

JEFF-3.12. modifications after processing checks – Summary

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NEA DataBank

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Below are listed all changes incorporated to ENDF files during the processing phase of the JEFF-3.1.2 library – These changes solve NJOY covariance processing issues and get rid of other JANIS warnings. In total 6 files were modified.

Trivial corrections to get rid of JANIS warnings :

Pu-241 : MF1/MT458 ZA field now correctly an integer (previously ZA *field rounded* warning issued)

Am-241: MF4/MT18 and MF5/MT18 ZA field now correctly an integer

Am-242: MF5/MT455 ZA field now correctly an integer

Cd-113 : MF5/MT16 fractional probability set to 1.0 instead of 0.1 (JANIS warning : *only one partial but fractional probability is not simple*)

Issues solved when processing covariances into BOXER format and non-trivial changes:

Nb-93 :

- IZAP fixed in MF10/MT4 and MF40/MT4 – This value was previously wrongly set to 0.

U-233 :

- MF32/MT151 Aji's (resonance spins) values now correctly match MF2/MT151. ER's (energy resonances) rounded. Covariance processing is solved.
- A redundant MT102/MT102 subsection was removed from MF33 (JANIS warning : *Several self covariance matrix found*).

This ENDF file is taken from JENDL 3.3. In fact, the same warning is shown when processing this JENDL3.3 file with JANIS code. The definition of MF=33/MT=102 is summarized in Table 1. NL=3 subsections are shown:

MAT1=0, MTS1=102, MAT and MTs for the second energy-dependent cross-section.
(1st definition of correlation MT102/MT102 related to MT18)

Here, two sub-subsections are defined: NC-type and NI-type

MAT1=9222, MTS1=18

One sub-subsections is defined: NC-type

MAT1=9222, MTS1=102 (2nd definition of correlation MT102/MT102)

One sub-subsections is defined: NI-type

Table 1. An extract of U233 file, MF3 and MT102.

9.223300+4	2.310380+2	0	0	0	3922233102	1
0.000000+0	0.000000+0	0	102	1	1922233102	2
0.000000+0	0.000000+0	0	1	0	0922233102	3
3.000000+4	2.000000+7	9222	18	6	2922233102	4
0.000000+0	0.000000+0	3.000000+4	1.000000+0	2.000000+7	0.000000+0922233102	5
0.000000+0	0.000000+0	1	5	465	30922233102	6
1.000000-5	3.000000+4	4.000000+4	5.000000+4	6.000000+4	7.000000+4922233102	7
8.000000+4	9.000000+4	1.000000+5	1.500000+5	1.750000+5	2.000000+5922233102	8
...						
2.218940-4	1.463680-4	1.881870-4	1.951940-4	0.000000+0	3.182660-2922233102	79
1.909590-4	1.909590-4	3.535940-3	1.619520-4	3.191650-3	0.000000+0922233102	80
3.182660-2	2.864390-4	1.889430-4	2.429270-4	2.519720-4	0.000000+0922233102	81
3.182660-2	1.889430-4	2.429270-4	2.519720-4	0.000000+0	2.289170-2922233102	82
1.602420-4	3.205440-3	0.000000+0	2.289170-2	2.136960-4	0.000000+0922233102	83
5.541320-2	0.000000+0	0.000000+0			922233102	84
0.000000+0	0.000000+0	9222	18	1	0922233102	85
0.000000+0	0.000000+0	0	2	0	0922233102	86
3.000000+4	2.000000+7	9222	18	6	2922233102	87
0.000000+0	0.000000+0	3.000000+4	1.000000+0	2.000000+7	0.000000+0922233102	88
0.000000+0	0.000000+0	9222	102	0	1922233102	89
0.000000+0	0.000000+0	1	5	45	9922233102	90
1.000000-5	6.000000+6	8.000000+6	1.000000+7	1.200000+7	1.400000+7922233102	91
1.600000+7	1.800000+7	2.000000+7	0.000000+0	0.000000+0	0.000000+0922233102	92
0.000000+0	0.000000+0	0.000000+0	0.000000+0	0.000000+0	2.500000-1922233102	93
2.715900-1	2.298400-1	1.809500-1	1.918800-1	2.223700-1	2.501250-1922233102	94
4.356000-1	4.371310-1	4.194960-1	4.343330-1	4.590960-1	4.717350-1922233102	95
4.624000-1	4.660040-1	4.802980-1	4.971620-1	4.998000-1	4.900000-1922233102	96
5.029920-1	5.117840-1	5.050500-1	5.184000-1	5.296030-1	5.248800-1922233102	97
5.476000-1	5.500050-1	5.625000-1			922233102	98
922233	099999					

It can be concluded that the 3rd subsection MT102/MT102 is already present in this evaluation.
This part of the original file has been removed in this update.

Important : Using NJOY code (ERROR and COVR modules), the same results are obtained with or without this 3rd subsection. This type of problem is not identified using NJOY code.