

ENDF/B-VII.1 Beta 5 Release Notes

1. Only the Neutron Sublibrary was processed and verified in this release.
2. The following ENDF-6 Utility Codes and their specific versions were used:
 - STANEF v8.05
 - CHECKR v8.15
 - FIZCON v8.10
 - PSYCHE v8.05

3. CHECKR issued the following errors:

- **4-Be-7 MAT 419**

ERROR(S) FOUND IN MAT= 419, MF= 1, MT=451
EMAX = 8.10E+06 OUT OF RANGE 2.00E+07 - 5.00E+08 SEQUENCE NUMBER 3

The following CHECKR errors have been reclassified as *informational messages* only and can be disregarded:

- **74-W-180 MAT 7425**

ERROR(S) FOUND IN MAT=7425, MF=33, MT= 28
MTL=854 IS ASSIGNED OUT OF ORDER 852 SEQUENCE NUMBER 1

- **74-W-182 MAT 7431**

ERROR(S) FOUND IN MAT=7431, MF=33, MT= 28
MTL=854 IS ASSIGNED OUT OF ORDER 852 SEQUENCE NUMBER 1

- **74-W-183 MAT 7434**

ERROR(S) FOUND IN MAT=7434, MF=33, MT= 28
MTL=854 IS ASSIGNED OUT OF ORDER 852 SEQUENCE NUMBER 1

- **74-W-184 MAT 7437**

ERROR(S) FOUND IN MAT=7437, MF=33, MT= 28

MTL=854 IS ASSIGNED OUT OF ORDER 852 SEQUENCE NUMBER 1

- **74-W -186 MAT 7443**

ERROR(S) FOUND IN MAT=7443, MF=33, MT= 28
MTL=854 IS ASSIGNED OUT OF ORDER 852 SEQUENCE NUMBER 1

- **90-Th-232 MAT 9040**

ERROR(S) FOUND IN MAT=9040, MF=33, MT= 22
MTL=854 IS ASSIGNED OUT OF ORDER 851 SEQUENCE NUMBER 1

4. FIZCON issued the following errors:

- **18-Ar-40 MAT 1837**

ERROR(S) FOUND IN MAT=1837, MF= 5, MT= 16
FOR LF=1 EPMAX FOUND TO BE 1.25000E+06 SHOULD BE 1.12912E+06
FOR LF=1 EPMAX FOUND TO BE 2.25000E+06 SHOULD BE 2.12912E+06
FOR LF=1 EPMAX FOUND TO BE 3.25000E+06 SHOULD BE 3.12912E+06
FOR LF=1 EPMAX FOUND TO BE 4.25000E+06 SHOULD BE 4.12912E+06
FOR LF=1 EPMAX FOUND TO BE 4.75000E+06 SHOULD BE 4.62912E+06
FOR LF=1 EPMAX FOUND TO BE 5.25000E+06 SHOULD BE 5.12912E+06

ERROR(S) FOUND IN MAT=1837, MF= 5, MT= 17
FOR LF=1 EPMAX FOUND TO BE 7.50000E+05 SHOULD BE 5.31800E+05

- **22-Ti-49 MAT 2234**

ERROR(S) FOUND IN MAT=2234, MF= 6, MT= 91
CHECK NORMALIZATION= 0.127853 AT E= 2.8000E+06 SEQUENCE NUMBER 9

- **23-V-50 MAT 2325**

ERROR(S) FOUND IN MAT=2325, MF= 6, MT=102
CHECK NORMALIZATION= 1.000506 AT E= 1.0000E+07 SEQUENCE NUMBER 9816

- **30-Zn-65 MAT 3028**

ERROR(S) FOUND IN MAT=3028, MF= 6, MT=102
CHECK NORMALIZATION= 1.000551 AT E= 1.2000E+07 SEQUENCE NUMBER 4958

- **30-Zn-67 MAT 3034**

ERROR(S) FOUND IN MAT=3034, MF= 6, MT=102
CHECK NORMALIZATION= 0.999410 AT E= 1.0000E+07 SEQUENCE NUMBER 5446

- **30-Zn-68 MAT 3037**

ERROR(S) FOUND IN MAT=3037, MF= 6, MT=102
CHECK NORMALIZATION= 0.999440 AT E= 1.0000E+00 SEQUENCE NUMBER 129
CHECK NORMALIZATION= 0.999399 AT E= 1.0000E+02 SEQUENCE NUMBER 317

- **30-Zn-70 MAT 3043**

ERROR(S) FOUND IN MAT=3043, MF= 6, MT=102
CHECK NORMALIZATION= 0.999291 AT E= 1.0000E-05 SEQUENCE NUMBER 28
CHECK NORMALIZATION= 0.999291 AT E= 1.0000E-01 SEQUENCE NUMBER 58
CHECK NORMALIZATION= 1.000621 AT E= 1.0000E+00 SEQUENCE NUMBER 88
CHECK NORMALIZATION= 0.999157 AT E= 7.0000E+02 SEQUENCE NUMBER 268

- **32-Ge-76 MAT 3243**

ERROR(S) FOUND IN MAT=3243, MF= 4, MT= 51
SECTION DOES NOT SPAN THE SAME ENERGY RANGE AS FILE 3, MT= 51

- **41-Nb-93 MAT 4125**

ERROR(S) FOUND IN MAT=4125, MF= 5, MT= 32
NORMALIZATION CHECK INTEGRAL=9.82505E-01 BEFORE SEQUENCE NUMBER 25

ERROR(S) FOUND IN MAT=4125, MF= 5, MT= 33
NORMALIZATION CHECK INTEGRAL= 9.87893E-01 BEFORE SEQUENCE NUMBER 25

ERROR(S) FOUND IN MAT=4125, MF=10, MT= 4
THE MAXIMUM INCIDENT ENERGY OF 2.00000E+07 (EV)
SHOULD BE GREATER THAN OR EQUAL TO 1.50000E+08

