



HTR-N & N1
High-Temperature Reactor Physics and Fuel Cycle Studies
(EC-funded Projects: FIKI-CT-2000-00020 & FIKI-CT-2001-00169)

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Chronology and history of revisions

Rev.	Date	Description
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1	20.10.2004	Final issue



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Libraries for HTR neutronics calculations

1. MCNP libraries

The neutronics calculations for WP2 should be based on the newest released cross section evaluations. At beginning of the project the evaluations JEF-2.2, JENDL-3.2 and ENDF/B-VI were available. At the beginning of 2003 also newer evaluations or new releases of single cross section data sets were published, especially JEFF-3.0, JENDL-3.3 and ENDF/B-VI up to release 7/1,2,3,4,5/

For the neutronics calculations both continuous data for the Monte Carlo code MCNP /6/ and multigroup data sets were generated or updated for WP2. For comparisons these data sets are based on the main three evaluations JEF-2.2, ENDF/B-VI and JENDL-3.2.

The data sets for MCNP were generated with a reconstruction accuracy of 0,1 % by means of the NJOY code (version depending of generation date) /7/.

For fission products also compact data sets were generated to calculate problems with many zones and fission products more efficiently without significant loss of accuracy.

For the main nuclides of moderators, structure materials, absorbers, actinides and fission products MCNP cross section sets were generated for a light temperature grid of 293K, 335 K, 500 K, 600 K, 900 K, 1200 K, 1500 K, 2000 K and 2500 K.

The covered temperature range allows calculations for cold and hot operation conditions and accidental conditions as well.

The MCNP data sets used for different kinds of calculations are listed in **table 1** for structure materials and actinides based mainly on JEF-2.2. **Table 2** shows the data sets for fission products.

In **table 3**, the data sets for alternative evaluations ENDF/B-VI and JENDL-3.2 are listed. Additionally shows the **table 4** the data sets for moderators. For the moderator graphite several data sets were generated based on comparable old (but widely used) scattering laws and newer data sets based on scattering laws derived from ENDF/B and an alternative frequency distribution (see Difilippo et.al) /8,9/.

The tables show for every data set the identifier, the relative mass of nucleus, the temperature in MeV, the generation date and the size of the data set in line 1 and a descriptive text and the ENDF material number in line 2.

2. Multigroup libraries

The multigroup libraries which can be used for deterministic transport calculations and multigroup Monte Carlo are based mainly on JEF-2.2 and ENDF/B-VI. The structure of the libraries is ordered according to the AMPX library of the SCALE /10/ system. A list is given in **table 5**. Since the ENDF-6 format does not use resonance parameters in the AMPX compatible form, no resonance parameter are stored on the AMPX library. The resonance shielding is performed by solving the slowing down equation for the energy range of 1eV- 2keV for a hyperfine energy grid with up to 26,000 points using a first collision probability method for 1D cells /11/. Overlapping resonances can be taken into account by this method for all nuclides in the fuel, structure material or moderator. The library contains practically the same nuclides as the corresponding MCNP library with the exception of fission products for which - with few exceptions - not the full scattering matrix is stored but only the capture and scattering cross section.

The generated data were tested extensively against experiments and benchmarks /12,13,14/. Details of these benchmarks calculations are given in /15/.

3. Covariance data

- There are strong differences in covariance data of different data sources which lead to differences in uncertainty estimation:
 - uranium fuel U-235 fission 0.21 % (JEF-2.2), 0.08 % (IRDF90)
 - uranium fuel U-238 total 0.47% (JEF-2.2 incomplete), 0.26% (IRDF90)
 - plutonium fuel: also strong differences between JEF-2.2 and IRDF90
- The covariance data for uncertainty analysis are not complete in the different data evaluations; there are few applications for thermal reactors.
- Covariance data for actinides are in IRDF90, JEF-2.2 (JEFF-3.0) ENDF/B-VI.7 and CENDL-2.1.

For a number of actinides covariance data are plotted in fig. 1 to 17.

4. Literature

1. The JEF-2.2 Nuclear Data Library, JEF-Report 17 , April 2000.
2. "ENDF/B-VI Summary Documentation", BNL-NCS-17541 (ENDF-201), 4th edition, (Oct. 1991)
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15. HTR-N-05-D-2.1.5, Validation of cross section libraries for analysis of thermal reactors

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Table 1: Directory of MCNP cross section data sets for structure materials, absorbers and actinides based on JEF2.2 and ENDF/B-VI

1001.60c	.999	2.53350E-08	07/12/97	5089	
1-H-1	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat 125
2004.60c	4.002	2.53350E-08	07/15/97	3605	
2-He-4	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat 228
5010.60c	9.927	2.53350E-08	07/12/97	35898	
5-B-10	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat 525
5011.60c	10.915	2.53350E-08	07/12/97	120024	
5-B-11	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat 528
8016.60c	15.853	2.53350E-08	07/12/97	69321	
8-O-16	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat 825
8017.60c	16.853	2.53350E-08	07/14/97	6446	
8-O-17	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat 828
24050.60c	49.517	2.53350E-08	07/11/97	566805	
24-Cr-50	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat2425
24052.60c	51.494	2.53350E-08	07/11/97	390981	
24-Cr-52	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat2431
24053.60c	52.486	2.53350E-08	07/12/97	259252	
24-Cr-53	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat2434
24054.60c	53.476	2.53350E-08	07/12/97	239378	
24-Cr-54	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat2437
25055.60c	54.466	2.53350E-08	07/13/97	461339	
25-Mn-55	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat2525
26054.60c	53.476	2.53350E-08	07/11/97	361521	
26-Fe-54	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat2625
26056.60c	55.454	2.53350E-08	07/11/97	681513	
26-Fe-56	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat2631
26057.60c	56.446	2.53350E-08	07/11/97	289721	
26-Fe-57	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat2634
26058.60c	57.436	2.53350E-08	07/11/97	195137	
26-Fe-58	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat2637
28058.60c	57.438	2.53350E-08	07/13/97	1038911	
28-Ni-58	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat2825
28060.60c	59.416	2.53350E-08	07/13/97	658130	
28-Ni-60	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat2831
28061.60c	60.408	2.53350E-08	07/13/97	133119	
28-Ni-61	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat2834
28062.60c	61.396	2.53350E-08	07/13/97	126628	
28-Ni-62	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat2837

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28064.60c	63.379	2.53350E-08	07/13/97	102319	
28-Ni-64	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat2843
40000.60c	90.436	2.53350E-08	07/13/97	349384	
40-Zr_nat	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat4000
54135.20c	133.748	2.53350E-08	07/11/97	6350	
54-Xe-135	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat5458
62149.20c	147.638	2.53350E-08	07/11/97	78679	
62-Sm-149	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat6240
64152.60c	150.615	2.53350E-08	07/14/97	412144	
64-Gd-152	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat6425
64154.20c	152.599	2.53350E-08	07/11/97	59453	
64-Gd-154	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat6431
64155.20c	153.592	2.53350E-08	07/11/97	132870	
64-Gd-155	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat6434
64156.20c	154.583	2.53350E-08	07/11/97	119243	
64-Gd-156	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat6437
64157.20c	155.576	2.53350E-08	07/11/97	102326	
64-Gd-157	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat6440
64158.20c	156.568	2.53350E-08	07/11/97	211761	
64-Gd-158	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat6443
64160.20c	158.553	2.53350E-08	07/11/97	73415	
64-Gd-160	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat6449
72174.20c	172.446	2.53350E-08	07/11/97	69170	
72-Hf-174	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat7225
72176.20c	174.429	2.53350E-08	07/11/97	132436	
72-Hf-176	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat7231
72177.20c	175.420	2.53350E-08	07/11/97	260977	
72-Hf-177	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat7234
72178.20c	176.411	2.53350E-08	07/11/97	157380	
72-Hf-178	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat7237
72179.20c	177.413	2.53350E-08	07/11/97	184225	
72-Hf-179	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat7240
72180.20c	178.404	2.53350E-08	07/11/97	177250	
72-Hf-180	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat7243
92234.20c	232.030	2.53350E-08	07/03/97	262135	
92-U-234	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat9225
92235.20c	233.025	2.53350E-08	07/08/97	691616	
92-U-235	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat9228
92236.20c	234.018	2.53350E-08	07/03/97	321916	

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92-U-236	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat9231
92237.20c	235.012	2.53350E-08	07/03/97	76235	
92-U-237	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat9234
92238.20c	236.006	2.53350E-08	07/11/97	1178744	
92-U-238	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat9237
93237.20c	235.012	2.53350E-08	07/11/97	166331	
93-Np-237	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat9346
93238.20c	236.006	2.53350E-08	07/11/97	46953	
93-Np-238	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat9349
93239.20c	236.999	2.53350E-08	07/11/97	13404	
93-Np-239	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat9352
94238.20c	236.005	2.53350E-08	07/11/97	102514	
94-Pu-238	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat9434
94239.20c	236.999	2.53350E-08	07/11/97	383953	
94-Pu-239	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat9437
94240.20c	237.992	2.53350E-08	07/11/97	302145	
94-Pu-240	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat9440
94241.20c	238.986	2.53350E-08	07/11/97	156265	
94-Pu-241	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat9443
94242.20c	239.979	2.53350E-08	07/11/97	200641	
94-Pu-242	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat9446
95241.20c	238.986	2.53350E-08	07/11/97	164943	
95-Am-241	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat9543
95242.20c	239.981	2.53350E-08	07/11/97	16696	
95-Am-242	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat9546
95242.90c	239.981	2.53350E-08	07/11/97	13455	
95-Am-242m	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat9547
95243.20c	240.973	2.53350E-08	07/11/97	226711	
95-Am-243	JEF-2.2	T=293.6K njoy94.66mm_8	jul97/IKE		mat9549
96242.60c	239.979	2.53350E-08	07/11/97	51355	
96-Cm-242	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat9631
96243.60c	240.973	2.53350E-08	07/11/97	24400	
96-Cm-243	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat9634
96244.60c	241.966	2.53350E-08	07/11/97	122864	
96-Cm-244	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat9637
96245.60c	242.960	2.53350E-08	07/11/97	41468	
96-Cm-245	ENDF/B-VIrel4	T=293.6K njoy94.66mm_8	jul97/IKE		mat9640
34074.11c	73.287	2.88680E-08	7/ 7/98	22646	
34-Se-74	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat3425
36083.11c	82.202	2.88680E-08	7/ 7/98	16066	

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36-Kr-83	JEF-2.2	T=335K	njoy94.105sun	jul98/IKE		mat3640
40091.11c		90.125	2.88680E-08	7/ 7/98	113290	
40-Zr-91	JEF-2.2	T=335K	njoy94.105sun	jul98/IKE		mat4028
40093.11c		92.108	2.88680E-08	7/ 7/98	10085	
40-Zr-93	JEF-2.2	T=335K	njoy94.105sun	jul98/IKE		mat4034
40095.11c		94.093	2.88680E-08	7/ 7/98	30321	
40-Zr-95	JEF-2.2	T=335K	njoy94.105sun	jul98/IKE		mat4040
40096.11c		95.084	2.88680E-08	7/ 7/98	32260	
40-Zr-96	JEF-2.2	T=335K	njoy94.105sun	jul98/IKE		mat4043
41095.11c		94.091	2.88680E-08	7/ 7/98	37123	
41-Nb-95	JEF-2.2	T=335K	njoy94.105sun	jul98/IKE		mat4131
42095.11c		94.095	2.88680E-08	7/ 7/98	76824	
42-Mo-95	JEF-2.2	T=335K	njoy94.105sun	jul98/IKE		mat4234
42097.11c		96.078	2.88680E-08	7/ 7/98	87676	
42-Mo-97	JEF-2.2	T=335K	njoy94.105sun	jul98/IKE		mat4240
42098.11c		97.064	2.88680E-08	7/ 7/98	76840	
42-Mo-98	JEF-2.2	T=335K	njoy94.105sun	jul98/IKE		mat4243
42099.11c		98.058	2.88680E-08	7/ 7/98	6391	
42-Mo-99	JEF-2.2	T=335K	njoy94.105sun	jul98/IKE		mat4246
42100.11c		99.049	2.88680E-08	7/ 7/98	92451	
42-Mo-100	JEF-2.2	T=335K	njoy94.105sun	jul98/IKE		mat4249
43099.11c		98.057	2.88680E-08	7/ 7/98	108512	
43-Tc-99	JEF-2.2	T=335K	njoy94.105sun	jul98/IKE		mat4331
44100.11c		99.046	2.88680E-08	7/ 7/98	8695	
44-Ru-100	JEF-2.2	T=335K	njoy94.105sun	jul98/IKE		mat4437
44101.11c		100.039	2.88680E-08	7/ 7/98	71340	
44-Ru-101	JEF-2.2	T=335K	njoy94.105sun	jul98/IKE		mat4440
44102.11c		101.029	2.88680E-08	7/ 7/98	15170	
44-Ru-102	JEF-2.2	T=335K	njoy94.105sun	jul98/IKE		mat4443
44103.11c		102.022	2.88680E-08	7/ 7/98	32205	
44-Ru-103	JEF-2.2	T=335K	njoy94.105sun	jul98/IKE		mat4446
44104.11c		103.013	2.88680E-08	7/ 7/98	29796	
44-Ru-104	JEF-2.2	T=335K	njoy94.105sun	jul98/IKE		mat4449
44106.11c		104.998	2.88680E-08	7/ 7/98	6100	
44-Ru-106	JEF-2.2	T=335K	njoy94.105sun	jul98/IKE		mat4455
45103.11c		102.021	2.88680E-08	7/ 7/98	134563	
45-Rh-103	JEF-2.2	T=335K	njoy94.105sun	jul98/IKE		mat4525
45105.11c		104.005	2.88680E-08	7/ 7/98	4836	
45-Rh-105	JEF-2.2	T=335K	njoy94.105sun	jul98/IKE		mat4531

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46104.11c	103.011	2.88680E-08	7/ 7/98	57071	
46-Pd-104	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat4631
46105.11c	104.000	2.88680E-08	7/ 7/98	198128	
46-Pd-105	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat4634
46106.11c	104.994	2.88680E-08	7/ 7/98	60509	
46-Pd-106	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat4637
46107.11c	105.987	2.88680E-08	7/ 7/98	58919	
46-Pd-107	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat4640
46108.11c	106.977	2.88680E-08	7/ 7/98	72916	
46-Pd-108	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat4643
47107.11c	105.987	2.88680E-08	7/14/98	76470	
47-Ag-107	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat4725
47109.11c	107.969	2.88680E-08	7/ 7/98	88116	
47-Ag-109	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat4731
47110.81c	108.962	2.88680E-08	7/14/98	81333	
47-Ag-110m	JENDL-3.2	T=335K njoy94.105sun	jul98/IKE		mat4735
48110.11c	108.959	2.88680E-08	7/ 7/98	84162	
48-Cd-110	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat4837
48111.11c	109.952	2.88680E-08	7/ 7/98	133655	
48-Cd-111	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat4840
48112.11c	110.942	2.88680E-08	7/ 7/98	121445	
48-Cd-112	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat4843
48113.11c	111.930	2.88680E-08	7/ 7/98	37342	
48-Cd-113	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat4846
48114.11c	112.925	2.88680E-08	7/ 7/98	69762	
48-Cd-114	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat4849
48116.11c	114.909	2.88680E-08	7/ 7/98	31772	
48-Cd-116	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat4855
49113.11c	111.934	2.88680E-08	7/ 7/98	46362	
49-In-113	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat4925
49115.11c	113.917	2.88680E-08	7/ 7/98	179716	
49-In-115	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat4931
52132.11c	130.775	2.88680E-08	7/14/98	4616	
52-Te-132	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat5261
53127.11c	125.814	2.88680E-08	7/ 7/98	174812	
53-I-127	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat5325
53129.11c	127.798	2.88680E-08	7/ 7/98	131101	
53-I-129	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat5331
53131.11c	129.782	2.88680E-08	7/ 7/98	6639	

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53-I-131	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat5337
53135.11c	133.751	2.88680E-08 7/ 7/98	2758
53-I-135	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat5349
54131.11c	129.781	2.88680E-08 7/ 7/98	70338
54-Xe-131	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat5446
54132.11c	130.771	2.88680E-08 7/ 7/98	17160
54-Xe-132	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat5449
54133.11c	131.764	2.88680E-08 7/ 7/98	5451
54-Xe-133	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat5452
54134.11c	132.755	2.88680E-08 7/ 7/98	8901
54-Xe-134	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat5455
54135.11c	133.748	2.88680E-08 7/ 7/98	6282
54-Xe-135	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat5458
55133.11c	131.762	2.88680E-08 7/ 7/98	173795
55-Cs-133	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat5525
55134.11c	132.757	2.88680E-08 7/ 7/98	19726
55-Cs-134	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat5528
55135.11c	133.750	2.88680E-08 7/ 7/98	27793
55-Cs-135	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat5531
57139.11c	137.713	2.88680E-08 7/ 7/98	94310
57-La-139	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat5728
58140.11c	138.704	2.88680E-08 7/ 7/98	29270
58-Ce-140	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat5837
58141.11c	139.698	2.88680E-08 7/ 7/98	40482
58-Ce-141	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat5840
58142.11c	140.690	2.88680E-08 7/ 7/98	18182
58-Ce-142	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat5843
58143.11c	141.685	2.88680E-08 7/ 7/98	5624
58-Ce-143	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat5846
58144.11c	142.677	2.88680E-08 7/ 7/98	45446
58-Ce-144	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat5849
59141.11c	139.698	2.88680E-08 7/ 8/98	110738
59-Pr-141	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat5925
59143.11c	141.683	2.88680E-08 7/ 8/98	6681
59-Pr-143	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat5931
60142.11c	140.689	2.88680E-08 7/ 8/98	54889
60-Nd-142	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat6025
60143.11c	141.680	2.88680E-08 7/ 8/98	173565
60-Nd-143	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat6028
60144.11c	142.674	2.88680E-08 7/ 8/98	61888

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60-Nd-144	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat6031
60145.11c	143.668	2.88680E-08 7/ 8/98	153380
60-Nd-145	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat6034
60146.11c	144.660	2.88680E-08 7/ 8/98	83431
60-Nd-146	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat6037
60147.11c	145.654	2.88680E-08 7/ 8/98	17885
60-Nd-147	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat6040
60148.11c	146.646	2.88680E-08 7/ 8/98	112074
60-Nd-148	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat6043
60150.11c	148.633	2.88680E-08 7/ 8/98	83487
60-Nd-150	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat6049
61147.11c	145.653	2.88680E-08 7/ 8/98	63704
61-Pm-147	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat6149
61148.11c	146.647	2.88680E-08 7/ 8/98	4420
61-Pm-148	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat6152
61148.81c	146.647	2.88680E-08 7/ 8/98	4833
61-Pm-148m	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat6153
61149.11c	147.639	2.88680E-08 7/ 8/98	7402
61-Pm-149	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat6155
62147.11c	145.653	2.88680E-08 7/ 8/98	153816
62-Sm-147	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat6234
62148.11c	146.644	2.88680E-08 7/ 8/98	8712
62-Sm-148	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat6237
62149.11c	147.638	2.88680E-08 7/ 8/98	77091
62-Sm-149	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat6240
62150.11c	148.629	2.88680E-08 7/ 8/98	46908
62-Sm-150	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat6243
62151.11c	149.620	2.88680E-08 7/ 8/98	134341
62-Sm-151	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat6246
62152.11c	150.615	2.88680E-08 7/ 8/98	121493
62-Sm-152	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat6249
62153.11c	151.608	2.88680E-08 7/ 8/98	12010
62-Sm-153	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat6252
62154.11c	152.600	2.88680E-08 7/ 8/98	75052
62-Sm-154	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat6255
63153.11c	151.607	2.88680E-08 7/ 8/98	116373
63-Eu-153	JEF-2.2	T=335K njoy94.105sun jul98/IKE	mat6331
63154.11c	152.600	2.88680E-08 7/10/98	66362
63-Eu-154	ENDF/B-VI.103	T=335K njoy94.105sun jul98/IKE	mat6334

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63155.11c	153.592	2.88680E-08	7/ 8/98	13458	
63-Eu-155	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat6337
63156.11c	154.585	2.88680E-08	7/ 8/98	9130	
63-Eu-156	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat6340
63157.11c	155.577	2.88680E-08	7/ 8/98	3876	
63-Eu-157	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat6343
64152.11c	150.615	2.88680E-08	7/13/98	296979	
64-Gd-152	ENDF/B-VI.103	T=335K njoy94.105sun	jul98/IKE		mat6425
64154.11c	152.599	2.88680E-08	7/ 9/98	55916	
64-Gd-154	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat6431
64155.11c	153.592	2.88680E-08	7/ 9/98	129176	
64-Gd-155	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat6434
64156.11c	154.583	2.88680E-08	7/ 9/98	99155	
64-Gd-156	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat6437
64157.11c	155.576	2.88680E-08	7/ 9/98	91951	
64-Gd-157	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat6440
64158.11c	156.568	2.88680E-08	7/ 9/98	139016	
64-Gd-158	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat6443
64160.11c	158.553	2.88680E-08	7/ 9/98	54152	
64-Gd-160	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat6449
65159.11c	157.560	2.88680E-08	7/ 8/98	53751	
65-Tb-159	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat6525
65160.11c	158.553	2.88680E-08	7/ 8/98	4091	
65-Tb-160	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat6528
66160.11c	158.551	2.88680E-08	7/ 8/98	13818	
66-Dy-160	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat6637
66161.11c	159.545	2.88680E-08	7/ 8/98	36496	
66-Dy-161	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat6640
66162.11c	160.536	2.88680E-08	7/ 8/98	24791	
66-Dy-162	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat6643
66163.11c	161.529	2.88680E-08	7/ 8/98	90830	
66-Dy-163	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat6646
66164.11c	162.520	2.88680E-08	7/ 8/98	15069	
66-Dy-164	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat6649
67165.11c	163.514	2.88680E-08	7/ 8/98	48014	
67-Ho-165	JEF-2.2	T=335K njoy94.105sun	jul98/IKE		mat6725
92234.11c	232.030	2.88680E-08	7/ 6/98	181167	
92-U-234	JEF-2.2	T=335K njoy94.105sun	jun98/IKE		mat9225
92235.11c	233.025	2.88680E-08	6/26/98	655751	
92-U-235	JEF-2.2	T=335K njoy94.105sun	jun98/IKE		mat9228

