

\*\*\*\*\* BIR-SECTION \*\*\*\*\*

\* REFERENCE (C, 68WASH, 2, 885, 6803) PRO  
 \* CONTRIBUTION,  
 \* (P, EANDC(E)-89, 37, 6802)  
 \* (J, NP/A, 118, 9, 6805) FINAL  
 \* MEASUREMENTS.

\* AUTHOR (H. K. VONACH, F. G. VONACH, H.  
 \* TITLE -PRECISION MEASUREMENTS  
 \* OF (N,P), (N,A) AND (N, $\alpha$ )  
 \* 13.5 - 14.7 MEV NEUTRON  
 \* INSTITUTE (ZGERMUN)  
 \* N-SOURCE (D-T ) BOMBARDMENT OF A  
 \* DEUTERONS. A RANGE OF I  
 \* WERE USED BY VARYING THE  
 \* FACILITY (VDG ) 400KEV VAN DE GRA  
 \* FUR STRAHLENFORSCHUNG,  
 \* METHOD (ACTIV) GAMMA PULSES EX  
 \* TA-180M WHERE BETAS WERE  
 \* PART-DET (BG ) DECAY GAMMAS.  
 \* SAMPLE NATURAL MATERIALS. ME  
 \* SAMPLES WERE PLACED A  
 \* CORRESPONDING TO 30  
 \* ENERGY, AND SUBTENDED  
 \* DISTANCE OF 100MM  
 \* CORRECTION ANGULAR DEPENDENT NE  
 \* ELASTICALLY SCATTERED  
 \* SCATTERING CONTRIBUT  
 \* DECAY CORRECTIONS.  
 \* ERR-ANALYS SYSTEMATIC ERRORS, TA  
 \* ATTENUATION CORRECTIO  
 \* (0.05 PC), DECAY CORRE  
 \* SHIFTS (0.1 PC), MAXIMU  
 \* THAN 0.9 PERCENT, STATIS  
 \* IN THE TOTAL ERROR.  
 \* DETECTOR (NAICR) 5X5INCH WELL CRY  
 \* (PROPC) CH4 FLOW COUNTER  
 \* TA-180M.  
 \* STATUS FROM TABLES IN CONFERENCE  
 \* HISTORY (781017C) PDJ, RECOMPILED  
 \* (790219E)  
 \* (800115A) REACTION STRINGS  
 \* 022 AND 023 CHANGED.  
 \* (800115E)  
 \* (800424A) DATA HEADINGS C  
 \* (800603E)

\*\*\*\*\* END BIR-SECTION \*\*\*\*\*

\*\*\*\*\* BIR-SECTION \*\*\*\*\*

\* REACTION (23-V-51(N,A)21-SC-48,, S  
 \* RATIO TO THE 14.7 MEV CR  
 \* STATUS PUBLISHED TABLE.  
 \* HISTORY (781018C) PDJ,  
 \* (790219E)  
 \* (800424A) DATA HEADINGS C  
 \* (800603E)

\*\*\*\*\* END BIR-SECTION \*\*\*\*\*

\*\*\*\*\* NB COMMON-SECTION \*\*\*\*\*

	EN MEV	EN-ERR MEV	DATA ARB-UNIT
1	13.6	0.075	0.820
2	13.7	0.075	0.836
3	13.8	0.075	0.852
4	13.9	0.075	0.867
5	14.0	0.075	0.885
6	14.1	0.075	0.902

\*\*\*\*\* END DATA-SECTION \*\*\*\*\*

NNDEN/39

# NEUTRON NUCLEAR DATA EVALUATION NEWSLETTER

NEA DATA BANK  
BANQUES DE DONNÉES DE L'AEN

February 1987



NNDEN/39

**NEUTRON NUCLEAR DATA  
EVALUATION NEWSLETTER**

**NEA DATA BANK  
BANQUES DE DONNÉES DE L'AEN**

February 1987

3303

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NEUTRON NUCLEAR DATA EVALUATION NEWSLETTER

NNDEN/39

The Newsletter reports:

1. Evaluation work on particular nuclides.
2. Development of codes for nuclear model calculations, and other codes needed for nuclear data work.
3. Publications relevant to the neutron data field.

Contributions on evaluation activities and nuclear model codes have been received from:

		<u>Page</u>
BULGARIA	Institute for Nuclear Research and Nuclear Energy, Sofia	7
FEDERAL REPUBLIC OF GERMANY	KFK Karlsruhe	8
FRANCE	CEN, Bruyères-le-Châtel CEN, Cadarache	10 13
INDIA	Indira Gandhi Centre, Kalpakkam	15
ITALY	ENEA, Bologna	16
JAPAN	Nuclear Data Centre, JAERI	18
NETHERLANDS	ECN, Petten	19
UNITED KINGDOM	AERE, Harwell Nuclear Physics Laboratory, Oxford AEE, Winfrith	20 21 23
USA	NNDC, Brookhaven	24
EFF (European Fusion File)	ECN, Petten	29
OECD/NEA	Data Bank, Saclay	30

The next issue of NNDEN has been scheduled for June 1987 and contributors are asked to send in their reports by 15th May 1987.

