Fission Energy Release Format Modification

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Modified Fission Energy Release Format, MF1, MT458

- MF1, MT458 – Components of Fission Energy Release
  - 18 element “LIST” array: Nine values, including total energy, fission product energy, prompt and delayed photon energy, prompt and delayed neutron energy, beta decay energy, neutrino energy, (total – neutrino) energy plus nine uncertainties.
  - Energy dependence equations are specified in the Format Manual, but can not be inferred from the numerical data in an evaluated file.
    - fission product energy is independent of incident neutron energy.
    - prompt photon energy is independent of incident neutron energy.
    - prompt neutron energy is dependent upon (i) incident neutron energy and (ii) {nu(e) – nu(thermal)}

Modified Fission Energy Release Format, MF1, MT458

- D. G. Madland, “Total prompt energy release in the neutron-induced fission of ^{235}U, ^{238}U and ^{239}Pu,” Nuclear Physics A772, 113(2006).
  - Provides new results for fission product energy, prompt neutron and prompt photon energy for the major actinides.
  - Recommended linear or quadratic energy dependence with incident neutron energy does not conform to existing ENDF formats.

Modified Fission Energy Release Format, MF1, MT458

- Alternate format: Allow for an arbitrary polynomial representation for the fission energy components.
- Polynomial order is LIST array length divided by 18, minus one.
- Existing 18 element LIST array data will retain their historical definitions and historical energy dependencies.
- Allow the MF1, MT458 “LIST” array length to be an integer multiple of 18. The first 18 values are intercept terms and uncertainties, next 18 values are linear coefficients and uncertainties, next 18 are quadratic coefficients and uncertainties, …