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92236.11c	234.018	2.88680E-08	7/ 6/98	251211	
92-U-236	JEF-2.2	T=335K njoy94.105sun	jun98/IKE		mat9231
92237.11c	235.012	2.88680E-08	7/ 9/98	74768	
92-U-237	JEF-2.2	T=335K njoy94.105sun	jun98/IKE		mat9234
92238.11c	236.006	2.88680E-08	6/26/98	715640	
92-U-238	JEF-2.2	T=335K njoy94.105sun	jun98/IKE		mat9237
93237.11c	235.012	2.88680E-08	7/ 8/98	155123	
93-Np-237	JEF-2.2	T=335K njoy94.105sun	jun98/IKE		mat9346
93238.11c	236.006	2.88680E-08	7/ 8/98	46225	
93-Np-238	JEF-2.2	T=335K njoy94.105sun	jun98/IKE		mat9349
93239.11c	236.999	2.88680E-08	7/ 8/98	11255	
93-Np-239	JEF-2.2	T=335K njoy94.105sun	jun98/IKE		mat9352
94238.11c	236.005	2.88680E-08	7/ 6/98	91474	
94-Pu-238	JEF-2.2	T=335K njoy94.105sun	jun98/IKE		mat9434
94239.11c	236.999	2.88680E-08	7/ 6/98	307392	
94-Pu-239	JEF-2.2	T=335K njoy94.105sun	jun98/IKE		mat9437
94240.11c	237.992	2.88680E-08	7/ 6/98	259033	
94-Pu-240	JEF-2.2	T=335K njoy94.105sun	jun98/IKE		mat9440
94241.11c	238.986	2.88680E-08	7/ 6/98	147450	
94-Pu-241	JEF-2.2	T=335K njoy94.105sun	jun98/IKE		mat9443
94242.11c	239.979	2.88680E-08	7/ 6/98	140473	
94-Pu-242	JEF-2.2	T=335K njoy94.105sun	jun98/IKE		mat9446
95241.11c	238.986	2.88680E-08	7/ 9/98	155383	
95-Am-241	JEF-2.2	T=335K njoy94.105sun	jun98/IKE		mat9543
95242.11c	239.981	2.88680E-08	7/ 9/98	15592	
95-Am-242	JEF-2.2	T=335K njoy94.105sun	jun98/IKE		mat9546
95242.81c	239.981	2.88680E-08	7/ 9/98	13351	
95-Am-242m	JEF-2.2	T=335K njoy94.105sun	jun98/IKE		mat9547
95243.11c	240.973	2.88680E-08	7/ 9/98	214695	
95-Am-243	JEF-2.2	T=335K njoy94.105sun	jun98/IKE		mat9549
96242.11c	239.979	2.88680E-08	7/ 9/98	44477	
96-Cm-242	JEF-2.2	T=335K njoy94.105sun	jun98/IKE		mat9631
96243.11c	240.973	2.88680E-08	7/ 9/98	20450	
96-Cm-243	JEF-2.2	T=335K njoy94.105sun	jun98/IKE		mat9634
96244.11c	241.966	2.88680E-08	7/ 9/98	141567	
96-Cm-244	JEF-2.2	T=335K njoy94.105sun	jun98/IKE		mat9637
96245.11c	242.960	2.88680E-08	7/ 9/98	42395	
96-Cm-245	JEF-2.2	T=335K njoy94.105sun	jun98/IKE		mat9640
54135.21c	133.748	4.30870E-08	07/11/97	6364	
54-Xe-135	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat5458

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62149.21c	147.638	4.30870E-08	07/11/97	72008	
62-Sm-149	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat6240
64152.61c	150.615	4.30870E-08	07/14/97	389581	
64-Gd-152	ENDF/B-VIrel4	T=500K njoy94.66mm_8	jul97/IKE		mat6425
64154.21c	152.599	4.30870E-08	07/11/97	56069	
64-Gd-154	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat6431
64155.21c	153.592	4.30870E-08	07/11/97	120216	
64-Gd-155	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat6434
64156.21c	154.583	4.30870E-08	07/11/97	113789	
64-Gd-156	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat6437
64157.21c	155.576	4.30870E-08	07/11/97	95737	
64-Gd-157	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat6440
64158.21c	156.568	4.30870E-08	07/11/97	201660	
64-Gd-158	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat6443
64160.21c	158.553	4.30870E-08	07/11/97	71198	
64-Gd-160	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat6449
92234.21c	232.030	4.30870E-08	07/03/97	246255	
92-U-234	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat9225
92235.21c	233.025	4.30870E-08	07/08/97	584588	
92-U-235	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat9228
92236.21c	234.018	4.30870E-08	07/03/97	297740	
92-U-236	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat9231
92237.21c	235.012	4.30870E-08	07/03/97	72878	
92-U-237	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat9234
92238.21c	236.006	4.30870E-08	07/08/97	1409945	
92-U-238	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat9237
93237.21c	235.012	4.30870E-08	07/11/97	142043	
93-Np-237	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat9346
93238.21c	236.006	4.30870E-08	07/11/97	43625	
93-Np-238	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat9349
93239.21c	236.999	4.30870E-08	07/11/97	13572	
93-Np-239	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat9352
94238.21c	236.005	4.30870E-08	07/11/97	97258	
94-Pu-238	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat9434
94239.21c	236.999	4.30870E-08	07/11/97	339137	
94-Pu-239	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat9437
94240.21c	237.992	4.30870E-08	07/11/97	278297	
94-Pu-240	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat9440
94241.21c	238.986	4.30870E-08	07/11/97	139585	
94-Pu-241	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat9443

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94242.21c	239.979	4.30870E-08	07/11/97	190753	
94-Pu-242	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat9446
95241.21c	238.986	4.30870E-08	07/11/97	139983	
95-Am-241	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat9543
95242.21c	239.981	4.30870E-08	07/11/97	16688	
95-Am-242	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat9546
95242.91c	239.981	4.30870E-08	07/11/97	12863	
95-Am-242m	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat9547
95243.21c	240.973	4.30870E-08	07/11/97	191071	
95-Am-243	JEF-2.2	T=500K njoy94.66mm_8	jul97/IKE		mat9549
96242.61c	239.979	4.30870E-08	07/11/97	48961	
96-Cm-242	ENDF/B-VIrel4	T=500K njoy94.66mm_8	jul97/IKE		mat9631
96243.61c	240.973	4.30870E-08	07/11/97	23986	
96-Cm-243	ENDF/B-VIrel4	T=500K njoy94.66mm_8	jul97/IKE		mat9634
96244.61c	241.966	4.30870E-08	07/11/97	116699	
96-Cm-244	ENDF/B-VIrel4	T=500K njoy94.66mm_8	jul97/IKE		mat9637
96245.61c	242.960	4.30870E-08	07/11/97	40217	
96-Cm-245	ENDF/B-VIrel4	T=500K njoy94.66mm_8	jul97/IKE		mat9640
24050.62c	49.517	5.17040E-08	07/11/97	536717	
24-Cr-50	ENDF/B-VIrel4	T=600K njoy94.66mm_8	jul97/IKE		mat2425
24052.62c	51.494	5.17040E-08	07/11/97	382029	
24-Cr-52	ENDF/B-VIrel4	T=600K njoy94.66mm_8	jul97/IKE		mat2431
24053.62c	52.486	5.17040E-08	07/12/97	250412	
24-Cr-53	ENDF/B-VIrel4	T=600K njoy94.66mm_8	jul97/IKE		mat2434
24054.62c	53.476	5.17040E-08	07/12/97	236570	
24-Cr-54	ENDF/B-VIrel4	T=600K njoy94.66mm_8	jul97/IKE		mat2437
25055.62c	54.466	5.17040E-08	07/13/97	448395	
25-Mn-55	ENDF/B-VIrel4	T=600K njoy94.66mm_8	jul97/IKE		mat2525
26054.62c	53.476	5.17040E-08	07/11/97	348385	
26-Fe-54	ENDF/B-VIrel4	T=600K njoy94.66mm_8	jul97/IKE		mat2625
26056.62c	55.454	5.17040E-08	07/11/97	661097	
26-Fe-56	ENDF/B-VIrel4	T=600K njoy94.66mm_8	jul97/IKE		mat2631
26057.62c	56.446	5.17040E-08	07/11/97	288849	
26-Fe-57	ENDF/B-VIrel4	T=600K njoy94.66mm_8	jul97/IKE		mat2634
26058.62c	57.436	5.17040E-08	07/11/97	190921	
26-Fe-58	ENDF/B-VIrel4	T=600K njoy94.66mm_8	jul97/IKE		mat2637
28058.62c	57.438	5.17040E-08	07/13/97	1012975	
28-Ni-58	ENDF/B-VIrel4	T=600K njoy94.66mm_8	jul97/IKE		mat2825
28060.62c	59.416	5.17040E-08	07/13/97	633022	

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28-Ni-60	ENDF/B-VIrel4	T=600K	njoy94.66mm_8	jul97/IKE	mat2831
28061.62c	60.408	5.17040E-08	07/13/97	132543	
28-Ni-61	ENDF/B-VIrel4	T=600K	njoy94.66mm_8	jul97/IKE	mat2834
28062.62c	61.396	5.17040E-08	07/13/97	126260	
28-Ni-62	ENDF/B-VIrel4	T=600K	njoy94.66mm_8	jul97/IKE	mat2837
28064.62c	63.379	5.17040E-08	07/13/97	101751	
28-Ni-64	ENDF/B-VIrel4	T=600K	njoy94.66mm_8	jul97/IKE	mat2843
40000.62c	90.436	5.17040E-08	07/13/97	333774	
40-Zr_nat	ENDF/B-VIrel4	T=600K	njoy94.66mm_8	jul97/IKE	mat4000
54135.22c	133.748	5.17040E-08	07/11/97	6336	
54-Xe-135	JEF-2.2	T=600K	njoy94.66mm_8	jul97/IKE	mat5458
62149.22c	147.638	5.17040E-08	07/11/97	69824	
62-Sm-149	JEF-2.2	T=600K	njoy94.66mm_8	jul97/IKE	mat6240
64152.62c	150.615	5.17040E-08	07/14/97	381733	
64-Gd-152	ENDF/B-VIrel4	T=600K	njoy94.66mm_8	jul97/IKE	mat6425
64154.22c	152.599	5.17040E-08	07/11/97	55286	
64-Gd-154	JEF-2.2	T=600K	njoy94.66mm_8	jul97/IKE	mat6431
64155.22c	153.592	5.17040E-08	07/11/97	116220	
64-Gd-155	JEF-2.2	T=600K	njoy94.66mm_8	jul97/IKE	mat6434
64156.22c	154.583	5.17040E-08	07/11/97	112025	
64-Gd-156	JEF-2.2	T=600K	njoy94.66mm_8	jul97/IKE	mat6437
64157.22c	155.576	5.17040E-08	07/11/97	93280	
64-Gd-157	JEF-2.2	T=600K	njoy94.66mm_8	jul97/IKE	mat6440
64158.22c	156.568	5.17040E-08	07/11/97	197934	
64-Gd-158	JEF-2.2	T=600K	njoy94.66mm_8	jul97/IKE	mat6443
64160.22c	158.553	5.17040E-08	07/11/97	70037	
64-Gd-160	JEF-2.2	T=600K	njoy94.66mm_8	jul97/IKE	mat6449
72174.22c	172.446	5.17040E-08	07/11/97	66209	
72-Hf-174	JEF-2.2	T=600K	njoy94.66mm_8	jul97/IKE	mat7225
72176.22c	174.429	5.17040E-08	07/11/97	126122	
72-Hf-176	JEF-2.2	T=600K	njoy94.66mm_8	jul97/IKE	mat7231
72177.22c	175.420	5.17040E-08	07/11/97	222708	
72-Hf-177	JEF-2.2	T=600K	njoy94.66mm_8	jul97/IKE	mat7234
72178.22c	176.411	5.17040E-08	07/11/97	149708	
72-Hf-178	JEF-2.2	T=600K	njoy94.66mm_8	jul97/IKE	mat7237
72179.22c	177.413	5.17040E-08	07/11/97	167992	
72-Hf-179	JEF-2.2	T=600K	njoy94.66mm_8	jul97/IKE	mat7240
72180.22c	178.404	5.17040E-08	07/11/97	168927	
72-Hf-180	JEF-2.2	T=600K	njoy94.66mm_8	jul97/IKE	mat7243
92234.22c	232.030	5.17040E-08	07/03/97	239871	

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92-U-234	JEF-2.2	T=600K njoy94.66mm_8	jul97/IKE		mat9225
92235.22c	233.025	5.17040E-08	07/08/97	537203	
92-U-235	JEF-2.2	T=600K njoy94.66mm_8	jul97/IKE		mat9228
92236.22c	234.018	5.17040E-08	07/03/97	288756	
92-U-236	JEF-2.2	T=600K njoy94.66mm_8	jul97/IKE		mat9231
92237.22c	235.012	5.17040E-08	07/03/97	72023	
92-U-237	JEF-2.2	T=600K njoy94.66mm_8	jul97/IKE		mat9234
92238.22c	236.006	5.17040E-08	07/08/97	1298021	
92-U-238	JEF-2.2	T=600K njoy94.66mm_8	jul97/IKE		mat9237
93237.22c	235.012	5.17040E-08	07/11/97	133267	
93-Np-237	JEF-2.2	T=600K njoy94.66mm_8	jul97/IKE		mat9346
93238.22c	236.006	5.17040E-08	07/11/97	41633	
93-Np-238	JEF-2.2	T=600K njoy94.66mm_8	jul97/IKE		mat9349
93239.22c	236.999	5.17040E-08	07/11/97	13555	
93-Np-239	JEF-2.2	T=600K njoy94.66mm_8	jul97/IKE		mat9352
94238.22c	236.005	5.17040E-08	07/11/97	94778	
94-Pu-238	JEF-2.2	T=600K njoy94.66mm_8	jul97/IKE		mat9434
94239.22c	236.999	5.17040E-08	07/11/97	324153	
94-Pu-239	JEF-2.2	T=600K njoy94.66mm_8	jul97/IKE		mat9437
94240.22c	237.992	5.17040E-08	07/11/97	271361	
94-Pu-240	JEF-2.2	T=600K njoy94.66mm_8	jul97/IKE		mat9440
94241.22c	238.986	5.17040E-08	07/11/97	133697	
94-Pu-241	JEF-2.2	T=600K njoy94.66mm_8	jul97/IKE		mat9443
94242.22c	239.979	5.17040E-08	07/11/97	187353	
94-Pu-242	JEF-2.2	T=600K njoy94.66mm_8	jul97/IKE		mat9446
95241.22c	238.986	5.17040E-08	07/11/97	131055	
95-Am-241	JEF-2.2	T=600K njoy94.66mm_8	jul97/IKE		mat9543
95242.22c	239.981	5.17040E-08	07/11/97	16704	
95-Am-242	JEF-2.2	T=600K njoy94.66mm_8	jul97/IKE		mat9546
95242.92c	239.981	5.17040E-08	07/11/97	12671	
95-Am-242m	JEF-2.2	T=600K njoy94.66mm_8	jul97/IKE		mat9547
95243.22c	240.973	5.17040E-08	07/11/97	180143	
95-Am-243	JEF-2.2	T=600K njoy94.66mm_8	jul97/IKE		mat9549
96242.62c	239.979	5.17040E-08	07/11/97	48160	
96-Cm-242	ENDF/B-VIrel4	T=600K njoy94.66mm_8	jul97/IKE		mat9631
96243.62c	240.973	5.17040E-08	07/11/97	23734	
96-Cm-243	ENDF/B-VIrel4	T=600K njoy94.66mm_8	jul97/IKE		mat9634
96244.62c	241.966	5.17040E-08	07/11/97	114782	
96-Cm-244	ENDF/B-VIrel4	T=600K njoy94.66mm_8	jul97/IKE		mat9637

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96245.62c	242.960	5.17040E-08	07/11/97	39731	
96-Cm-245	ENDF/B-VIrel4	T=600K njoy94.66mm_8	jul97/IKE		mat9640
54135.23c	133.748	6.46300E-08	07/11/97	6371	
54-Xe-135	JEF-2.2	T=750K njoy94.66mm_8	jul97/IKE		mat5458
62149.23c	147.638	6.46300E-08	07/11/97	66744	
62-Sm-149	JEF-2.2	T=750K njoy94.66mm_8	jul97/IKE		mat6240
64152.63c	150.615	6.46300E-08	07/14/97	371113	
64-Gd-152	ENDF/B-VIrel4	T=750K njoy94.66mm_8	jul97/IKE		mat6425
64154.23c	152.599	6.46300E-08	07/11/97	53819	
64-Gd-154	JEF-2.2	T=750K njoy94.66mm_8	jul97/IKE		mat6431
64155.23c	153.592	6.46300E-08	07/11/97	111027	
64-Gd-155	JEF-2.2	T=750K njoy94.66mm_8	jul97/IKE		mat6434
64156.23c	154.583	6.46300E-08	07/11/97	108641	
64-Gd-156	JEF-2.2	T=750K njoy94.66mm_8	jul97/IKE		mat6437
64157.23c	155.576	6.46300E-08	07/11/97	90481	
64-Gd-157	JEF-2.2	T=750K njoy94.66mm_8	jul97/IKE		mat6440
64158.23c	156.568	6.46300E-08	07/11/97	192660	
64-Gd-158	JEF-2.2	T=750K njoy94.66mm_8	jul97/IKE		mat6443
64160.23c	158.553	6.46300E-08	07/11/97	68426	
64-Gd-160	JEF-2.2	T=750K njoy94.66mm_8	jul97/IKE		mat6449
92234.23c	232.030	6.46300E-08	07/03/97	231583	
92-U-234	JEF-2.2	T=750K njoy94.66mm_8	jul97/IKE		mat9225
92235.23c	233.025	6.46300E-08	07/08/97	485021	
92-U-235	JEF-2.2	T=750K njoy94.66mm_8	jul97/IKE		mat9228
92236.23c	234.018	6.46300E-08	07/03/97	279268	
92-U-236	JEF-2.2	T=750K njoy94.66mm_8	jul97/IKE		mat9231
92237.23c	235.012	6.46300E-08	07/03/97	70502	
92-U-237	JEF-2.2	T=750K njoy94.66mm_8	jul97/IKE		mat9234
92238.23c	236.006	6.46300E-08	07/08/97	1178969	
92-U-238	JEF-2.2	T=750K njoy94.66mm_8	jul97/IKE		mat9237
93237.23c	235.012	6.46300E-08	07/11/97	123131	
93-Np-237	JEF-2.2	T=750K njoy94.66mm_8	jul97/IKE		mat9346
93238.23c	236.006	6.46300E-08	07/11/97	39177	
93-Np-238	JEF-2.2	T=750K njoy94.66mm_8	jul97/IKE		mat9349
93239.23c	236.999	6.46300E-08	07/11/97	13518	
93-Np-239	JEF-2.2	T=750K njoy94.66mm_8	jul97/IKE		mat9352
94238.23c	236.005	6.46300E-08	07/11/97	92418	
94-Pu-238	JEF-2.2	T=750K njoy94.66mm_8	jul97/IKE		mat9434
94239.23c	236.999	6.46300E-08	07/11/97	304705	

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Task:	2.1.2	Document type: Deliverable	

94-Pu-239	JEF-2.2	T=750K	njoy94.66mm_8	jul97/IKE		mat9437
94240.23c		237.992	6.46300E-08	07/11/97	261737	
94-Pu-240	JEF-2.2	T=750K	njoy94.66mm_8	jul97/IKE		mat9440
94241.23c		238.986	6.46300E-08	07/11/97	125785	
94-Pu-241	JEF-2.2	T=750K	njoy94.66mm_8	jul97/IKE		mat9443
94242.23c		239.979	6.46300E-08	07/11/97	182481	
94-Pu-242	JEF-2.2	T=750K	njoy94.66mm_8	jul97/IKE		mat9446
95241.23c		238.986	6.46300E-08	07/11/97	120903	
95-Am-241	JEF-2.2	T=750K	njoy94.66mm_8	jul97/IKE		mat9543
95242.23c		239.981	6.46300E-08	07/11/97	16720	
95-Am-242	JEF-2.2	T=750K	njoy94.66mm_8	jul97/IKE		mat9546
95242.93c		239.981	6.46300E-08	07/11/97	12367	
95-Am-242m	JEF-2.2	T=750K	njoy94.66mm_8	jul97/IKE		mat9547
95243.23c		240.973	6.46300E-08	07/11/97	166599	
95-Am-243	JEF-2.2	T=750K	njoy94.66mm_8	jul97/IKE		mat9549
96242.63c		239.979	6.46300E-08	07/11/97	47467	
96-Cm-242	ENDF/B-VIrel4	T=750K	njoy94.66mm_8	jul97/IKE		mat9631
96243.63c		240.973	6.46300E-08	07/11/97	23689	
96-Cm-243	ENDF/B-VIrel4	T=750K	njoy94.66mm_8	jul97/IKE		mat9634
96244.63c		241.966	6.46300E-08	07/11/97	111965	
96-Cm-244	ENDF/B-VIrel4	T=750K	njoy94.66mm_8	jul97/IKE		mat9637
96245.63c		242.960	6.46300E-08	07/11/97	39173	
96-Cm-245	ENDF/B-VIrel4	T=750K	njoy94.66mm_8	jul97/IKE		mat9640
54135.24c		133.748	7.75560E-08	07/11/97	6392	
54-Xe-135	JEF-2.2	T=900K	njoy94.66mm_8	jul97/IKE		mat5458
62149.24c		147.638	7.75560E-08	07/11/97	63741	
62-Sm-149	JEF-2.2	T=900K	njoy94.66mm_8	jul97/IKE		mat6240
64152.64c		150.615	7.75560E-08	07/14/97	362167	
64-Gd-152	ENDF/B-VIrel4	T=900K	njoy94.66mm_8	jul97/IKE		mat6425
64154.24c		152.599	7.75560E-08	07/11/97	52919	
64-Gd-154	JEF-2.2	T=900K	njoy94.66mm_8	jul97/IKE		mat6431
64155.24c		153.592	7.75560E-08	07/11/97	106293	
64-Gd-155	JEF-2.2	T=900K	njoy94.66mm_8	jul97/IKE		mat6434
64156.24c		154.583	7.75560E-08	07/11/97	106364	
64-Gd-156	JEF-2.2	T=900K	njoy94.66mm_8	jul97/IKE		mat6437
64157.24c		155.576	7.75560E-08	07/11/97	87934	
64-Gd-157	JEF-2.2	T=900K	njoy94.66mm_8	jul97/IKE		mat6440
64158.24c		156.568	7.75560E-08	07/11/97	188286	
64-Gd-158	JEF-2.2	T=900K	njoy94.66mm_8	jul97/IKE		mat6443

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Task:	2.1.2	Document type: Deliverable	

64160.24c	158.553	7.75560E-08	07/11/97	67418	
64-Gd-160	JEF-2.2	T=900K njoy94.66mm_8	jul97/IKE		mat6449
92234.24c	232.030	7.75560E-08	07/03/97	225223	
92-U-234	JEF-2.2	T=900K njoy94.66mm_8	jul97/IKE		mat9225
92235.24c	233.025	7.75560E-08	07/08/97	446627	
92-U-235	JEF-2.2	T=900K njoy94.66mm_8	jul97/IKE		mat9228
92236.24c	234.018	7.75560E-08	07/03/97	270308	
92-U-236	JEF-2.2	T=900K njoy94.66mm_8	jul97/IKE		mat9231
92237.24c	235.012	7.75560E-08	07/03/97	69548	
92-U-237	JEF-2.2	T=900K njoy94.66mm_8	jul97/IKE		mat9234
92238.24c	236.006	7.75560E-08	07/08/97	1086683	
92-U-238	JEF-2.2	T=900K njoy94.66mm_8	jul97/IKE		mat9237
93237.24c	235.012	7.75560E-08	07/11/97	116267	
93-Np-237	JEF-2.2	T=900K njoy94.66mm_8	jul97/IKE		mat9346
93238.24c	236.006	7.75560E-08	07/11/97	37329	
93-Np-238	JEF-2.2	T=900K njoy94.66mm_8	jul97/IKE		mat9349
93239.24c	236.999	7.75560E-08	07/11/97	13473	
93-Np-239	JEF-2.2	T=900K njoy94.66mm_8	jul97/IKE		mat9352
94238.24c	236.005	7.75560E-08	07/11/97	90658	
94-Pu-238	JEF-2.2	T=900K njoy94.66mm_8	jul97/IKE		mat9434
94239.24c	236.999	7.75560E-08	07/11/97	288681	
94-Pu-239	JEF-2.2	T=900K njoy94.66mm_8	jul97/IKE		mat9437
94240.24c	237.992	7.75560E-08	07/11/97	253913	
94-Pu-240	JEF-2.2	T=900K njoy94.66mm_8	jul97/IKE		mat9440
94241.24c	238.986	7.75560E-08	07/11/97	118969	
94-Pu-241	JEF-2.2	T=900K njoy94.66mm_8	jul97/IKE		mat9443
94242.24c	239.979	7.75560E-08	07/11/97	178985	
94-Pu-242	JEF-2.2	T=900K njoy94.66mm_8	jul97/IKE		mat9446
95241.24c	238.986	7.75560E-08	07/11/97	112367	
95-Am-241	JEF-2.2	T=900K njoy94.66mm_8	jul97/IKE		mat9543
95242.24c	239.981	7.75560E-08	07/11/97	16712	
95-Am-242	JEF-2.2	T=900K njoy94.66mm_8	jul97/IKE		mat9546
95242.94c	239.981	7.75560E-08	07/11/97	12103	
95-Am-242m	JEF-2.2	T=900K njoy94.66mm_8	jul97/IKE		mat9547
95243.24c	240.973	7.75560E-08	07/11/97	155159	
95-Am-243	JEF-2.2	T=900K njoy94.66mm_8	jul97/IKE		mat9549
96242.64c	239.979	7.75560E-08	07/11/97	46855	
96-Cm-242	ENDF/B-VIrel4	T=900K njoy94.66mm_8	jul97/IKE		mat9631