NEA Data Bank, January 1987

NEW EVALUATIONS

- A) COMPLETED
- B) IN PROGRESS
- C) PLANNED IN THE NEAR FUTURE

NUCLIDE	DATA TYPE	ENERGY RANGE	PAGE		
			A	B	C
H-1	many	$10^{-5}$ -20 MeV	27		
H-3	R matrix	up to 20 MeV	27		
He-3	R matrix	up to 20 MeV	27		
Li-6	R matrix	up to 4 MeV	27		
Li-6	(n,t)(n,n)			27	
Li-7	(n,n't)		24		
Be-nat	many			27	
B-10	many			27	
B-11	many			27	
C-Na	many			27	
Al-nat	many	up to 50 MeV		27	
Al-27	many	14.5 MeV	17		
Al-27	(n,p)(n, $\alpha$ )		24		
V-nat	many			27	
Cr-50	many	1 KeV-15 MeV	17		
Cr-52	many	1 KeV-15 MeV	17		
Cr-52	many			27	
Cr-53	many	1 KeV-15 MeV	17		
Cr-53	many	up to 5 MeV		27	
Cr-54	many	1 KeV-15 MeV	17		
Fe-nat	many			27	
Fe-54	many			9	
Fe-54	(n,n)(n,n')	up to 80 MeV	10		
Fe-56	many			27	
Fe-56	many			9	
Fe-56	(n,n)(n,n')	up to 80 MeV	10		
Fe-57	many			9	
Fe-58	many			9	
Co-nat	many			27	
Co-58	level dens.par.			18	
Co-59	many		21		

NUCLIDE	DATA TYPE	ENERGY RANGE	PAGE		
			A	B	C
Ni-nat	many	up to 50 MeV		27	
Ni-58	level dens.par.			18	
Ni-58	(n,n),(n,n')	up to 80 MeV	10		
Ni-58	(n,p)		24		
Ni-58	many	1 MeV-20 MeV		27	
Ni-60	(n,n)(n,n')	up to 80 MeV	10		
Ni-60	many	1 MeV-20 MeV		27	
Ni-60	(n,p)		24		
Ni-60	level dens.par.			18	
Ni-isot	many				
Cu-nat	many	up to 50 MeV		27	
Cu-63	many	$10^{-5}$ -20 MeV	27		
Cu-65	many	$10^{-5}$ -20 MeV	27		
Se-75	(n, $\gamma$ )		23		
Y-nat	many	$10^{-5}$ -20 MeV	27		
Nb-nat	many		28		
Nb-93	many	1 MeV-20 MeV		22	
Ru-102	many			19	
I-123	many		19		
Eu-151	many	3 KeV-2.2 MeV		28	
Eu-153	many	3 KeV-2.2 MeV		28	
Gd-155	many			28	
Gd-157	many			28	
Ho-165	many			28	
W-nat	many	up to 50 MeV		28	
Au-197	many	10 KeV-20 MeV	28		
Au-197	(n, $\gamma$ )			28	
Ra-224	many				23
Th-228	many				23
Th-232	many	non-res.reg.	15		
Th-232	many			15	
Th-232	(n,n')		21		
U-232	many				23
U-233	many			15	
U-235	(n,f)			28	
U-235	$\alpha$ value	$2.5 \cdot 10^{-2}$ eV		7	

NUCLIDE	DATA TYPE	ENERGY RANGE	PAGE		
			A	B	C
U-238	(n,γ)(n,n')	unresolv.res.reg.		9	
U-238	(n,γ)(n,f)	> 45 KeV		28	
U-238	many	res. reg.		28	
U-238	res. par.			20	
Np-236	many			23	
Np-237	(n,2n)			23	
Pu-236	many			23	
Pu-239	(n,f)			28	
Pu-239	many	res. reg.		28	
Pu-239	many			7	
Pu-239	spct fiss neutr.		24		
Pu-239	$D_p$		13		
Pu-239	many	up to 1 KeV		14	
Pu-239	many	30 KeV-20 MeV			14
Pu-239	R matrix	up to 1 KeV	26		
Pu-240	many			28	
Pu-241	many	therm & res.reg.	13		
Pu-241	res. par.	100 eV-30 KeV		7	
Am-242-m	many	therm & res.reg.	8		
Bk-250	many	$10^{-5}$ -20 MeV		18	
Cf-252	many	$10^{-5}$ -20 MeV		18	



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G. Georgiev, N. Tchikov

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Work recently completed or in progress:

1. Evaluation of  $^{241}\text{Pu}$  neutron constants, average resonance parameters in the unresolved resonance region (100 eV - 30 keV) using our model and code MNCARL for calculation of energy averaged neutron cross sections, their momentum, self-shielding factors, transmission.

2. Multilevel analysis of neutron cross sections of  $^{239}\text{Pu}$  in Adler-Adler scheme taking into account S-matrix unitarity properties.

3. Measurement of the  $^{235}\text{U}$  " $\alpha$ " value in the thermal point by the  $\gamma$ -ray multiplicity spectrometry using multisectional scintillation detector at Sofia research reactor.

References:

1.  $^{239}\text{Pu}$  resonance parameters, N. Janeva, V. Kolesov, A. Lukyanov, S. Toshkov, Bulg.J. of Physics (in print).
2.  $^{235}\text{U}$  " $\alpha$ "-value in thermal neutron energy point, Yu.V.Adamchuk, G. Georgiev, N. Tchikov, N. Janeva, Compt.rend.Bulg.Acad.Sci., 1986, v.39, No.10.
3. The method of fissile nuclei "alpha" measurements, Adamchuk Yu.V., Georgiev G., et al., Bulg.J. of Physics, v. 13, No.3, 1986.

