ENDF/B-VII.1 Covariances:
Some Thoughts

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Covariance Successes

1) The content is greatly improved from ENDF/B-VII.0.
2) Evaluators have put a great deal of effort into producing a reasonable product, with considerable success.
3) Feedback from certain user communities (e.g., criticality safety, advanced fast-reactor development, and defense programs) has been extremely valuable in this process.
4) A lot of developmental work has gone into learning how to produce improved covariance data over the entire energy range applicable to the ENDF/B library.
5) Collaboration with foreign colleagues in developing new covariance evaluation methods, and in producing content for the new ENDF/B library, has been extremely valuable.
6) A covariance review process has been implemented for the first time. It involves procedures targeted at both the mathematical and physical aspects of these data.

Room for Improvement

1) Better integration of the processes of evaluating cross sections and producing their covariance should be sought.
2) Refinements should be made to the covariance QA review process (and updating the stated requirements) based on experience gained from work on ENDF/B-VII.1.
3) More time should be allowed for the covariance review process. It was overly rushed for ENDF/B-VII.1.
4) It would be worthwhile to try an approach suggested by Pavel Oblozinsky: *Convene a group of a few people for the expressed task of reviewing all the covariance data for a given library several months prior to its release date*.
5) More attention should be given to discussing and attempting to meet the needs of a broader group of covariance data users, e.g., those in reactor dosimetry.

Resolve a Long-standing Issue

- An attempt should be made to try and bridge the gap between the standards and requirements for traditional data testing (C/E ≈1 to within a few pcm) and realistic data uncertainties, as reflected in the covariance data.
- Put more specifically: If the underlying data and the evaluation procedures used suggest uncertainties of a few percent for a particular important reaction cross section, e.g., ^{235}U fission, does it make sense to always require C/E consistencies so close to unity for major benchmarks with high sensitivity to ^{235}U nuclear data?

Discussion?