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Task:	2.1.2	Document type: Deliverable	

96243.64c	240.973	7.75560E-08	07/11/97	23545	
96-Cm-243	ENDF/B-VIrel4	T=900K njoy94.66mm_8	jul97/IKE		mat9634
96244.64c	241.966	7.75560E-08	07/11/97	109697	
96-Cm-244	ENDF/B-VIrel4	T=900K njoy94.66mm_8	jul97/IKE		mat9637
96245.64c	242.960	7.75560E-08	07/11/97	38597	
96-Cm-245	ENDF/B-VIrel4	T=900K njoy94.66mm_8	jul97/IKE		mat9640
54135.25c	133.748	1.03410E-07	07/11/97	6406	
54-Xe-135	JEF-2.2	T=1200K njoy94.66mm_8	jul97/IKE		mat5458
62149.25c	147.638	1.03410E-07	07/11/97	59821	
62-Sm-149	JEF-2.2	T=1200K njoy94.66mm_8	jul97/IKE		mat6240
64152.65c	150.615	1.03410E-07	07/14/97	349738	
64-Gd-152	ENDF/B-VIrel4	T=1200K njoy94.66mm_8	jul97/IKE		mat6425
64154.25c	152.599	1.03410E-07	07/11/97	50939	
64-Gd-154	JEF-2.2	T=1200K njoy94.66mm_8	jul97/IKE		mat6431
64155.25c	153.592	1.03410E-07	07/11/97	98382	
64-Gd-155	JEF-2.2	T=1200K njoy94.66mm_8	jul97/IKE		mat6434
64156.25c	154.583	1.03410E-07	07/11/97	101990	
64-Gd-156	JEF-2.2	T=1200K njoy94.66mm_8	jul97/IKE		mat6437
64157.25c	155.576	1.03410E-07	07/11/97	84352	
64-Gd-157	JEF-2.2	T=1200K njoy94.66mm_8	jul97/IKE		mat6440
64158.25c	156.568	1.03410E-07	07/11/97	182913	
64-Gd-158	JEF-2.2	T=1200K njoy94.66mm_8	jul97/IKE		mat6443
64160.25c	158.553	1.03410E-07	07/11/97	66248	
64-Gd-160	JEF-2.2	T=1200K njoy94.66mm_8	jul97/IKE		mat6449
92234.25c	232.030	1.03410E-07	07/03/97	215663	
92-U-234	JEF-2.2	T=1200K njoy94.66mm_8	jul97/IKE		mat9225
92235.25c	233.025	1.03410E-07	07/08/97	392204	
92-U-235	JEF-2.2	T=1200K njoy94.66mm_8	jul97/IKE		mat9228
92236.25c	234.018	1.03410E-07	07/03/97	258492	
92-U-236	JEF-2.2	T=1200K njoy94.66mm_8	jul97/IKE		mat9231
92237.25c	235.012	1.03410E-07	07/03/97	68351	
92-U-237	JEF-2.2	T=1200K njoy94.66mm_8	jul97/IKE		mat9234
92238.25c	236.006	1.03410E-07	07/08/97	948929	
92-U-238	JEF-2.2	T=1200K njoy94.66mm_8	jul97/IKE		mat9237
93237.25c	235.012	1.03410E-07	07/11/97	106123	
93-Np-237	JEF-2.2	T=1200K njoy94.66mm_8	jul97/IKE		mat9346
93238.25c	236.006	1.03410E-07	07/11/97	34169	
93-Np-238	JEF-2.2	T=1200K njoy94.66mm_8	jul97/IKE		mat9349
93239.25c	236.999	1.03410E-07	07/11/97	13494	

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Task:	2.1.2	Document type: Deliverable	

93-Np-239	JEF-2.2	T=1200K	njoy94.66mm_8	jul97/IKE		mat9352
94238.25c		236.005	1.03410E-07	07/11/97	87610	
94-Pu-238	JEF-2.2	T=1200K	njoy94.66mm_8	jul97/IKE		mat9434
94239.25c		236.999	1.03410E-07	07/11/97	261265	
94-Pu-239	JEF-2.2	T=1200K	njoy94.66mm_8	jul97/IKE		mat9437
94240.25c		237.992	1.03410E-07	07/11/97	238889	
94-Pu-240	JEF-2.2	T=1200K	njoy94.66mm_8	jul97/IKE		mat9440
94241.25c		238.986	1.03410E-07	07/11/97	109449	
94-Pu-241	JEF-2.2	T=1200K	njoy94.66mm_8	jul97/IKE		mat9443
94242.25c		239.979	1.03410E-07	07/11/97	170729	
94-Pu-242	JEF-2.2	T=1200K	njoy94.66mm_8	jul97/IKE		mat9446
95241.25c		238.986	1.03410E-07	07/11/97	101063	
95-Am-241	JEF-2.2	T=1200K	njoy94.66mm_8	jul97/IKE		mat9543
95242.25c		239.981	1.03410E-07	07/11/97	16680	
95-Am-242	JEF-2.2	T=1200K	njoy94.66mm_8	jul97/IKE		mat9546
95242.95c		239.981	1.03410E-07	07/11/97	11735	
95-Am-242m	JEF-2.2	T=1200K	njoy94.66mm_8	jul97/IKE		mat9547
95243.25c		240.973	1.03410E-07	07/11/97	137303	
95-Am-243	JEF-2.2	T=1200K	njoy94.66mm_8	jul97/IKE		mat9549
96242.65c		239.979	1.03410E-07	07/11/97	45532	
96-Cm-242	ENDF/B-VIrel4	T=1200K	njoy94.66mm_8	jul97/IKE		mat9631
96243.65c		240.973	1.03410E-07	07/11/97	23203	
96-Cm-243	ENDF/B-VIrel4	T=1200K	njoy94.66mm_8	jul97/IKE		mat9634
96244.65c		241.966	1.03410E-07	07/11/97	105791	
96-Cm-244	ENDF/B-VIrel4	T=1200K	njoy94.66mm_8	jul97/IKE		mat9637
96245.65c		242.960	1.03410E-07	07/11/97	37724	
96-Cm-245	ENDF/B-VIrel4	T=1200K	njoy94.66mm_8	jul97/IKE		mat9640
54135.26c		133.748	1.29260E-07	07/11/97	6392	
54-Xe-135	JEF-2.2	T=1500K	njoy94.66mm_8	jul97/IKE		mat5458
62149.26c		147.638	1.29260E-07	07/11/97	56860	
62-Sm-149	JEF-2.2	T=1500K	njoy94.66mm_8	jul97/IKE		mat6240
64152.66c		150.615	1.29260E-07	07/14/97	340468	
64-Gd-152	ENDF/B-VIrel4	T=1500K	njoy94.66mm_8	jul97/IKE		mat6425
64154.26c		152.599	1.29260E-07	07/11/97	49814	
64-Gd-154	JEF-2.2	T=1500K	njoy94.66mm_8	jul97/IKE		mat6431
64155.26c		153.592	1.29260E-07	07/11/97	92721	
64-Gd-155	JEF-2.2	T=1500K	njoy94.66mm_8	jul97/IKE		mat6434
64156.26c		154.583	1.29260E-07	07/11/97	99029	
64-Gd-156	JEF-2.2	T=1500K	njoy94.66mm_8	jul97/IKE		mat6437

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Task:	2.1.2	Document type: Deliverable	

64157.26c	155.576	1.29260E-07	07/11/97	80932	
64-Gd-157	JEF-2.2	T=1500K njoy94.66mm_8	jul97/IKE		mat6440
64158.26c	156.568	1.29260E-07	07/11/97	177918	
64-Gd-158	JEF-2.2	T=1500K njoy94.66mm_8	jul97/IKE		mat6443
64160.26c	158.553	1.29260E-07	07/11/97	65249	
64-Gd-160	JEF-2.2	T=1500K njoy94.66mm_8	jul97/IKE		mat6449
92234.26c	232.030	1.29260E-07	07/03/97	207807	
92-U-234	JEF-2.2	T=1500K njoy94.66mm_8	jul97/IKE		mat9225
92235.26c	233.025	1.29260E-07	07/08/97	356816	
92-U-235	JEF-2.2	T=1500K njoy94.66mm_8	jul97/IKE		mat9228
92236.26c	234.018	1.29260E-07	07/03/97	248092	
92-U-236	JEF-2.2	T=1500K njoy94.66mm_8	jul97/IKE		mat9231
92237.26c	235.012	1.29260E-07	07/03/97	66488	
92-U-237	JEF-2.2	T=1500K njoy94.66mm_8	jul97/IKE		mat9234
92238.26c	236.006	1.29260E-07	07/08/97	854897	
92-U-238	JEF-2.2	T=1500K njoy94.66mm_8	jul97/IKE		mat9237
93237.26c	235.012	1.29260E-07	07/11/97	98459	
93-Np-237	JEF-2.2	T=1500K njoy94.66mm_8	jul97/IKE		mat9346
93238.26c	236.006	1.29260E-07	07/11/97	31697	
93-Np-238	JEF-2.2	T=1500K njoy94.66mm_8	jul97/IKE		mat9349
93239.26c	236.999	1.29260E-07	07/11/97	13629	
93-Np-239	JEF-2.2	T=1500K njoy94.66mm_8	jul97/IKE		mat9352
94238.26c	236.005	1.29260E-07	07/11/97	85386	
94-Pu-238	JEF-2.2	T=1500K njoy94.66mm_8	jul97/IKE		mat9434
94239.26c	236.999	1.29260E-07	07/11/97	240993	
94-Pu-239	JEF-2.2	T=1500K njoy94.66mm_8	jul97/IKE		mat9437
94240.26c	237.992	1.29260E-07	07/11/97	228481	
94-Pu-240	JEF-2.2	T=1500K njoy94.66mm_8	jul97/IKE		mat9440
94241.26c	238.986	1.29260E-07	07/11/97	102537	
94-Pu-241	JEF-2.2	T=1500K njoy94.66mm_8	jul97/IKE		mat9443
94242.26c	239.979	1.29260E-07	07/11/97	166241	
94-Pu-242	JEF-2.2	T=1500K njoy94.66mm_8	jul97/IKE		mat9446
95241.26c	238.986	1.29260E-07	07/11/97	92223	
95-Am-241	JEF-2.2	T=1500K njoy94.66mm_8	jul97/IKE		mat9543
95242.26c	239.981	1.29260E-07	07/11/97	16664	
95-Am-242	JEF-2.2	T=1500K njoy94.66mm_8	jul97/IKE		mat9546
95242.96c	239.981	1.29260E-07	07/11/97	11447	
95-Am-242m	JEF-2.2	T=1500K njoy94.66mm_8	jul97/IKE		mat9547

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Task:	2.1.2	Document type: Deliverable	

95243.26c	240.973	1.29260E-07	07/11/97	124551	
95-Am-243	JEF-2.2	T=1500K njoy94.66mm_8	jul97/IKE		mat9549
96242.66c	239.979	1.29260E-07	07/11/97	44632	
96-Cm-242	ENDF/B-VIrel4	T=1500K njoy94.66mm_8	jul97/IKE		mat9631
96243.66c	240.973	1.29260E-07	07/11/97	22834	
96-Cm-243	ENDF/B-VIrel4	T=1500K njoy94.66mm_8	jul97/IKE		mat9634
96244.66c	241.966	1.29260E-07	07/11/97	103082	
96-Cm-244	ENDF/B-VIrel4	T=1500K njoy94.66mm_8	jul97/IKE		mat9637
96245.66c	242.960	1.29260E-07	07/11/97	36842	
96-Cm-245	ENDF/B-VIrel4	T=1500K njoy94.66mm_8	jul97/IKE		mat9640
54135.27c	133.748	1.72350E-07	07/11/97	6406	
54-Xe-135	JEF-2.2	T=2000K njoy94.66mm_8	jul97/IKE		mat5458
62149.27c	147.638	1.72350E-07	07/11/97	52604	
62-Sm-149	JEF-2.2	T=2000K njoy94.66mm_8	jul97/IKE		mat6240
64152.67c	150.615	1.72350E-07	07/14/97	326095	
64-Gd-152	ENDF/B-VIrel4	T=2000K njoy94.66mm_8	jul97/IKE		mat6425
64154.27c	152.599	1.72350E-07	07/11/97	48050	
64-Gd-154	JEF-2.2	T=2000K njoy94.66mm_8	jul97/IKE		mat6431
64155.27c	153.592	1.72350E-07	07/11/97	86655	
64-Gd-155	JEF-2.2	T=2000K njoy94.66mm_8	jul97/IKE		mat6434
64156.27c	154.583	1.72350E-07	07/11/97	96635	
64-Gd-156	JEF-2.2	T=2000K njoy94.66mm_8	jul97/IKE		mat6437
64157.27c	155.576	1.72350E-07	07/11/97	77008	
64-Gd-157	JEF-2.2	T=2000K njoy94.66mm_8	jul97/IKE		mat6440
64158.27c	156.568	1.72350E-07	07/11/97	172194	
64-Gd-158	JEF-2.2	T=2000K njoy94.66mm_8	jul97/IKE		mat6443
64160.27c	158.553	1.72350E-07	07/11/97	64070	
64-Gd-160	JEF-2.2	T=2000K njoy94.66mm_8	jul97/IKE		mat6449
92234.27c	232.030	1.72350E-07	07/03/97	196879	
92-U-234	JEF-2.2	T=2000K njoy94.66mm_8	jul97/IKE		mat9225
92235.27c	233.025	1.72350E-07	07/08/97	317081	
92-U-235	JEF-2.2	T=2000K njoy94.66mm_8	jul97/IKE		mat9228
92236.27c	234.018	1.72350E-07	07/03/97	234884	
92-U-236	JEF-2.2	T=2000K njoy94.66mm_8	jul97/IKE		mat9231
92237.27c	235.012	1.72350E-07	07/03/97	64139	
92-U-237	JEF-2.2	T=2000K njoy94.66mm_8	jul97/IKE		mat9234
92238.27c	236.006	1.72350E-07	07/08/97	745727	
92-U-238	JEF-2.2	T=2000K njoy94.66mm_8	jul97/IKE		mat9237
93237.27c	235.012	1.72350E-07	07/11/97	88363	

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Task:	2.1.2	Document type: Deliverable	

93-Np-237	JEF-2.2	T=2000K	njoy94.66mm_8	jul97/IKE		mat9346
93238.27c		236.006	1.72350E-07	07/11/97	28273	
93-Np-238	JEF-2.2	T=2000K	njoy94.66mm_8	jul97/IKE		mat9349
93239.27c		236.999	1.72350E-07	07/11/97	13653	
93-Np-239	JEF-2.2	T=2000K	njoy94.66mm_8	jul97/IKE		mat9352
94238.27c		236.005	1.72350E-07	07/11/97	82578	
94-Pu-238	JEF-2.2	T=2000K	njoy94.66mm_8	jul97/IKE		mat9434
94239.27c		236.999	1.72350E-07	07/11/97	218073	
94-Pu-239	JEF-2.2	T=2000K	njoy94.66mm_8	jul97/IKE		mat9437
94240.27c		237.992	1.72350E-07	07/11/97	215425	
94-Pu-240	JEF-2.2	T=2000K	njoy94.66mm_8	jul97/IKE		mat9440
94241.27c		238.986	1.72350E-07	07/11/97	93529	
94-Pu-241	JEF-2.2	T=2000K	njoy94.66mm_8	jul97/IKE		mat9443
94242.27c		239.979	1.72350E-07	07/11/97	160633	
94-Pu-242	JEF-2.2	T=2000K	njoy94.66mm_8	jul97/IKE		mat9446
95241.27c		238.986	1.72350E-07	07/11/97	81607	
95-Am-241	JEF-2.2	T=2000K	njoy94.66mm_8	jul97/IKE		mat9543
95242.27c		239.981	1.72350E-07	07/11/97	16696	
95-Am-242	JEF-2.2	T=2000K	njoy94.66mm_8	jul97/IKE		mat9546
95242.97c		239.981	1.72350E-07	07/11/97	10959	
95-Am-242m	JEF-2.2	T=2000K	njoy94.66mm_8	jul97/IKE		mat9547
95243.27c		240.973	1.72350E-07	07/11/97	109039	
95-Am-243	JEF-2.2	T=2000K	njoy94.66mm_8	jul97/IKE		mat9549
96242.67c		239.979	1.72350E-07	07/11/97	43669	
96-Cm-242	ENDF/B-VIrel4	T=2000K	njoy94.66mm_8	jul97/IKE		mat9631
96243.67c		240.973	1.72350E-07	07/11/97	22186	
96-Cm-243	ENDF/B-VIrel4	T=2000K	njoy94.66mm_8	jul97/IKE		mat9634
96244.67c		241.966	1.72350E-07	07/11/97	98627	
96-Cm-244	ENDF/B-VIrel4	T=2000K	njoy94.66mm_8	jul97/IKE		mat9637
96245.67c		242.960	1.72350E-07	07/11/97	35483	
96-Cm-245	ENDF/B-VIrel4	T=2000K	njoy94.66mm_8	jul97/IKE		mat9640
54135.28c		133.748	2.15430E-07	07/11/97	6385	
54-Xe-135	JEF-2.2	T=2500K	njoy94.66mm_8	jul97/IKE		mat5458
62149.28c		147.638	2.15430E-07	07/11/97	49020	
62-Sm-149	JEF-2.2	T=2500K	njoy94.66mm_8	jul97/IKE		mat6240
64152.68c		150.615	2.15430E-07	07/14/97	314656	
64-Gd-152	ENDF/B-VIrel4	T=2500K	njoy94.66mm_8	jul97/IKE		mat6425
64154.28c		152.599	2.15430E-07	07/11/97	46502	

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64-Gd-154	JEF-2.2	T=2500K	njoy94.66mm_8	jul97/IKE		mat6431
64155.28c		153.592	2.15430E-07	07/11/97	82551	
64-Gd-155	JEF-2.2	T=2500K	njoy94.66mm_8	jul97/IKE		mat6434
64156.28c		154.583	2.15430E-07	07/11/97	95042	
64-Gd-156	JEF-2.2	T=2500K	njoy94.66mm_8	jul97/IKE		mat6437
64157.28c		155.576	2.15430E-07	07/11/97	74821	
64-Gd-157	JEF-2.2	T=2500K	njoy94.66mm_8	jul97/IKE		mat6440
64158.28c		156.568	2.15430E-07	07/11/97	168000	
64-Gd-158	JEF-2.2	T=2500K	njoy94.66mm_8	jul97/IKE		mat6443
64160.28c		158.553	2.15430E-07	07/11/97	62486	
64-Gd-160	JEF-2.2	T=2500K	njoy94.66mm_8	jul97/IKE		mat6449
92234.28c		232.030	2.15430E-07	07/03/97	186559	
92-U-234	JEF-2.2	T=2500K	njoy94.66mm_8	jul97/IKE		mat9225
92235.28c		233.025	2.15430E-07	07/08/97	291179	
92-U-235	JEF-2.2	T=2500K	njoy94.66mm_8	jul97/IKE		mat9228
92236.28c		234.018	2.15430E-07	07/03/97	222844	
92-U-236	JEF-2.2	T=2500K	njoy94.66mm_8	jul97/IKE		mat9231
92237.28c		235.012	2.15430E-07	07/03/97	62375	
92-U-237	JEF-2.2	T=2500K	njoy94.66mm_8	jul97/IKE		mat9234
92238.28c		236.006	2.15430E-07	07/08/97	669407	
92-U-238	JEF-2.2	T=2500K	njoy94.66mm_8	jul97/IKE		mat9237
93237.28c		235.012	2.15430E-07	07/11/97	81195	
93-Np-237	JEF-2.2	T=2500K	njoy94.66mm_8	jul97/IKE		mat9346
93238.28c		236.006	2.15430E-07	07/11/97	25297	
93-Np-238	JEF-2.2	T=2500K	njoy94.66mm_8	jul97/IKE		mat9349
93239.28c		236.999	2.15430E-07	07/11/97	13675	
93-Np-239	JEF-2.2	T=2500K	njoy94.66mm_8	jul97/IKE		mat9352
94238.28c		236.005	2.15430E-07	07/11/97	79970	
94-Pu-238	JEF-2.2	T=2500K	njoy94.66mm_8	jul97/IKE		mat9434
94239.28c		236.999	2.15430E-07	07/11/97	200921	
94-Pu-239	JEF-2.2	T=2500K	njoy94.66mm_8	jul97/IKE		mat9437
94240.28c		237.992	2.15430E-07	07/11/97	205945	
94-Pu-240	JEF-2.2	T=2500K	njoy94.66mm_8	jul97/IKE		mat9440
94241.28c		238.986	2.15430E-07	07/11/97	86769	
94-Pu-241	JEF-2.2	T=2500K	njoy94.66mm_8	jul97/IKE		mat9443
94242.28c		239.979	2.15430E-07	07/11/97	155345	
94-Pu-242	JEF-2.2	T=2500K	njoy94.66mm_8	jul97/IKE		mat9446
95241.28c		238.986	2.15430E-07	07/11/97	74015	
95-Am-241	JEF-2.2	T=2500K	njoy94.66mm_8	jul97/IKE		mat9543

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95242.28c	239.981	2.15430E-07	07/11/97	16704	
95-Am-242	JEF-2.2	T=2500K njoy94.66mm_8	jul97/IKE		mat9546
95242.98c	239.981	2.15430E-07	07/11/97	10591	
95-Am-242m	JEF-2.2	T=2500K njoy94.66mm_8	jul97/IKE		mat9547
95243.28c	240.973	2.15430E-07	07/11/97	97863	
95-Am-243	JEF-2.2	T=2500K njoy94.66mm_8	jul97/IKE		mat9549
96242.68c	239.979	2.15430E-07	07/11/97	43003	
96-Cm-242	ENDF/B-VIrel4	T=2500K njoy94.66mm_8	jul97/IKE		mat9631
96243.68c	240.973	2.15430E-07	07/11/97	21745	
96-Cm-243	ENDF/B-VIrel4	T=2500K njoy94.66mm_8	jul97/IKE		mat9634
96244.68c	241.966	2.15430E-07	07/11/97	95900	
96-Cm-244	ENDF/B-VIrel4	T=2500K njoy94.66mm_8	jul97/IKE		mat9637
96245.68c	242.960	2.15430E-07	07/11/97	34430	
96-Cm-245	ENDF/B-VIrel4	T=2500K njoy94.66mm_8	jul97/IKE		mat9640

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Table 2: Directory of MCNP cross section data sets for fission products based on JEF2.2 and ENDF/B-VI