KfK KARLSRUHE

GERMANY

Names: F.H. Fröhner, I. Broeders, B. Krieg, A. Mateeva

Address: Institut für Neutronenphysik und Reaktortechnik  
Kernforschungszentrum Karlsruhe  
Postfach 3640  
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Work recently completed

- A new evaluation of  $^{242}\text{mAm}$  in the thermal and resolved resonance range was finished, based on the fission cross section data published by Dabbs et al. (ORNL, 1983) and on the resonance parameters for the first 48 levels by Browne et al. (LLNL, 1984), and on their thermal values and resonance parameters. The evaluated thermal cross sections (2200 m/s) are 6800 b for fission, 1400 b for radiative capture and 10 b for elastic scattering. The LLNL resonance parameters were modified so as to achieve a compromise between the LLNL and ORNL data (the latter being 10 to 20 % higher).  
(F.H. Fröhner)
- In response to an invitation by NNDC a proposal for the section on resolved resonance formalisms in the ENDF manual was prepared for CSEWG and sent to NNDC in May 1986. The main points were a plea for admitting the Reich-Moore formalism not only for fissile nuclei, but generally. The point was made that nothing restricts the nonelastic channels in this formalism to fission, so that they can also be used for inelastic scattering, charged-particle emission etc. Furthermore, setting the radiation widths to zero one gets the usual R-matrix formulae, so that the formalism can be used directly for the parameters obtained e. g. by Hale and coworkers for light nuclei. The newly proposed hybrid formalism was criticized as unnecessary and confusing the issue. A formal reply from CSEWG was not received so far. (F.H. Fröhner)
- In preparation for an Ispra Course on Data Uncertainty, Sensitivities, Consistency and Adjustment (JRC Ispra, April 1986) the probabilistic foundations of data evaluation were reviewed, with special emphasis on parameter estimation via Bayes' theorem and on modern methods for the assignment of a-priori probabilities based on group theory and information theory. The process leading from raw data to evaluated files including covariance information was outlined, with due account of the role of nuclear models and of reaction theory. It was explained how common errors cause correlations and how covariance files can be constructed from a breakdown of errors into their statistical and systematic components. Finally it was shown how the problem of incon-

sistent data can be tackled by two-stage Bayesian parameter estimation. A report (Ref. 1) was written and an extended book contribution is in preparation.

(F.H. Fröhner)

- Burnup calculations for testing JEF-1 results against post-irradiation data from PWRs were made with the code KARBUS. Group constants for 69 groups were produced with a modified version of NJOY from 113 JEF materials including 20 actinides, 87 fission products, O and H (in water). Scattering matrices for water were generated for eight temperatures in cooperation with IKE, Stuttgart. Results are being compared with earlier KEDAK calculations.  
(A. Mateeva, H.W. Wiese, U. Fischer, C. Broeders, H. Küsters)
- The group constant code NJOY (from LANL) was modified and extended as follows. The present KfK version can cope with resonances having the unphysical (average) compound spin 1/2. A new reading routine for File 6 was written. Neutron emission cross sections (MT=10) can be processed. Group cross sections for neutron absorption are calculated. Input data are printed automatically, and calculations are not interrupted if a data type is missing. The scattering law for transfer matrices accounting for inelastic scattering, (n,2n) and (n,3n) reactions is printed out. A program, JOYFOR, was developed for translation of NJOY results in MATXS format to the KfK MITRA input format (Ref. 3)  
(I. Broeders, B. Krieg)

#### Work in progress

- Work is under way on capture and inelastic scattering of  $^{238}\text{U}$  in the unresolved resonance region, including self-shielding studies. In this context new methods recently developed at Heidelberg and Karlsruhe (cf. Ref. 2) for unresolved resonances are implemented in computer programs  
(F.H. Fröhner, E. Stein)
- A new evaluation of Fe-54, -56, -57, -58 was begun in order to update JEF with the wealth of new resonance data obtained in the last decade. This work is undertaken in cooperation with Bologna and Petten.  
(F.H. Fröhner)

#### References

1. F.H. Fröhner, "Principles and Techniques of Data Evaluation", KfK 4099 (August 1986)
2. F.H. Fröhner, "Unresolved Resonances and the Optical Model", Spec. Meet. on Use of the Optical Model for the Calculation of Neutron Cross Sections Below 20 MeV, Paris, 13-15 Nov. 1985, NEANDC - 222 'U' (1986)
3. B. Krieg and I. Broeders, "A Program for Transformation of NJOY Results in MATXS Format to the MITRA Input Format", KfK 4179 (in print)

CONTRIBUTION TO NNEN 39

Service de Physique et Technique Nucléaires  
Centre d'études de Bruyères-le-Châtel  
B.P. n° 12 - 91680 BRUYERES-LE-CHATEL (France)

I - Recent publications and reports

- Transformations cinématiques et intégration des sections efficaces doublement différentielles.  
O. BERSILLON (à paraître).
- Hadronic excitations of the second  $0^+$  state in  $^{90}\text{Zr}$ .  
J.P. DELAROCHE<sup>1</sup> et al., Phys. Rev. C. 34, 2005 (1986)
- Optical Model Description of the Neutron Interaction with  $^{116}\text{Sn}$  and  $^{120}\text{Sn}$  over a wide Energy range.  
P.P. Guss<sup>2</sup> et al., Submitted to Phys. Rev. C
- Coupled-channel description of inelastic scattering from soft nuclei.  
J.P. DELAROCHE, F.S. DIETRICH<sup>3</sup>.  
Accepted for publication in Phys. Rev. C
- Deformed Optical potential for  $n + ^{184}\text{W}$  at  $E < 26$  MeV.  
J.P. DELAROCHE, Internal Report.

