Status of the JEFF project: 2008

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Abstract

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1 Introduction

The JEFF project involves evaluation efforts that cover the main nuclear data needs in the fields of fission and fusion applications in Europe. The overall structure of the project is depicted in fig. 1. Development of the JEFF libraries is not directly financed, and is based on the voluntary participation of European institutes and scientists. Staff at the NEA Data Bank ensure the maintenance of the JEFF library, and biannual JEFF meetings bring together experts in different areas such as data evaluations, experimental studies, reaction modelling, verification and compilation of the data, file processing and benchmarking.

2 Status of JEFF-3.1

The latest official version of the JEFF-3.1 library was released in May 2005 [1], and consists of the following sub-libraries:

- neutron general purpose library: 381 isotopes or elements,
- neutron activation library: 12617 neutron-induced reactions on 774 target nuclei, which is based on the European Activation File EAF-2003,
- thermal scattering law library: 9 materials,
- decay data library: 3852 isotopes,

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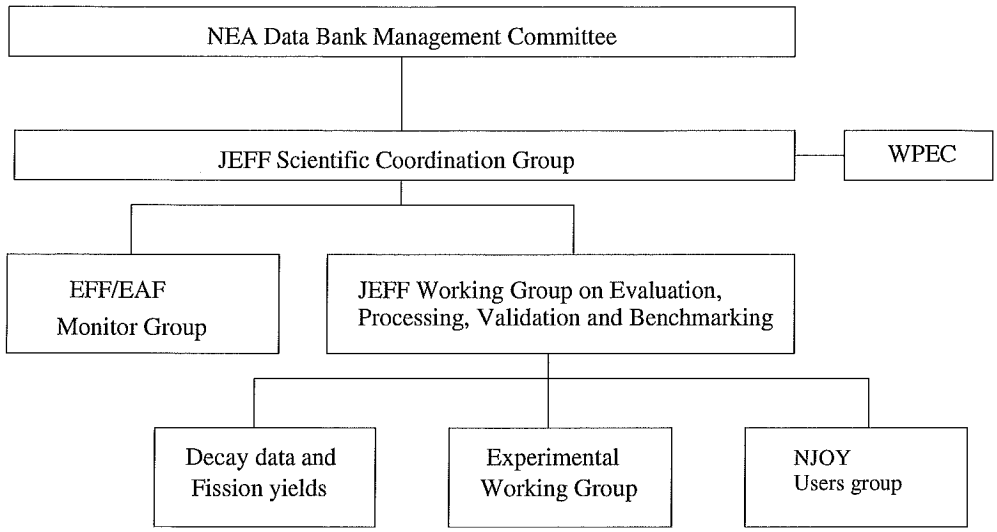

Fig. 1. Organisation of the JEFF project.

- spontaneous and neutron fission yield data library: 19 isotopes,
- proton special purpose library: 26 isotopes.

Since the contents have been described in previous WPEC meetings, we only report on feedback and validation of JEFF-3.1 here.

2.1 Feedback on JEFF-3.1: Towards JEFF-3.1.1

JEFF-3.1 has been in use since May 2005. Various problems, ranging from small to significant, have been reported since its release. Details can be found at **www.nea.fr/html/dbdata/jeff3feedback/feedback-31.html** which is also given in an Appendix to this document. As JEFF adopts, for some nuclides, evaluations directly from other file projects, such as ENDF/B-VI.8, ENDF/B-VII or JENDL-3.3, it may be worthwile for other WPEC members to check this list too. Among the more important feedback for the general purpose file is

- Np-237 underestimation of the thermal capture cross section Suggestion to go back to JEFF-3.0 for NP-237.
- Bad performance of Mg in LLNL pulsed sphere benchmarks. Inelastic angular distribution problems.
- Change of the upper limit of the unresolved resonance range for Pu-239.

It was decided to produce an intermediate release, JEFF-3.1.1 for the beginning of 2009, in which the corrections of the feedback list are implemented. Significantly new evaluations will have to wait for the JEFF-3.2 release. However, JEFF participants can already test such new files via the JEFF-3.2 beta collection (see the second Appendix).

The JEFF-3.1.1 Radioactive Decay Data library was released in November 2007. A pre-release benchmark has been carried out confirming improvements in the new decay heat calculations.

2.2 Validation of JEFF-3.1

The JEFF Scientific Coordination Group has decided to write a report on the integral validation of JEFF-3.1. It is currently under construction. Simultaneous with the release of JEFF-3.1, and also directly after that, a lot of benchmarking was performed. Here we divide it in two parts, one before and one after the last WPEC meeting.

