels were replaced with the results of EVAPSPEC[10].

76. Plutonium-236 (MAT=2941)

The Q-values of MT=19, 20 and 21 were set to be equal to that of MT=18. The threshold energies of MT=20 and 21 were modified to be 3 MeV and 11 MeV, respectively, and their cross sections around threshold energies were corrected. The total cross section was recalculated from partial cross sections.

The energy distribution data of MT=19, 20 and 21 were taken from those of MT=18.

77. Plutonium-238 (MAT=2942)

The neutron widths of the 2.9-eV and 32.2-eV resonances were modified. The fission widths of the -0.4-eV and 2.9-eV resonances were adjusted to reproduce the thermal fission cross section of 16.5 barns recommended in BNL-325 3rd edition. The resonance formula was changed to the multilevel Breit-Wigner formula in order to avoid negative cross sections.

The Q-values and threshold energies of the (n,2n) and (n,3n) cross sections were corrected. The (n,2n) cross section at 10 MeV was replaced with correct one. The total cross section was constructed from partial cross sections.

The angular distribution of elastically scattered neutrons by 20-MeV neutrons had negative values. The same distribution as 18-MeV neutrons was assumed at 20 MeV.

78. Plutonium-239 (MAT=2943)

The interpolation of fission yield data was changed to linear-linear. The Q-value of the total inelastic scattering cross section was slightly changed from -7.863 keV to -7.86 keV.

79. Plutonium-240 (MAT=2944)

The Q-values and threshold energies of all inelastic scattering cross sections were inconsistent in JENDL-2 (Rev0). The threshold energies were recalculated from their Q values. The total and total inelastic scattering cross sections were recalculated from partial cross sections.

The energy range of angular distribution data for the (n,2n) and (n,3n) reactions were corrected.

The energy distribution data were calculated with EVAPSPEC.

80. Plutonium-241 (MAT=2945)

The Q-values of the (n,2n), (n,3n) and (n,4n) cross sections were corrected.

81. Plutonium-242 (MAT=2946)

The threshold energies were slightly corrected to satisfy the relation between Q-values and threshold energies. The total and total inelastic scattering cross sections were calculated as a sum of partial cross sections.

82. Americium-241 (MAT=2951)

The fission yield data were renormalized to 2.0.

The Q-values were replaced with those calculated from threshold energies. The total cross section was reconstructed from partial cross sections.

The energy ranges of MF=4, MT=18 and MF=5, MT=16, 17 and 18 were corrected to be consistent with cross section data.

The evaporation spectra in MF=5 were recalculated with EVAPSPEC.

83. Americium-242 (MAT=2952)

The angular distribution of elastically scattered neutrons by 20-MeV neutrons had negative values. The same distribution as 18-MeV neutrons was assumed at 20 MeV.

84. Americium-242m (MAT=2953)

The elastic and capture cross sections around 3.5 eV were modified. The total cross section was reconstructed from partial cross sections.

The angular distribution of elastically scattered neutrons by 20-MeV neutrons had negative values. The same distribution as 18-MeV neutrons was assumed at 20 MeV.

The energy range of MF=5, MT=91 was corrected.

85. Americium-243 (MAT=2954)

The fission yield data were renormalized to 2.0.

The total cross section was reconstructed from partial cross sections.

The angular distribution of elastically scattered neutrons by 20-MeV neutrons had negative values. The same distribution as 14-MeV neutrons was assumed at 20 MeV. The energy range of MF=4, MT=18 was corrected to be consistent with cross section data.

86. Curium-242 (MAT=2961)

The angular distribution of elastically scattered neutrons at 20 MeV had negative values. The same distribution as 18-MeV neutrons was assumed at 20 MeV.

87. Curium-243 (MAT=2962)

The capture cross section of JENDL-2 (Rev0) was adopted by mistake to be the same as elastic scattering cross section in the energy range from 27 eV to 1 keV. It was replaced with the cross sections correctly estimated with the method described in Ref. 11. The total cross section was reconstructed from partial cross sections.

The angular distribution of elastically scattered neutrons at 20 MeV had negative values. The same distribution as 18-MeV neutrons was assumed at 20 MeV.

88. Curium-244 (MAT=2963)

The resonance formula was replaced with the multilevel Breit-Wigner formula to avoid negative cross sections. The background cross sections given in JENDL-2 (Rev0) were taken away.

The total cross section was recalculated as a sum of partial cross sections.

89. Curium-245 (MAT=2964)

The Q-value of the (n,2n) was corrected.

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