II - Work recently completed

- Energy dependences of the deformed optical potential for neutron scattering from  $^{54,56}\text{Fe}$  and  $^{58,60}\text{Ni}$  up to 80 MeV.  
R.S. PEDRONI<sup>2</sup> et al., to be submitted to Phys. Rev. C.
- The Dynamics of collective excitation in  $^{194}\text{Pt}$  from several scattering experiments.  
J.P. DELAROCHE<sup>4</sup> et al., to be submitted to Phys. Rev. C.
- Ground State band deformations of  $^{155,156,157,158,160}\text{Gd}$  from neutron scattering measurements and Hartree-Fock-Bogolyubov calculations.  
J.P. DELAROCHE et al., to be submitted to Phys. Rev. C.

- Quest for the Fermi energy anomaly in the rare-earth region.  
J.P. DELAROCHE, to be submitted to Phys. Rev. C.
- Excitation of  $K^\pi = 0^+, 0^-, 1^-$  and  $3^-$  bands of Deformed Nuclei in the context of the coupled-channel formalism.  
J.P. DELAROCHE<sup>1</sup> et al., Technical Report.
- Polarized proton scattering from <sup>116,120,124</sup>Sn at 16 MeV.  
D.J. ABBOTT<sup>5</sup> et al., to be submitted to Phys. Rev. C.

### III - Work in progress

- Analyse des spectres de neutrons issus de la réaction  $d + {}^7\text{Li}$ .  
O. BERSILLON.
- Analyse des spectres d'électrons de conversion de la réaction <sup>169</sup>Tm (n,e-).  
O. BERSILLON, S. JOLY.
- Etude de problèmes de conservation de l'énergie dans les fichiers ENDF.  
O. BERSILLON.
- Dispersion relation corrections applied to nucleon scattering from <sup>40</sup>Ca.  
J.P. DELAROCHE<sup>2</sup> et al.

### IV - Work planned for the future

- Energy dependence of the deformed optical potential and Dispersion relation corrections for  $n + {}^{184}\text{W}$  below 26 MeV.  
J.P. DELAROCHE<sup>1</sup> et al.

### V - Work on nuclear model codes

- Statistical model code. Modification of the code HELMAG.  
B. DUCHEMIN, C. LAGRANGE.

- Implementation of ECIS79 with Dispersion relation corrections.  
J.P. DELAROCHE.

#### VI - Other subjects of interest

- Physics of the proton interaction at and below the coulomb barrier.  
J.P. DELAROCHE.
- Méthode de résolution de systèmes différentiels : test d'un nouvel algorithme.  
M. COLLIN, F. GUEMAS.

#### REFERENCES

- <sup>1</sup> - In collaboration with Ohio University, Athens, U.S.A.
- <sup>2</sup> - In collaboration with Duke University, Durham, U.S.A.
- <sup>3</sup> - In collaboration with L.L.N. Laboratory, U.S.A.
- <sup>4</sup> - In collaboration with University of Kentucky, Lexington, U.S.A.
- <sup>5</sup> - In collaboration with the University of North carolina, Chapel Hill, U.S.A.

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I - RECENT PUBLICATIONS AND REPORTS

- . R Matrix analysis of the  $^{239}\text{Pu}$  cross-section up to 1 KeV.  
H. DERRIEN, G. DE SAUSSURE, P.B. PEREZ, N.M. LARSON and  
R.L. MACKLIN.  
ORNL-TM-10098
  
- . R Matrix analysis of the  $^{241}\text{Pu}$  cross-section up to 100 eV.  
H. DERRIEN, N.M. LARSON, G. DE SAUSSURE and R.B. PEREZ  
Accepted for Nuclear Science and Engineering
  
- . Fast Reactor Benchmark Tests on the JEF-1 evaluated Nuclear Data  
File.  
E. FORT, J.P. DOAT, P. LONG, G. REYNAUD, G.C. PANINI  
JEF Report 142

II - WORK RECENTLY COMPLETED

- . Evaluation of  $^{241}\text{Pu}$  neutron cross-sections in thermal and  
resonance region (H. DERRIEN).
  
- . Re-Evaluation of  $\nu_p$  of  $^{239}\text{Pu}$  and Integral Tests  
(E. FORT, J. FREHAUT, H. TELLIER).
  
- . Fast Reactor Benchmark Tests on JEF-1  
(E. FORT, J.P. DOAT, P. LONG, G. REYNAUD, G.C. PANINI)

III - WORK IN PROGRESS

Re-evaluation of  $^{239}\text{Pu}$  cross-section in the resonance region up to 1 Kev (H. DERRIEN).

IV - WORK PLANNED FOR THE NEAR FUTURE

Complete re-evaluation of  $^{239}\text{Pu}$  in the range 30KeV - 20MeV (E. FORT, P. LONG).

COMPILED BY

Eric FORT

Cadarache, November 1986



INDIRA GANDHI CENTRE FOR ATOMIC RESEARCH, KALPAKKAM, INDIA

NAMES: S. Ganesan, M. M. Ramanadhan and V. Gopalakrishnan

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Indira Gandhi Centre for Atomic Research,  
Kalpakkam, 603 102  
Tamil Nadu, INDIA

Work Recently Completed:

\* The Indian evaluation (Revision: zero) for Th-232 in ENDF/B format was prepared and submitted to IAEA. Since the evaluations presently cover data in non-resonance regions, the JENDL-2 file was used to make the complete file in ENDF/B format.

Work in progress:

\* Continuing evaluation and data testing calculations for Th-232 and U-233 :

- Analyses of irradiation experiments in RAPSODIE fast test reactor for integral testing of capture and fission cross sections in fast energy region, using data from JENDL-2, ENDF/B-IV, ENDL-84 and recent experimental data reported in the literature.

