ENDF/B-VII.1 Beta 3 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 v8.04
    - CHECKR v8.13
    - FIZCON v8.08
    - 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
      ```

    - **25-Mn-55 MAT 2525**

      ```
      ERROR(S) FOUND IN MAT=2525, MF= 1, MT=451
         OUT OF SEQUENCE AT SEQUENCE NUMBER 786
      ```

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

      ```
      ERROR(S) FOUND IN MAT=7425, MF=33, MT= 28
         MTL=854 IS ASSIGNED OUT OF ORDER852
      ```

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

      ```
      ERROR(S) FOUND IN MAT=7431, MF=33, MT= 28
         MTL=854 IS ASSIGNED OUT OF ORDER852
      ```

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

      ```
      ERROR(S) FOUND IN MAT=7434, MF=33, MT= 28
         MTL=854 IS ASSIGNED OUT OF ORDER852
      ```

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

```
ERROR(S) FOUND IN MAT=7437, MF=33, MT= 28
   MTL=854 IS ASSIGNED OUT OF ORDER852
```

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

```
ERROR(S) FOUND IN MAT=7443, MF=33, MT= 28
   MTL=854 IS ASSIGNED OUT OF ORDER852
```

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

```
ERROR(S) FOUND IN MAT=9040, MF=33, MT= 22
   MTL=854 IS ASSIGNED OUT OF ORDER851
```

4. A specific NNDC in-house version of **NJOY-99.368** was used to process the whole neutron sublibrary, except Cl-35 and F-19 which required **NJOY-2010**, and generate the corresponding ACE library. To process Ti-46, 47, 48, 49, 50 and V-51, we modified the VIEWR module (beginning of subroutine axis3) in **NJOY-99.368** to include the following lines:

```
if(astp .eq. 0.0) then
   if(amin .le. 0.0) return
   if(amax .le. 0.0) return
endif
```

5. 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
   - F-19: 2 problems forund
   - 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
- Ti-49: 2 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-96: 1 problem 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

6. MCNP5 version 1.40 was used to perform simple neutronics calculations using GODIVA. All 418 materials were successfully processed.