2.2.1 Benchmarking 2005-2007

Extensive, partly-automated benchmarking tests were undertaken to probe the quality of JEFF-3.1. These studies have included MCNP (NRG, SCK), TRIPOLI (CEA) [2] and APOLLO (CEA) criticality calculations for an unprecedented set of benchmarks. Examples are given in Refs. [3]-[5]. Current-day computer power will enable rapid revisions of the JEFF library to be quickly tested within this scheme. Additional validation is now possible by means of a Monte Carlo approach for the calculation of the effective delayed-neutron fractions [6], and improved thermal scattering law data [7–10]. A wider range of validation exercises is being performed [11–13] using different methods and codes to study various integral quantities. Apart from reactivity predictions in UO_2-fuelled systems (CEA), JEFF-3.1 has exhibited improvements in isotopic inventory predictions as inferred from post irradiation examination data. All cases show improvements over the JEFF-3.0 library. However, some deficiencies do remain: core calculations with TRIPOLI4 [14] revealed an overestimation of k_{eff} when simulating a MOX core, implying the need for an improved ^{239}Pu evaluation [15]. A detailed analysis of the MINERVE Oscillation experiment (OSMOSE) and PIE data for UO_x fuel led to the conclusion that the calculated reactivity worth is underestimated, indicating the possible adoption of a capture value for ^{237}Np that is too low [16]. The MINERVE oscillation measurements also established the quality of the FP data of JEFF-3.1 [17].

The EFF project carries out integral experiments and develops calculational methods for fusion systems [18]. Test Blanket Modules (TBMs) are required for ITER, and they need to be designed in the near term. Measurements of the tritium production rate and neutron/gamma flux by ENEA and TUD have been analysed with new and existing tools (FZK, HUJI, IJS) to check the adequacy of the nuclear data. Software tools have been developed to carry

out sensitivity analyses within the neutronics codes (FZK, HUJI). Algorithms have been prepared to calculate variations in response due to changes in secondary angular distributions, and Monte-Carlo track length estimators have been produced and implemented. These tools have subsequently been used in benchmark analyses. Future work includes an investigation of the derivation of covariances, evaluations at a range of energies and activation measurements of other suggested materials. Testing of JEFF-3.1 for all materials with several existing 14-MeV shielding benchmarks (LLNL, FNS, OKTAVIAN, FNG, TUD) has been completed [19].

Validation of the activation library against integral data has been performed by means of direct comparison with measurements of sample materials under fusion- and IFMIF-relevant [20] neutron spectra. Irradiations have been carried out at ENEA FNG, Sergiev Posad SNEG-13, JAERI FNS, FZK Isochron-cyclotron and NPI cyclotron, and comparisons made with integral C/E data (ratio of a calculated library entry to the equivalent experimental value). The results of these benchmark exercises in concurrence with differential data have indicated where modifications to the data need to be made. Most of the measurements were carried out with materials relevant for fusion, resulting in small uncertainties for activities produced in the major nuclides, but larger uncertainties for activities produced in the minor nuclides and impurities. New methodologies for measuring the beta and gamma heating have also provided a large amount of data [21].

2.2.2 Benchmarking 2007-2008

At the two most recent JEFF meetings, various additional benchmarking was reported.

Sensitivity analyses from AREVA-NP and CEA concluded that currently available evaluations in JEFF3.1 for the Zr and O strongly influence the underestimation by about 500pcm on k-eff for large PWRs and BWRs. CEA (Bernard and Noguere, CEA) re-evaluated 91Zr,96Zr (n,γ) and 16O (n,α) which reduce the k-eff underestimation of PWRs and BWRS cores by about 100 and 200 pcm respectively.

The fuel inventory and reactivity loss of spent fuel in BWRs was analyzed with the APOLLO-2.8 code (Leconte, CEA). For BWRs assemblies, MOX and UOX fuel have been validated and the fuel inventory and reactivity loss have been qualified with the APOLLO 2.8 code. The main conclusion extrapolated from the fuel inventory analyses was that JEFF3.1 improves the predictions of main actinides and fission products significantly with respect to JEF2.2. Good performance of the JEFF3.1 library could also been concluded from reactivity loss studies of spent fuels in BWRs. These results from reactivity

loss have been confirmed with three samples with different void fractions and burn-ups. The only required change for the success of these analyses was to adopt JEFF-3.0 for Np-237 instead of the JEFF-3.1 file.

Analyses in two experimental reactors are on-going, EOLE LWR and MASURCA fast reactor, with the objective to reduce the uncertainty on the Fe-56 cross-section (CEA, Vaglio-Gaudard) and to understand the 20% discrepancies among the different libraries for inelastic cross-sections. JEFF3.1 slightly improves the performances of JEF2.2 for the fission rate estimation at the interface region (core-reflector). However the calculations with JEFF3.1 overestimate by about 4% the fission rate in that region.