34074.20c	73.287	2.53350E-08	11/28/97	27357	
34-Se-74	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat3425
36083.20c	82.202	2.53350E-08	11/25/97	16255	
36-Kr-83	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat3640
40091.20c	90.125	2.53350E-08	11/26/97	181796	
40-Zr-91	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4028
40093.20c	92.108	2.53350E-08	11/25/97	10092	
40-Zr-93	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4034
40095.20c	94.093	2.53350E-08	11/25/97	38497	
40-Zr-95	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4040
40096.20c	95.084	2.53350E-08	11/25/97	50821	
40-Zr-96	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4043
41095.20c	94.091	2.53350E-08	11/25/97	43307	
41-Nb-95	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4131
42095.20c	94.095	2.53350E-08	11/25/97	110717	
42-Mo-95	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4234
42097.20c	96.078	2.53350E-08	11/25/97	125215	
42-Mo-97	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4240
42098.20c	97.064	2.53350E-08	11/25/97	142797	
42-Mo-98	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4243
42099.20c	98.058	2.53350E-08	11/25/97	6552	
42-Mo-99	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4246
42100.20c	99.049	2.53350E-08	11/25/97	191627	
42-Mo-100	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4249
43099.20c	98.057	2.53350E-08	11/25/97	136752	
43-Tc-99	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4331
44100.20c	99.046	2.53350E-08	11/25/97	8996	
44-Ru-100	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4437
44101.20c	100.039	2.53350E-08	11/25/97	78123	
44-Ru-101	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4440
44102.20c	101.029	2.53350E-08	11/25/97	17149	
44-Ru-102	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4443
44103.20c	102.022	2.53350E-08	11/25/97	32485	
44-Ru-103	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4446
44104.20c	103.013	2.53350E-08	11/25/97	38049	
44-Ru-104	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4449
44106.20c	104.998	2.53350E-08	11/25/97	6732	
44-Ru-106	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4455

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45103.20c	102.021	2.53350E-08	11/24/97	192194	
45-Rh-103	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4525
45105.20c	104.005	2.53350E-08	11/24/97	4836	
45-Rh-105	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4531
46104.20c	103.011	2.53350E-08	11/24/97	88382	
46-Pd-104	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4631
46105.20c	104.000	2.53350E-08	11/26/97	259721	
46-Pd-105	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4634
46106.20c	104.994	2.53350E-08	11/24/97	107069	
46-Pd-106	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4637
46107.20c	105.987	2.53350E-08	11/24/97	59588	
46-Pd-107	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4640
46108.20c	106.977	2.53350E-08	11/24/97	116779	
46-Pd-108	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4643
47107.20c	105.987	2.53350E-08	1/19/98	97744	
47-Ag-107	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4725
47109.20c	107.969	2.53350E-08	11/24/97	103446	
47-Ag-109	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4731
47110.90c	108.962	2.53350E-08	3/14/98	122446	
47-Ag-110m	JENDL-3.2	T=293.6K njoy94.105sun	mar98/IKE		mat4735
48110.20c	108.959	2.53350E-08	11/24/97	136503	
48-Cd-110	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4837
48111.20c	109.952	2.53350E-08	11/24/97	210746	
48-Cd-111	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4840
48112.20c	110.942	2.53350E-08	1/19/98	207541	
48-Cd-112	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4843
48113.20c	111.930	2.53350E-08	11/25/97	41766	
48-Cd-113	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4846
48114.20c	112.925	2.53350E-08	1/16/98	113061	
48-Cd-114	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4849
48116.20c	114.909	2.53350E-08	1/16/98	52220	
48-Cd-116	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4855
49113.20c	111.934	2.53350E-08	1/16/98	49673	
49-In-113	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4925
49115.20c	113.917	2.53350E-08	11/26/97	230513	
49-In-115	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat4931
52132.20c	130.775	2.53350E-08	11/24/97	6741	
52-Te-132	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat5261
53127.20c	125.814	2.53350E-08	11/25/97	248257	

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53-I-127	JEF-2.2	T=293.6K njoy94.105sun nov97/IKE	mat5325
53129.20c	127.798	2.53350E-08 11/25/97	210439
53-I-129	JEF-2.2	T=293.6K njoy94.105sun nov97/IKE	mat5331
53131.20c	129.782	2.53350E-08 11/24/97	7269
53-I-131	JEF-2.2	T=293.6K njoy94.105sun nov97/IKE	mat5337
53135.20c	133.751	2.53350E-08 11/24/97	3535
53-I-135	JEF-2.2	T=293.6K njoy94.105sun nov97/IKE	mat5349
54131.20c	129.781	2.53350E-08 11/24/97	83736
54-Xe-131	JEF-2.2	T=293.6K njoy94.105sun nov97/IKE	mat5446
54132.20c	130.771	2.53350E-08 11/24/97	26228
54-Xe-132	JEF-2.2	T=293.6K njoy94.105sun nov97/IKE	mat5449
54133.20c	131.764	2.53350E-08 11/24/97	5483
54-Xe-133	JEF-2.2	T=293.6K njoy94.105sun nov97/IKE	mat5452
54134.20c	132.755	2.53350E-08 11/24/97	12756
54-Xe-134	JEF-2.2	T=293.6K njoy94.105sun nov97/IKE	mat5455
54135.20c	133.748	2.53350E-08 11/24/97	6350
54-Xe-135	JEF-2.2	T=293.6K njoy94.105sun nov97/IKE	mat5458
55133.20c	131.762	2.53350E-08 11/24/97	264654
55-Cs-133	JEF-2.2	T=293.6K njoy94.105sun nov97/IKE	mat5525
55134.20c	132.757	2.53350E-08 11/24/97	20342
55-Cs-134	JEF-2.2	T=293.6K njoy94.105sun nov97/IKE	mat5528
55135.20c	133.750	2.53350E-08 11/24/97	27933
55-Cs-135	JEF-2.2	T=293.6K njoy94.105sun nov97/IKE	mat5531
57139.20c	137.713	2.53350E-08 11/25/97	193248
57-La-139	JEF-2.2	T=293.6K njoy94.105sun nov97/IKE	mat5728
58140.20c	138.704	2.53350E-08 1/19/98	54128
58-Ce-140	JEF-2.2	T=293.6K njoy94.105sun nov97/IKE	mat5837
58141.20c	139.698	2.53350E-08 11/24/97	41438
58-Ce-141	JEF-2.2	T=293.6K njoy94.105sun nov97/IKE	mat5840
58142.20c	140.690	2.53350E-08 11/24/97	20779
58-Ce-142	JEF-2.2	T=293.6K njoy94.105sun nov97/IKE	mat5843
58143.20c	141.685	2.53350E-08 11/24/97	5859
58-Ce-143	JEF-2.2	T=293.6K njoy94.105sun nov97/IKE	mat5846
58144.20c	142.677	2.53350E-08 11/24/97	57783
58-Ce-144	JEF-2.2	T=293.6K njoy94.105sun nov97/IKE	mat5849
59141.20c	139.698	2.53350E-08 11/24/97	181015
59-Pr-141	JEF-2.2	T=293.6K njoy94.105sun nov97/IKE	mat5925
59143.20c	141.683	2.53350E-08 11/24/97	6749
59-Pr-143	JEF-2.2	T=293.6K njoy94.105sun nov97/IKE	mat5931
60142.20c	140.689	2.53350E-08 11/23/97	125611

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60-Nd-142	JEF-2.2	T=293.6K	njoy94.105sun	nov97/IKE		mat6025
60143.20c		141.680	2.53350E-08	11/23/97	215674	
60-Nd-143	JEF-2.2	T=293.6K	njoy94.105sun	nov97/IKE		mat6028
60144.20c		142.674	2.53350E-08	11/23/97	115681	
60-Nd-144	JEF-2.2	T=293.6K	njoy94.105sun	nov97/IKE		mat6031
60145.20c		143.668	2.53350E-08	11/23/97	179916	
60-Nd-145	JEF-2.2	T=293.6K	njoy94.105sun	nov97/IKE		mat6034
60146.20c		144.660	2.53350E-08	11/23/97	169762	
60-Nd-146	JEF-2.2	T=293.6K	njoy94.105sun	nov97/IKE		mat6037
60147.20c		145.654	2.53350E-08	11/24/97	17987	
60-Nd-147	JEF-2.2	T=293.6K	njoy94.105sun	nov97/IKE		mat6040
60148.20c		146.646	2.53350E-08	11/24/97	207239	
60-Nd-148	JEF-2.2	T=293.6K	njoy94.105sun	nov97/IKE		mat6043
60150.20c		148.633	2.53350E-08	11/24/97	126486	
60-Nd-150	JEF-2.2	T=293.6K	njoy94.105sun	nov97/IKE		mat6049
61147.20c		145.653	2.53350E-08	11/23/97	64582	
61-Pm-147	JEF-2.2	T=293.6K	njoy94.105sun	nov97/IKE		mat6149
61148.20c		146.647	2.53350E-08	11/23/97	4413	
61-Pm-148	JEF-2.2	T=293.6K	njoy94.105sun	nov97/IKE		mat6152
61148.90c		146.647	2.53350E-08	11/23/97	4833	
61-Pm-148m	JEF-2.2	T=293.6K	njoy94.105sun	nov97/IKE		mat6153
61149.20c		147.639	2.53350E-08	11/23/97	7250	
61-Pm-149	JEF-2.2	T=293.6K	njoy94.105sun	nov97/IKE		mat6155
62147.20c		145.653	2.53350E-08	11/23/97	159814	
62-Sm-147	JEF-2.2	T=293.6K	njoy94.105sun	nov97/IKE		mat6234
62148.20c		146.644	2.53350E-08	11/23/97	9069	
62-Sm-148	JEF-2.2	T=293.6K	njoy94.105sun	nov97/IKE		mat6237
62149.20c		147.638	2.53350E-08	11/23/97	78630	
62-Sm-149	JEF-2.2	T=293.6K	njoy94.105sun	nov97/IKE		mat6240
62150.20c		148.629	2.53350E-08	11/24/97	52024	
62-Sm-150	JEF-2.2	T=293.6K	njoy94.105sun	nov97/IKE		mat6243
62151.20c		149.620	2.53350E-08	11/24/97	137619	
62-Sm-151	JEF-2.2	T=293.6K	njoy94.105sun	nov97/IKE		mat6246
62152.20c		150.615	2.53350E-08	11/24/97	169457	
62-Sm-152	JEF-2.2	T=293.6K	njoy94.105sun	nov97/IKE		mat6249
62153.20c		151.608	2.53350E-08	11/24/97	11983	
62-Sm-153	JEF-2.2	T=293.6K	njoy94.105sun	nov97/IKE		mat6252
62154.20c		152.600	2.53350E-08	11/24/97	102852	
62-Sm-154	JEF-2.2	T=293.6K	njoy94.105sun	nov97/IKE		mat6255

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63153.20c	151.607	2.53350E-08	11/23/97	119097	
63-Eu-153	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat6331
63154.20c	152.600	2.53350E-08	11/23/97	81307	
63-Eu-154	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat6334
63155.20c	153.592	2.53350E-08	11/23/97	13519	
63-Eu-155	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat6337
63156.20c	154.585	2.53350E-08	11/23/97	9116	
63-Eu-156	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat6340
63157.20c	155.577	2.53350E-08	11/23/97	3918	
63-Eu-157	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat6343
65159.20c	157.560	2.53350E-08	12/ 1/97	54528	
65-Tb-159	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat6525
65160.20c	158.553	2.53350E-08	12/ 1/97	4112	
65-Tb-160	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat6528
66160.20c	158.551	2.53350E-08	11/23/97	14504	
66-Dy-160	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat6637
66161.20c	159.545	2.53350E-08	11/23/97	36895	
66-Dy-161	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat6640
66162.20c	160.536	2.53350E-08	11/23/97	27136	
66-Dy-162	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat6643
66163.20c	161.529	2.53350E-08	11/23/97	93455	
66-Dy-163	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat6646
66164.20c	162.520	2.53350E-08	11/23/97	16084	
66-Dy-164	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat6649
67165.20c	163.514	2.53350E-08	11/23/97	48756	
67-Ho-165	JEF-2.2	T=293.6K njoy94.105sun	nov97/IKE		mat6725
34074.21c	73.287	4.30870E-08	11/28/97	26587	
34-Se-74	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat3425
36083.21c	82.202	4.30870E-08	11/25/97	16143	
36-Kr-83	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat3640
40091.21c	90.125	4.30870E-08	11/26/97	175276	
40-Zr-91	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat4028
40093.21c	92.108	4.30870E-08	11/25/97	10092	
40-Zr-93	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat4034
40095.21c	94.093	4.30870E-08	11/25/97	38042	
40-Zr-95	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat4040
40096.21c	95.084	4.30870E-08	11/25/97	50205	
40-Zr-96	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat4043
41095.21c	94.091	4.30870E-08	11/25/97	41823	

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41-Nb-95	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat4131
42095.21c		94.095	4.30870E-08	11/25/97	105089	
42-Mo-95	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat4234
42097.21c		96.078	4.30870E-08	11/25/97	117753	
42-Mo-97	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat4240
42098.21c		97.064	4.30870E-08	11/25/97	138366	
42-Mo-98	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat4243
42099.21c		98.058	4.30870E-08	11/25/97	6517	
42-Mo-99	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat4246
42100.21c		99.049	4.30870E-08	11/25/97	183738	
42-Mo-100	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat4249
43099.21c		98.057	4.30870E-08	11/25/97	128828	
43-Tc-99	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat4331
44100.21c		99.046	4.30870E-08	11/25/97	8877	
44-Ru-100	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat4437
44101.21c		100.039	4.30870E-08	11/25/97	74630	
44-Ru-101	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat4440
44102.21c		101.029	4.30870E-08	11/25/97	16820	
44-Ru-102	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat4443
44103.21c		102.022	4.30870E-08	11/25/97	31645	
44-Ru-103	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat4446
44104.21c		103.013	4.30870E-08	11/25/97	36591	
44-Ru-104	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat4449
44106.21c		104.998	4.30870E-08	11/25/97	6823	
44-Ru-106	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat4455
45103.21c		102.021	4.30870E-08	11/24/97	177655	
45-Rh-103	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat4525
45105.21c		104.005	4.30870E-08	11/24/97	4920	
45-Rh-105	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat4531
46104.21c		103.011	4.30870E-08	11/24/97	84413	
46-Pd-104	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat4631
46105.21c		104.000	4.30870E-08	11/26/97	236845	
46-Pd-105	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat4634
46106.21c		104.994	4.30870E-08	11/24/97	102792	
46-Pd-106	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat4637
46107.21c		105.987	4.30870E-08	11/24/97	56480	
46-Pd-107	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat4640
46108.21c		106.977	4.30870E-08	11/24/97	111910	
46-Pd-108	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat4643
47107.21c		105.987	4.30870E-08	1/19/98	92753	

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47-Ag-107	JEF-2.2	T=500K njoy94.105sun	nov97/IKE	mat4725
47109.21c	107.969	4.30870E-08	11/24/97	98546
47-Ag-109	JEF-2.2	T=500K njoy94.105sun	nov97/IKE	mat4731
47110.91c	108.962	4.30870E-08	3/14/98	122460
47-Ag-110m	JENDL-3.2	T=500K njoy94.105sun	mar98/IKE	mat4735
48110.21c	108.959	4.30870E-08	11/24/97	128502
48-Cd-110	JEF-2.2	T=500K njoy94.105sun	nov97/IKE	mat4837
48111.21c	109.952	4.30870E-08	11/24/97	195626
48-Cd-111	JEF-2.2	T=500K njoy94.105sun	nov97/IKE	mat4840
48112.21c	110.942	4.30870E-08	1/19/98	195693
48-Cd-112	JEF-2.2	T=500K njoy94.105sun	nov97/IKE	mat4843
48113.21c	111.930	4.30870E-08	11/25/97	40828
48-Cd-113	JEF-2.2	T=500K njoy94.105sun	nov97/IKE	mat4846
48114.21c	112.925	4.30870E-08	1/16/98	108518
48-Cd-114	JEF-2.2	T=500K njoy94.105sun	nov97/IKE	mat4849
48116.21c	114.909	4.30870E-08	1/16/98	50269
48-Cd-116	JEF-2.2	T=500K njoy94.105sun	nov97/IKE	mat4855
49113.21c	111.934	4.30870E-08	1/16/98	47587
49-In-113	JEF-2.2	T=500K njoy94.105sun	nov97/IKE	mat4925
49115.21c	113.917	4.30870E-08	11/26/97	210185
49-In-115	JEF-2.2	T=500K njoy94.105sun	nov97/IKE	mat4931
52132.21c	130.775	4.30870E-08	11/24/97	6851
52-Te-132	JEF-2.2	T=500K njoy94.105sun	nov97/IKE	mat5261
53127.21c	125.814	4.30870E-08	11/25/97	227012
53-I-127	JEF-2.2	T=500K njoy94.105sun	nov97/IKE	mat5325
53129.21c	127.798	4.30870E-08	11/25/97	195795
53-I-129	JEF-2.2	T=500K njoy94.105sun	nov97/IKE	mat5331
53131.21c	129.782	4.30870E-08	11/24/97	7251
53-I-131	JEF-2.2	T=500K njoy94.105sun	nov97/IKE	mat5337
53135.21c	133.751	4.30870E-08	11/24/97	3535
53-I-135	JEF-2.2	T=500K njoy94.105sun	nov97/IKE	mat5349
54131.21c	129.781	4.30870E-08	11/24/97	81874
54-Xe-131	JEF-2.2	T=500K njoy94.105sun	nov97/IKE	mat5446
54132.21c	130.771	4.30870E-08	11/24/97	25899
54-Xe-132	JEF-2.2	T=500K njoy94.105sun	nov97/IKE	mat5449
54133.21c	131.764	4.30870E-08	11/24/97	5525
54-Xe-133	JEF-2.2	T=500K njoy94.105sun	nov97/IKE	mat5452
54134.21c	132.755	4.30870E-08	11/24/97	12693
54-Xe-134	JEF-2.2	T=500K njoy94.105sun	nov97/IKE	mat5455

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54135.21c	133.748	4.30870E-08	11/24/97	6364	
54-Xe-135	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat5458
55133.21c	131.762	4.30870E-08	11/24/97	247805	
55-Cs-133	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat5525
55134.21c	132.757	4.30870E-08	11/24/97	19845	
55-Cs-134	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat5528
55135.21c	133.750	4.30870E-08	11/24/97	27464	
55-Cs-135	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat5531
57139.21c	137.713	4.30870E-08	11/25/97	185646	
57-La-139	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat5728
58140.21c	138.704	4.30870E-08	1/19/98	52886	
58-Ce-140	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat5837
58141.21c	139.698	4.30870E-08	11/24/97	40738	
58-Ce-141	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat5840
58142.21c	140.690	4.30870E-08	11/24/97	20824	
58-Ce-142	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat5843
58143.21c	141.685	4.30870E-08	11/24/97	5880	
58-Ce-143	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat5846
58144.21c	142.677	4.30870E-08	11/24/97	57672	
58-Ce-144	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat5849
59141.21c	139.698	4.30870E-08	11/24/97	172783	
59-Pr-141	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat5925
59143.21c	141.683	4.30870E-08	11/24/97	6686	
59-Pr-143	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat5931
60142.21c	140.689	4.30870E-08	11/23/97	121804	
60-Nd-142	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat6025
60143.21c	141.680	4.30870E-08	11/23/97	203270	
60-Nd-143	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat6028
60144.21c	142.674	4.30870E-08	11/23/97	111159	
60-Nd-144	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat6031
60145.21c	143.668	4.30870E-08	11/23/97	169773	
60-Nd-145	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat6034
60146.21c	144.660	4.30870E-08	11/23/97	164036	
60-Nd-146	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat6037
60147.21c	145.654	4.30870E-08	11/24/97	17546	
60-Nd-147	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat6040
60148.21c	146.646	4.30870E-08	11/24/97	196753	
60-Nd-148	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat6043
60150.21c	148.633	4.30870E-08	11/24/97	121446	

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60-Nd-150	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat6049
61147.21c		145.653	4.30870E-08	11/23/97	61054	
61-Pm-147	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat6149
61148.21c		146.647	4.30870E-08	11/23/97	4427	
61-Pm-148	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat6152
61148.91c		146.647	4.30870E-08	11/23/97	4798	
61-Pm-148m	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat6153
61149.21c		147.639	4.30870E-08	11/23/97	7411	
61-Pm-149	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat6155
62147.21c		145.653	4.30870E-08	11/23/97	146556	
62-Sm-147	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat6234
62148.21c		146.644	4.30870E-08	11/23/97	8950	
62-Sm-148	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat6237
62149.21c		147.638	4.30870E-08	11/23/97	72036	
62-Sm-149	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat6240
62150.21c		148.629	4.30870E-08	11/24/97	49945	
62-Sm-150	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat6243
62151.21c		149.620	4.30870E-08	11/24/97	123682	
62-Sm-151	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat6246
62152.21c		150.615	4.30870E-08	11/24/97	160133	
62-Sm-152	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat6249
62153.21c		151.608	4.30870E-08	11/24/97	12208	
62-Sm-153	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat6252
62154.21c		152.600	4.30870E-08	11/24/97	98569	
62-Sm-154	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat6255
63153.21c		151.607	4.30870E-08	11/23/97	108900	
63-Eu-153	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat6331
63154.21c		152.600	4.30870E-08	11/23/97	73333	
63-Eu-154	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat6334
63155.21c		153.592	4.30870E-08	11/23/97	13448	
63-Eu-155	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat6337
63156.21c		154.585	4.30870E-08	11/23/97	9147	
63-Eu-156	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat6340
63157.21c		155.577	4.30870E-08	11/23/97	3932	
63-Eu-157	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat6343
65159.21c		157.560	4.30870E-08	12/ 1/97	51735	
65-Tb-159	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat6525
65160.21c		158.553	4.30870E-08	12/ 1/97	4112	
65-Tb-160	JEF-2.2	T=500K	njoy94.105sun	nov97/IKE		mat6528

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66160.21c	158.551	4.30870E-08	11/23/97	14378	
66-Dy-160	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat6637
66161.21c	159.545	4.30870E-08	11/23/97	34648	
66-Dy-161	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat6640
66162.21c	160.536	4.30870E-08	11/23/97	26121	
66-Dy-162	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat6643
66163.21c	161.529	4.30870E-08	11/23/97	86847	
66-Dy-163	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat6646
66164.21c	162.520	4.30870E-08	11/23/97	15902	
66-Dy-164	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat6649
67165.21c	163.514	4.30870E-08	11/23/97	46124	
67-Ho-165	JEF-2.2	T=500K njoy94.105sun	nov97/IKE		mat6725
34074.22c	73.287	5.17040E-08	11/28/97	26342	
34-Se-74	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat3425
36083.22c	82.202	5.17040E-08	11/25/97	16178	
36-Kr-83	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat3640
40091.22c	90.125	5.17040E-08	11/26/97	172740	
40-Zr-91	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4028
40093.22c	92.108	5.17040E-08	11/25/97	10057	
40-Zr-93	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4034
40095.22c	94.093	5.17040E-08	11/25/97	37839	
40-Zr-95	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4040
40096.22c	95.084	5.17040E-08	11/25/97	50051	
40-Zr-96	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4043
41095.22c	94.091	5.17040E-08	11/25/97	41459	
41-Nb-95	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4131
42095.22c	94.095	5.17040E-08	11/25/97	103115	
42-Mo-95	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4234
42097.22c	96.078	5.17040E-08	11/25/97	115016	
42-Mo-97	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4240
42098.22c	97.064	5.17040E-08	11/25/97	136910	
42-Mo-98	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4243
42099.22c	98.058	5.17040E-08	11/25/97	6538	
42-Mo-99	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4246
42100.22c	99.049	5.17040E-08	11/25/97	181022	
42-Mo-100	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4249
43099.22c	98.057	5.17040E-08	11/25/97	126350	
43-Tc-99	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4331

