Subgroup 39 Meeting AGENDA

May 13

9:00-9:15 Welcome, approval of Agenda, new members etc

9:15-9:45 Review of actions (including remarks, if any, on paper "Comments on Covariance Data of JENDL-4.0 and ENDF/B-VII.1" sent by M.Ishikawa)

9:45-10:45 Computation of sensitivity coefficients with Monte Carlo tools and results of an inter-comparison for Flattop and ZPR benchmarks (T. Ivanova, E. Ivanov, I. Hill, J. Dyrda, S. Pelloni, I. Kodeli)

10:45-11:00 Coffee break

11:00-11:20 Role of shielding benchmarks e.g. ASPIS (I. Kodeli)

11:20-12:20 Use of specific new experiments:

PROTEUS (S.Pelloni)

STEK (M.S)

Experiments related to U-235, U-238, Fe, and Na (G.Palmiotti)

Comments on beta-eff measurements (paper sent by M. Ishikawa)

12:20-12:40 “Update on ICSBEP and IRPhEP DB Tools, DICE and IDAT” (I. Hill)

12:40-14:00 Lunch

14:00-14:30 New studies at JAEA on adjustment trends (K. Yokoyama)

14:30-15:30 Comparison of adjustment trends (E.Dupont, K.Yokoyama, G.Palmiotti, P.Archier, M.S)

15:30-15:45 Coffee break

15:45-16:15 Results to be presented at the joint meeting with CIELO: discussion (All)

16:15-17:00 Methodology issues (G.Palmiotti)

17:00-17:30 Next steps and meeting

Proposed presentations for the joint CIELO/Subgroup 39 on May 14:

- Discussion on adjustment trends of ADJ2010 (K.Yokoyama) (20’)
- Discussion on adjustment trends from ENDF/B-VII (G.Palmiotti) (20’)
- Tentative: Adjustment trends from JEFF (P.Archier) (20’)
- Comparison of adjustment trends (E. Dupont, G.Palmiotti) (50’)
- Method issues, covariance validation, needs and perspectives (G.Palmiotti, MS, All) (40’)

4. Discussion, summary, next steps, actions

The following conclusions summarise the meeting discussions, issues and actions.

C1. Compensations in current adjustments (see example by M. Ishikawa: case of ^{239}Pu Chi, ^{23}Na(n,n'), ^{238}U(n,n') and ^{239}Pu(n,n')). There is a need for integral experiments able to discriminate between these effects, see point C7 below for a few suggestions. The analysis of current adjustments trends can also help (see point C6 below). In addition, there is a need for covariance data as complete and reliable as possible (this is an item for discussion with CIELO evaluators in May).

C2. Adjustment of ^{235}U data: are there enough experiments accounted for? More experiments are certainly needed to improve the high energy range.

Action on all: to suggest additional integral experiments sensitive to ^{235}U.

C3. Energy range of interest. At present the range 500 eV – 5 MeV is fairly well covered. There is a need for additional experiments to cover thermal and epithermal spectra.

Action on T. Ivanova and M. Hursin: to suggest integral experiments for the thermal and epithermal energy range (e.g. PROTEUS- HCLWRs?)

C4. Role of integral β_{eff} measurements in the adjustment of delayed neutrons (and availability of related nuclear data covariance).

Action on I. Kodeli, E. Ivanova, M. Ishikawa (for deadline see point C7 below): to look into BERENICE experiments and ANL β_{eff} experiments (accuracy, relevance etc.).

C5. Secondary neutron distribution adjustment: need sensitivity and covariance data.

C6. As for already existing adjustments (JAEA, CEA, INL, PSI, IRSN…), it is proposed to compare adjusted cross sections of the five isotopes (^{239}Pu, ^{235}U, ^{238}U, ^{56}Fe and ^{23}Na) in 33 groups, using SG33 format. The prior and posterior uncertainties should be reported too. The standard values should be included in the comparison. This comparison and associated analysis could be the basis for an interim report to CIELO by May 2014. Two hypotheses: a) discuss results and iterate by email, b) make discussion in May 2014. In that case, the meeting with CIELO would be in November 2014.

Action on C. De Saint Jean, M. Ishikawa, G. Palmiotti, S. Pelloni, T. Ivanova, E. Ivanov, E. Dupont: to prepare this comparison. NOTE: data are expected by March 31, 2014 to allow formatting

C7. Specific integral measurements can be required in order to avoid as much as possible compensation effects and provide valuable information on separated effects:

- Single isotope (e.g. sample irradiation effects for capture and (n, 2n) cross-sections). However, few experiments are available.
- Neutron propagation experiments for elastic/inelastic scattering cross sections, e.g. ASPIS iron propagation experiment. Action on I. Kodeli: to report on existing propagation experiments.
- "Flat" adjoint flux experiments (to separate inelastic from absorption cross sections). The STEK experiments have been documented in a JAEA report and a reanalysis is underway at Petten. Any other experiment of this type available? Action on E. Dupont, E. Ivanov, M. Ishikawa, M. Salvatores: to look into these experiments and see if they could be useful for the present purposes.
- ^{238}U sphere neutron transmission experiments (e.g. Obninsk experiments). Others? Action on T. Ivanova, C. De Saint Jean, G. Palmiotti: to look into these experiments.

Action on G. Palmiotti, M. Salvatores, M. Ishikawa, E. Ivanov, T. Ivanova, C. De Saint Jean, I. Kodeli, S. Pelloni, M. Hursin: to prepare a summary by the next meeting (May 2014) on all these experiments (see also points C2, C3 and C4) with preliminary documents to be circulated ahead of that date for comments.

C8. The scattering anisotropy (P_N) needs to be carefully accounted for (cf. FLATTOP case analysed by I. Kodeli). In this frame, new full MC methods have been developed and should be compared, e.g. on the same FLATTOP experiment (Action on E. Ivanov).

C9. Methodology issues

- Adjusted central values acceptability: if it stays in ~1sigma of original uncertainty.
- Adjustment in low sensitivity energy regions: acceptable if correlations in energy do require them.
- Experiment "rejection": better use the different criteria for giving "warnings". Criteria to be summarized (Action on G. Palmiotti).
- Use of a posteriori covariance data: if feedback to designers, both adjusted data and a posteriori covariance; if feedback to evaluators, only trends will be given. The method to avoid generation of not previously existing cross correlations could be suggested (Action on E. Ivanov, T. Ivanova).
- Prepare a list of priority missing covariance data types (see also points C4 and C5) and list of "suspect" low values (file dependent) (Action on M. Ishikawa). This list will be discussed with CIELO evaluators.
- Nuclear parameter adjustment: first attempts promising. However not yet consensus. Needs some further discussion and iteration with evaluators.

Action on G. Palmiotti, C. De Saint Jean, E. Ivanov, M. Ishikawa, M. Salvatores: to prepare a summary of methodology issues for further discussion at next meeting (May 2014).