The JANUS-8 shielding benchmark results (Archier and Litaize, CEA) for Na-23 suggests extra adjustment of the inelastic cross sections and elastic and inelastic angular ditributions. A revised Na-23 evaluation is currently under study by NRG and CEA.

To improve LWR cycle prediction, the benchmarks on separate fission product oscillations and spent fuel oscillations in MINERVE were used (Bernard, CEA). Target accuracies on reactivity loss per cycle set by AREVA-NP were approached by revising 7 JEFF-3.1 fission products: Ru-103, Tc-99, Pm-148g, Zr-93, Pm-147, Eu-154 and Cs-135.

3 Towards JEFF-3.2

There is no firm timetable and completion target date for the preparation of the JEFF-3.2 library, but release is expected in 2010. Until then, specific items to be addressed include the following:

- *An extensive benchmarking report on JEFF-3.1*, in which JEFF-3.1 will be tested against criticality, reactor burn-up, shielding, activation, fission inventory and decay heat experiments, by means of a variety of Monte Carlo and deterministic computer codes.
- *Inclusion of more covariance data*: the availability and quality of covariance data is clearly inadequate. Various activities, such as WPEC subgroups 24 (covariances) and 26 (data needs for advanced reactors [22]) are addressing this matter, and the JEFF project should benefit from these initiatives.
- *Revision and test of FPs*: the JEFF project needs to exploit the FP evaluations undertaken as part of WPEC SG21 [23] and 23 and for ENDF/B-VII, for the selection of those data files that best reproduce the European integral measurements of FP capture.
- An effort to revise the entire range of isotopes for U and Pu in the fast range is undertaken by CEA/BRC.

- *More emphasis on minor actinides*: transmutation scenarios, GEN-IV systems and deep-burn designs require the accuracy of some minor actinide data to approach those of the major actinides.
- *New photonuclear libraries*, with special emphasis on actinides. Available libraries for actinides include data only up to 20 MeV. New evaluations for ^{232}Th, ^{235,238}U, ^{237}Np and ^{239}Pu will be extended to 130 MeV and recent measurements of delayed neutron data will be included.
- *New proton and deuteron libraries*: these data will be primarily based on available models.
- *Adoption of EAF-2007 as new activation library*: includes an energy extension to 60 MeV, which is required for the IFMIF fusion programme [24].
- *Update of the decay data and fission yield libraries*: inconsistencies will be corrected and additional spectral data will be included for specific radionuclides.
- *Thermal scattering law data* will undergo further testing.
- *More complete gamma production data*: presence of gamma production data in all libraries is still rather random - a more systematic approach to the production of gamma data is needed, and this issue will be taken up in future releases of JEFF.
- *TALYS-1.0* will be used in many future evaluations.
- *NJOY extensions required for JEFF processing*: a special NJOY users group [25] has been launched inside the JEFF project.
- *CONRAD*: new, modern modular software developed by CEA, Cadarache, for the analysis of nuclear data [26] will provide a natural interface between the resolved and unresolved resonance region and fast neutron range in neutron data evaluations.

New neutron evaluations that are finished or under construction since the release of JEFF-3.1 are shown in Table 1. More specific reasons for these updates are:

- *Revision and validation of* $^{235,238}U$ to solve remaining deficiencies, especially for fast HEU systems.
- *New evaluation for* ^{239}Pu to improve MOX analyses.
- *New evaluations of Cr, Mn, Ta and W isotopes* are available from the EFF fusion project.
- *Revised evaluation for Pb, Bi and Am* isotopes using IRMM, Geel, measurements and TALYS.
- *New evaluation for* ^{232}Th, ^{233}Pa based on n_TOF/IRMM measurements - these data files are the results of an IAEA coordinated research project on the Th fuel cycle [27] and have also been adopted in ENDF/B-VII.
- *New evaluations for* ^{2}H, ^{151}Sm, ^{237}Np, *Zr and Hf-isotopes.*

We foresee validation and benchmarking activities on the following:

Table 1
New neutron evaluations, finished or under construction, for JEFF-3.2

Nuclei	Energy range and origin
^{16}O	0-150 MeV, CEA/Cadarache
^{23}Na	0-200 MeV, NRG, CEA/Cadarache
$^{50-54}$Cr	0-60 MeV, FZK (EFF)
^{55}Mn	0-60 MeV, FZK (EFF)
^{91,96}Zr	0-20 MeV, CEA/Cadarache
^{181}Ta	0-60 MeV, FZK (EFF)
$^{182-186}$W	0-60 MeV, FZK (EFF)
$^{174-180}$Hf	0-20 MeV, CEA/Cadarache [29]
^{204,206,207,208}Pb	0-200 MeV, NRG [30]
^{209}Bi	0-200 MeV, NRG [30]
$^{232-238}$U	0-30 MeV, CEA
^{239}Pu	thermal, CEA/Cadarache
$^{238-242}$Pu	0-30 MeV, CEA
^{241,243}Am	0-20 MeV NRG and CEA/BRC