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44100.22c	99.046	5.17040E-08	11/25/97	8870	
44-Ru-100	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4437
44101.22c	100.039	5.17040E-08	11/25/97	72894	
44-Ru-101	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4440
44102.22c	101.029	5.17040E-08	11/25/97	16813	
44-Ru-102	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4443
44103.22c	102.022	5.17040E-08	11/25/97	31379	
44-Ru-103	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4446
44104.22c	103.013	5.17040E-08	11/25/97	36186	
44-Ru-104	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4449
44106.22c	104.998	5.17040E-08	11/25/97	6865	
44-Ru-106	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4455
45103.22c	102.021	5.17040E-08	11/24/97	172083	
45-Rh-103	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4525
45105.22c	104.005	5.17040E-08	11/24/97	4962	
45-Rh-105	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4531
46104.22c	103.011	5.17040E-08	11/24/97	83209	
46-Pd-104	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4631
46105.22c	104.000	5.17040E-08	11/26/97	227360	
46-Pd-105	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4634
46106.22c	104.994	5.17040E-08	11/24/97	101329	
46-Pd-106	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4637
46107.22c	105.987	5.17040E-08	11/24/97	55486	
46-Pd-107	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4640
46108.22c	106.977	5.17040E-08	11/24/97	110497	
46-Pd-108	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4643
47107.22c	105.987	5.17040E-08	1/19/98	90800	
47-Ag-107	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4725
47109.22c	107.969	5.17040E-08	11/24/97	96432	
47-Ag-109	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4731
47110.92c	108.962	5.17040E-08	3/14/98	122460	
47-Ag-110m	JENDL-3.2	T=600K njoy94.105sun	mar98/IKE		mat4735
48110.22c	108.959	5.17040E-08	11/24/97	125765	
48-Cd-110	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4837
48111.22c	109.952	5.17040E-08	11/24/97	191377	
48-Cd-111	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4840
48112.22c	110.942	5.17040E-08	1/19/98	191245	
48-Cd-112	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat4843
48113.22c	111.930	5.17040E-08	11/25/97	40541	

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48-Cd-113	JEF-2.2	T=600K	njoy94.105sun	nov97/IKE		mat4846
48114.22c		112.925	5.17040E-08	1/16/98	107107	
48-Cd-114	JEF-2.2	T=600K	njoy94.105sun	nov97/IKE		mat4849
48116.22c		114.909	5.17040E-08	1/16/98	49936	
48-Cd-116	JEF-2.2	T=600K	njoy94.105sun	nov97/IKE		mat4855
49113.22c		111.934	5.17040E-08	1/16/98	46635	
49-In-113	JEF-2.2	T=600K	njoy94.105sun	nov97/IKE		mat4925
49115.22c		113.917	5.17040E-08	11/26/97	202593	
49-In-115	JEF-2.2	T=600K	njoy94.105sun	nov97/IKE		mat4931
52132.22c		130.775	5.17040E-08	11/24/97	6887	
52-Te-132	JEF-2.2	T=600K	njoy94.105sun	nov97/IKE		mat5261
53127.22c		125.814	5.17040E-08	11/25/97	219011	
53-I-127	JEF-2.2	T=600K	njoy94.105sun	nov97/IKE		mat5325
53129.22c		127.798	5.17040E-08	11/25/97	190055	
53-I-129	JEF-2.2	T=600K	njoy94.105sun	nov97/IKE		mat5331
53131.22c		129.782	5.17040E-08	11/24/97	7152	
53-I-131	JEF-2.2	T=600K	njoy94.105sun	nov97/IKE		mat5337
53135.22c		133.751	5.17040E-08	11/24/97	3535	
53-I-135	JEF-2.2	T=600K	njoy94.105sun	nov97/IKE		mat5349
54131.22c		129.781	5.17040E-08	11/24/97	80705	
54-Xe-131	JEF-2.2	T=600K	njoy94.105sun	nov97/IKE		mat5446
54132.22c		130.771	5.17040E-08	11/24/97	25549	
54-Xe-132	JEF-2.2	T=600K	njoy94.105sun	nov97/IKE		mat5449
54133.22c		131.764	5.17040E-08	11/24/97	5546	
54-Xe-133	JEF-2.2	T=600K	njoy94.105sun	nov97/IKE		mat5452
54134.22c		132.755	5.17040E-08	11/24/97	12581	
54-Xe-134	JEF-2.2	T=600K	njoy94.105sun	nov97/IKE		mat5455
54135.22c		133.748	5.17040E-08	11/24/97	6336	
54-Xe-135	JEF-2.2	T=600K	njoy94.105sun	nov97/IKE		mat5458
55133.22c		131.762	5.17040E-08	11/24/97	241386	
55-Cs-133	JEF-2.2	T=600K	njoy94.105sun	nov97/IKE		mat5525
55134.22c		132.757	5.17040E-08	11/24/97	19663	
55-Cs-134	JEF-2.2	T=600K	njoy94.105sun	nov97/IKE		mat5528
55135.22c		133.750	5.17040E-08	11/24/97	27261	
55-Cs-135	JEF-2.2	T=600K	njoy94.105sun	nov97/IKE		mat5531
57139.22c		137.713	5.17040E-08	11/25/97	183476	
57-La-139	JEF-2.2	T=600K	njoy94.105sun	nov97/IKE		mat5728
58140.22c		138.704	5.17040E-08	1/19/98	52481	
58-Ce-140	JEF-2.2	T=600K	njoy94.105sun	nov97/IKE		mat5837

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58141.22c	139.698	5.17040E-08	11/24/97	40500	
58-Ce-141	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat5840
58142.22c	140.690	5.17040E-08	11/24/97	20797	
58-Ce-142	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat5843
58143.22c	141.685	5.17040E-08	11/24/97	5838	
58-Ce-143	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat5846
58144.22c	142.677	5.17040E-08	11/24/97	57537	
58-Ce-144	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat5849
59141.22c	139.698	5.17040E-08	11/24/97	168863	
59-Pr-141	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat5925
59143.22c	141.683	5.17040E-08	11/24/97	6686	
59-Pr-143	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat5931
60142.22c	140.689	5.17040E-08	11/23/97	120355	
60-Nd-142	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6025
60143.22c	141.680	5.17040E-08	11/23/97	198601	
60-Nd-143	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6028
60144.22c	142.674	5.17040E-08	11/23/97	109178	
60-Nd-144	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6031
60145.22c	143.668	5.17040E-08	11/23/97	165993	
60-Nd-145	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6034
60146.22c	144.660	5.17040E-08	11/23/97	161985	
60-Nd-146	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6037
60147.22c	145.654	5.17040E-08	11/24/97	17336	
60-Nd-147	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6040
60148.22c	146.646	5.17040E-08	11/24/97	192847	
60-Nd-148	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6043
60150.22c	148.633	5.17040E-08	11/24/97	119439	
60-Nd-150	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6049
61147.22c	145.653	5.17040E-08	11/23/97	60193	
61-Pm-147	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6149
61148.22c	146.647	5.17040E-08	11/23/97	4420	
61-Pm-148	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6152
61148.92c	146.647	5.17040E-08	11/23/97	4721	
61-Pm-148m	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6153
61149.22c	147.639	5.17040E-08	11/23/97	7420	
61-Pm-149	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6155
62147.22c	145.653	5.17040E-08	11/23/97	142356	
62-Sm-147	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6234

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62148.22c	146.644	5.17040E-08	11/23/97	8985	
62-Sm-148	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6237
62149.22c	147.638	5.17040E-08	11/23/97	69852	
62-Sm-149	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6240
62150.22c	148.629	5.17040E-08	11/24/97	49144	
62-Sm-150	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6243
62151.22c	149.620	5.17040E-08	11/24/97	118397	
62-Sm-151	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6246
62152.22c	150.615	5.17040E-08	11/24/97	157760	
62-Sm-152	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6249
62153.22c	151.608	5.17040E-08	11/24/97	12172	
62-Sm-153	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6252
62154.22c	152.600	5.17040E-08	11/24/97	96922	
62-Sm-154	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6255
63153.22c	151.607	5.17040E-08	11/23/97	105215	
63-Eu-153	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6331
63154.22c	152.600	5.17040E-08	11/23/97	70498	
63-Eu-154	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6334
63155.22c	153.592	5.17040E-08	11/23/97	13367	
63-Eu-155	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6337
63156.22c	154.585	5.17040E-08	11/23/97	9304	
63-Eu-156	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6340
63157.22c	155.577	5.17040E-08	11/23/97	3925	
63-Eu-157	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6343
65159.22c	157.560	5.17040E-08	12/ 1/97	50377	
65-Tb-159	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6525
65160.22c	158.553	5.17040E-08	12/ 1/97	4126	
65-Tb-160	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6528
66160.22c	158.551	5.17040E-08	11/23/97	14273	
66-Dy-160	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6637
66161.22c	159.545	5.17040E-08	11/23/97	33696	
66-Dy-161	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6640
66162.22c	160.536	5.17040E-08	11/23/97	25841	
66-Dy-162	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6643
66163.22c	161.529	5.17040E-08	11/23/97	84600	
66-Dy-163	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6646
66164.22c	162.520	5.17040E-08	11/23/97	15909	
66-Dy-164	JEF-2.2	T=600K njoy94.105sun	nov97/IKE		mat6649
67165.22c	163.514	5.17040E-08	11/23/97	45214	

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67-Ho-165	JEF-2.2	T=600K	njoy94.105sun	nov97/IKE	mat6725
34074.24c		73.287	7.75560E-08	11/28/97	25740
34-Se-74	JEF-2.2	T=900K	njoy94.105sun	nov97/IKE	mat3425
36083.24c		82.202	7.75560E-08	11/25/97	16171
36-Kr-83	JEF-2.2	T=900K	njoy94.105sun	nov97/IKE	mat3640
40091.24c		90.125	7.75560E-08	11/26/97	167388
40-Zr-91	JEF-2.2	T=900K	njoy94.105sun	nov97/IKE	mat4028
40093.24c		92.108	7.75560E-08	11/25/97	10029
40-Zr-93	JEF-2.2	T=900K	njoy94.105sun	nov97/IKE	mat4034
40095.24c		94.093	7.75560E-08	11/25/97	37048
40-Zr-95	JEF-2.2	T=900K	njoy94.105sun	nov97/IKE	mat4040
40096.24c		95.084	7.75560E-08	11/25/97	49792
40-Zr-96	JEF-2.2	T=900K	njoy94.105sun	nov97/IKE	mat4043
41095.24c		94.091	7.75560E-08	11/25/97	40703
41-Nb-95	JEF-2.2	T=900K	njoy94.105sun	nov97/IKE	mat4131
42095.24c		94.095	7.75560E-08	11/25/97	99111
42-Mo-95	JEF-2.2	T=900K	njoy94.105sun	nov97/IKE	mat4234
42097.24c		96.078	7.75560E-08	11/25/97	110697
42-Mo-97	JEF-2.2	T=900K	njoy94.105sun	nov97/IKE	mat4240
42098.24c		97.064	7.75560E-08	11/25/97	132472
42-Mo-98	JEF-2.2	T=900K	njoy94.105sun	nov97/IKE	mat4243
42099.24c		98.058	7.75560E-08	11/25/97	6566
42-Mo-99	JEF-2.2	T=900K	njoy94.105sun	nov97/IKE	mat4246
42100.24c		99.049	7.75560E-08	11/25/97	175177
42-Mo-100	JEF-2.2	T=900K	njoy94.105sun	nov97/IKE	mat4249
43099.24c		98.057	7.75560E-08	11/25/97	119168
43-Tc-99	JEF-2.2	T=900K	njoy94.105sun	nov97/IKE	mat4331
44100.24c		99.046	7.75560E-08	11/25/97	8702
44-Ru-100	JEF-2.2	T=900K	njoy94.105sun	nov97/IKE	mat4437
44101.24c		100.039	7.75560E-08	11/25/97	69919
44-Ru-101	JEF-2.2	T=900K	njoy94.105sun	nov97/IKE	mat4440
44102.24c		101.029	7.75560E-08	11/25/97	16666
44-Ru-102	JEF-2.2	T=900K	njoy94.105sun	nov97/IKE	mat4443
44103.24c		102.022	7.75560E-08	11/25/97	31008
44-Ru-103	JEF-2.2	T=900K	njoy94.105sun	nov97/IKE	mat4446
44104.24c		103.013	7.75560E-08	11/25/97	35340
44-Ru-104	JEF-2.2	T=900K	njoy94.105sun	nov97/IKE	mat4449
44106.24c		104.998	7.75560E-08	11/25/97	6837
44-Ru-106	JEF-2.2	T=900K	njoy94.105sun	nov97/IKE	mat4455

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45103.24c	102.021	7.75560E-08	11/24/97	159315	
45-Rh-103	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat4525
45105.24c	104.005	7.75560E-08	11/24/97	4857	
45-Rh-105	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat4531
46104.24c	103.011	7.75560E-08	11/24/97	79324	
46-Pd-104	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat4631
46105.24c	104.000	7.75560E-08	11/26/97	205842	
46-Pd-105	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat4634
46106.24c	104.994	7.75560E-08	11/24/97	96611	
46-Pd-106	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat4637
46107.24c	105.987	7.75560E-08	11/24/97	53442	
46-Pd-107	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat4640
46108.24c	106.977	7.75560E-08	11/24/97	105763	
46-Pd-108	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat4643
47107.24c	105.987	7.75560E-08	1/19/98	86089	
47-Ag-107	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat4725
47109.24c	107.969	7.75560E-08	11/24/97	91168	
47-Ag-109	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat4731
47110.94c	108.962	7.75560E-08	3/14/98	122460	
47-Ag-110m	JENDL-3.2	T=900K njoy94.105sun	mar98/IKE		mat4735
48110.24c	108.959	7.75560E-08	11/24/97	119885	
48-Cd-110	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat4837
48111.24c	109.952	7.75560E-08	11/24/97	181577	
48-Cd-111	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat4840
48112.24c	110.942	7.75560E-08	1/19/98	181197	
48-Cd-112	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat4843
48113.24c	111.930	7.75560E-08	11/25/97	40079	
48-Cd-113	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat4846
48114.24c	112.925	7.75560E-08	1/16/98	102715	
48-Cd-114	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat4849
48116.24c	114.909	7.75560E-08	1/16/98	49495	
48-Cd-116	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat4855
49113.24c	111.934	7.75560E-08	1/16/98	44045	
49-In-113	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat4925
49115.24c	113.917	7.75560E-08	11/26/97	182825	
49-In-115	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat4931
52132.24c	130.775	7.75560E-08	11/24/97	6896	
52-Te-132	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat5261

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53127.24c	125.814	7.75560E-08	11/25/97	199341	
53-I-127	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat5325
53129.24c	127.798	7.75560E-08	11/25/97	177672	
53-I-129	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat5331
53131.24c	129.782	7.75560E-08	11/24/97	7242	
53-I-131	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat5337
53135.24c	133.751	7.75560E-08	11/24/97	3528	
53-I-135	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat5349
54131.24c	129.781	7.75560E-08	11/24/97	77520	
54-Xe-131	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat5446
54132.24c	130.771	7.75560E-08	11/24/97	24947	
54-Xe-132	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat5449
54133.24c	131.764	7.75560E-08	11/24/97	5560	
54-Xe-133	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat5452
54134.24c	132.755	7.75560E-08	11/24/97	12623	
54-Xe-134	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat5455
54135.24c	133.748	7.75560E-08	11/24/97	6392	
54-Xe-135	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat5458
55133.24c	131.762	7.75560E-08	11/24/97	227736	
55-Cs-133	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat5525
55134.24c	132.757	7.75560E-08	11/24/97	19271	
55-Cs-134	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat5528
55135.24c	133.750	7.75560E-08	11/24/97	26960	
55-Cs-135	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat5531
57139.24c	137.713	7.75560E-08	11/25/97	176133	
57-La-139	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat5728
58140.24c	138.704	7.75560E-08	1/19/98	51635	
58-Ce-140	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat5837
58141.24c	139.698	7.75560E-08	11/24/97	39723	
58-Ce-141	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat5840
58142.24c	140.690	7.75560E-08	11/24/97	20698	
58-Ce-142	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat5843
58143.24c	141.685	7.75560E-08	11/24/97	5831	
58-Ce-143	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat5846
58144.24c	142.677	7.75560E-08	11/24/97	57348	
58-Ce-144	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat5849
59141.24c	139.698	7.75560E-08	11/24/97	160589	
59-Pr-141	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat5925
59143.24c	141.683	7.75560E-08	11/24/97	6749	

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59-Pr-143	JEF-2.2	T=900K njoy94.105sun nov97/IKE	mat5931
60142.24c	140.689	7.75560E-08 11/23/97	115990
60-Nd-142	JEF-2.2	T=900K njoy94.105sun nov97/IKE	mat6025
60143.24c	141.680	7.75560E-08 11/23/97	189158
60-Nd-143	JEF-2.2	T=900K njoy94.105sun nov97/IKE	mat6028
60144.24c	142.674	7.75560E-08 11/23/97	105769
60-Nd-144	JEF-2.2	T=900K njoy94.105sun nov97/IKE	mat6031
60145.24c	143.668	7.75560E-08 11/23/97	157096
60-Nd-145	JEF-2.2	T=900K njoy94.105sun nov97/IKE	mat6034
60146.24c	144.660	7.75560E-08 11/23/97	154950
60-Nd-146	JEF-2.2	T=900K njoy94.105sun nov97/IKE	mat6037
60147.24c	145.654	7.75560E-08 11/24/97	16860
60-Nd-147	JEF-2.2	T=900K njoy94.105sun nov97/IKE	mat6040
60148.24c	146.646	7.75560E-08 11/24/97	184783
60-Nd-148	JEF-2.2	T=900K njoy94.105sun nov97/IKE	mat6043
60150.24c	148.633	7.75560E-08 11/24/97	115362
60-Nd-150	JEF-2.2	T=900K njoy94.105sun nov97/IKE	mat6049
61147.24c	145.653	7.75560E-08 11/23/97	57204
61-Pm-147	JEF-2.2	T=900K njoy94.105sun nov97/IKE	mat6149
61148.24c	146.647	7.75560E-08 11/23/97	4399
61-Pm-148	JEF-2.2	T=900K njoy94.105sun nov97/IKE	mat6152
61148.94c	146.647	7.75560E-08 11/23/97	4749
61-Pm-148m	JEF-2.2	T=900K njoy94.105sun nov97/IKE	mat6153
61149.24c	147.639	7.75560E-08 11/23/97	7348
61-Pm-149	JEF-2.2	T=900K njoy94.105sun nov97/IKE	mat6155
62147.24c	145.653	7.75560E-08 11/23/97	131611
62-Sm-147	JEF-2.2	T=900K njoy94.105sun nov97/IKE	mat6234
62148.24c	146.644	7.75560E-08 11/23/97	9062
62-Sm-148	JEF-2.2	T=900K njoy94.105sun nov97/IKE	mat6237
62149.24c	147.638	7.75560E-08 11/23/97	63727
62-Sm-149	JEF-2.2	T=900K njoy94.105sun nov97/IKE	mat6240
62150.24c	148.629	7.75560E-08 11/24/97	47866
62-Sm-150	JEF-2.2	T=900K njoy94.105sun nov97/IKE	mat6243
62151.24c	149.620	7.75560E-08 11/24/97	106672
62-Sm-151	JEF-2.2	T=900K njoy94.105sun nov97/IKE	mat6246
62152.24c	150.615	7.75560E-08 11/24/97	151334
62-Sm-152	JEF-2.2	T=900K njoy94.105sun nov97/IKE	mat6249
62153.24c	151.608	7.75560E-08 11/24/97	12154
62-Sm-153	JEF-2.2	T=900K njoy94.105sun nov97/IKE	mat6252

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62154.24c	152.600	7.75560E-08	11/24/97	93619	
62-Sm-154	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat6255
63153.24c	151.607	7.75560E-08	11/23/97	96404	
63-Eu-153	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat6331
63154.24c	152.600	7.75560E-08	11/23/97	63883	
63-Eu-154	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat6334
63155.24c	153.592	7.75560E-08	11/23/97	13070	
63-Eu-155	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat6337
63156.24c	154.585	7.75560E-08	11/23/97	9187	
63-Eu-156	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat6340
63157.24c	155.577	7.75560E-08	11/23/97	3981	
63-Eu-157	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat6343
65159.24c	157.560	7.75560E-08	12/ 1/97	47990	
65-Tb-159	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat6525
65160.24c	158.553	7.75560E-08	12/ 1/97	4182	
65-Tb-160	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat6528
66160.24c	158.551	7.75560E-08	11/23/97	13888	
66-Dy-160	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat6637
66161.24c	159.545	7.75560E-08	11/23/97	32016	
66-Dy-161	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat6640
66162.24c	160.536	7.75560E-08	11/23/97	25260	
66-Dy-162	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat6643
66163.24c	161.529	7.75560E-08	11/23/97	80967	
66-Dy-163	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat6646
66164.24c	162.520	7.75560E-08	11/23/97	15888	
66-Dy-164	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat6649
67165.24c	163.514	7.75560E-08	11/23/97	43002	
67-Ho-165	JEF-2.2	T=900K njoy94.105sun	nov97/IKE		mat6725

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Table 3: Directory of MCNP cross section data sets for some structure materials and actinides based on JENDL3.2

1001.70c	.999	2.53350E-08	3/19/97	4399	
1-H-1 JENDL-3.2	T=293.6K	njoy94.66m	mar97		mat 125
5010.70c	9.927	2.53350E-08	3/18/97	36881	
5-B-10 JENDL-3.2	T=293.6K	njoy94.66m	mar97		mat 525
5011.70c	10.915	2.53350E-08	3/18/97	53050	
5-B-11 JENDL-3.2	T=293.6K	njoy94.66m	mar97		mat 528
8016.70c	15.857	2.53350E-08	3/18/97	52281	
8-O-16 JENDL-3.2	T=293.6K	njoy94.66m	mar97		mat 825
13027.70c	26.750	2.53350E-08	3/18/97	57742	
13-Al-27 JENDL-3.2	T=293.6K	njoy94.66m	mar97		mat1325
54135.70c	133.748	2.53350E-08	3/17/97	68464	
54-Xe-135 JENDL-3.2	T=293.6K	njoy94.66m	mar97		mat5458
62149.70c	147.638	2.53350E-08	3/17/97	308091	
62-Sm-149 JENDL-3.2	T=293.6K	njoy94.66m	mar97		mat6240
92234.70c	232.030	2.53350E-08	3/13/97	291552	
92-U-234 JENDL-3.2	T=293.6K	njoy94.66m	mar97		mat9225
92235.70c	233.025	2.53350E-08	3/18/97	718987	
92-U-235 JENDL-3.2	T=293.6K	njoy94.66m	mar97		mat9228
92236.70c	234.018	2.53350E-08	3/13/97	256682	
92-U-236 JENDL-3.2	T=293.6K	njoy94.66m	mar97		mat9231
92237.70c	235.013	2.53350E-08	3/13/97	112010	
92-U-237 JENDL-3.2	T=293.6K	njoy94.66m	mar97		mat9234
92238.70c	236.006	2.53350E-08	3/17/97	1178463	
92-U-238 JENDL-3.2	T=293.6K	njoy94.66m	mar97		mat9237
93237.70c	235.012	2.53350E-08	3/13/97	156761	
93-Np-237 JENDL-3.2	T=293.6K	njoy94.66m	mar97		mat9346
93238.70c	236.006	2.53350E-08	3/13/97	23399	
93-Np-238 JENDL-3.2	T=293.6K	njoy94.66m	mar97		mat9349
93239.70c	236.999	2.53350E-08	3/13/97	13418	
93-Np-239 JENDL-3.2	T=293.6K	njoy94.66m	mar97		mat9352
94238.70c	236.005	2.53350E-08	3/15/97	137905	
94-Pu-238 JENDL-3.2	T=293.6K	njoy94.66m	mar97		mat9434
94239.70c	236.999	2.53350E-08	3/17/97	805541	
94-Pu-239 JENDL-3.2	T=293.6K	njoy94.66m	mar97		mat9437
94240.70c	237.992	2.53350E-08	3/18/97	463113	
94-Pu-240 JENDL-3.2	T=293.6K	njoy94.66m	mar97		mat9440
94241.70c	238.986	2.53350E-08	3/18/97	139569	

