Release notes for ENDF/B Development photoat-095_Am_000 evaluation

October 13, 2016

- `checkr` Warnings:

  1. A previous error halted parsing of the current section
     MAT=9500, MF= 1, MT=451 (1): Parsing stopped

     ```
     ERROR(S) FOUND IN MAT=9500, MF= 1, MT=451
        SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER      170 TO     209
     ```

- `checkr` Errors:

  1. A variable is outside the allowed ENDF range
     MAT=9500, MF= 1, MT=451 (0): Variable range

     ```
     ERROR(S) FOUND IN MAT=9500, MF= 1, MT=451
        MOD =     3 OUT OF RANGE     0 -     1           RECORD NUMBER     170
     ```

  2. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=9500, MF=23, MT=501 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=9500, MF=23, MT=501
        SECTION 23/501 NOT IN DIRECTORY                 RECORD NUMBER     211
     ```

  3. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=9500, MF=23, MT=502 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=9500, MF=23, MT=502
        SECTION 23/502 NOT IN DIRECTORY                 RECORD NUMBER    1252
     ```

  4. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=9500, MF=23, MT=504 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=9500, MF=23, MT=504
        SECTION 23/504 NOT IN DIRECTORY                 RECORD NUMBER    1740
     ```

  5. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=9500, MF=23, MT=515 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=9500, MF=23, MT=515
        SECTION 23/515 NOT IN DIRECTORY                 RECORD NUMBER    1781
     ```

  6. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=9500, MF=23, MT=516 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=9500, MF=23, MT=516
        SECTION 23/516 NOT IN DIRECTORY                 RECORD NUMBER    1816
     ```

  7. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=9500, MF=23, MT=517 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=517
   SECTION 23/517 NOT IN DIRECTORY                  RECORD NUMBER    1871
```

8. Missing a section in directory so your directory is messed up. This error will break everything else
   MAT=9500, MF=23, MT=522 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=522
   SECTION 23/522 NOT IN DIRECTORY                  RECORD NUMBER    1913
```

9. Missing a section in directory so your directory is messed up. This error will break everything else
   MAT=9500, MF=23, MT=534 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=534
   SECTION 23/534 NOT IN DIRECTORY                  RECORD NUMBER    2398
```

10. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9500, MF=23, MT=535 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=535
   SECTION 23/535 NOT IN DIRECTORY                  RECORD NUMBER    2419
```

11. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9500, MF=23, MT=536 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=536
   SECTION 23/536 NOT IN DIRECTORY                  RECORD NUMBER    2442
```

12. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9500, MF=23, MT=537 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=537
   SECTION 23/537 NOT IN DIRECTORY                  RECORD NUMBER    2465
```

13. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9500, MF=23, MT=538 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=538
   SECTION 23/538 NOT IN DIRECTORY                  RECORD NUMBER    2487
```

14. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9500, MF=23, MT=539 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=539
   SECTION 23/539 NOT IN DIRECTORY                  RECORD NUMBER    2512
```

15. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9500, MF=23, MT=540 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=540
   SECTION 23/540 NOT IN DIRECTORY                RECORD NUMBER    2539
```

16. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9500, MF=23, MT=541 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=541
   SECTION 23/541 NOT IN DIRECTORY                RECORD NUMBER    2566
```

17. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9500, MF=23, MT=542 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=542
   SECTION 23/542 NOT IN DIRECTORY                RECORD NUMBER    2594
```

18. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9500, MF=23, MT=543 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=543
   SECTION 23/543 NOT IN DIRECTORY                RECORD NUMBER    2623
```

19. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9500, MF=23, MT=544 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=544
   SECTION 23/544 NOT IN DIRECTORY                RECORD NUMBER    2650
```

20. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9500, MF=23, MT=545 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=545
   SECTION 23/545 NOT IN DIRECTORY                RECORD NUMBER    2680
```

21. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9500, MF=23, MT=546 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=546
   SECTION 23/546 NOT IN DIRECTORY                RECORD NUMBER    2710
```

22. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9500, MF=23, MT=547 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=547
   SECTION 23/547 NOT IN DIRECTORY                RECORD NUMBER    2746
```

23. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9500, MF=23, MT=548 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=548
   SECTION 23/548 NOT IN DIRECTORY                  RECORD NUMBER    2783
```

24. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9500, MF=23, MT=549 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=549
   SECTION 23/549 NOT IN DIRECTORY                  RECORD NUMBER    2840
```

25. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9500, MF=23, MT=550 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=550
   SECTION 23/550 NOT IN DIRECTORY                  RECORD NUMBER    2900
```

26. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9500, MF=23, MT=551 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=551
   SECTION 23/551 NOT IN DIRECTORY                  RECORD NUMBER    2928
```

27. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9500, MF=23, MT=552 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=552
   SECTION 23/552 NOT IN DIRECTORY                  RECORD NUMBER    2966
```

28. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9500, MF=23, MT=553 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=553
   SECTION 23/553 NOT IN DIRECTORY                  RECORD NUMBER    2999
```

29. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9500, MF=23, MT=554 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=554
   SECTION 23/554 NOT IN DIRECTORY                  RECORD NUMBER    3055
```

30. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9500, MF=23, MT=555 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=555
   SECTION 23/555 NOT IN DIRECTORY                  RECORD NUMBER    3112
```

31. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9500, MF=23, MT=556 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=556
   SECTION 23/556 NOT IN DIRECTORY                  RECORD NUMBER    3194
```

32. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=9500, MF=23, MT=559 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=559
   SECTION 23/559 NOT IN DIRECTORY                  RECORD NUMBER    3276
```

33. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=9500, MF=23, MT=560 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=560
   SECTION 23/560 NOT IN DIRECTORY                  RECORD NUMBER    3312
```

34. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=9500, MF=23, MT=561 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=561
   SECTION 23/561 NOT IN DIRECTORY                  RECORD NUMBER    3352
```

35. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=9500, MF=23, MT=570 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=23, MT=570
   SECTION 23/570 NOT IN DIRECTORY                  RECORD NUMBER    3395
```

36. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=9500, MF=27, MT=502 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=27, MT=502
   SECTION 27/502 NOT IN DIRECTORY                  RECORD NUMBER    3433
```

37. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=9500, MF=27, MT=504 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=27, MT=504
   SECTION 27/504 NOT IN DIRECTORY                  RECORD NUMBER    3482
```

38. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=9500, MF=27, MT=505 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=27, MT=505
   SECTION 27/505 NOT IN DIRECTORY                  RECORD NUMBER    3532
```

39. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=9500, MF=27, MT=506 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9500, MF=27, MT=506
   SECTION 27/506 NOT IN DIRECTORY                RECORD NUMBER    3737
```

- `fudge-4.0` Warnings:

  1. generic warning message
     reaction label 0: Am + gamma [coherent] / Product: gamma (Error # 0): Warning

     ```
     WARNING: coherentScattering is not a valid distribution component for 2-body reaction
     ```

  2. FIXME: Generic fudge unimplemented message
     reaction label 0: Am + gamma [coherent] / Product: gamma (Error # 2): Generic unimp (c)

     ```
     WARNING: Checking not yet implemented for pointwise type data
     ```

  3. generic warning message
     reaction label 1: Am + gamma [incoherent] / Product: gamma (Error # 0): Warning

     ```
     WARNING: incoherentScattering is not a valid distribution component for 2-body reaction
     ```

  4. FIXME: Generic fudge unimplemented message
     reaction label 1: Am + gamma [incoherent] / Product: gamma (Error # 2): Generic unimp (c)

     ```
     WARNING: Checking not yet implemented for piecewise type data
     ```

  5. Cross sections do not correctly sum up properly according to an ENDF (or equivalent) sumrule
     summedReaction label 31: total (Error # 0): Sumrule

     ```
     WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 100.00%
     ```

  6. Cross sections do not correctly sum up properly according to an ENDF (or equivalent) sumrule
     summedReaction label 33: photoelectric absorption (Error # 0): Sumrule

     ```
     WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 67.13%
     ```

- `fudge-4.0` Errors:

  1. Calculated and tabulated thresholds don't agree
     reaction label 0: Am + gamma [coherent] / Cross section: (Error # 0): Threshold mismatch

     ```
     WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1. eV!
     ```

  2. 2-body reaction not in center-of-mass frame
     reaction label 0: Am + gamma [coherent] / Product: gamma (Error # 1): 2-body not in COM

     ```
     WARNING: 2-body reaction not in center-of-mass frame!
     ```

  3. Calculated and tabulated thresholds don't agree
     reaction label 1: Am + gamma [incoherent] / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1. eV!
```

4. 2-body reaction not in center-of-mass frame
   reaction label 1: Am + gamma [incoherent] / Product: gamma (Error # 1): 2-body not in COM

```
WARNING: 2-body reaction not in center-of-mass frame!
```

5. Energy range of data set does not match cross section range
   reaction label 1: Am + gamma [incoherent] / Product: gamma / Distribution incoherentScattering - piecewise: (Error # 0): Domain mismatch (a)

```
WARNING: Domain doesn't match the cross section domain: (0.0 -> 1000000000.0) vs (1.0 -> 1e+11)
```