- *Criticality studies by means of Monte Carlo*: large-scale validation of the ICSBEP criticality data is planned that will be based on MCNP and TRIPOLI, and well-automated procedures within the JEFF project (NRG, CEA/Cadarache, SCK, VTT, etc.).
- *Integral experiments with deterministic methods*: codes such as ERANOS [28] and SCALE are being used to test the JEFF-3.1 library for fuel inventory, reactivity variation, and FP integral experiments.
- *14-MeV shielding benchmarks*: LLNL, FNS, OKTAVIAN, FNG, TUD benchmarks will be tested for new JEFF library releases, especially on the basis of the Monte Carlo codes (FZK, NRG, SCK).
- *Activation benchmarks*: follow-up of the fusion activation benchmarks as already mentioned.
- *Decay heat benchmarks.*
- *IRPHE benchmarks* on larger reactor systems.

4 Conclusions

The JEFF-3.1 nuclear data library was released in May 2005 and has been extensively validated. Concerted efforts have been expended on all of the general and special purpose libraries to achieve overall improvements over a range of simulations for nuclear technology applications. Remaining deficiencies pose new challenges to and incentives for the further development of JEFF. Proposed future objectives have been listed in this paper, and need to be realised in order to meet users' demands and needs. A revised library JEFF-3.1.1 will be produced for 2009. A JEFF-3.2 library is foreseen for 2010.

References

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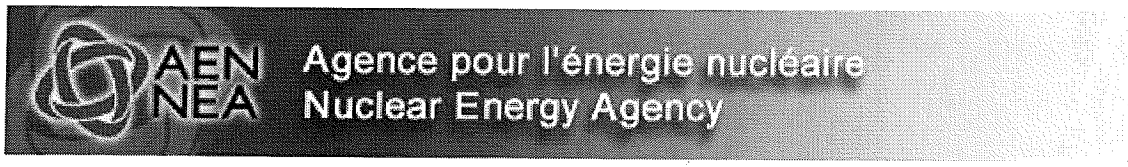

Feedback on JEFF-3.1

Please, see also proposals for JEFF-3.2 (password protected)

Enter new feedback

Back to the main page of the JEFF-3.1 Library.

Last updated on 1 November 2007

- **Feedback on the Neutron Files**
- **Feedback on the Thermal Scattering Files**
- **Feedback on the Radioactive Decay Data Files**
- **Feedback on the Neutron Fission Yields**
- **Feedback on the Activation Files**

The status column identify the feedback status:
- Submitted: Feedbacks submitted to the NEA and not yet revised by the Working Group
- Accepted: Feedback has been accepted by the Working Group
- Updated: A new updated file is available

*: Z-sym-A and state if not ground, or compound
**: File name as in the official CD-ROM

Feedback on the Neutron Files

Nuclide*	File name**	From	Date	Comment	Status
11-Na- 23	JEFF31N1125_0.ASC	D. Brown	28 November 2005	MF=4.The data is given in the wrong frame as LCT = 2.	Submitted
12-Mg- 24,25,26	JEFF31N1225(28,31)_0.ASC	W. Haeck	14 June 2006	Large discrepencies compare with the elemental version in JEFF3.0 (JEF/DOC-1125 and JEF/DOC-1141). Major differences for angular distributions in different levels of innelastic scattering (MT 51 and 52).	Submitted
17-Cl- 35	JEFF31N1725_0.ASC	Lopez-Aldama	21 June 2005	File 14 (MF=14) the NK value should be equal to the NK in file 12 and 13 JEFF31N1725_1.ASC).	Accepted and updated
17-Cl- 37	JEFF31N1731_0.ASC	NEA	3 June 2005	The number of lines in MF3, MT1,MT2 and MT102 is wrong in the MF1, MT451 list. The number of lines should be 4189, instead of 2043. JEFF31N1731_0.ASC).	Accepted and updated on final version