- **50-Sn-120 MAT 5049**

ERROR(S) FOUND IN MAT=5049, MF= 5, MT= 16
FOR LF=1 EPMAX FOUND TO BE 8.12146E+05 SHOULD BE 7.66500E+04

ERROR(S) FOUND IN MAT=5049, MF= 5, MT= 17
FOR LF=1 EPMAX FOUND TO BE 2.68355E+05 SHOULD BE 1.31200E+05

ERROR(S) FOUND IN MAT=5049, MF= 5, MT= 22
FOR LF=1 EPMAX FOUND TO BE 1.15348E+06 SHOULD BE 4.04400E+04

ERROR(S) FOUND IN MAT=5049, MF= 5, MT= 28
FOR LF=1 EPMAX FOUND TO BE 1.24484E+06 SHOULD BE 8.98000E+04

- **72-Hf-174 MAT 7225**

ERROR(S) FOUND IN MAT=7225, MF= 5, MT= 16
FOR LF=1 EPMAX FOUND TO BE 7.50000E+05 SHOULD BE 4.97700E+04
FOR LF=1 EPMAX FOUND TO BE 7.50000E+05 SHOULD BE 4.18320E+05
FOR LF=1 EPMAX FOUND TO BE 1.75000E+06 SHOULD BE 1.41832E+06
FOR LF=1 EPMAX FOUND TO BE 2.75000E+06 SHOULD BE 2.41832E+06

FOR LF=1 EPMAX FOUND TO BE 1.07500E+07 SHOULD BE 1.04183E+07
FOR LF=1 EPMAX FOUND TO BE 1.17500E+07 SHOULD BE 1.14183E+07

ERROR(S) FOUND IN MAT=7225, MF= 5, MT= 17
FOR LF=1 EPMAX FOUND TO BE 7.50000E+05 SHOULD BE 9.03000E+04
FOR LF=1 EPMAX FOUND TO BE 7.50000E+05 SHOULD BE 4.36600E+05
FOR LF=1 EPMAX FOUND TO BE 1.75000E+06 SHOULD BE 1.43660E+06
FOR LF=1 EPMAX FOUND TO BE 2.75000E+06 SHOULD BE 2.43660E+06

- **72-Hf-176 MAT 7231**

ERROR(S) FOUND IN MAT=7231, MF= 5, MT= 16
FOR LF=1 EPMAX FOUND TO BE 1.25000E+06 SHOULD BE 4.63800E+04
FOR LF=1 EPMAX FOUND TO BE 1.25000E+06 SHOULD BE 9.11320E+05
FOR LF=1 EPMAX FOUND TO BE 2.25000E+06 SHOULD BE 1.91132E+06
FOR LF=1 EPMAX FOUND TO BE 3.25000E+06 SHOULD BE 2.91132E+06

FOR LF=1 EPMAX FOUND TO BE 1.12500E+07 SHOULD BE 1.09113E+07
FOR LF=1 EPMAX FOUND TO BE 1.22500E+07 SHOULD BE 1.19113E+07

ERROR(S) FOUND IN MAT=7231, MF= 5, MT= 17
FOR LF=1 EPMAX FOUND TO BE 1.25000E+06 SHOULD BE 8.57000E+04
FOR LF=1 EPMAX FOUND TO BE 1.25000E+06 SHOULD BE 1.05760E+06
FOR LF=1 EPMAX FOUND TO BE 2.25000E+06 SHOULD BE 2.05760E+06
FOR LF=1 EPMAX FOUND TO BE 3.25000E+06 SHOULD BE 3.05760E+06

- **72-Hf-177 MAT 7234**

ERROR(S) FOUND IN MAT=7234, MF= 5, MT= 16
FOR LF=1 EPMAX FOUND TO BE 7.50000E+05 SHOULD BE 3.63800E+04
FOR LF=1 EPMAX FOUND TO BE 7.50000E+05 SHOULD BE 6.19320E+05
FOR LF=1 EPMAX FOUND TO BE 1.75000E+06 SHOULD BE 1.61932E+06
FOR LF=1 EPMAX FOUND TO BE 2.75000E+06 SHOULD BE 2.61932E+06

FOR LF=1 EPMAX FOUND TO BE 1.27500E+07 SHOULD BE 1.26193E+07
FOR LF=1 EPMAX FOUND TO BE 1.37500E+07 SHOULD BE 1.36193E+07

ERROR(S) FOUND IN MAT=7234, MF= 5, MT= 17

FOR LF=1 EPMAX FOUND TO BE 7.50000E+05 SHOULD BE 8.25000E+04
FOR LF=1 EPMAX FOUND TO BE 7.50000E+05 SHOULD BE 5.30600E+05
FOR LF=1 EPMAX FOUND TO BE 1.75000E+06 SHOULD BE 1.53060E+06
FOR LF=1 EPMAX FOUND TO BE 2.75000E+06 SHOULD BE 2.53060E+06

• **72-Hf-178 MAT 7237**

ERROR(S) FOUND IN MAT=7237, MF= 5, MT= 16

FOR LF=1 EPMAX FOUND TO BE 7.50000E+05 SHOULD BE 4.32400E+04
FOR LF=1 EPMAX FOUND TO BE 7.50000E+05 SHOULD BE 3.74320E+05
FOR LF=1 EPMAX FOUND TO BE 1.75000E+06 SHOULD BE 1.37432E+06
FOR LF=1 EPMAX FOUND TO BE 2.75000E+06 SHOULD BE 2.37432E+06

FOR LF=1 EPMAX FOUND TO BE 1.17500E+07 SHOULD BE 1.13743E+07
FOR LF=1 EPMAX FOUND TO BE 1.27500E+07 SHOULD BE 1.23743E+07