- Analyses of irradiation experiments in CFRMF assembly for data testing of (n, gamma) cross section to compliment our data testing results obtained previously by analyses of THOR assembly.

Publications/Reports:

1. "Effect of Interpolation Error in Pre-processing Codes on Calculations of Self-Shielding Factors and Their Temperature Derivatives", Radiation Effects 96/1-4, 235-238 (1986). A detailed report giving details of results of our participation in IAEA nuclear data processing code verification project dealing with Doppler broadening and self-shielding is being prepared.
2. "A Programme of Evaluation, Processing and Testing of Nuclear Data for Th-232 and U-233", Radiation Effects 96/1-4, 313-316 (1986).
3. "Transport Correction for ZPR-6-7 Assembly with 1969 Adjusted French Set and ENDF/B-IV Based IGCAR Multigroup Data Set", Unpublished Note (June 1986)
4. "Kalpakkam Multigroup Cross Section Set for Fast Reactor Applications-Status and Performance", IGCAR Report:IGCAR-77 (1986)
5. "On the Limitation of Using THOR Assembly for Integral Validation of Pu-239 + n Cross Sections.", Nucl. Sci. Eng., 92, 608-609 (1986)
6. "Highlights of Santa Fe Conference on Nuclear Data", PHYSICS NEWS 16(3), 101 (1985).

E.N.E.A. - Centro Ricerche Energia "E. Clementel"

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Names: F. Fabbri, G. Maino, E. Menapace, A. Mengoni, G.C. Panini,  
M. Pescarini, G. Reffo, M. Rosetti, M. Vaccari.

#### Publications

- 1) A. Mengoni, F. Fabbri, G. Maino, "Evaluation of Gamma-Ray Production Cross Sections and Spectra for Neutron-Induced Reactions on Chromium", RT/TIB/85/38.
- 2) G. Reffo, R. Affonso do Rego, F. Fabbri, "14.5 Neutron Induced Reactions on  $^{27}\text{Al}$ ", IAEA CRP Meeting on "Method for the Calculation of Fast Neutron Nuclear Data for Structural Materials", Bologna (Italy), October 7-10, 1986.

Work in progress or recently completed

I) Evaluation

1. The evaluation of photon production data and cross sections for neutron induced reactions on  $^{50}\text{Cr}$ ,  $^{52}\text{Cr}$ ,  $^{53}\text{Cr}$  and  $^{54}\text{Cr}$  has been completed in the energy region between 1 keV and 15 MeV. Theoretical calculations compare well with the available experimental information. The relevant nuclear data have been processed in ENDF/B format.
2. An evaluation has been performed of neutron and gamma ray production induced by 14.5 MeV neutrons on  $^{27}\text{Al}$ . Total gamma ray spectrum has been calculated as well as double differential cross sections for total neutron emission.

II) Activity in Nuclear Data Management and Processing

- a) The ACER module version received from AERE-Winfrith has been included in the CRAY version of THEMIS and benchmarks about the reliability of neutron libraries has been successfully run with the MCNP code. Work is in progress to test libraries with the photon production data too.
- b) Interpretation and plotting codes for a better understanding of the contents are being developed for the incident charged particle evaluated data collection ECPL-82 (DLC-106) and for the experimental photonuclear data file NNSL/LLL.

Contribution to Neutron Nuclear Data Evaluation Newsletter-39

Japanese Nuclear Data Committee  
Nuclear Data Center, JAERI

Work in Progress:

(1) Evaluation of nuclear data for JENDL-3

Evaluation work for JENDL-3 is in progress. The number of nuclides stored in JENDL-3 is given in Table 1 together with those in JENDL-2.

Table 1 Number of nuclides in JENDL

Nuclides		JENDL-2	JENDL-3*
Light nuclides	Z=1-19	11	38(9)
Structural materials	Z=20-30	30	37(6)
FP nuclides	Z=31-69	101	~170(3)
Medium weight nuclides	Z=70-89	12	20(5)
Heavy nuclides	Z=90-94	19	21(3)
Transplutonium	Z=95-98	8	18(0)

\* ( ) : Number of nuclides with gamma-ray production data

(2) Bayes Estimation of Nuclear Reaction Model Parameters

Y. Uenohara, T. Yugawa and Y. Kanda (Kyushu Univ.)

Estimation of optical model and level density parameters was performed for  $^{59}\text{Co}$ ,  $^{58}\text{Ni}$  and  $^{60}\text{Ni}$  by using the Bayesian method. (to be submitted to J. Nucl. Sci. and Technol.)

(3) Evaluation of Neutron Nuclear Data for  $^{250}\text{Bk}$  and  $^{252}\text{Cf}$

T. Nakagawa (JAERI)

Evaluation of neutron nuclear data for  $^{250}\text{Bk}$  and  $^{252}\text{Cf}$  is in progress in the energy range from  $10^{-5}$  eV to 20 MeV.