20-Ca- 46	JEFF31N2043_0.ASC	V. Sinitsa and M. Pescarini	24 March 2006	The total cross section (MF3,MT1) below 1 keV is zero, while the capture cross section is not zero. The total (MT1) is not the sum of the cross sections. M. Pescarini is proposing the following file: JEFF31N2043_2.ASC. The file has been proposed to JEFF3.2, see the JEFF3.2-Beta JEFF-3.2-beta page.	accepted
22-Ti- 50	JEFF31N2237_0.ASC	E. Dorval	31 October 2006	Neutron capture cross section data, MT=102, is wrong. It is not from isotope Ti-50. but from natural Titanium.	Submitted
22-Ti-	all Ti isotopes	D. Brown	28 November 2005	MF=6. In MT102 MF6 (n,gamma), the energy-angle distributions for the outgoing gammas from the continuum. The interpolation table has all E' set to 0 for all entries.	Submitted
22-Ti-46,49		C. Dean	12 March 2007	Elastic cross section negative above 18.797MeV Revision is needed before updating JEFF3.2	Submitted
24-Cr- 52	JEFF31N2431_0.ASC	O. Bouland, M. Mattes	31 January 2006	Corrections on MF=4, MT=2: 1/ The file can not be processed by GROUPR of NJOY because of the very high number of energy points (23825 instead of max 2000 for the ENDF format)--> number of points decreased down to 1394. 2/ The GROUPR module of NJOY can not process the section MF4/MT2 because of redundant energy points in the file. This is due to the option 'conversion of data fields to standard form' in the STANEF code which forces the file MF4/MT2 output to adopt the ENDF format with 6 significant digits, rather than 7, for the energy values. --> section MF4/MT2 recreated correctly. JEFF31TNN2431_1.ASC	Accepted
26-Fe- 56	JEFF31N2631_0.ASC	D. Brown	28 November 2005	There is a mismatch between the level excitations in the MF3 data and the MF12 data.	Accepted

				The file proposed is JEFF31N2631_1.ASC	
26-Fe- 56	JEFF31N2631_0.ASC	O. Cabellos	20 November 2006	The processing of the file for radiation damage calculations MT=444 has a discotinuity above 20 MeV. Is the discontinuity caused by the lack of recoil information above 20 MeV?	To be discussed within the Working Group
26-Fe- 57	JEFF31N2634_0.ASC	A. Trkov	26 August 2005	Inconsistency between the total MT1 and the sum of the partials.	Submitted
26-Fe- 58	JEFF31N2637_0.ASC	A. Trkov	4 May 2006	Correction total and non-elastic cross section JEFF31TN2637_1.ASC.	Accepted
27-Co- 58	JEFF31N2722_0.ASC	O. Cabellos	4 October 2005	Capture ,(n,gamma),discontinuity for the resonances	Submitted
41-Mo- 95	JEFF31N4234_0.ASC	D. Brown	5 November 2006	Flag on first 2 tables of legendre coeffs set to 0, it should be set to 1 The file proposed is JEFF31N4234_1.ASC	Accepted
52-Te- 127	JEFF31N5247_0.ASC	F. Leszczynski	7 February 2007	Huge difference observed in thermal capture value: JEFF-3.1=JEF-2,.2= 9.4 barn, ENDF/B-VII=JENDL3.3: 3380 barn	Proposed
63-Eu-151	JEFF31N6325_0.ASC	D. Brown	28 November 2005	MF=12. Energies out of order.	Submitted
77-Ir-191	JEFF31N7725_0.ASC	Lopez-Aldama	21 June 2005	File 14 (MF=14) the NK value should be equal to the NK in file 12 and 13 JEFF31N7725_1.ASC).	Accepted and updated
77-Ir-191	JEFF31N7725_1.ASC	D. Brown	5 November 2006	File 12 (MF=12) The number of gammas is incorrect, it is listed as 153, but should be 152. The file proposed is: JEFF31N7725_2.ASC).	Accepted
77-Ir-193	JEFF31N7731_0.ASC	Lopez-Aldama	21 June 2005	File 14 (MF=14) the NK value should be equal to the NK in file 12 and 13 JEFF31N7731_1.ASC).	Accepted and updated
77-Ir-193	JEFF31N7731_0.ASC	D. Brown	5 November 2006	File 12:1) MF=12, MT=52 Added file so that can correctly deexcite higher levels. It is more or less a copy of the MT=51 file but the level energy matches that in MF=3, MT=52. 2) MF=12, MT=102, Lowered number of lines specidfied in header by one to match the actual number in the file. 3) MF=1, MT=451	Accepeted