ERROR(S) FOUND IN MAT=7237, MF= 5, MT= 17

FOR LF=1 EPMAX FOUND TO BE 1.25000E+06 SHOULD BE 7.94000E+04
FOR LF=1 EPMAX FOUND TO BE 1.25000E+06 SHOULD BE 9.93600E+05
FOR LF=1 EPMAX FOUND TO BE 2.25000E+06 SHOULD BE 1.99360E+06
FOR LF=1 EPMAX FOUND TO BE 3.25000E+06 SHOULD BE 2.99360E+06

• **72-Hf-179 MAT 7240**

ERROR(S) FOUND IN MAT=7240, MF= 5, MT= 16

FOR LF=1 EPMAX FOUND TO BE 1.25000E+06 SHOULD BE 3.43900E+04
FOR LF=1 EPMAX FOUND TO BE 1.25000E+06 SHOULD BE 9.00320E+05
FOR LF=1 EPMAX FOUND TO BE 2.25000E+06 SHOULD BE 1.90032E+06
FOR LF=1 EPMAX FOUND TO BE 3.25000E+06 SHOULD BE 2.90032E+06

FOR LF=1 EPMAX FOUND TO BE 1.32500E+07 SHOULD BE 1.29003E+07
FOR LF=1 EPMAX FOUND TO BE 1.42500E+07 SHOULD BE 1.39003E+07

ERROR(S) FOUND IN MAT=7240, MF= 5, MT= 17

FOR LF=1 EPMAX FOUND TO BE 7.50000E+05 SHOULD BE 7.74000E+04
FOR LF=1 EPMAX FOUND TO BE 7.50000E+05 SHOULD BE 2.74600E+05

• **72-Hf-180 MAT 7243**

ERROR(S) FOUND IN MAT=7243, MF= 5, MT= 16

FOR LF=1 EPMAX FOUND TO BE 7.50000E+05 SHOULD BE 4.14200E+04
FOR LF=1 EPMAX FOUND TO BE 7.50000E+05 SHOULD BE 6.12320E+05
FOR LF=1 EPMAX FOUND TO BE 1.75000E+06 SHOULD BE 1.61232E+06
FOR LF=1 EPMAX FOUND TO BE 2.75000E+06 SHOULD BE 2.61232E+06

FOR LF=1 EPMAX FOUND TO BE 1.17500E+07 SHOULD BE 1.16123E+07

FOR LF=1 EPMAX FOUND TO BE 1.27500E+07 SHOULD BE 1.26123E+07

ERROR(S) FOUND IN MAT=7243, MF= 5, MT= 17

FOR LF=1 EPMAX FOUND TO BE 7.50000E+05 SHOULD BE 7.56000E+04

FOR LF=1 EPMAX FOUND TO BE 7.50000E+05 SHOULD BE 5.12600E+05

FOR LF=1 EPMAX FOUND TO BE 1.75000E+06 SHOULD BE 1.51260E+06

FOR LF=1 EPMAX FOUND TO BE 2.75000E+06 SHOULD BE 2.51260E+06

- **93-Np-237 MAT 9436**

ERROR(S) FOUND IN MAT=9346, MF= 6, MT= 16

SECTION DOES NOT SPAN THE SAME ENERGY RANGE AS FILE 3, MT= 16

ERROR(S) FOUND IN MAT=9346, MF= 6, MT= 17

SECTION DOES NOT SPAN THE SAME ENERGY RANGE AS FILE 3, MT= 17

- **94-Pu-240 MAT 9440**

ERROR(S) FOUND IN MAT=9440, MF= 5, MT= 18

SECTION DOES NOT SPAN THE SAME ENERGY RANGE AS FILE 3, MT= 18

- **98-Cf-249 MAT 9852**

ERROR(S) FOUND IN MAT=9852, MF= 3, MT= 58

SECTIONS ARE NOT IN INCREASING LEVEL ENERGY ORDER AT MT = 58

For the benefit of evaluators, FIZCON issued the following errors which have been reclassified as *informational messages only* and can be disregarded:

- **1-H-1 MAT 125**

ERROR(S) FOUND IN MAT= 125, MF= 6, MT=102

DISCRETE 2-BODY LAW NOT PERMITTED FOR MT= 102 SEQUENCE NUMBER 2

Reason: In the above, 2-body law for H-1 MT-102 is fine.

- **3-Li-6 MAT 325**

ERROR(S) FOUND IN MAT= 325, MF= 6, MT=105

DISCRETE 2-BODY LAW NOT PERMITTED FOR MT= 105 SEQUENCE NUMBER 2

Reason: In the above, 2-body law for Li-6 MT-105 is fine.

- **8-O-16 MAT 825**

ERROR(S) FOUND IN MAT= 825, MF=33, MT=103

BAD NC-TYPE SUB-SUBSECTION SEQUENCE NUMBER 4
CONFLICTS WITH SUB-SUBSECTION AT 4
DERIVED MT= 4 USED AS AN MTI IN MT=103

ERROR(S) FOUND IN MAT= 825, MF=33, MT=104
BAD NC-TYPE SUB-SUBSECTION SEQUENCE NUMBER 4
CONFLICTS WITH SUB-SUBSECTION AT 4
DERIVED MT= 4 USED AS AN MTI IN MT=104

ERROR(S) FOUND IN MAT= 825, MF=33, MT=105
BAD NC-TYPE SUB-SUBSECTION SEQUENCE NUMBER 4
CONFLICTS WITH SUB-SUBSECTION AT 4
DERIVED MT= 4 USED AS AN MTI IN MT=105

ERROR(S) FOUND IN MAT= 825, MF=33, MT=107
BAD NC-TYPE SUB-SUBSECTION SEQUENCE NUMBER 4
CONFLICTS WITH SUB-SUBSECTION AT 4
DERIVED MT= 4 USED AS AN MTI IN MT=107

Reason: In the above, nested NC-type covariance is fine.