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Names: H. Gruppelaar, H.A.J. van der Kamp, J.M. Akkermans, D. Nierop  
and Shi Xiangjun (visiting scientist)

1. Recent publications and reports

- [1] H. Gruppelaar, P. Nagel and P.E. Hodgson; Pre-equilibrium processes in nuclear reaction theory: the state of the art and beyond, Riv. Nuovo Cim. 9 (1986), p. 1 (No. 7).
- [2] H. Gruppelaar, J.M. Akkermans and Shi Xiangjun; Investigation of spin effects in exciton-model codes, Contr. Conf. on Fast Neutron Physics, Dubrovnik, May 1986.
- [3] Shi Xiangjun, H. Gruppelaar, J.M. Akkermans and Zhang Jingshang; Transformation formulas for Legendre coefficients of double-differential cross sections, presented at the IAEA CRP meeting on Methods for the Calculation of Fast Neutron Nuclear Data for Structural Materials, Bologna, Italy, 7-10 October 1986.
- [4] J.M. Akkermans, Shi Xiangjun and H. Gruppelaar; Economizing Hauser-Feasbach model calculations in the continuum, Comput. Phys. Commun. (in press).
- [5] H. Gruppelaar, J.M. Akkermans and Shi Xiangjun; A unified angular-momentum conserving model for precompound and compound emission, subm. to Phys. Lett. B.
- [6] Shi Xiangjun, H. Gruppelaar and J.M. Akkermans; Effects of angular-momentum conservation in unified pre-equilibrium and equilibrium reaction models, subm. to Nucl. Phys. A, also presented at the IAEA CRP meeting on Methods for the Calculation of Fast Neutron Nuclear Data for Structural Materials, Bologna, Italy, 7-10 October 1986.
- [7] H.A.J. van der Kamp and H. Gruppelaar; Evaluation of neutron cross sections for <sup>129</sup>I (RCN-4 data library), ECN-86-152, available upon request.

2. Work recently completed

See above-mentioned publications and reports.

3. Work in progress

- Evaluation of Ru-102, Ni-isotopes.
- Revision of thermal and resolved-resonance range of 65 fission-product isotopes (cooperation with NEA Data Bank).
- Study of direct inelastic-scattering contribution for fission-product nuclides.
- Update of activation cross section file for fusion-reactor materials.

4. Work planned for the future

- Update of fission-product cross sections.
- Work for EFF-2 (European Fusion File).

5. Work on nuclear model codes

See Refs. [3-6].

Compiled by: H. Gruppelaar

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R. A. Forrest, M. C. Moxon, B. H. Patrick and M. G. Sowerby

I Recent Publications and Reports

- (a) "Summary of the Work of the NEANDC Task Force on U-238"  
M. G. Sowerby in collaboration with H. Derrien, M. Moxon,  
Y. Nakajima, D. Olsen, F. Poortmans, G. de Saussure, B. Syme.  
Proc. of International Conference on Nuclear Data for Basic and  
Applied Science, Santa Fé, New Mexico, May 1985 (Gordon and Breach,  
New York 1986) Volume 2, 1511.
- (b) "Status of the UK activation cross-section library for fusion"  
R. A. Forrest  
IAEA Advisory Group Meeting on Nuclear Data for Fusion, Gaussig,  
German Democratic Republic, 1-5 December 1986

II Work Recently Completed

Improved systematics for neutron induced threshold reactions with charged products for incident neutron energies at about 14.5 MeV have been developed (R. A. Forrest, AERE-R 12419 in course of publication).

III Work in Progress

- (a) Evaluation of U-238 neutron cross-sections in collaboration with E. Fort (Cadarache), F. H. Fröhner (Karlsruhe) and Y. Nakajima (NEA Data Bank). This involves amongst other things a complete re-evaluation of the resolved resonance parameters.
- (b) Evaluation of cross-sections relevant to fusion activation and incorporation of present fusion activation library so that it can be used with the FISPIN code.

IV Work Planned for the Future

Phase 1 review of ENDF/B VI standards.

V Work on Nuclear Model Codes

Test of the accuracy of the Weisskopf-Ewing code CADE (AERE-R 11515, (1984)) for calculating activation cross-sections is in progress with Oxford University.

M. G. Sowerby

Neutron Nuclear Data Evaluation Newsletter  
December 1986

NUCLEAR PHYSICS LABORATORY, OXFORD U.K.  
P.E. HODGSON

I. Recent Publications and Reports

1. **The Inelastic Scattering of Neutrons by  $^{232}\text{Th}$ .** By A.M. Street and P.E. Hodgson. Nuclear Science and Engineering, **92**, 459, 1986.
2. **Pre-Equilibrium Processes in the Reactions of Neutrons on  $^{59}\text{Co}$  and  $^{93}\text{Nb}$ .** By G.M. Field, R. Bonetti and P.E. Hodgson. J.Phys.G. **12**, 93, 1986.
3. **Pre-Equilibrium Processes in Nuclear Reactions.** By P.E. Hodgson, G.M. Field, H. Gruppelaar and P. Nagel. Proceedings of the International Conference on Nuclear Data for Basic and Applied Science, Santa Fe, New Mexico May 1985 (Gordon and Breach, 1986) Volume II, 1033. This reviews both the exciton and the quantum-mechanical theories.
4. **The Interactions of Neutrons with  $^{59}\text{Co}$ .** By P.E. Hodgson. Invited paper presented to the 4th International Conference on Nuclear Reaction Mechanisms, Varenna, 1985. Ricerca Scientifica ed Educazione Permanente Supplement **46**, 1, 1985.
5. **Analysis of Cross-Sections of Neutron-Induced Reactions from 1 to 20 MeV.** By P.E. Hodgson. Specialists' Meeting on the Use of the Optical Model for the Calculation of Neutron Cross-Sections below 20 MeV (November 1985), OECD, Paris 1986, p.117.
6. **Analysis of Neutron Inelastic Scattering from  $^{59}\text{Co}$  and  $^{93}\text{Nb}$  using the Multistep Compound Pre-Equilibrium Theory.** By R. Bonetti and P.E. Hodgson. Specialists' Meeting on the Use of the Optical Model for the Calculation of Neutron Cross-Sections below 20 MeV (November 1985) OECD, Paris 1986 p.267.
7. **The Interactions of Neutrons with  $^{59}\text{Co}$ .** By P.E. Hodgson. Proceedings of the Second La Rábida Summer School on Nuclear Physics (June-July 1985). World Scientific 418, 1985.
8. **Pre-Equilibrium Processes in Nuclear Reactions.** By P.E. Hodgson. Proceedings of Second La Rábida Summer School on Nuclear Physics (June-July 1985). World Scientific 429, 1985.
9. **The  $(p, \alpha)$  Reaction.** By P.E. Hodgson. Proceedings of the Second La Rábida Summer School on Nuclear Physics (June-July 1985). World Scientific 439, 1985.
10. **Weisskopf-Ewing and Pre-Equilibrium Calculations of Nuclear Reaction Cross-Sections.** By S. Ait-Tahar. M.Sc. Thesis (Oxford) 1986.
11. **Pre-Equilibrium Processes in Nuclear Reaction Theory.** By H. Gruppelaar, P. Nagel and P.E. Hodgson. La Rivista del Nuovo Cimento **9**, 1, 1986.