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94-Pu-241	JENDL-3.2	T=293.6K njoy94.66m mar97	mat9443
94242.70c	239.979	2.53350E-08 3/15/97	199266
94-Pu-242	JENDL-3.2	T=293.6K njoy94.66m mar97	mat9446
95241.70c	238.986	2.53350E-08 3/14/97	164474
95-Am-241	JENDL-3.2	T=293.6K njoy94.66m mar97	mat9543
95242.70c	239.981	2.53350E-08 3/14/97	31298
95-Am-242m	JENDL-3.2	T=293.6K njoy94.66m mar97	mat9547
95243.70c	240.973	2.53350E-08 3/14/97	203061
95-Am-243	JENDL-3.2	T=293.6K njoy94.66m mar97	mat9549
96242.70c	239.979	2.53350E-08 3/13/97	47993
96-Cm-242	JENDL-3.2	T=293.6K njoy94.66m mar97	mat9631
96243.70c	240.973	2.53350E-08 3/13/97	49913
96-Cm-243	JENDL-3.2	T=293.6K njoy94.66m mar97	mat9634
96244.70c	241.966	2.53350E-08 3/13/97	177935
96-Cm-244	JENDL-3.2	T=293.6K njoy94.66m mar97	mat9637
96245.70c	242.961	2.53350E-08 3/13/97	55737
96-Cm-245	JENDL-3.2	T=293.6K njoy94.66m mar97	mat9640
92234.74c	232.030	7.75560E-08 1/21/99	253104
92-U-234	JENDL-3.2	T=900.K njoy94.66m_8 mar97	mat9225
92235.74c	233.025	7.75560E-08 1/21/99	697747
92-U-235	JENDL-3.2	T=900.K njoy94.66m_8 mar97	mat9228
92236.74c	234.018	7.75560E-08 1/21/99	227866
92-U-236	JENDL-3.2	T=900.K njoy94.66m_8 mar97	mat9231
92237.74c	235.013	7.75560E-08 1/21/99	102338
92-U-237	JENDL-3.2	T=900.K njoy94.66m_8 mar97	mat9234
92238.74c	236.006	7.75560E-08 1/21/99	768198
92-U-238	JENDL-3.2	T=900.K njoy94.66m_8 mar97	mat9237
94238.74c	236.005	7.75560E-08 1/21/99	124705
94-Pu-238	JENDL-3.2	T=900.K njoy94.66m_8 mar97	mat9434
94239.74c	236.999	7.75560E-08 1/21/99	531860
94-Pu-239	JENDL-3.2	T=900.K njoy94.66m_8 mar97	mat9437
94240.74c	237.992	7.75560E-08 1/21/99	403105
94-Pu-240	JENDL-3.2	T=900.K njoy94.66m_8 mar97	mat9440
94241.74c	238.986	7.75560E-08 1/21/99	105990
94-Pu-241	JENDL-3.2	T=900.K njoy94.66m_8 mar97	mat9443
94242.74c	239.979	7.75560E-08 1/21/99	178018
94-Pu-242	JENDL-3.2	T=900.K njoy94.66m_8 mar97	mat9446

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Table 4: Directory of MCNP thermal cross section data sets for moderators based on IKE and LANL evaluations

parah.01t	.000	1.68670E-09	11/14/90	60307	
para-H in liquid H2	T=20.38K	S(a,b)	from IKE	Stuttgart, nov.90	MAT 125
orthoh.01t	.000	1.68670E-09	11/14/90	60307	
ortho-H in liquid H2	T=20.38K	S(a,b)	from IKE	Stuttgart, nov.90	MAT 125
parad.00t	.000	1.60230E-09	11/14/90	60307	
para-D in liquid D2	T=19.00K	S(a,b)	from IKE	Stuttgart, nov.90	MAT 128
orthod.00t	.000	1.60230E-09	11/14/90	60307	
ortho-D in liquid D2	T=19.00K	S(a,b)	from IKE	Stuttgart, nov.90	MAT 128
ortod6.00t	.000	1.60230E-09	11/14/90	60307	
ortho-D in liquid D2	T=19.00K	S(a,b)	from IKE	Stuttgart, nov.90	MAT 128
parad.01t	.000	2.02400E+00	11/14/9	60307	
para-D in liquid D2	T=23.65K	S(a,b)	from IKE	Stuttgart, nov.90	MAT 128
ortod6.01t	.000	2.02400E+00	11/14/9	60307	
ortho-D in liquid D2	T=23.65K	S(a,b)	from IKE	Stuttgart, nov.90	MAT 128
h2o.01t	.000	2.47940E-08	12/12/90	82195	
H in H2O	t=293.6 K	JEF-2/S(a,b)	from IKE	nov.90	MAT 125
h2o.02t	.000	2.73240E-08	12/12/90	82195	
H in H2O	t=323.6 K	JEF-2/S(a,b)	from IKE	nov.90	MAT 125
h2o.03t	.000	3.15410E-08	12/12/90	82195	
H in H2O	t=373.6 K	JEF-2/S(a,b)	from IKE	nov.90	MAT 125
h2o.04t	.000	3.57570E-08	12/12/90	82195	
H in H2O	t=423.6 K	JEF-2/S(a,b)	from IKE	nov.90	MAT 125
h2o.05t	.000	3.99740E-08	12/12/90	82195	
H in H2O	t=473.6 K	JEF-2/S(a,b)	from IKE	nov.90	MAT 125
h2o.06t	.000	4.41910E-08	12/12/90	82195	
H in H2O	t=523.6 K	JEF-2/S(a,b)	from IKE	nov.90	MAT 125
h2o.07t	.000	4.84070E-08	12/12/90	82195	
H in H2O	t=573.6 K	JEF-2/S(a,b)	from IKE	nov.90	MAT 125
h2o.08t	.000	5.26240E-08	12/12/90	82195	
H in H2O	t=623.6 K	JEF-2/S(a,b)	from IKE	nov.90	MAT 125
poly.01t	.000	0.00000E+00	10/22/85	11544	
hydrogen in polyethylene at 300 degrees kelvin					
poly.03t	.000	0.00000E+00	79/09/09.	15602	
h-1 in poly variable weighting 8 angles below 4 ev					
h/zr.01t	.000	0.00000E+00	10/22/85	11544	
hydrogen in zirconium hydride at 300 degrees kelvin					
h/zr.02t	.000	0.00000E+00	10/22/85	11534	

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hydrogen in zirconium hydride at 400 degrees kelvin				
h/zr.04t	.000	0.00000E+00	10/22/85	11534
hydrogen in zirconium hydride at 600 degrees kelvin				
h/zr.05t	.000	0.00000E+00	10/22/85	11534
hydrogen in zirconium hydride at 800 degrees kelvin				
h/zr.06t	.000	0.00000E+00	10/22/85	11534
hydrogen in zirconium hydride at 1200 degrees kelvin				
benz.01t	.000	0.00000E+00	09/08/86	16241
benzene at 300 degrees kelvin				
benz.02t	.000	0.00000E+00	09/08/86	16241
benzene at 400 degrees kelvin				
benz.03t	.000	0.00000E+00	09/08/86	16241
benzene at 500 degrees kelvin				
benz.04t	.000	0.00000E+00	09/08/86	16241
benzene at 600 degrees kelvin				
benz.05t	.000	0.00000E+00	09/08/86	16241
benzene at 800 degrees kelvin				
hwtr.01t	.000	0.00000E+00	10/22/85	10193
deuterium in heavy water at 300 degrees kelvin				
hwtr.02t	.000	0.00000E+00	10/22/85	10193
deuterium in heavy water at 400 degrees kelvin				
hwtr.03t	.000	0.00000E+00	10/22/85	10193
deuterium in heavy water at 500 degrees kelvin				
hwtr.04t	.000	0.00000E+00	10/22/85	10193
deuterium in heavy water at 600 degrees kelvin				
hwtr.05t	.000	0.00000E+00	10/22/85	10193
deuterium in heavy water at 800 degrees kelvin				
be.01t	.000	0.00000E+00	10/24/85	10224
beryllium metal at 300 degrees kelvin				
be.04t	.000	0.00000E+00	10/24/85	10172
beryllium metal at 600 degrees kelvin				
be.05t	.000	0.00000E+00	10/24/85	10146
beryllium metal at 800 degrees kelvin				
be.06t	.000	0.00000E+00	10/24/85	10118
beryllium metal at 1200 degrees kelvin				
beo.01t	.000	0.00000E+00	09/08/86	16262
beryllium oxide at 300 degrees kelvin				
beo.04t	.000	0.00000E+00	09/08/86	16202
beryllium oxide at 600 degrees kelvin				

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beo.05t	.000	0.00000E+00	09/08/86	16176	
beryllium oxide at 800 degrees kelvin					
beo.06t	.000	0.00000E+00	09/08/86	16132	
beryllium oxide at 1200 degrees kelvin					
grph.01t	.000	0.00000E+00	09/08/86	16572	
graphite at 300 degrees kelvin					
grph.04t	.000	0.00000E+00	09/08/86	16512	
graphite at 600 degrees kelvin					
grph.05t	.000	0.00000E+00	09/08/86	16486	
graphite at 800 degrees kelvin					
grph.06t	.000	0.00000E+00	09/08/86	16438	
graphite at 1200 degrees kelvin					
grph.07t	.000	0.00000E+00	09/08/86	16414	
graphite at 1600 degrees kelvin					
grph.08t	.000	0.00000E+00	09/08/86	16400	
graphite at 2000 degrees kelvin					
graphi.00t	11.898	2.53010E-08	01/30/03	56130	
graphite	T=293.6 K	njoy99.81+	jan03/IKE		mat 600
graphi.01t	11.898	3.44700E-08	01/30/03	56102	
graphite	T=400 K	njoy99.81+	jan03/IKE		mat 600
graphi.02t	11.898	4.30870E-08	01/30/03	56084	
graphite	T=500 K	njoy99.81+	jan03/IKE		mat 600
graphi.03t	11.898	5.17040E-08	01/30/03	56068	
graphite	T=600 K	njoy99.81+	jan03/IKE		mat 600
graphi.04t	11.898	6.03220E-08	01/30/03	56058	
graphite	T=700 K	njoy99.81+	jan03/IKE		mat 600
graphi.05t	11.898	6.89390E-08	01/30/03	56044	
graphite	T=800 K	njoy99.81+	jan03/IKE		mat 600
graphi.06t	11.898	8.61740E-08	01/30/03	56014	
graphite	T=1000 K	njoy99.81+	jan03/IKE		mat 600
graphi.07t	11.898	1.03410E-07	01/30/03	55994	
graphite	T=1200 K	njoy99.81+	jan03/IKE		mat 600
graphi.08t	11.898	1.37880E-07	01/30/03	55970	
graphite	T=1600 K	njoy99.81+	jan03/IKE		mat 600
graphi.09t	11.898	1.72350E-07	01/30/03	55958	
graphite	T=2000 K	njoy99.81+	jan03/IKE		mat 600
graphi.10t	11.898	2.58520E-07	01/30/03	55920	
graphite	T=3000 K	njoy99.81+	jan03/IKE		mat 600
grph_d.00t	11.898	2.53010E-08	02/09/03	56116	
graphite	T=293.6 K	Difilippo	njoy99.81+	jan03/IKE	mat 600

Work Package:	2	HTR-N project document No.: HTR-N-02.05-D-2.1.2	Rev. <no.>
Task:	2.1.2	Document type: Deliverable	

grph_d.01t	11.898	3.44700E-08	02/09/03	56090	
graphite	T=400 K Difilippo	njoy99.81+	jan03/IKE		mat 600
grph_d.02t	11.898	4.30870E-08	02/09/03	56068	
graphite	T=500 K Difilippo	njoy99.81+	jan03/IKE		mat 600
grph_d.03t	11.898	5.17040E-08	02/09/03	56052	
graphite	T=600 K Difilippo	njoy99.81+	jan03/IKE		mat 600
grph_d.04t	11.898	6.03220E-08	02/09/03	56036	
graphite	T=700 K Difilippo	njoy99.81+	jan03/IKE		mat 600
grph_d.05t	11.898	6.89390E-08	02/09/03	56018	
graphite	T=800 K Difilippo	njoy99.81+	jan03/IKE		mat 600
grph_d.06t	11.898	8.61740E-08	02/09/03	55994	
graphite	T=1000 K Difilippo	njoy99.81+	jan03/IKE		mat 600
grph_d.07t	11.898	1.03410E-07	02/09/03	55974	
graphite	T=1200 K Difilippo	njoy99.81+	jan03/IKE		mat 600
grph_d.08t	11.898	1.37880E-07	02/09/03	55960	
graphite	T=1600 K Difilippo	njoy99.81+	jan03/IKE		mat 600
grph_d.09t	11.898	1.72350E-07	02/09/03	55936	
graphite	T=2000 K Difilippo	njoy99.81+	jan03/IKE		mat 600
grph_d.10t	11.898	2.58520E-07	02/09/03	55906	
graphite	T=3000 K Difilippo	njoy99.81+	jan03/IKE		mat 600
zr/h.01t	.000	0.00000E+00	09/08/86	17302	
zirconium in zirconium hydride at 300 degrees kelvin					
zr/h.02t	.000	0.00000E+00	09/08/86	17462	
zirconium in zirconium hydride at 400 degrees kelvin					
zr/h.04t	.000	0.00000E+00	09/08/86	17432	
zirconium in zirconium hydride at 600 degrees kelvin					
zr/h.05t	.000	0.00000E+00	09/08/86	17432	
zirconium in zirconium hydride at 800 degrees kelvin					
zr/h.06t	.000	0.00000E+00	09/08/86	17442	
zirconium in zirconium hydride at 1200 degrees kelvin					

Work Package:	2	HTR-N project document No.: HTR-N-02.05-D-2.1.2	Rev. <no.>
Task:	2.1.2	Document type: Deliverable	

Table 5: Directory of SCALE multigroup library with 292 neutron groups (165 fast, 127 thermal) based on JEF-2.2 and ENDF/B-VI up to release 4

1001	H bound in H2O	JEF-2.2	29-3-93
1006	H bound in polyethylene	JEF-2.2	-94
1302	D bound in D2O	JEF-2.2	30-11-94
1401	H bound in ZrH	ENDF/B-VI.4	06-06-97
4009	Be (metal)	ENDF/B-VI.0	12-3-98/apr93 IKE
5010	B-10	JEF-2.2	29-3-93
5011	B-11	JEF-2.2	29-3-93
6000	C_nat	JEF-2.2	29-3-93
6300	C as graphite	JEF-2.2	29-3-93
6301	C-nat graphite	JEFF-3 GA	28-02-2003
6302	C-nat graphite	Difilippo	01-03-2003
7014	N-14	JEF-2.2	29-3-93
8016	O-16	JEF-2.2	29-3-93
12000	Mg_nat	JEF-2.2	29-3-93
13027	Al-27	JEF-2.2	29-3-93
14000	Si_nat	JEF-2.2	29-3-93
17000	Cl_nat	JEF-2.2	29-3-93
22000	Ti_nat	JEF-2.2	8-11-94
24050	Cr-50	JEF-2.2	29-3-93
24052	Cr-52	JEF-2.2	29-3-93
24053	Cr-53	JEF-2.2	29-3-93
24054	Cr-54	JEF-2.2	29-3-93
25055	Mn-55	JEF-2.2	29-3-93
26054	Fe-54	JEF-2.2	29-3-93
26056	Fe-56	JEF-2.2	29-3-93
26057	Fe-57	JEF-2.2	29-3-93
26058	Fe-58	JEF-2.2	29-3-93
28058	Ni-58	JEF-2.2	29-3-93
28060	Ni-60	JEF-2.2	29-3-93
28061	Ni-61	JEF-2.2	29-3-93
28062	Ni-62	JEF-2.2	29-3-93
28064	Ni-64	JEF-2.2	29-3-93
40000	Zr_nat	JEF-2.2	26-11-93
42000	Mo_nat	JEF-2.2	9-11-94
48000	Cd_nat	ENDF/B-VI	14-5--96
47107	Ag-107	JEF-2.2	15-11-95
47109	Ag-109	JEF-2.2	15-11-95
49113	In-113	JEF-2.2	15-11-95
49115	In-115	JEF-2.2	15-11-95
54135	Xe-135	JEF-2.2	11-01-96
62149	Sm-149	JEF-2.2	29-3-93
64152	Gd-152	ENDF/B-VIrel0	28-7-97
64154	Gd-154	JEF-2.2	28-7-97
64155	Gd-155	JEF-2.2	28-7-97
64156	Gd-156	JEF-2.2	28-7-97
64157	Gd-157	JEF-2.2	28-7-97
64158	Gd-158	JEF-2.2	28-7-97
64160	Gd-160	JEF-2.2	28-7-97
72174	Hf-174	JEF-2.2	2-6-93
72176	Hf-176	JEF-2.2	2-6-93
72177	Hf-177	JEF-2.2	21-6-94
72178	Hf-178	JEF-2.2	21-6-94
72179	Hf-179	JEF-2.2	21-6-94
72180	Hf-180	JEF-2.2	21-6-94
82000	Pb_nat	JEF-2.2	8-11-94
90232	Th-232	JEF-2.2	16-8-94

Work Package:	2	HTR-N project document No.: HTR-N-02.05-D-2.1.2	Rev. <no.>
Task:	2.1.2	Document type: Deliverable	

91233	Pa-233	JEF-2.2	16-8-94
92233	U-233	JEF-2.2	16-8-94
92234	U-234	JEF-2.2	29-3-93
92235	U-235	JEF-2.2	11-6-94r_group
92236	U-236	JEF-2.2	29-3-93
92237	U-237	JEF-2.2	14-5--96
92238	U-238	JEF-2.2	11-6-94r_group
93237	Np-237	JEF-2.2	30-08-95
93238	Np-238	JEF-2.2	30-08-95
93239	Np-239	JEF-2.2	30-08-95
94238	Pu-238	JEF-2.2	29-3-93
94239	Pu-239	ENDF/B-VIrev2	4-02-96
94240	Pu-240	JEF-2.2	29-3-93
94241	Pu-241	JEF-2.2	29-3-93
94242	Pu-242	JEF-2.2	29-3-93
95241	Am-241	JEF-2.2	22-2-93
95242	Am-242	JEF-2.2	23-11-94
95942	Am-242m	JEF-2.2	23-11-94
95243	Am-243	JEF-2.2	9-2-94
96242	Cm-242	JEF-2.2	8-11-94
96244	Cm-244	JEF-2.2	22-11-94
96245	Cm-245	JEF-2.2	8-11-94
96242	Cm-242	JEF-2.2	28-11-94
96243	Cm-243	JEF-2.2	14-5--96
96244	Cm-244	ENDF/B-VI	28-11-94
96245	Cm-245	JEF-2.2	28-11-94

Table 6: Directory of SCALE multigroup library with 292 neutron groups (165 fast, 127 thermal) based on JENDL3.2

identif ier	t i t l e		
1001	H-1 bound in H2O	JENDL-3.2	18-3-97
5010	B-10	JENDL-3.2	14-3-97
5011	B-11	JENDL-3.2	14-3-97
8016	O-16	JENDL-3.2	14-3-97
13027	Al-27	JENDL-3.2	14-3-97
40000	Zr_nat	JENDL-3.2	14-3-97
54135	Xe-135	JENDL-3.2	21-3-97
62149	Sm-149	JENDL-3.2	21-3-97
92234	U-234	JENDL-3.2	21-3-97
92235	U-235	JENDL-3.2	21-3-97
92236	U-236	JENDL-3.2	21-3-97
92237	U-237	JENDL-3.2	21-3-97
92238	U-238	JENDL-3.2	14-3-97
93237	Np-237	JENDL-3.2	21-3-97
93238	Np-238	JENDL-3.2	21-3-97
93239	Np-239	JENDL-3.2	13-3-97
94238	Pu-238	JENDL-3.2	21-3-97
94239	Pu-239	JENDL-3.2	21-3-97
94240	Pu-240	JENDL-3.2	17-3-97
94241	Pu-241	JENDL-3.2	17-3-97
94242	Pu-242	JENDL-3.2	14-3-97
95241	Am-241	JENDL-3.2	21-3-97
95942	Am-242m	JENDL-3.2	21-3-97
95243	Am-243	JENDL-3.2	21-3-97
96242	Cm-242	JENDL-3.2	21-3-97
96243	Cm-243	JENDL-3.2	21-3-97
96244	Cm-244	JENDL-3.2	21-3-97

Work Package:	2	HTR-N project document No.: HTR-N-02.05-D-2.1.2	Rev. <no.>
Task:	2.1.2	Document type: Deliverable	

96245	Cm-245	JENDL-3.2	21-3-97
1001	H-1 bound in H2O	ENDF/B-VIrel4	18-3-97
5010	B-10	ENDF/B-VIrel4	17-3-97
5011	B-11	ENDF/B-VIrel4	17-3-97
8016	O-16	ENDF/B-VIrel4	17-3-97
13027	Al-27	ENDF/B-VIrel4	17-3-97
40000	Zr_nat	ENDF/B-VIrel4	17-3-97
54135	Xe-135	ENDF/B-VIrel4	17-3-97
62149	Sm-149	ENDF/B-VIrel4	17-3-97
92234	U-234	ENDF/B-VIrel4	14-3-97
92235	U-235	ENDF/B-VIrel4	14-3-97
92236	U-236	ENDF/B-VIrel4	14-3-97
92237	U-237	ENDF/B-VIrel4	14-3-97
92238	U-238	ENDF/B-VIrel4	14-3-97
93237	Np-237	ENDF/B-VIrel4	14-3-97
93238	Np-238	ENDF/B-VIrel4	14-3-97
93239	Np-239	ENDF/B-VIrel4	14-3-97
94238	Pu-238	ENDF/B-VIrel4	14-3-97
94239	Pu-239	ENDF/B-VIrel4	14-3-97
94240	Pu-240	ENDF/B-VIrel4	14-3-97
94241	Pu-241	ENDF/B-VIrel4	14-3-97
94242	Pu-242	ENDF/B-VIrel4	14-3-97
95241	Am-241	ENDF/B-VIrel4	14-3-97
95942	Am-242m	ENDF/B-VIrel4	14-3-97
95243	Am-243	ENDF/B-VIrel4	14-3-97
96242	Cm-242	ENDF/B-VIrel4	14-3-97
96243	Cm-243	ENDF/B-VIrel4	14-3-97
96244	Cm-244	ENDF/B-VIrel4	14-3-97
96245	Cm-245	ENDF/B-VIrel4	14-3-97

Work Package:	2	HTR-N project document No.: HTR-N-02.05-D-2.1.2	Rev. <no.>
Task:	2.1.2	Document type:	Deliverable