- **14-Si-28 MAT 1425**

ERROR(S) FOUND IN MAT=1425, MF=33, MT= 4
BAD NC-TYPE SUB-SUBSECTION SEQUENCE NUMBER 4
CONFLICTS WITH SUB-SUBSECTION AT 4
DERIVED MT= 1 USED AS AN MTI IN MT= 4

Reason: In the above, nested NC-type covariance is fine.

- **48-Cd-115M MAT 4853**

ERROR(S) FOUND IN MAT=4853, MF=12, MT= 51
THE ENERGY OF HIGHEST LEVEL MUST BE 0.0000E+00 SEQUENCE NUMBER 2

Reason: The above is an isomer target. The energy of the first level that can be attained is zero.

- **67-Ho-166M MAT 6729**

ERROR(S) FOUND IN MAT=6729, MF=12, MT= 51
THE ENERGY OF HIGHEST LEVEL MUST BE 0.0000E+00 SEQUENCE NUMBER 2

Reason: The above is an isomer target. The energy of the first level that can be attained is zero.

- **74-W-180 MAT 7425**

ERROR(S) FOUND IN MAT=7425, MF=33, MT= 17	
ENERGY INCORRECT	SEQUENCE NUMBER 265
EXPECT 1.00000E-05, FIND 3.57170E+06	
ERROR(S) FOUND IN MAT=7425, MF=33, MT= 51	
ENERGY INCORRECT	SEQUENCE NUMBER 539
EXPECT 1.00000E-05, FIND 3.57170E+06	
ERROR(S) FOUND IN MAT=7425, MF=33, MT=851	
ENERGY INCORRECT	SEQUENCE NUMBER 4
EXPECT 1.00000E-05, FIND 3.57170E+06	
ENERGY INCORRECT	SEQUENCE NUMBER 35
EXPECT 1.00000E-05, FIND 3.57170E+06	
ENERGY INCORRECT	SEQUENCE NUMBER 326
EXPECT 1.00000E-05, FIND 7.81170E+00	
ERROR(S) FOUND IN MAT=7425, MF=33, MT=852	
ENERGY INCORRECT	SEQUENCE NUMBER 173
EXPECT 1.00000E-05, FIND 1.79010E+06	
ENERGY INCORRECT	SEQUENCE NUMBER 228
EXPECT 1.00000E-05, FIND 7.81170E+00	
ERROR(S) FOUND IN MAT=7425, MF=33, MT=853	
ENERGY INCORRECT	SEQUENCE NUMBER 216
EXPECT 1.00000E-05, FIND 1.79010E+06	
ENERGY INCORRECT	SEQUENCE NUMBER 320
EXPECT 1.00000E-05, FIND 7.81170E+00	
ERROR(S) FOUND IN MAT=7425, MF=33, MT=854	
ENERGY INCORRECT	SEQUENCE NUMBER 73
EXPECT 1.00000E-05, FIND 1.79010E+06	
ENERGY INCORRECT	SEQUENCE NUMBER 170
EXPECT 1.00000E-05, FIND 7.81170E+00	
ERROR(S) FOUND IN MAT=7425, MF=33, MT=855	
ENERGY INCORRECT	SEQUENCE NUMBER 4
EXPECT 1.00000E-05, FIND 1.79010E+06	
ENERGY INCORRECT	SEQUENCE NUMBER 45
EXPECT 1.00000E-05, FIND 1.79010E+06	
ENERGY INCORRECT	SEQUENCE NUMBER 48
EXPECT 1.00000E-05, FIND 7.81170E+00	
ERROR(S) FOUND IN MAT=7425, MF=33, MT=856	
ENERGY INCORRECT	SEQUENCE NUMBER 4
EXPECT 1.00000E-05, FIND 7.81170E+00	

Reason: The above are threshold reactions. Thus, their covariances do not start at 10e-5 eV (possibly a FIZCON bug).

ERROR(S) FOUND IN MAT=7425, MF=33, MT=102	
ENERGY INCORRECT	SEQUENCE NUMBER 493
EXPECT 1.00000E-05, FIND 3.57170E+06	

Reason: The above is a cross-correlation in a threshold reaction. Thus, its covariance does not start at 10e-5 eV (possibly a FIZCON bug).

• **74-W-182 MAT 7431**

ERROR(S) FOUND IN MAT=7431, MF=33, MT= 2	
ENERGY INCORRECT	SEQUENCE NUMBER 159
EXPECT 1.00000E-05, FIND 4.50000E+03	
ENERGY INCORRECT	SEQUENCE NUMBER 250
EXPECT 1.00000E-05, FIND 4.50000E+03	
ENERGY INCORRECT	SEQUENCE NUMBER 1512
EXPECT 1.00000E-05, FIND 4.50000E+03	
ERROR(S) FOUND IN MAT=7431, MF=33, MT=102	
ENERGY INCORRECT	SEQUENCE NUMBER 157
EXPECT 1.00000E-05, FIND 4.50000E+03	
ENERGY INCORRECT	SEQUENCE NUMBER 163
EXPECT 1.00000E-05, FIND 4.49650E+06	
ENERGY INCORRECT	SEQUENCE NUMBER 901

Reason: The above cross-correlations are in threshold reactions. Thus, their covariances do not start at 10e-5 eV (possibly a FIZCON bug).