II. Work Recently Completed

1. **Multistep Processes in Nuclear Reactions.** By P.E. Hodgson. Invited paper presented at the International Symposium on Physics at Tandem, Beijing. May 1986.
2. **Weisskopf-Ewing Calculations: I Neutron-Induced Reactions.** By S. Ait-Tahar and P.E. Hodgson. (Submitted for publication in J.Phys.G.).

3. **The Interactions of Alpha-Particles with Nuclei.** By E. Gadioli and P.E. Hodgson. (To be published in Reports in Progress in Physics).
4. **Compound Nucleus Reactions.** By P.E. Hodgson. (To be published in Reports in Progress in Physics).

### III. Work in Progress

1. **Neutron Scattering and Reactions on  $^{93}\text{Nb}$  from 1 to 20 MeV.** By D. Wilmore and P.E. Hodgson.
2. **Multistep Compound Processes in Nuclear Reactions.** By R. Bonetti and P.E. Hodgson. A general survey of the contributions of multistep processes to neutron-induced reactions from 1 to 20 MeV on a range of nuclei.
3. **Nucleon-Alpha Reactions on Nuclei.** By E. Gadioli, E. Gadioli-Erba and P.E. Hodgson. A comprehensive review of present knowledge.
4. **The Use of Dispersion Relations in the Analysis of Neutron Cross-Sections.** By P.E. Hodgson.
5. **Weisskopf-Ewing Calculations: II Proton and Alpha-Induced Reactions.** By S. Ait-Tahar and P.E. Hodgson.

### IV. Work Planned for the Future

1. **A study of alpha-emission in multistep reactions.**

### V. Work on Nuclear Model Codes

1. **Intercomparison of Compound Nuclear Reaction Codes.** By E. Sartori and P.E. Hodgson. The initial comparison will be of codes using the Weisskopf-Ewing and Hauser-Feshbach theories. Later it is planned to extend this to Multistep Compound theories.

### VI. Other Subjects of Interest

1. **Nuclear Momentum Distributions in the Coherent Fluctuation Model.** By A.N. Antonov, I.Zh. Petkov and P.E. Hodgson. Bulgarian J.Phys. **13**, 109, 1986.
2. **A Study of Short-Range Correlation Effects on Nuclear Spatial and Momentum Distributions.** By A.N. Antonov, P.E. Hodgson, A. Malecki and I.Zh. Petkov. Proceedings of the Eleventh International IUPAP Conference on Few-body Systems in Particle and Nuclear Physics. Tokyo and Sendai, August 1986. Supplement to Research Report of Laboratory of Nuclear Science, Tohoku University **19**, 354, 1986.

P.E. Hodgson  
November 1986



WINFRITH ATOMIC ENERGY ESTABLISHMENT

Address: United Kingdom Atomic Energy Authority  
Dorchester, Dorset

Names: Dr. A.L. Nichols, Dr. R.W. Smith

Work recently completed and in progress:

IAEA Co-ordinated Research Program on Gamma-ray Standards for Detector Calibration

Gamma-ray emission probability data have been evaluated for Se75. This concludes a preliminary assessment of the data for four radio-nuclides to be considered as calibration standards. This work has been undertaken for the IAEA Consultants' meeting on Gamma-ray Standards for Detector Calibration (May 1985).

Heavy element and actinide decay data

Decay data have been evaluated for specific radio-nuclides in the U232 4n decay chain. This work is half completed and evaluations have been undertaken for Np236, Pu236, U232, Th228 and Ra224.

Further evaluations are planned in this series.

Pu236 production cross-section

An evaluation of the production cross section of Pu236 (from the (n,2n) reaction on Np237) has been completed. The evaluation is very similar to FORT's recently recommended data. It has been used to calculate the recent integral measurement by Gromova (Cf252 spontaneous fission spectrum) - the agreement is within 25%. Adjustments to the present evaluation may be undertaken when further integral evidence becomes available.

Compiled by R.W. Smith.