				Update to reflect the addition of the new MF=12,MT=52 file. The file proposed is JEFF31N7731_2.ASC)	
81-Tl	JEFF31N8100_0.ASC	E. Dupont and O. Cabellos	13 November 2006	Different results using NJOY and PREPRO, MF=3 MT=102. A change in the interpolation law (from lin-lin to log-log) will improve the results (PREPRO treatement) . E. Dupont have proposed the following file JEFF31N8100_1.ASC and the documentation of the modifications proposed memo_natTl.pdf	Submitted
83-Bi-209	JEFF31N8325_0.ASC	W. Haeck	14 June 2006	Problem in the secondary photon distribution mt=849, continium spectrum at incidente energy equal to 200ev is zero. Haeck proposed to modify the existing zero values in the continium spectra for the incident energy points 1e-5eV, 0.0253 eV and 200 eV a small value such as 1e-25. The proposed file is: JEFF31N8325_1.ASC	Accepted
92-U-233	JEFF31N9222_0.ASC	Dean	24 May 2005	The decay constant for the 4th time group is a factor 10 too low 1.330420-2 instead of 1.330420-1 JEFF31N9222_1.ASC).	Accepted and updated on final version
92-U-233	JEFF31N9222_1.ASC	J-C Sublet	31 March 2008	MF-5 MT-16,17,91 Q-value, threshold and spectra modified MF-5 MT-20,21,38 threshold spectra reshuffled. A strict interpretation of the original spectra would lead to the generation of too many neutron below 0.2 eV "U-234, U-233 energy distribution of secondary particles" jefdoc-1217 JEFF31N9222_2.ASC).	submitted
92-U-233	JEFF31N9222_2.ASC	J-C Sublet	16 May 2008	Correction of the JEFF31N9222_2.ASC file so that it includes previous correction (JEFF31N9222_1.ASC, see above) by C Dean (the decay constant for the 4th time group is a factor 10 too low 1.330420-2 instead of 1.330420-1).	submitted

				JEFF31N9222_3.ASC).	
92-U-234	JEFF31N9225_0.ASC	B. Naranjo and NEA	28 June 2005	The number of lines in MF2, MT151 is 489. The value 498 is wrongly stated in MF1, MT451. JEFF31N9225_0.ASC).	Accepted and updated on final version
92-U-234	JEFF31N9225_0.ASC	J-C Sublet	31 March 2008	MF-5 MT-16,17,91 Q-value, threshold and spectra modified MF-5 MT-20,21,38 threshold spectra reshuffled. A strict interpretation of the original spectra would lead to the generation of too many neutron below 0.2 eV "U-234, U-233 energy distribution of secondary particles" jefdoc-1217 JEFF31N9225_1.ASC).	submitted
94-Pu-239	JEFF31N9437_0.ASC	Dupont	14 June 2005	Upper limit unresolved resonance range, the evaluation selected is: JEFF31N9437_3.ASC a report to summarized the proposals).	Submitted
94-Pu-239	JEFF31N9437_0.ASC	Dean	09 June 2005	Upper limit unresolved resonance range (two solutions proposed by C. Dean for the evaluators to decide between, based on validation and comparisons) JEFF31N9437_1.ASC and JEFF31N9437_2.ASC).	Submitted
94-Pu-240	JEFF31N9440_0.ASC	D. Brown	28 November 2005	MF=4.The data is given in the wrong frame as LCT = 2.	Submitted
95-Am-241	JEFF31N9543_0.ASC	O. Bouland	16 November 2006	A/During the revision of the resolved resonance parameters for JEFF31, the fission widths of the 4th energy lowest resonances were not updated accordingly to the new neutron width values. This is now done with preserving the capture trends. B/ For JEFF31, the un-assigned spins of the old Froehner's evaluation were assigned on statistical distribution laws. Following the new branching ratio information and the probable spins (see JEF/DOC-1086 , the spins of the bound and of the 4th lowest resonances were fixed. C/ In the Branching Ratio to AM241m file	Submitted

	(MF=9, MT=102), the LFS flag (Level number of the final state) was erroneously set to 2 which corresponds to the second metastable state and not the the second excited state. LFS corrected to 1. A new file including the corrections addressed above will be submited to the NEA

Feedback on the Thermal Scattering Files

Nuclide*	File name**	From	Date	Comment	Status
H(ZrH)	JEFF31TS0007_0.ASC	NEA	30 June 2005	Format error: The ZA number, 1.007000+3 changed to 1.070000+2 in MF/MT 1/451,7/2 and 7/4. Number of lines in MF/MT 1/451 corrected to 27 lines and for 7/4 corrected to 43116 lines JEFF31TS0007_1.ASC).	Accepted and updated on JEFF Web page
H(CaH2)	JEFF31TS0008_0.ASC	NEA	30 June 2005	Format error: The ZA number, 1.001000+3 changed to 1.080000+2 in MF/MT 1/451, 7/2 and 7/4, and number of lines for 1/451 corrected to 73 lines and for 7/4 corrected to 16210 lines JEFF31TS0008_1.ASC).	Accepted and updated on JEFF Web page
D(D2O)	JEFF31TS0011_0.ASC	NEA	30 June 2005	Format error: Number of lines in 1/451 corrected to 25 lines and for 7/4 corrected to 69538 lines JEFF31TS0011_1.ASC).	Accepted and updated on JEFF Web page
Ca(CaH2)	JEFF31TS0059_0.ASC	NEA	30 June 2005	Format error: The ZA number, 2.000000+3 changed to 1.590000+2 in MF/MT 1/451, 7/2 and 7/4 JEFF31TS0059_1.ASC).	Accepted and updated on JEFF web page