6. Calculated and tabulated thresholds don't agree
   reaction label 2: e- + e+ + Am [electron field] / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 2.044e6 eV!
```

7. Calculated and tabulated thresholds don't agree
   reaction label 3: e- + e+ + Am [nuclear field] / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1.022e6 eV!
```

8. Calculated and tabulated thresholds don't agree
   reaction label 4: e- + Am1s1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 125570. eV!
```

9. Calculated and tabulated thresholds don't agree
   reaction label 5: e- + Am2s1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 23827. eV!
```

10. Calculated and tabulated thresholds don't agree
    reaction label 6: e- + Am2p1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 23062. eV!
```

11. Calculated and tabulated thresholds don't agree
    reaction label 7: e- + Am2p3/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 18527. eV!
```

12. Calculated and tabulated thresholds don't agree
    reaction label 8: e- + Am3s1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 6102.1 eV!
```

13. Calculated and tabulated thresholds don't agree
    reaction label 9: e- + Am3p1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 5741.6 eV!
```

14. Calculated and tabulated thresholds don't agree
reaction label 10: e- + Am3p3/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 4685.5 eV!
```

15. Calculated and tabulated thresholds don't agree
reaction label 11: e- + Am3d3/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 4103.6 eV!
```

16. Calculated and tabulated thresholds don't agree
reaction label 12: e- + Am3d5/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 3892.5 eV!
```

17. Calculated and tabulated thresholds don't agree
reaction label 13: e- + Am4s1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1595.2 eV!
```

18. Calculated and tabulated thresholds don't agree
reaction label 14: e- + Am4p1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1428.2 eV!
```

19. Calculated and tabulated thresholds don't agree
reaction label 15: e- + Am4p3/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1147. eV!
```

20. Calculated and tabulated thresholds don't agree
reaction label 16: e- + Am4d3/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 877.9 eV!
```

21. Calculated and tabulated thresholds don't agree
reaction label 17: e- + Am4d5/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 826.6799999999999 eV!
```

22. Calculated and tabulated thresholds don't agree
reaction label 18: e- + Am4f5/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 471.03 eV!
```

23. Calculated and tabulated thresholds don't agree
reaction label 19: e- + Am4f7/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 457.17 eV!
```

24. Calculated and tabulated thresholds don't agree
reaction label 20: e- + Am5s1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 362.44 eV!
```

25. Calculated and tabulated thresholds don't agree
reaction label 21: e- + Am5p1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 295.06 eV!
```

26. Calculated and tabulated thresholds don't agree
reaction label 22: e- + Am5p3/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 225.25 eV!
```

27. Calculated and tabulated thresholds don't agree
reaction label 23: e- + Am5d3/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 125.29 eV!
```

28. Calculated and tabulated thresholds don't agree
reaction label 24: e- + Am5d5/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 114.9 eV!
```

29. Calculated and tabulated thresholds don't agree
reaction label 25: e- + Am5f5/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 8.289999999999999 eV!
```

30. Calculated and tabulated thresholds don't agree
reaction label 26: e- + Am5f7/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 7. eV!
```

31. Calculated and tabulated thresholds don't agree
reaction label 27: e- + Am6s1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 55.06 eV!
```

32. Calculated and tabulated thresholds don't agree
reaction label 28: e- + Am6p1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 35.14 eV!
```

33. Calculated and tabulated thresholds don't agree
reaction label 29: e- + Am6p3/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 23.89 eV!
```

34. Calculated and tabulated thresholds don't agree
reaction label 30: e- + Am7s1/2 / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 5.49 eV!
```

35. Calculated and tabulated thresholds don't agree
summedReaction label 31: total / Cross section: (Error # 0): Threshold mismatch

```
WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1. eV!
```

36. Calculated and tabulated thresholds don't agree
    summedReaction label 32: pair product / Cross section: (Error # 0): Threshold mismatch

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1.022e6 eV!
    ```

37. Calculated and tabulated thresholds don't agree
    summedReaction label 33: photoelectric absorption / Cross section: (Error # 0): Threshold mismatch

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 5.49 eV!
    ```

- `xsectplotter` Warnings:

  1. Encountered runtime warning in xsectplotter or Fudge or matplotlib
     Error: RuntimeWarning

     ```
     stderr while processing crossSection

     /usr/local/lib/python2.7/site-packages/matplotlib-1.3.1-py2.7-linux-x86_64.egg/matplotlib/pyplot.py:412: Runtime
     ... [3 more lines]
     ```