ERROR(S) FOUND IN MAT=7431, MF=33, MT= 17	
ENERGY INCORRECT	SEQUENCE NUMBER 100
EXPECT 1.00000E-05, FIND 4.50000E+03	
ENERGY INCORRECT	SEQUENCE NUMBER 191
EXPECT 1.00000E-05, FIND 4.49650E+06	
ERROR(S) FOUND IN MAT=7431, MF=33, MT= 51	
ENERGY INCORRECT	SEQUENCE NUMBER 111
EXPECT 1.00000E-05, FIND 4.50000E+03	
ENERGY INCORRECT	SEQUENCE NUMBER 346
EXPECT 1.00000E-05, FIND 4.49650E+06	
ERROR(S) FOUND IN MAT=7431, MF=33, MT=851	
ENERGY INCORRECT	SEQUENCE NUMBER 4
EXPECT 1.00000E-05, FIND 4.49650E+06	
ENERGY INCORRECT	SEQUENCE NUMBER 32
EXPECT 1.00000E-05, FIND 4.49650E+06	
ENERGY INCORRECT	SEQUENCE NUMBER 299
EXPECT 1.00000E-05, FIND 5.14530E+02	
ERROR(S) FOUND IN MAT=7431, MF=33, MT=852	
ENERGY INCORRECT	SEQUENCE NUMBER 224
EXPECT 1.00000E-05, FIND 5.14530E+02	
ERROR(S) FOUND IN MAT=7431, MF=33, MT=853	
ENERGY INCORRECT	SEQUENCE NUMBER 310
EXPECT 1.00000E-05, FIND 5.14530E+02	

ERROR(S) FOUND IN MAT=7431, MF=33, MT=854
ENERGY INCORRECT SEQUENCE NUMBER 158
EXPECT 1.00000E-05, FIND 5.14530E+02

ERROR(S) FOUND IN MAT=7431, MF=33, MT=855
ENERGY INCORRECT SEQUENCE NUMBER 44
EXPECT 1.00000E-05, FIND 5.14530E+02

ERROR(S) FOUND IN MAT=7431, MF=33, MT=856
ENERGY INCORRECT SEQUENCE NUMBER 4

Reason: The above are threshold reactions. Thus, their covariances do not start at 10e-5 eV (possibly a FIZCON bug).

• **74-W-183 MAT 7434**

ERROR(S) FOUND IN MAT=7434, MF=33, MT= 2
ENERGY INCORRECT SEQUENCE NUMBER 166
EXPECT 1.00000E-05, FIND 2.20000E+03
ENERGY INCORRECT SEQUENCE NUMBER 260
EXPECT 1.00000E-05, FIND 2.20000E+03
ENERGY INCORRECT SEQUENCE NUMBER 1660
EXPECT 1.00000E-05, FIND 2.20000E+03

ERROR(S) FOUND IN MAT=7434, MF=33, MT=102
ENERGY INCORRECT SEQUENCE NUMBER 164
EXPECT 1.00000E-05, FIND 2.20000E+03
ENERGY INCORRECT SEQUENCE NUMBER 171
EXPECT 1.00000E-05, FIND 3.57170E+06
ENERGY INCORRECT SEQUENCE NUMBER 1012
EXPECT 1.00000E-05, FIND 2.20000E+03

Reason: The above are cross-correlations in threshold reactions. Thus, their covariances do not start at 10e-5 eV (possibly a FIZCON bug).

ERROR(S) FOUND IN MAT=7434, MF=33, MT= 17
ENERGY INCORRECT SEQUENCE NUMBER 105
EXPECT 1.00000E-05, FIND 2.20000E+03
ENERGY INCORRECT SEQUENCE NUMBER 199
EXPECT 1.00000E-05, FIND 3.57170E+06

ERROR(S) FOUND IN MAT=7434, MF=33, MT= 51
ENERGY INCORRECT SEQUENCE NUMBER 123
EXPECT 1.00000E-05, FIND 2.20000E+03
ENERGY INCORRECT SEQUENCE NUMBER 378
EXPECT 1.00000E-05, FIND 3.57170E+06

ERROR(S) FOUND IN MAT=7434, MF=33, MT=851
ENERGY INCORRECT SEQUENCE NUMBER 4

EXPECT 1.00000E-05, FIND 3.57170E+06	
ENERGY INCORRECT	SEQUENCE NUMBER 35
EXPECT 1.00000E-05, FIND 3.57170E+06	
ENERGY INCORRECT	SEQUENCE NUMBER 353
EXPECT 1.00000E-05, FIND 5.14530E+02	
ERROR(S) FOUND IN MAT=7434, MF=33, MT=852	
ENERGY INCORRECT	SEQUENCE NUMBER 280
EXPECT 1.00000E-05, FIND 5.14530E+02	
ERROR(S) FOUND IN MAT=7434, MF=33, MT=853	
ENERGY INCORRECT	SEQUENCE NUMBER 407
EXPECT 1.00000E-05, FIND 5.14530E+02	
ERROR(S) FOUND IN MAT=7434, MF=33, MT=854	
ENERGY INCORRECT	SEQUENCE NUMBER 179
EXPECT 1.00000E-05, FIND 5.14530E+02	
ERROR(S) FOUND IN MAT=7434, MF=33, MT=855	
ENERGY INCORRECT	SEQUENCE NUMBER 48
EXPECT 1.00000E-05, FIND 5.14530E+02	
ERROR(S) FOUND IN MAT=7434, MF=33, MT=856	
ENERGY INCORRECT	SEQUENCE NUMBER 4
EXPECT 1.00000E-05, FIND 5.14530E+02	

Reason: These are threshold reactions. Thus, their covariances do not start at 10e-5 eV (possibly a FIZCON bug).