Feedback on the Radioactive Decay Data Files

Nuclide*	File name**	From	Date	Comment	Status
92-U-238	JEFF31RDD.ASC	A. Nichols	4 July 2005	ERROR: U-238 BF(sf) should be 5.46E-7. The original value of 5.46E-5 is an error, and was an aberration at the time of the re-evaluation of the decay data in January 2000.	Accepted.Updated on the JEFF3.1.1 library
various above Z=70	JEFF31RDD.ASC	O. Cabellos and M. Kellett	20 October 2005	Wrong natural abundance data for nuclei above Z=70 added as the final line in the comments section: MF=1, MT=451.	Accepted.Updated on the JEFF3.1.1 library
89-Sr	JEFF31RDD.ASC	O. Bersillon	2 January 2006	The uncertainty on the mean beta energy for the 89-Sr (MAT=964) decay given in the JEFF-3.1 RDD (233.8 keV) is not correct. It should be 1.0 keV!	Accepted.Updated on the JEFF3.1.1 library

95-Am-242	JEFF31RDD.ASC	T. D. Huynh	3 March 2006	Am-242M and Am-242N (Mat. 3607 and 3608) have both state numbers LIS=2 while the isomeric state is LISO=1 and 2 respectively.	Accepted.Updated on the JEFF3.1.1 library
	JEFF31RDD.ASC	Walter Josephson	19 September 2007	AWR values in JEFF-3.1 RDD converted from NUBASE atomic masses are innacurate.This issue will be addressed in a future update.	Accepted.Updated on the JEFF3.1.1 library

Feedback on the Neutron induced Fission Yields Data Files

Nuclide*	File name**	From	Date	Comment	Status
92-U-235	JEFF31NFY.ASC	Mills and Vidal	1 November 2007	Incorrect value in file MF=8. Vidal reported an inconsistency for Cs137 between the cumulative and independent yields for the thermal fission of U235.The reason was found to be an incorrect independent yield of I137. The value in the file was 2.9508E-2 instead of 3.0976E-2. This was the result of an incorrect unit conversion in the modification of UKFY3.6 to produce UKFY3.6A. A corrected file is proposed JEFF31NFY-U235-modified.ASC	Proposed

Feedback on the Activation Files

Nuclide*	File name**	From	Date	Comment	Status
Many	JEFF31A.ASC	A. Konobeyev	16 August 2007	Product nuclei (ZAP) incorrect, E.G. Ni-56 (MAT=2819), MF=10, MT=112	Submitted
(Kr-78, Kr-80, Kr-82, Zr-86, Te-120, Xe-133, Ce-134, Pm-151, Os-191, Pt-194, Pt-196, Pt-198, Tl-205, Np-239, Es-255)	JEFF31A.ASC	A. Konobeyev	14 August 2007	Interpolation ranges are incorrect for MF=9 MT=102	Submitted
41-Nb-93	JEFF31A.ASC	A. Konobeyev	15 Nov 2006	MF=10: Single measurement of the cross-section available at 17.01 - 19.21 MeV [Qaim et al, Phys.Rev C34 (1986) pp.489-492] seems to be ignored in the evaluation. The difference between evaluated cross-section and measured data is large. The evaluated cross-section could be easy corrected, if no doubts are found in Qaim et al measurements.	Submitted
Many (mainly fissile isotopes.)	JEFF31A.ASC	A. Rineiski	30 Jan 2006	Q-values for (n,f) reactions (MF3,MT18) are wrong for some isotopes, e.g. Pu-240.	Submitted

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JEFF-3.2 Beta

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General Purpose

Thermal Scattering Files

Radioactive Decay Data Files

Fission Yields Data

*: Z-sym-A and state if not ground, or compound
**: File name

General Purpose

Nuclide*	File name**	From	Date	Comment	Status
8-O- 16	JEFF31N0825_0.ASC	Noguere	11 December 2007	Correction O-16 (n,alpha) cross section bellow 6 MeV with the help of new differential data (See JEFDOC-1207 for details and new file JEFF31N0825_3.ASC).	Submitted
20-Ca- 46	JEFF31N2043_0.ASC	Sinitsa, Pescarini	21 March 2007	Modified JEFF-3.1 file including JENDL-3.3 Ca-46 elastic scattering data, below 1 keV. (See file JEFF31N2043_2.ASC).	Submitted
40-Zr-91 and 96	JEFF31N4028_0.ASC and JEFF31N4043_0.ASC	Noguere	11 December 2007	correction of the resonancies at 292.4 eV for the Zr-91 and 301.1 eV for the Zr-96 (See JEFDOC-1208 for details and new files JEFF31N4028_1.ASC and JEFF31N4043_1.ASC.	Submitted
45-Rh-103	JEFF31N4525_0.ASC	Dupont	25 September 2006	Corrected energy-angle distributions of the reaction products for MF6/MT5 for JEFF-3.2,	Submitted

