

CROSS SECTION EVALUATION WORKING GROUP HIGHLIGHTS

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The 48th meeting of the Cross Section Evaluation Working Group was held at Brookhaven National Laboratory, November 3-5, 1999. A total of 38 individuals participated from 11 U.S. organizations and one each from Aldermaston (UK), KAERI (S. Korea), Technion (Israel), NEA Data Bank (Paris) and IAEA Nuclear Data Section (Vienna).

CSEWG approved the distribution of release 7 of ENDF/B-VI. The distribution of release 7 was completed in April 2000. The new and revised materials contained in this release are listed in attachment A. Release 8 will be ready for review by the November 2000 CSEWG meeting. The expected contents of release 8 are given in attachment B. Evaluations currently being worked on for future releases of ENDF/B include thermal scattering law data for heavy water, polyethylene, benzene, uranium carbide and uranium hydride (MacFarlane,LANL); Ca and Fe (A.Smith,ANL); natural Ti (MacFarlane,LANL); Fe, W, and U237 (Young,LANL); Pu240 (Derrien,Leal,ORNL); and the fast cross sections for 19 fission products (KAERI-BNL). Young (LANL) will also look into reported deficiencies in the U238 evaluation above the resonance region.

There was extensive discussion of the pros, cons, and conditions for moving to ENDF/B-VII. In the past, new versions of ENDF/B coincided with new standards, new formats and a specific theme. A group was formed to look into the possibility of preparing an ENDF/B-VII library in the time frame of 3 to 5 years when the revised neutron standards should be available.

Evaluations of photonuclear reactions are now being carried out at LANL and KAERI (as part of an IAEA coordinated research project). The work will result in a photonuclear data library in ENDF/B in one to two years.

The matter of storage of evaluations done for communities such as astrophysics was discussed. For this purpose we need to store partial evaluations. ENDF/A may be resurrected for this purpose.

A major effort to develop a modern nuclear reaction model code has started under the leadership of Mark Chadwick (LANL). This effort will include contributions from (LLNL, TUNL and BNL).

The NJOY99 data processing system has released. ORNL has completed development of its nuclear data processing system, AMPX. It is currently being tested and documented prior to general release. The ENDF utility codes maintained by BNL will be updated to include format changes approved at the last two CSEWG meetings. In addition, the CHECKR and FIZCON source codes will be modernized. PC versions of the current release are available from the NNDC web site.

A revision to the Reich-Moore resonance region representation was approved. The issue of proper consideration of non-U.S. requests for format changes was discussed. See Attachment 3-5 of the 1999 CSEWG minutes.

Two interesting results for data testing on criticality benchmarks by Los Alamos were presented. First results from a new LANL critical assembly, Zeus, which has an intermediate spectrum, were reported. The assembly was modeled with MCNP. ENDF/B-VI, release 4 over-predicts k_{eff} by about 0.5%. Future configurations of this assembly will reduce the C/U ratio to produce harder spectra. An extensive set of calculations for 86 critical facilities were carried out using ENDF/B-V, ENDF/B-VI.2 and ENDF/B-VI.2. For more detail, see Attachment 4-2 of the 1999 CSEWG Meeting minutes.

NEA has begun distribution of the "Handbook of Evaluated International Criticality Safety Benchmark Experiments" on a CD-ROM, which includes 35 new approved benchmarks assembled at INEEL.

The results of benchmark testing of the new U-235 evaluation at ORNL were presented. Criticality for fast and intermediate spectra benchmarks was lower by 0.3-1.0% relative to the previous U-235 evaluation. The benchmark testing of the new ORNL U-233 evaluation shows that previous under prediction of K_{eff} for thermal systems has been eliminated.

A new WWW site at Argonne National Laboratory now provides electronic access to all of the ANL/NDM reports on nuclear data. The URL for this site is:

<http://www.td.anl.gov/reports/ANLNDMReports.html>

The meeting also discussed the feasibility of establishing a web site to contain information about the U.S. nuclear data measurement facilities and ongoing work at these facilities.

Next Meeting:

The next CSEWG meeting will be held at Brookhaven National Laboratory on November 8-10, 2000.

Attachment A

Contents of ENDF/B-VI Release 7

Neutron sublibrary		Proton sublibrary	
Material	Source	Library	Source
Cs133	KAERI:Oh	Bi209	LANL:
M.Chadwick			
Cs134	ORNL:R.Q.Wright		
Cs135	ORNL:R.Q.Wright		
Ba134	ORNL:R.Q.Wright		
Pr141	KAERI:Oh		
Sm149	KAERI:Chang		
Eu153	KAERI:Oh		
Eu154	ORNL:R.Q.Wright		
Eu155	ORNL:R.Q.Wright		
Dy160	ORNL:R.Q.Wright		
Dy161	ORNL:R.Q.Wright		
Dy162	ORNL:R.Q.Wright		
Dy163	ORNL:R.Q.Wright		
Dy164	ORNL:R.Q.Wright		
Lu175	ORNL:R.Q.Wright		
Lu176	ORNL:R.Q.Wright		
Bi209	LANL: M.Chadwick		
Cm243	Belorus: Maslov		
Cm245	Belorus: Maslov		
Cm246	Belorus: Maslov		

Attachment B

Expected Contents of ENDF/B-VI Release 8

Neutron sublibrary		Other libraries	
Material	Source	Library	Source
O16	LANL:P.Young	EEDL	LLNL: D.Cullen
Si29	ORNL: N.Larson	EPDL	LLNL: D.Cullen
Cl35,37	LANL:P.Young	EADL	LLNL: D.Cullen
Mo92	KAERI:Oh		
Tc99	KAERI:Chang		
Ru101	KAERI:Oh		
Rh103	KAERI:Chang		
Pd105	KAERI:Oh		
Ag109	KAERI:Oh		
Rh103	KAERI:Oh		
Pd105	KAERI:Oh		
Xe131	KAERI:Oh		
Nd143	KAERI:Chang		
Nd145	KAERI:Chang		
Sm147	KAERI:Oh		
Sm150	KAERI:Oh		
Sm151	KAERI:Oh		
Sm152	KAERI:Oh		
Gd155	KAERI:Chang		
Gd157	KAERI:Oh		
U232	ORNL: R.Q.Wright		

Neutron Library Evaluations Not Yet Received

BeO (TSL)	KAPL: C.Lubitz	Mn55	LANL: P.Young
Be9	LANL: P.Young	Fe54,56,57,58	LANL: P.Young
O16	ORNL: R.Sayer	Ni58,60,61,62	LANL: P.Young
F19	LANL: P.Young	Cu63,65	LANL: P.Young
Na23	LANL: P.Young	Zr(natural)	ANL:A.B.Smith
Mg	LANL: P.Young	Sn120	NNDC:V.McLane
Al27	LANL: P.Young	Sn122	NNDC:V.McLane
Al27	ORNL: L.Leal	Sn124	NNDC:V.McLane
Cl35,37	LANL: P.Young	Hg isotopic	LANL:

M.Chadwick

K

LANL: P.Young

U233

ORNL: L.Leal

Sc45

LANL: P.Young

U235

LANL: P. Young

Cr50,52,53,54

LANL: P.Young