- **74-W-184 MAT 7437**

ERROR(S) FOUND IN MAT=7437, MF=33, MT= 2	
ENERGY INCORRECT	SEQUENCE NUMBER 138
EXPECT 1.00000E-05, FIND 1.50000E+04	
ENERGY INCORRECT	SEQUENCE NUMBER 223
EXPECT 1.00000E-05, FIND 1.50000E+04	
ENERGY INCORRECT	SEQUENCE NUMBER 1368
EXPECT 1.00000E-05, FIND 1.50000E+04	
ERROR(S) FOUND IN MAT=7437, MF=33, MT=102	
ENERGY INCORRECT	SEQUENCE NUMBER 136
EXPECT 1.00000E-05, FIND 1.50000E+04	
ENERGY INCORRECT	SEQUENCE NUMBER 142
EXPECT 1.00000E-05, FIND 4.49650E+06	
ENERGY INCORRECT	SEQUENCE NUMBER 820
EXPECT 1.00000E-05, FIND 1.50000E+04	

Reason: The above are cross-correlations in threshold reactions. Thus, their covariances do not start at 10e-5 eV (possibly a FIZCON bug).

ERROR(S) FOUND IN MAT=7437, MF=33, MT= 17	
ENERGY INCORRECT	SEQUENCE NUMBER 100

EXPECT 1.00000E-05, FIND 1.50000E+04	
ENERGY INCORRECT	SEQUENCE NUMBER 185
EXPECT 1.00000E-05, FIND 4.49650E+06	
ERROR(S) FOUND IN MAT=7437, MF=33, MT= 51	
ENERGY INCORRECT	SEQUENCE NUMBER 111
EXPECT 1.00000E-05, FIND 1.50000E+04	
ENERGY INCORRECT	SEQUENCE NUMBER 329
EXPECT 1.00000E-05, FIND 4.49650E+06	
ERROR(S) FOUND IN MAT=7437, MF=33, MT=851	
ENERGY INCORRECT	SEQUENCE NUMBER 4
EXPECT 1.00000E-05, FIND 4.49650E+06	
ENERGY INCORRECT	SEQUENCE NUMBER 32
EXPECT 1.00000E-05, FIND 4.49650E+06	
ENERGY INCORRECT	SEQUENCE NUMBER 297
EXPECT 1.00000E-05, FIND 2.25360E+05	
ERROR(S) FOUND IN MAT=7437, MF=33, MT=852	
ENERGY INCORRECT	SEQUENCE NUMBER 234
EXPECT 1.00000E-05, FIND 2.25360E+05	
ERROR(S) FOUND IN MAT=7437, MF=33, MT=853	
ENERGY INCORRECT	SEQUENCE NUMBER 301
EXPECT 1.00000E-05, FIND 2.25360E+05	
ERROR(S) FOUND IN MAT=7437, MF=33, MT=854	
ENERGY INCORRECT	SEQUENCE NUMBER 150
EXPECT 1.00000E-05, FIND 2.25360E+05	
ERROR(S) FOUND IN MAT=7437, MF=33, MT=855	
ENERGY INCORRECT	SEQUENCE NUMBER 38
EXPECT 1.00000E-05, FIND 2.25360E+05	
ERROR(S) FOUND IN MAT=7437, MF=33, MT=856	
ENERGY INCORRECT	SEQUENCE NUMBER 4
EXPECT 1.00000E-05, FIND 2.25360E+05	

Reason: These are threshold reactions. Thus, their covariances do not start at 10e-5 eV (possibly a FIZCON bug).

- **74-W-186 MAT 7443**

ERROR(S) FOUND IN MAT=7443, MF=33, MT= 2	
ENERGY INCORRECT	SEQUENCE NUMBER 145
EXPECT 1.00000E-05, FIND 8.50000E+03	
ENERGY INCORRECT	SEQUENCE NUMBER 232
EXPECT 1.00000E-05, FIND 8.50000E+03	
ENERGY INCORRECT	SEQUENCE NUMBER 1435
EXPECT 1.00000E-05, FIND 8.50000E+03	
ERROR(S) FOUND IN MAT=7443, MF=33, MT=102	
ENERGY INCORRECT	SEQUENCE NUMBER 143
EXPECT 1.00000E-05, FIND 8.50000E+03	
ENERGY INCORRECT	SEQUENCE NUMBER 149

EXPECT	1.00000E-05, FIND	1.79010E+06	
ENERGY INCORRECT			SEQUENCE NUMBER 866
EXPECT	1.00000E-05, FIND	8.50000E+03	

Reason: The above are cross-correlations in threshold reactions. Thus, their covariances do not start at 10e-5 eV (possibly a FIZCON bug).

ERROR(S) FOUND IN MAT=7443, MF=33, MT= 17	
ENERGY INCORRECT	SEQUENCE NUMBER 100
EXPECT 1.00000E-05, FIND 8.50000E+03	
ENERGY INCORRECT	SEQUENCE NUMBER 187
EXPECT 1.00000E-05, FIND 1.79010E+06	

ERROR(S) FOUND IN MAT=7443, MF=33, MT= 51	
ENERGY INCORRECT	SEQUENCE NUMBER 111
EXPECT 1.00000E-05, FIND 8.50000E+03	
ENERGY INCORRECT	SEQUENCE NUMBER 335
EXPECT 1.00000E-05, FIND 1.79010E+06	

ERROR(S) FOUND IN MAT=7443, MF=33, MT=851	
ENERGY INCORRECT	SEQUENCE NUMBER 4
EXPECT 1.00000E-05, FIND 1.79010E+06	
ENERGY INCORRECT	SEQUENCE NUMBER 45
EXPECT 1.00000E-05, FIND 1.79010E+06	
ENERGY INCORRECT	SEQUENCE NUMBER 368
EXPECT 1.00000E-05, FIND 1.12950E+06	

ERROR(S) FOUND IN MAT=7443, MF=33, MT=852	
ENERGY INCORRECT	SEQUENCE NUMBER 231
EXPECT 1.00000E-05, FIND 1.12950E+06	

ERROR(S) FOUND IN MAT=7443, MF=33, MT=853	
ENERGY INCORRECT	SEQUENCE NUMBER 289
EXPECT 1.00000E-05, FIND 1.12950E+06	

ERROR(S) FOUND IN MAT=7443, MF=33, MT=854	
ENERGY INCORRECT	SEQUENCE NUMBER 150
EXPECT 1.00000E-05, FIND 1.12950E+06	

ERROR(S) FOUND IN MAT=7443, MF=33, MT=855	
ENERGY INCORRECT	SEQUENCE NUMBER 38
EXPECT 1.00000E-05, FIND 1.12950E+06	

ERROR(S) FOUND IN MAT=7443, MF=33, MT=856	
ENERGY INCORRECT	SEQUENCE NUMBER 4
EXPECT 1.00000E-05, FIND 1.12950E+06	

Reason: These are threshold reactions. Thus, their covariances do not start at 10e-5 eV (possibly a FIZCON bug).