				available for preliminary testing (See file JEFF31N4525_1.ASC).	
53-I-127	JEFF31N5325_0.ASC	Dupont	25 September 2006	Corrected energy-angle distributions of the reaction products for MF6/MT5 for JEFF-3.2, available for preliminary testing (See file JEFF31N5325_1.ASC).	Submitted
53-I-129	JEFF31N5331_0.ASC	Dupont	25 September 2006	Corrected energy-angle distributions of the reaction products for MF6/MT5 for JEFF-3.2, available for preliminary testing (See file JEFF31N5331_1.ASC).	Submitted
64-Gd-152	JEFF31N6425_0.ASC	Sublet	19 May 2008	New proposed evaluation for JEFF-3.2 that includes covariance data. Detailed information is available in MF-1 and in JEF/DOC-1210. (See file JEFF32TN6425_0.ASC).	Submitted
64-Gd-154	JEFF31N6431_0.ASC	Sublet	19 May 2008	New proposed evaluation for JEFF-3.2 that includes covariance data. Detailed information is available in MF-1 and in JEF/DOC-1210. (See file JEFF32TN6431_0.ASC).	Submitted
64-Gd-155	JEFF31N6434_0.ASC	Sublet	19 May 2008	New proposed evaluation for JEFF-3.2 that includes covariance data. Detailed information is available in MF-1 and in JEF/DOC-1210. (See file JEFF32TN6434_0.ASC).	Submitted
64-Gd-156	JEFF31N6437_0.ASC	Sublet	19 May 2008	New proposed evaluation for JEFF-3.2 that includes covariance data. Detailed information is available in MF-1 and in JEF/DOC-1210. (See file JEFF32TN6437_0.ASC).	Submitted
64-Gd-157	JEFF31N6440_0.ASC	Sublet	19 May 2008	New proposed evaluation for JEFF-3.2 that includes covariance data.	Submitted

				Detailed information is available in MF-1 and in JEF/DOC-1210. (See file JEFF32TN6440_0.ASC).	
64-Gd-158	JEFF31N6443_0.ASC	Sublet	19 May 2008	New proposed evaluation for JEFF-3.2 that includes covariance data. Detailed information is available in MF-1 and in JEF/DOC-1210. (See file JEFF32TN6443_0.ASC).	Submitted
64-Gd-160	JEFF31N6449_0.ASC	Sublet	19 May 2008	New proposed evaluation for JEFF-3.2 that includes covariance data. Detailed information is available in MF-1 and in JEF/DOC-1210. (See file JEFF32TN6449_0.ASC).	Submitted
82-Pb-204	JEFF32TN8225_0.ASC	Rochman	10 December 2007	New evaluation that includes covariance data, detailed information on the evaluations at JEF/DOC-1202 (See file JEFF32TN8225_0.ASC).	Submitted
82-Pb-205	JEFF32TN8228_0.ASC	Rochman	10 December 2007	New evaluation that includes covariance data, detailed information on the evaluations in JEF/DOC-1202 (See file JEFF32TN8228_0.ASC).	Submitted
82-Pb-206	JEFF32TN8231_0.ASC	Rochman	10 December 2007	New evaluation that includes covariance data, detailed information on the evaluations in JEF/DOC-1202 (See file JEFF32TN8231_0.ASC).	Submitted
82-Pb-207	JEFF32TN8234_0.ASC	Rochman	10 December 2007	New evaluation that includes covariance data, detailed information on the evaluations in JEF/DOC-1202 (See file JEFF32TN8234_0.ASC).	Submitted
82-Pb-208	JEFF32TN8237_0.ASC	Rochman	10 December 2007	New evaluation that includes covariance data, detailed information on the evaluations in JEF/DOC-1202 (See file JEFF32TN8237_0.ASC).	Submitted

83-Bi-209	JEFF32TN8325_0.ASC	Rochman	10 December 2007	New evaluation that includes covariance data, detailed information on the evaluations in JEF/DOC-1202 (See file JEFF32TN8325_0.ASC).	Submitted
94-Pu-239	JEFF31N9437_0.ASC	Dupont	14 June 2005	Upper limit unresolved resonance range, the evaluation selected is: JEFF31N9437_3.ASC a report to summarized the proposals).	Submitted
94-Pu-239	JEFF31N9437_3.ASC	Bernard, Santamarina	11 November 2006	The thermal region has been reviewed (see JEF/DOC-1158)and the evaluation proposed is: JEFF31N9437_4.ASC .	Submitted

Thermal Scattering Files

Nuclide*	File name**	From	Date	Comment	Status

Radioactive Decay Data Files

Nuclide*	File name**	From	Date	Comment	Status

Fission Yields Data

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