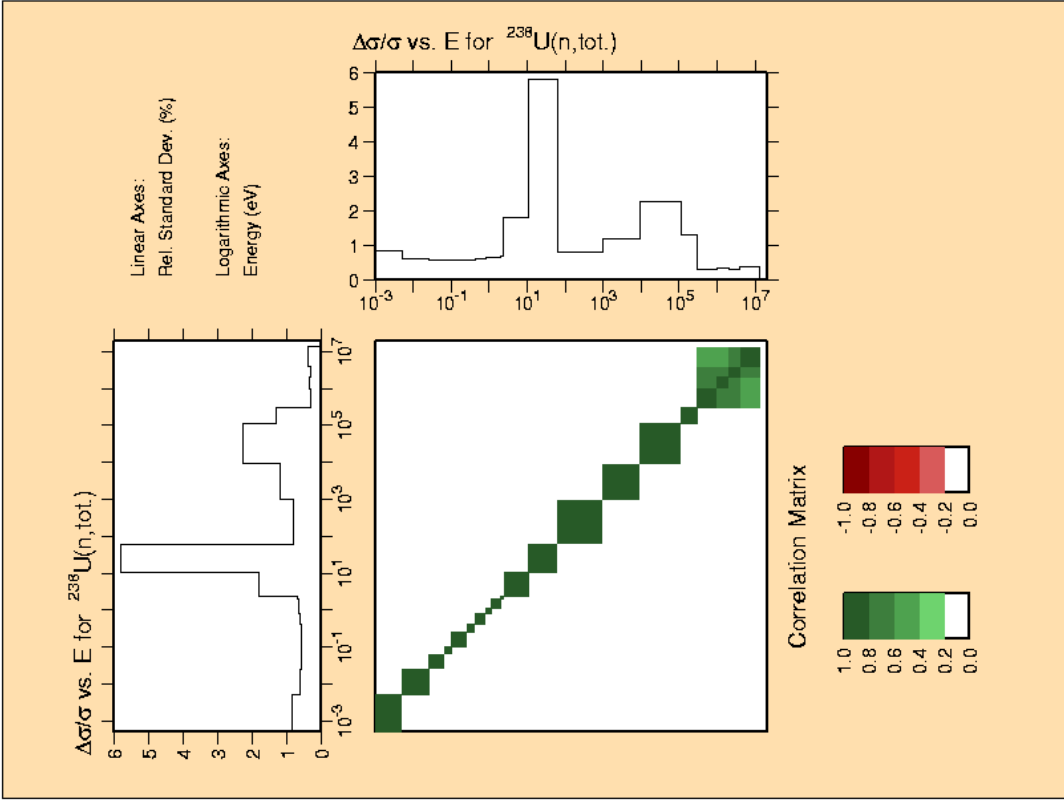


Fig. 1: correlation matrix for ²³⁸U-reaction (n, tot)

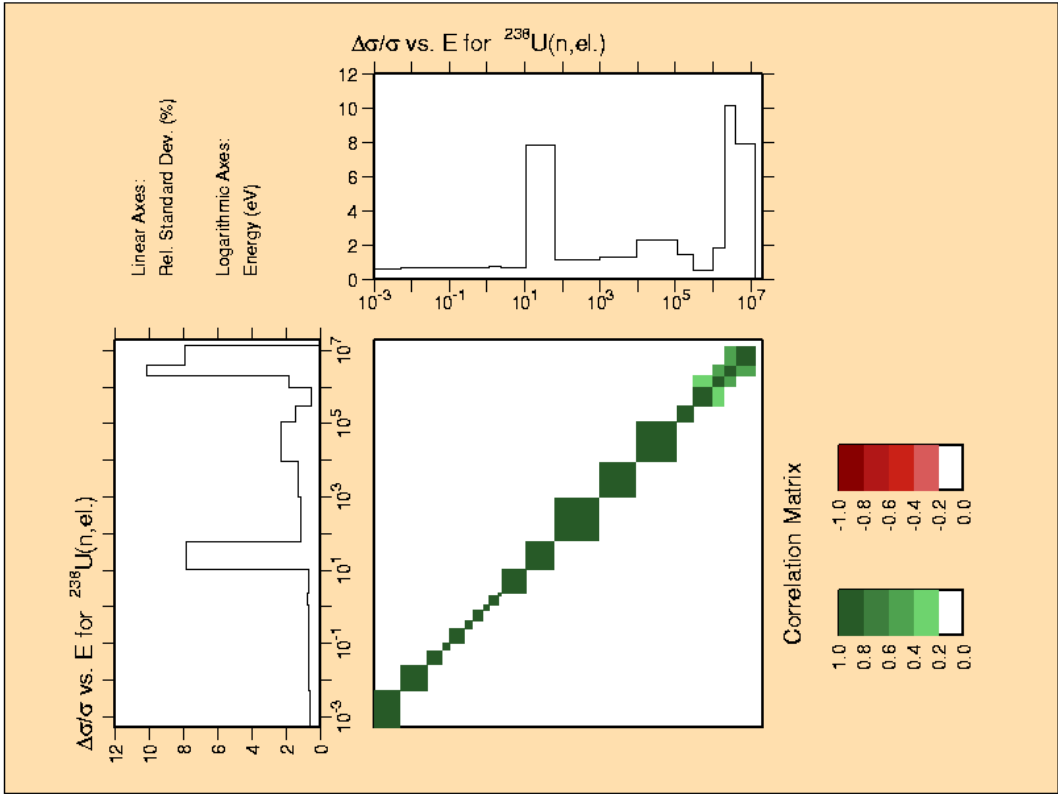


Fig. 2: correlation matrix for ²³⁸U-reaction (n, el.)

Work Package:	2	HTR-N project document No.: HTR-N-02.05-D-2.1.2	Rev. <no.>
Task:	2.1.2	Document type: Deliverable	

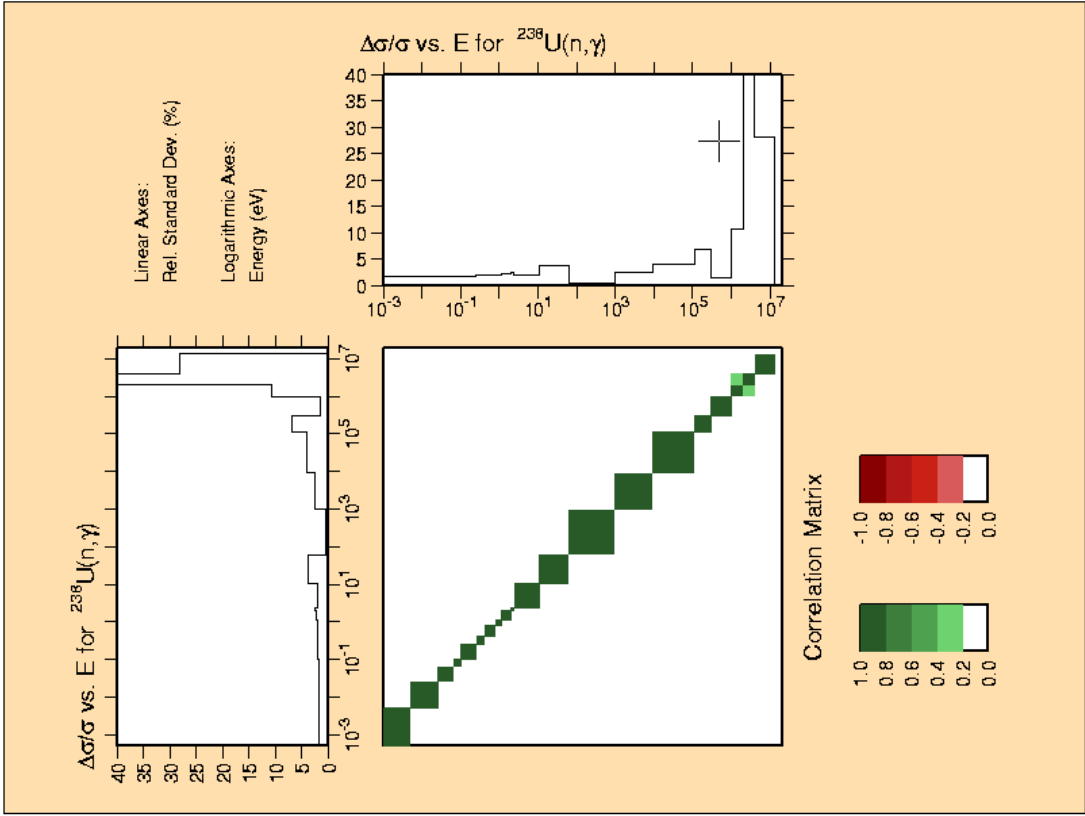


Fig. 3: correlation matrix for ^{238}U -reaction (n, γ)
HTR-N 02-05

Work Package:	2	HTR-N project document No.: HTR-N-02.05-D-2.1.2	Rev. <no.>
Task:	2.1.2	Document type:	Deliverable

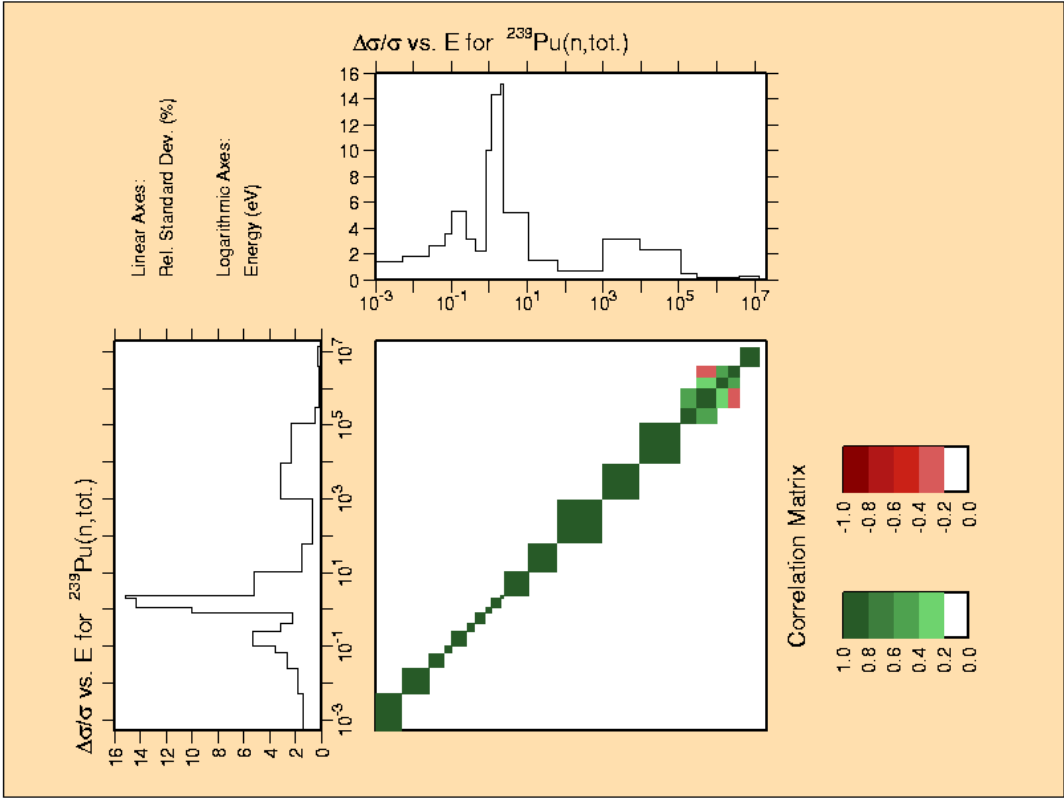


Fig. 4: correlation matrix for ²³⁹Pu-reaction (n, tot)

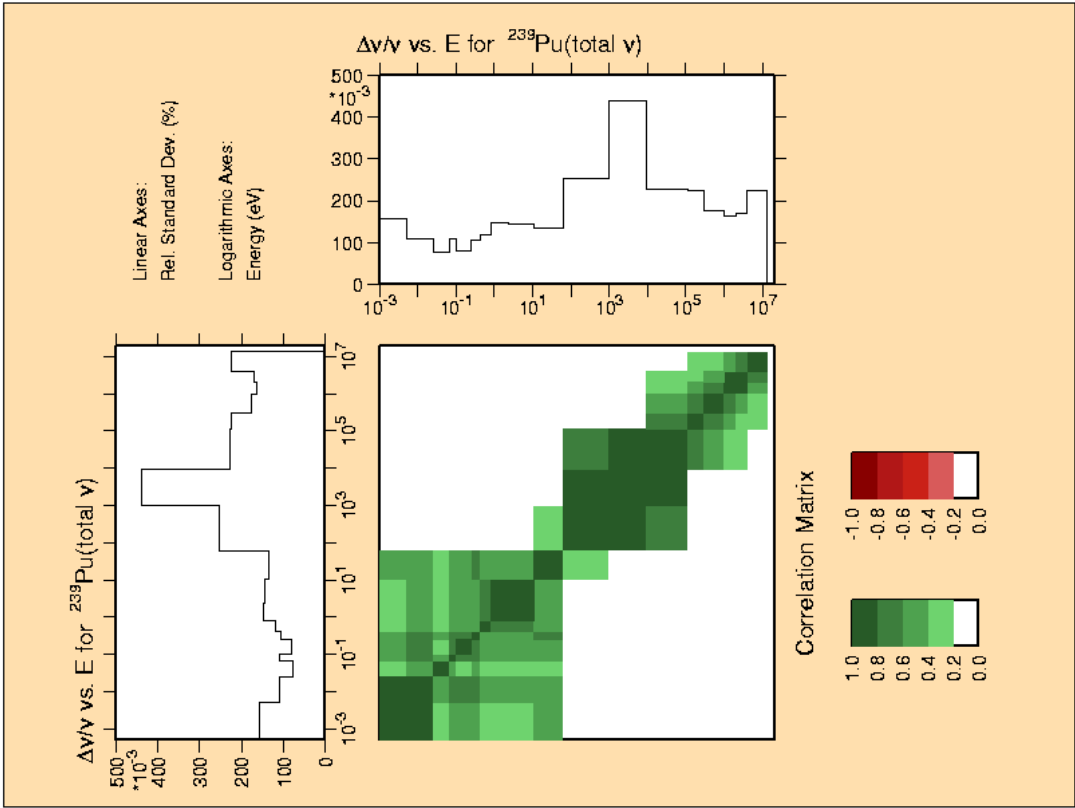


Fig. 5: correlation matrix for ²³⁹Pu (total v)

Work Package:	2	HTR-N project document No.: HTR-N-02.05-D-2.1.2	Rev. <no.>
Task:	2.1.2	Document type:	Deliverable

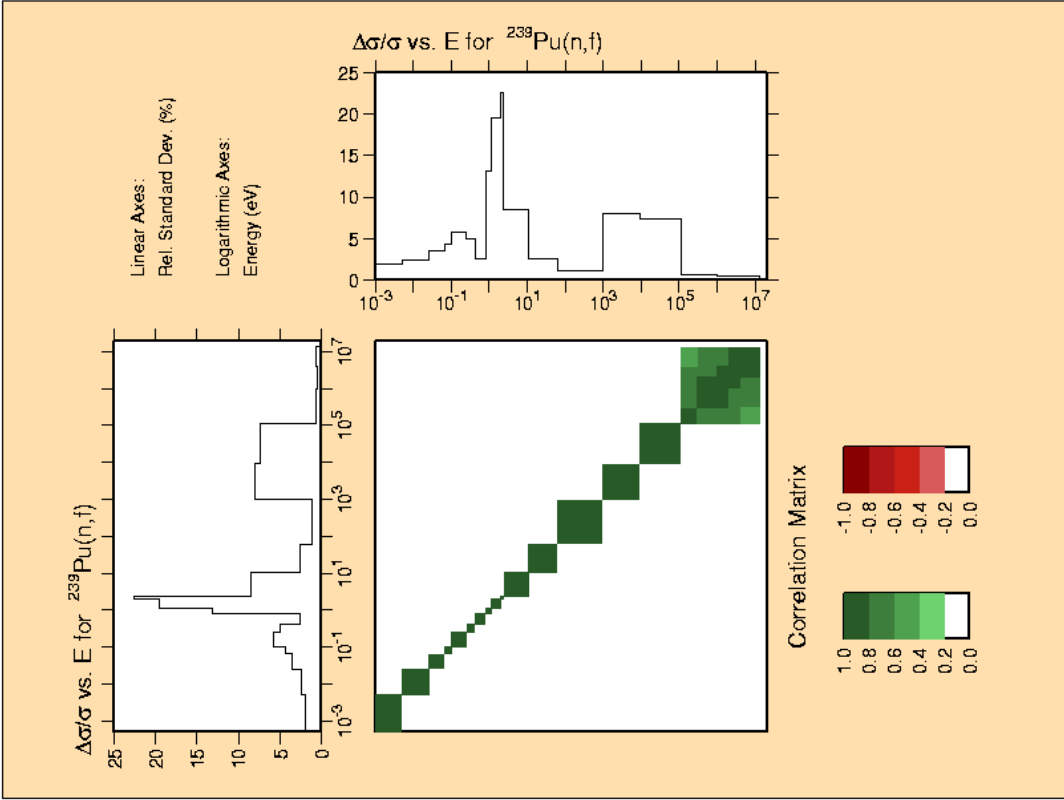


Fig. 6: correlation matrix for ^{239}U -reaction (n, f)

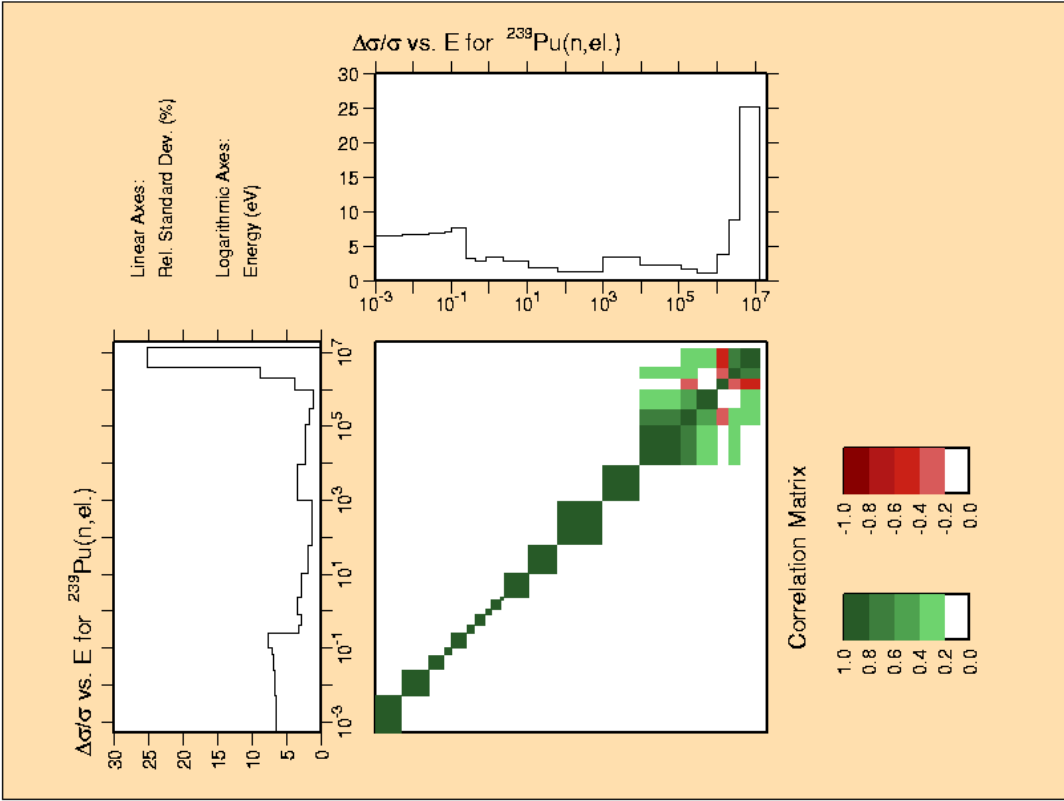


Fig. 7: correlation matrix for ^{239}Pu -reaction (n, el.)

Work Package:	2	HTR-N project document No.: HTR-N-02.05-D-2.1.2	Rev. <no.>
Task:	2.1.2	Document type: Deliverable	

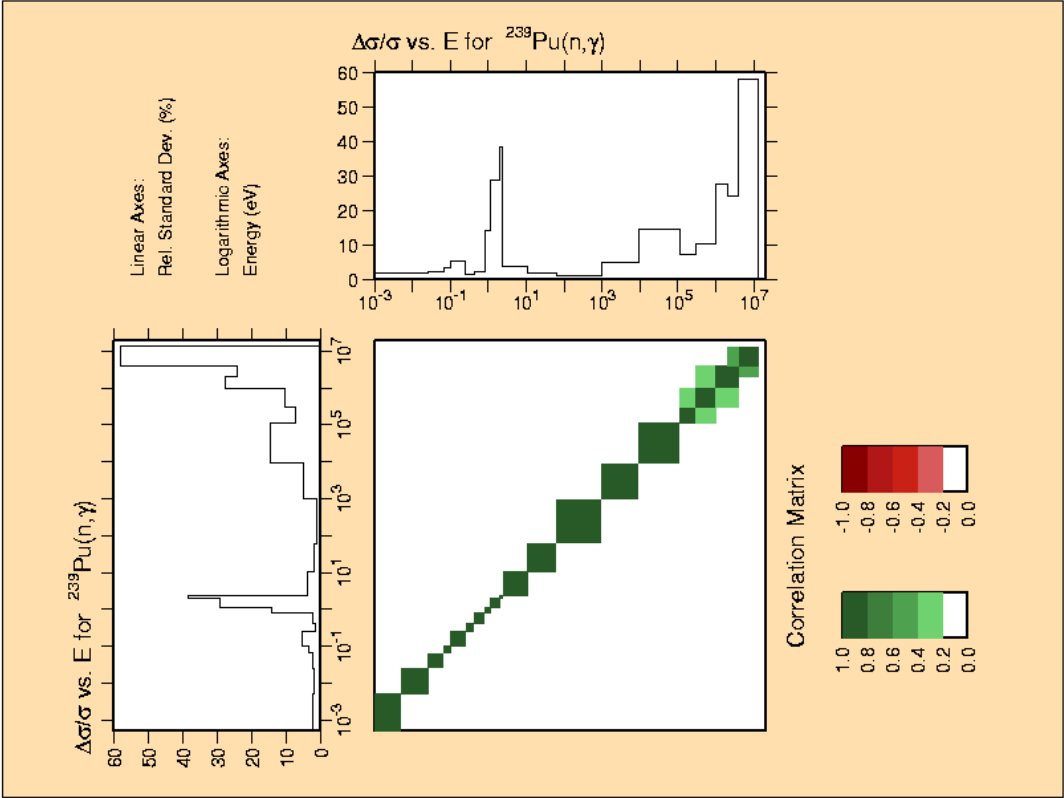


Fig. 8: correlation matrix for ^{239}Pu -reaction (n,γ)

Work Package:	2	HTR-N project document No.: HTR-N-02.05-D-2.1.2	Rev. <no.>
Task:	2.1.2	Document type:	Deliverable

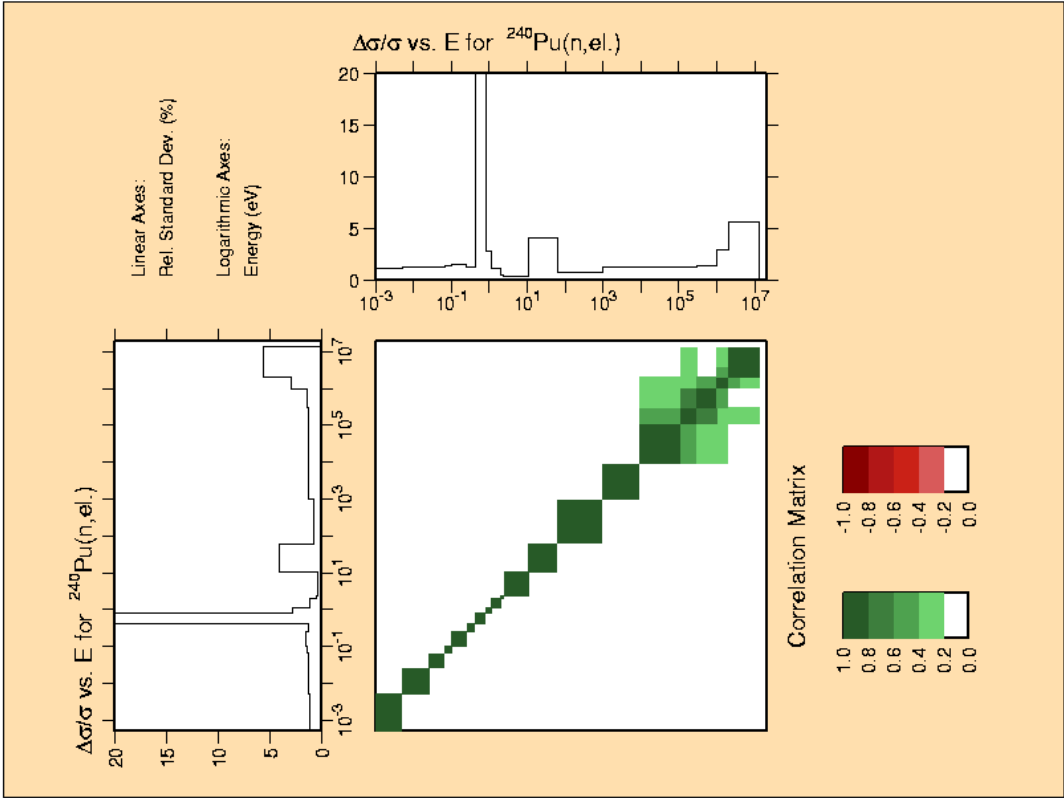


Fig. 9: correlation matrix for ^{240}Pu -reaction (n,el.)