- **82-Pb-204 MAT 8225**

ERROR(S) FOUND IN MAT=8225, MF=33, MT= 3
BAD NC-TYPE SUB-SUBSECTION SEQUENCE NUMBER 4
CONFLICTS WITH SUB-SUBSECTION AT 4
DERIVED MT= 2 USED AS AN MTI IN MT= 3

Reason: In the above, nested NC-type covariance is fine.

- **82-Pb-206 MAT 8231**

ERROR(S) FOUND IN MAT=8231, MF=33, MT= 3
BAD NC-TYPE SUB-SUBSECTION SEQUENCE NUMBER 4
CONFLICTS WITH SUB-SUBSECTION AT 4
DERIVED MT= 2 USED AS AN MTI IN MT= 3

Reason: In the above, nested NC-type covariance is fine.

- **82-Pb-207 MAT 8234**

ERROR(S) FOUND IN MAT=8234, MF=33, MT= 3
BAD NC-TYPE SUB-SUBSECTION SEQUENCE NUMBER 4
CONFLICTS WITH SUB-SUBSECTION AT 4
DERIVED MT= 2 USED AS AN MTI IN MT= 3

Reason: In the above, nested NC-type covariance is fine.

- **82-Pb-208 MAT 8237**

ERROR(S) FOUND IN MAT=8237, MF=33, MT= 3
BAD NC-TYPE SUB-SUBSECTION SEQUENCE NUMBER 4
CONFLICTS WITH SUB-SUBSECTION AT 4
DERIVED MT= 2 USED AS AN MTI IN MT= 3

Reason: In the above, nested NC-type covariance is fine.

- **89-Ac-227 MAT 8931**

ERROR(S) FOUND IN MAT=8931, MF= 1, MT=458
ERROR GREATER THAN VALUE AT COMPONENT # 39 SEQUENCE NUMBER 11
ERROR GREATER THAN VALUE AT COMPONENT # 41 SEQUENCE NUMBER 11
ERROR GREATER THAN VALUE AT COMPONENT # 51 SEQUENCE NUMBER 11
ERROR GREATER THAN VALUE AT COMPONENT # 53 SEQUENCE NUMBER 11

Reason: In the above, it is alright for the uncertainty to be greater than value.

• **90-Th-232 MAT 9040**

ERROR(S) FOUND IN MAT=9040, MF=33, MT= 2	
ENERGY INCORRECT	SEQUENCE NUMBER 91
EXPECT 1.00000E-05, FIND 1.00000E+05	
ENERGY INCORRECT	SEQUENCE NUMBER 139
EXPECT 1.00000E-05, FIND 1.00000E+05	
ENERGY INCORRECT	SEQUENCE NUMBER 1098
EXPECT 1.00000E-05, FIND 1.00000E+05	
ERROR(S) FOUND IN MAT=9040, MF=33, MT= 18	
ENERGY INCORRECT	SEQUENCE NUMBER 89
EXPECT 1.00000E-05, FIND 1.00000E+05	
ENERGY INCORRECT	SEQUENCE NUMBER 252
EXPECT 1.00000E-05, FIND 1.00000E+05	
ENERGY INCORRECT	SEQUENCE NUMBER 842
EXPECT 1.00000E-05, FIND 1.00000E+05	
ERROR(S) FOUND IN MAT=9040, MF=33, MT=102	
ENERGY INCORRECT	SEQUENCE NUMBER 89
EXPECT 1.00000E-05, FIND 1.00000E+05	
ENERGY INCORRECT	SEQUENCE NUMBER 152
EXPECT 1.00000E-05, FIND 1.00000E+05	
ENERGY INCORRECT	SEQUENCE NUMBER 526
EXPECT 1.00000E-05, FIND 1.00000E+05	
Reason: The above are cross-correlations in threshold reactions. Thus, their covariances do not start at 10e-5 eV (possibly a FIZCON bug).	
ERROR(S) FOUND IN MAT=9040, MF=33, MT= 5	
ENERGY INCORRECT	SEQUENCE NUMBER 33
EXPECT 1.00000E-05, FIND 1.00000E+05	
ENERGY INCORRECT	SEQUENCE NUMBER 132
EXPECT 1.00000E-05, FIND 1.00000E+05	
ERROR(S) FOUND IN MAT=9040, MF=33, MT= 17	
ENERGY INCORRECT	SEQUENCE NUMBER 17
EXPECT 1.00000E-05, FIND 1.00000E+05	
ENERGY INCORRECT	SEQUENCE NUMBER 126
ERROR(S) FOUND IN MAT=9040, MF=33, MT= 51	
ENERGY INCORRECT	SEQUENCE NUMBER 99
EXPECT 1.00000E-05, FIND 1.00000E+05	
ENERGY INCORRECT	SEQUENCE NUMBER 596
EXPECT 1.00000E-05, FIND 3.57170E+05	
ERROR(S) FOUND IN MAT=9040, MF=33, MT=851	
ENERGY INCORRECT	SEQUENCE NUMBER 125
EXPECT 1.00000E-05, FIND 3.57170E+05	
ENERGY INCORRECT	SEQUENCE NUMBER 176
EXPECT 1.00000E-05, FIND 1.42190E+06	
ERROR(S) FOUND IN MAT=9040, MF=33, MT=852	
ENERGY INCORRECT	SEQUENCE NUMBER 179
EXPECT 1.00000E-05, FIND 3.57170E+05	

ENERGY INCORRECT	SEQUENCE NUMBER	294
EXPECT 1.00000E-05, FIND 1.42190E+06		
ERROR(S) FOUND IN MAT=9040, MF=33, MT=853		
ENERGY INCORRECT	SEQUENCE NUMBER	48
EXPECT 1.00000E-05, FIND 3.57170E+05		
ENERGY INCORRECT	SEQUENCE NUMBER	135
EXPECT 1.00000E-05, FIND 1.42190E+06		
ERROR(S) FOUND IN MAT=9040, MF=33, MT=854		
ENERGY INCORRECT	SEQUENCE NUMBER	4
EXPECT 1.00000E-05, FIND 3.57170E+05		
ENERGY INCORRECT	SEQUENCE NUMBER	56
EXPECT 1.00000E-05, FIND 3.57170E+05		
ENERGY INCORRECT	SEQUENCE NUMBER	60
EXPECT 1.00000E-05, FIND 1.42190E+06		
ERROR(S) FOUND IN MAT=9040, MF=33, MT=855		
ENERGY INCORRECT	SEQUENCE NUMBER	4
EXPECT 1.00000E-05, FIND 1.42190E+06		

Reason: These are threshold reactions. Thus, their covariances do not start at 10e-5 eV (possibly a FIZCON bug).

- **91-Pa-232 MAT 9134**

ERROR(S) FOUND IN MAT=9134, MF= 1, MT=458		
ERROR GREATER THAN VALUE AT COMPONENT # 51	SEQUENCE NUMBER	11
ERROR GREATER THAN VALUE AT COMPONENT # 53	SEQUENCE NUMBER	11

Reason: In the above, it is alright for the uncertainty to be greater than value.

- **92-U-237 MAT 9234**

ERROR(S) FOUND IN MAT=9234, MF= 1, MT=458		
ERROR GREATER THAN VALUE AT COMPONENT # 39	SEQUENCE NUMBER	11
ERROR GREATER THAN VALUE AT COMPONENT # 51	SEQUENCE NUMBER	11
ERROR GREATER THAN VALUE AT COMPONENT # 53	SEQUENCE NUMBER	11

Reason: In the above, it is alright for the uncertainty to be greater than value.

- **96-Cm-250 MAT 9655**

ERROR(S) FOUND IN MAT=9655, MF= 1, MT=458		
ERROR GREATER THAN VALUE AT COMPONENT # 41	SEQUENCE NUMBER	11
ERROR GREATER THAN VALUE AT COMPONENT # 51	SEQUENCE NUMBER	11
ERROR GREATER THAN VALUE AT COMPONENT # 53	SEQUENCE NUMBER	11

Reason: In the above, it is alright for the uncertainty to be greater than value.

- **97-Bk-250 MAT 9755**

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ERROR(S) FOUND IN MAT=9755, MF= 1, MT=458
  ERROR GREATER THAN VALUE AT COMPONENT # 51      SEQUENCE NUMBER      11
  ERROR GREATER THAN VALUE AT COMPONENT # 53      SEQUENCE NUMBER      11
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Reason: In the above, it is alright for the uncertainty to be greater than value.

5. NNDC used **NJOY-99.368** to process the whole neutron sublibrary, except Cl-35 and F-19 which required **NJOY-2010**, and generate the corresponding ACE library which was used in MCNP calculations.

The ERRORR module in NJOY-99.368 was used to successfully process the covariances in 189 materials and the VIEWR module in NJOY-99.368 was used to generate plots which included only selected reaction channels namely (n,total), (n,elastic), (n,inelastic), (n,2n), (n,fission), and (n,gamma). These plots are available from the NNDC's GForge server under the project 'ENDF/B-VII'.

6. NJOY's ACER module consistency checks flagged possible problems in the energy distributions of alpha production in the following materials:
 - Natural C: 1 problem found
 - N-14: 5 problems found
 - O-16: 1 problem found
 - Al-27: 3 problems found
 - Si-28: 3 problems found
 - Si-29: 1 problem found
 - Si-30: 2 problems found

- P-31: 8 problems found
- Ca-40: 95 problems found
- Ca-43: 174 problems found
- Ca-46: 177 problems found
- Ca-48: 97 problems found
- Cr-50: 4 problems found
- Cr-52: 4 problems found
- Cr-53: 14 problems found
- Cr-54: 5 problems found
- Fe-54: 3 problems found
- Fe-56: 5 problems found
- Fe-57: 26 problems found
- Ni-58: 2 problems found
- Ni-60: 3 problems found
- Ni-61: 23 problems found
- Ni-62: 1 problem found
- Ni-64: 1 problem found
- Cu-63: 4 problems found
- Cu-65: 3 problems found
- Nb-93: 25 problems found
- Mo-97: 1 problem found
- Eu-153: 59 problems found

- Ta-180: 22 problems found
- Hg-198: 11 problems found
- Hg-199: 11 problems found
- Hg-200: 11 problems found
- Hg-201: 24 problems found
- Hg-202: 8 problems found
- Hg-204: 8 problems found
- Pb-204: 181 problems found
- Pb-206: 182 problems found
- Pb-207: 193 problems found
- Pb-208: 1 problem found
- Bi-209: 3 problems found
- Am-243: 1 problem found

7. MCNP5 version 1.40 was used to perform simple neutronics calculations using GODIVA. All 423 materials were successfully processed.