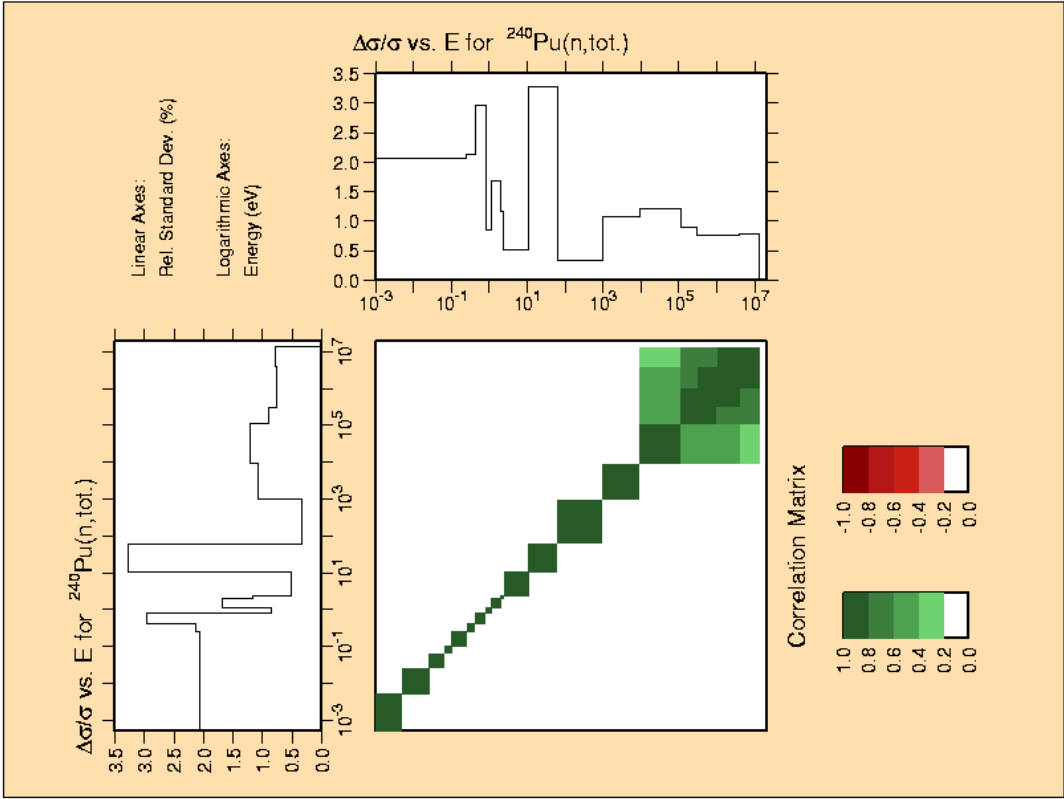


Fig. 10: correlation matrix for ^{240}Pu -reaction (n, tot)

Work Package:	2	HTR-N project document No.: HTR-N-02.05-D-2.1.2	Rev. <no.>
Task:	2.1.2	Document type:	Deliverable

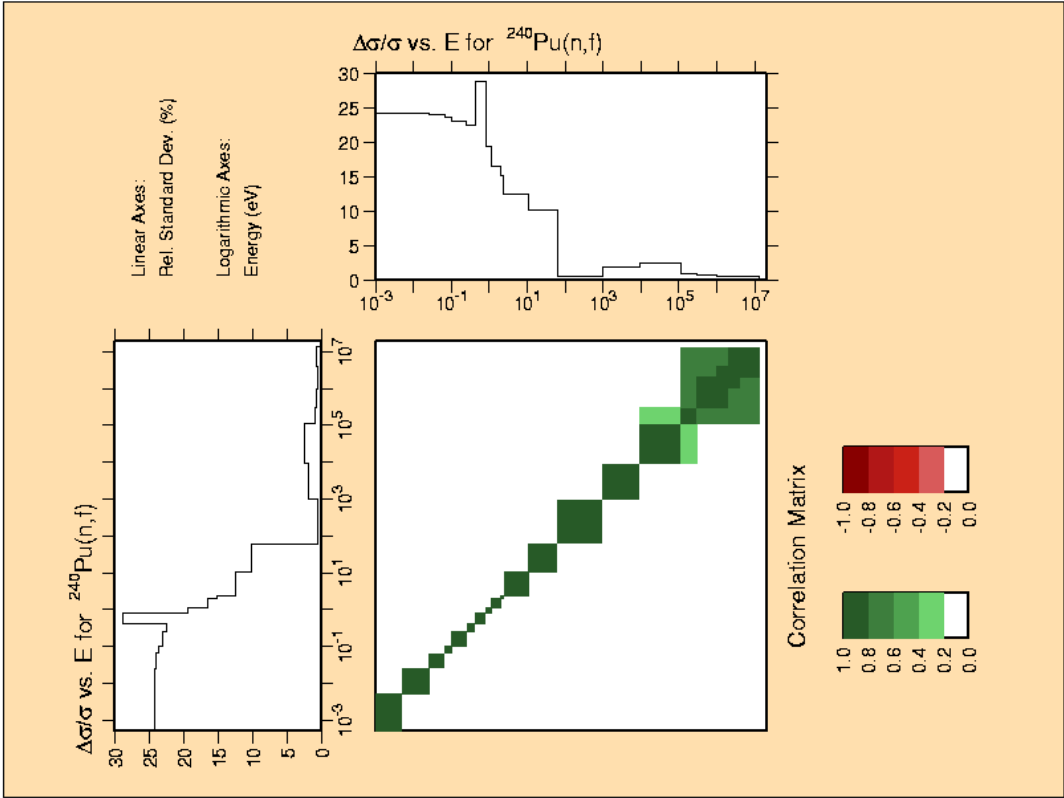


Fig. 11: correlation matrix for ^{240}Pu -reaction (n, f)

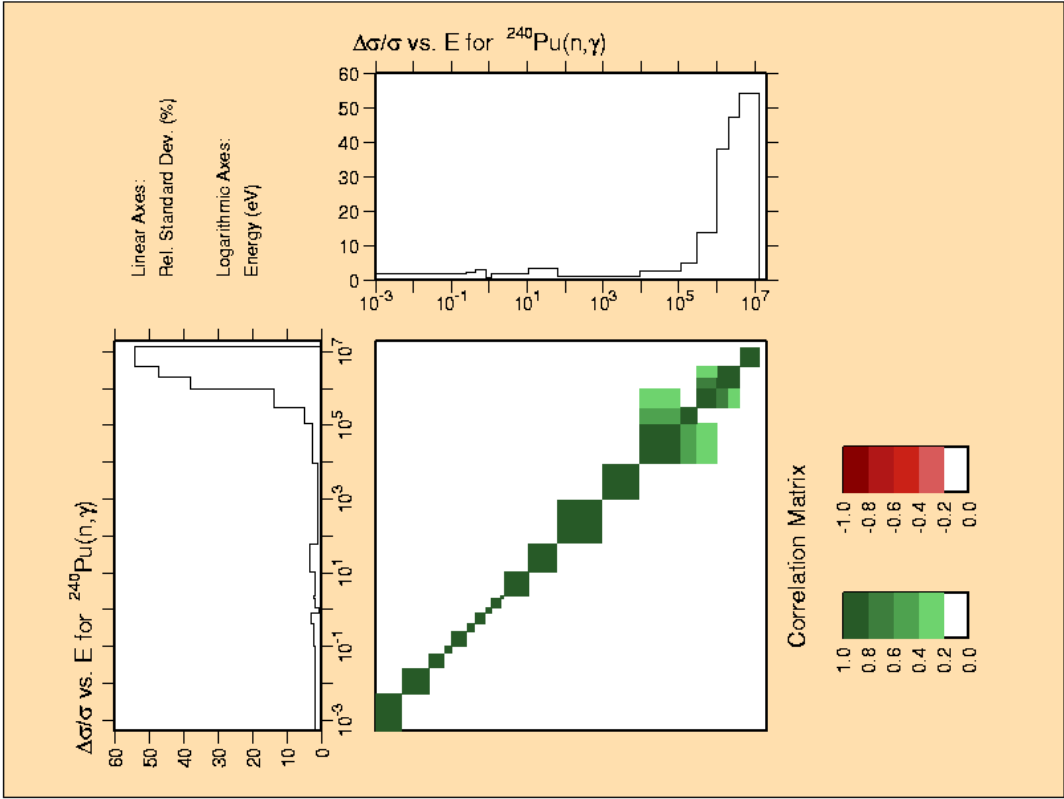


Fig. 12: correlation matrix for ^{240}Pu -reaction (n, γ)

Work Package:	2	HTR-N project document No.: HTR-N-02.05-D-2.1.2	Rev. <no.>
Task:	2.1.2	Document type:	Deliverable

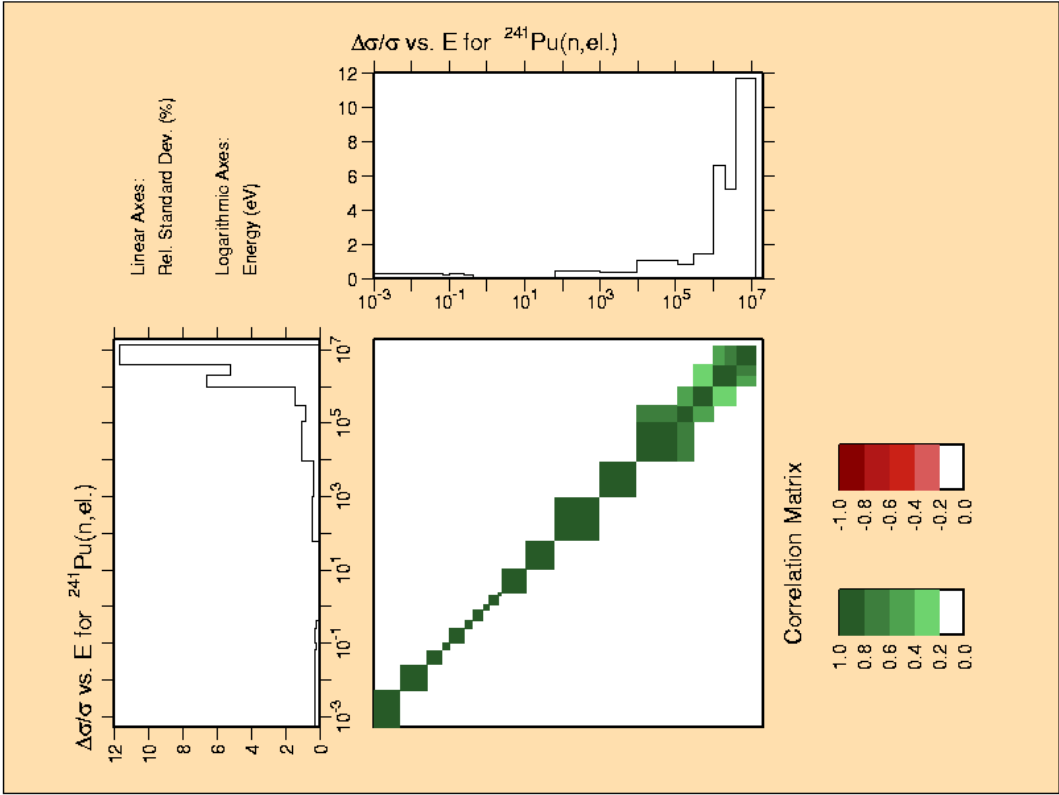


Fig. 13: correlation matrix for ^{241}Pu -reaction (n, el.)

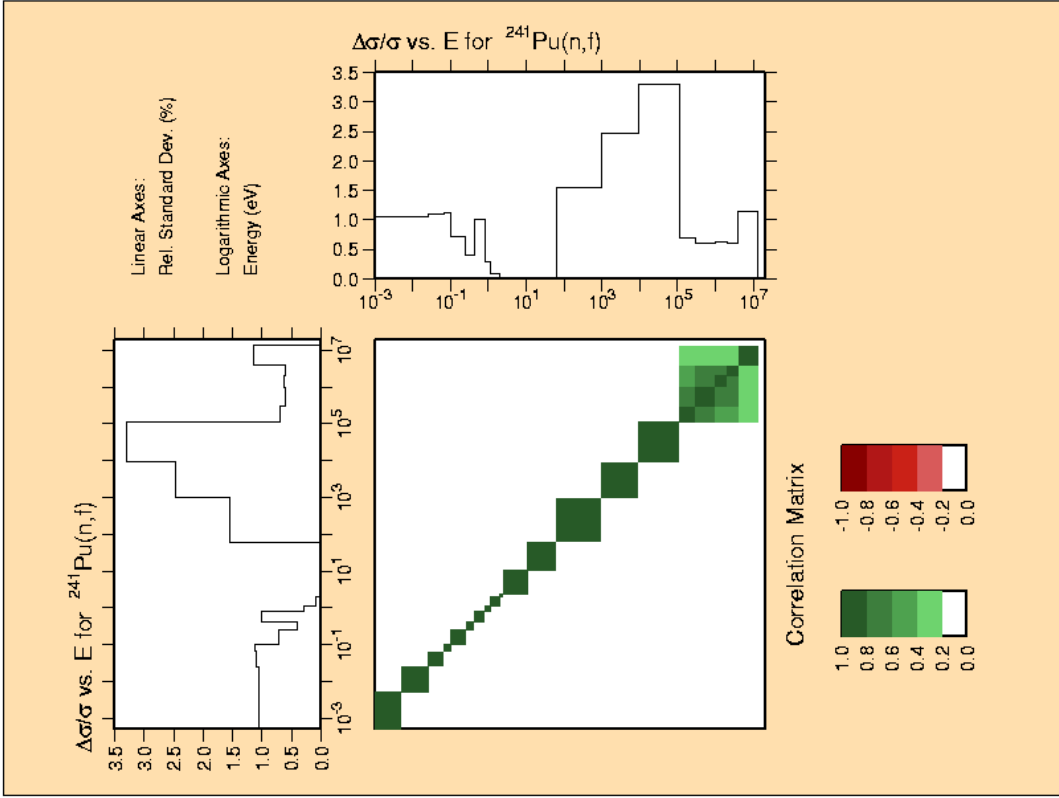


Fig. 14: correlation matrix for ^{241}Pu -reaction (n, f)

Work Package:	2	HTR-N project document No.: HTR-N-02.05-D-2.1.2	Rev. <no.>
Task:	2.1.2	Document type:	Deliverable

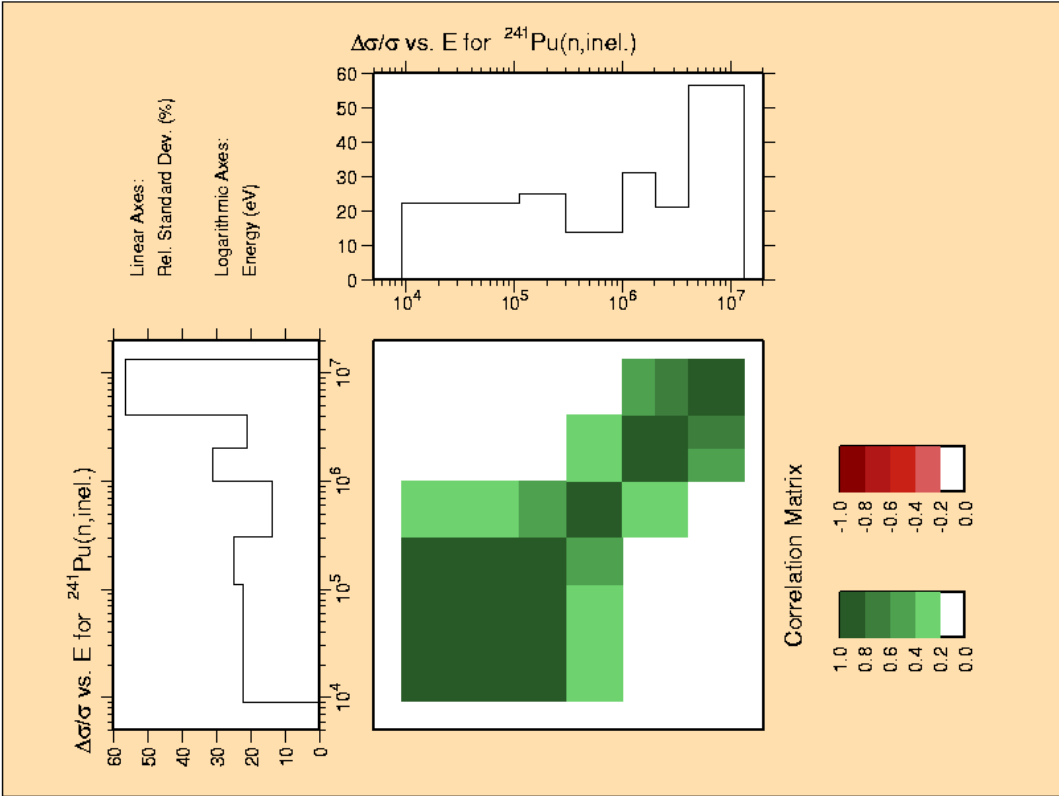


Fig. 15: correlation matrix for ^{241}Pu -reaction (n, incl.)

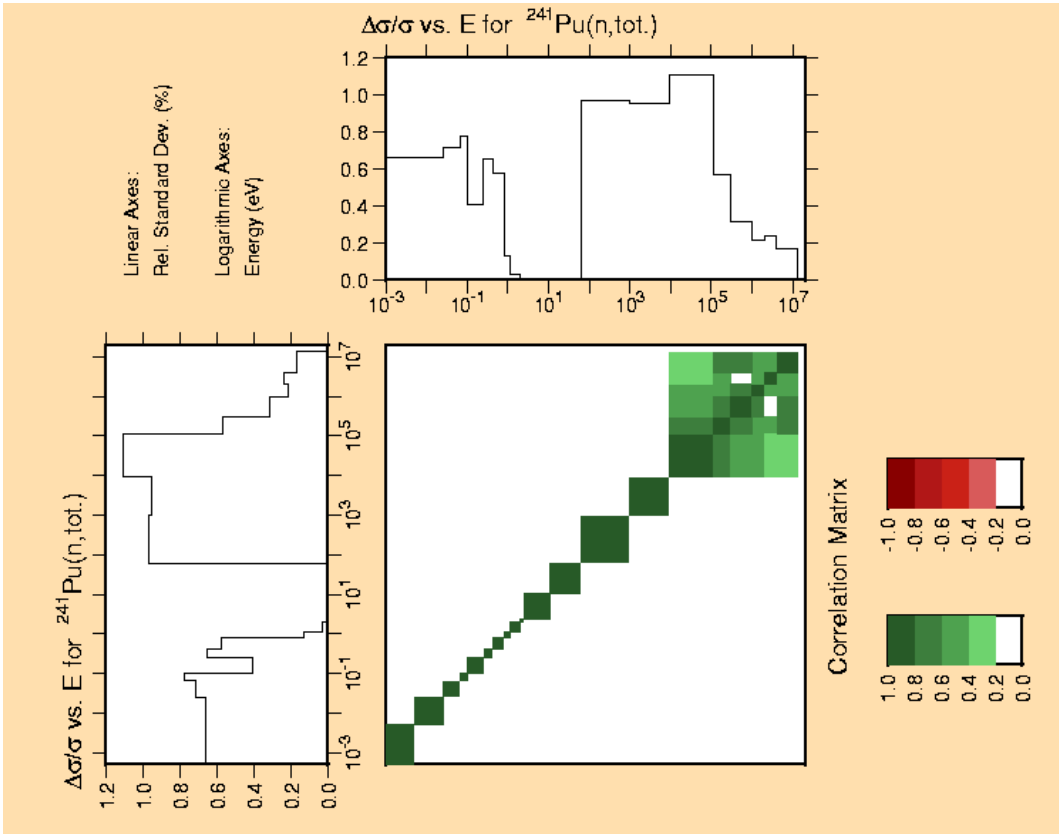


Fig. 16: correlation matrix for ^{241}Pu -reaction (n, tot)

Work Package:	2	HTR-N project document No.: HTR-N-02.05-D-2.1.2	Rev. <no.>
Task:	2.1.2	Document type: Deliverable	

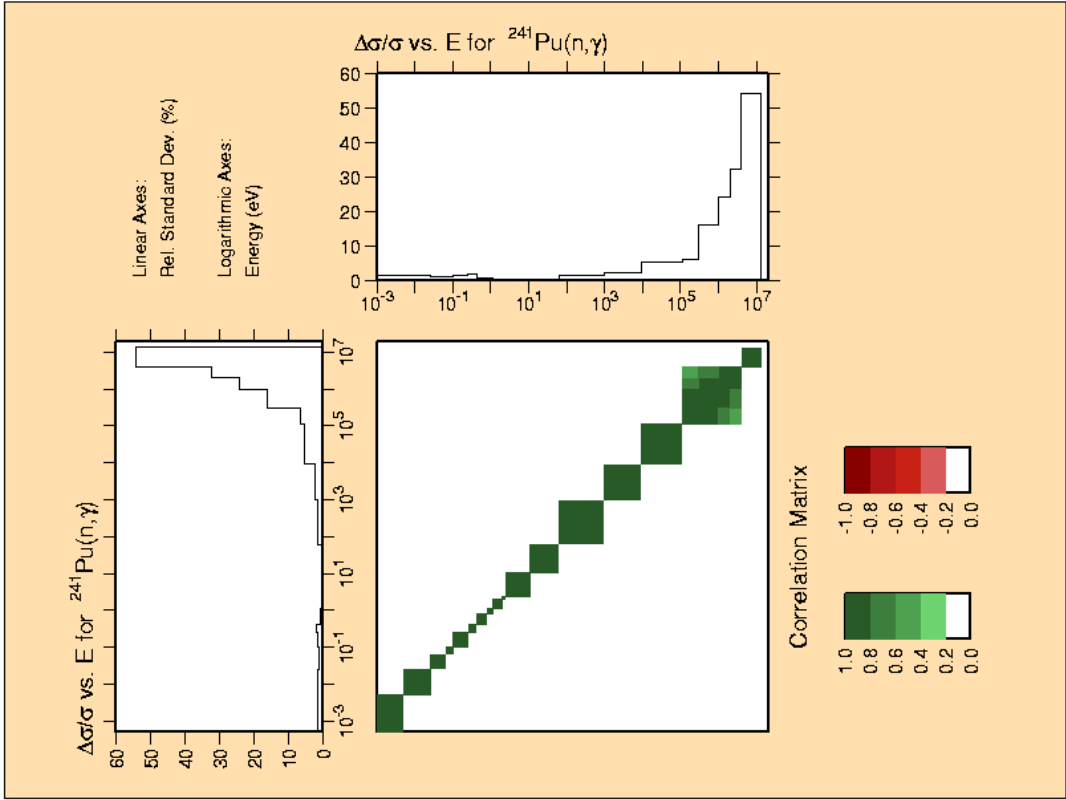


Fig. 17: correlation matrix for ^{241}Pu -reaction (n, γ)

Work Package:	2	HTR-N project document No.: HTR-N-02.05-D-2.1.2	Rev. <no.>
Task:	2.1.2	Document type:	Deliverable