USA Contribution to NNDEN-39  
via The National Nuclear Data Center

Recent Publications

- ANL/NDM-96            1986  
"Ratio of the prompt-fission-neutron spectrum of Pu-239 to that of U-235," Argonne National Laboratory.  
M. Sugimoto
- ANL/NDM-95            May 1986  
"A Facility for High-Intensity Neutron Irradiations Using Thick-Target Sources At The Argonne Fast-Neutron Generator," Argonne National Laboratory.  
D. L. Smith and J. W. Meadows
- ANL/NDM-94            January 1986  
"Evaluated Neutronic Data File For Yttrium," Argonne National Laboratory.  
A. B. Smith, D. L. Smith, P. Rousset, R. D. Lawson and R. J. Howerton
- Annals of Nuclear Energy, 13, 5, p. 233-235 (1986)  
"Measured Activation Cross Section Ratios For Li-7(n,n't)He-4 and Ni-60(n,p)Co-60 Relative to Al-27(n,p)Mg-27 and Al-27(n, $\alpha$ )Na-24 In TNE Be-9(d,n)B-10 Thick Target Neutron Spectrum At 7 MeV Deuteron Energy," Argonne National Laboratory.  
D. L. Smith, J. W. Meadows and M. M. Bretscher
- ANL/NDM-93            October 1985  
"Integral Cross-Section Measurements For Li-7(n,n't)He-4, Al-27(n,p)Mg-27, Al-27(n, $\alpha$ )Na-24, Ni-58(n,p)Co-58 And Ni-60(n,p)Co-60 Relative To U-238 Neutron Fission In The Thick-Target BE-9(d,n)B-10 Spectrum At  $E_d=7$  MeV," Argonne National Laboratory.  
D. L. Smith, J. W. Meadows and M. M. Bretscher
- BNL-NCS-38287        April 1986  
"Nuclear Data for Gd-153 Production," Brookhaven National Laboratory.  
N. E. Holden
- BNL-NCS-38404        May 1986  
"Summary of the Meeting of the Medium Energy Nuclear Data Working Group, held at Brookhaven National Laboratory, Upton, New York, May 21-22, 1986," Brookhaven National Laboratory.  
S. Pearlstein
- BNL-NCS-38049        May 1986  
"Preliminary Review of Nuclear Data for the Europium Isotopes,  $^{151}\text{Eu}$  to  $^{155}\text{Eu}$ ," Brookhaven National Laboratory.  
N. E. Holden

- BNL-NCS-37957 April 1986  
 "The  $^{11}\text{B}(p,p_0)$  and  $(p,p_1)$  Reactions and the Continuum Model of Nuclear Reactions," Brookhaven National Laboratory.  
 S. Ramavataram and M. Divadeenam
- BNL-NCS-37975 April 1986  
 "Neutron Cross Sections for  $^{152}\text{Gd}$  and  $^{153}\text{Gd}$ ," Brookhaven National Laboratory.  
 N. E. Holden
- BNL-NCS-51771 1st Edition, Supplement 2 April 1986  
 "Integral Charged Particle Nuclear Data Bibliography," Brookhaven National Laboratory.  
 N. E. Holden, S. Ramavataram and C. L. Dunford
- Nucl. Sci. Eng. (accepted for publication)  
 "Neutron Capture Cross Sections of  $^{151}\text{Eu}$  and  $^{153}\text{Eu}$  from 3 to 2200 KeV," Oak Ridge National Laboratory and Los Alamos National Laboratory.  
 R. L. Macklin and P. G. Young
- Specialists' Meeting on Delayed Neutrons, Birmingham, England, September 15-19, 1986, Proc. to be issued.  
 "Status of Evaluated Precursor and Aggregate Spectrum," Los Alamos National Laboratory.  
 T. R. England, M. C. Brady, E. D. Arthur, R. J. LaBauve and F. M. Mann
- Nuclear Safety (accepted for publication)  
 "Calculated Radionuclide Inventories of High-Exposure LWR Fuels," Los Alamos National Laboratory.  
 W. B. Wilson, T. R. England, R. J. LaBauve and J. A. Mitchell
- B.A.P.S. 31, 1238 (1986) ED10  
 "Theoretical Calculations of  $^{232}\text{Th}(n,n')$  Cross Sections," Los Alamos National Laboratory.  
 E. D. Arthur
- B.A.P.S. 31, 1230 (1986) DD11  
 "Medium Energy Nuclear Nucleus Reaction and Total Cross Sections from Phenomenological Optical-Model Calculations," Los Alamos National Laboratory.  
 D. G. Madland
- B.A.P.S. 31, 1230 (1986) DD10  
 "Off-Shell Effects for Intermediate Energy Proton-Nucleus Inclusive Scattering," Los Alamos National Laboratory.  
 E. R. Siciliano
- Proc. Topical Meeting on Reactor Physics and Safety, September 17-19, 1986, Saratoga Springs, New York  
 "DANDE-A Linked Code System for Core Neutronics/Depletion Analysis," Los Alamos National Laboratory.  
 R. J. LaBauve, T. R. England, D. C. George, R. E. MacFarlane and W. B. Wilson

- ORNL/TM-9964 (ENDF-341) July 1986  
"Update of ENDF/B-V MOD-3 Iron: Neutron-Producing Reaction Cross  
Sections and Energy-Angle Correlations," Oak Ridge National Laboratory.  
C. Y. Fu and D. M. Hetrick
- ORNL/TM-10098 June 1986  
"R-Matrix Analysis of the  $^{239}\text{Pu}$  Cross Sections up to 1 KeV," Oak Ridge  
National Laboratory.  
H. Derrien, G. de Saussure, R. B. Perez, N. M. Larson and R. L. Macklin

Evaluations Recently Completed or in Progress

<u>Material</u>	<u>Laboratory</u>	<u>Status</u>
$^1\text{H}$	LANL	Analysis complete for ENDF/B-VI.
$^3\text{H}$	LANL	R-matrix analysis complete to 20 MeV.
$^3\text{He}$	LANL	R-matrix analysis complete to 10 MeV.
$^6\text{Li}$	LANL	Analysis complete to 4 MeV for ENDF/B-VI.
$^6\text{Li}$	ANL	Simultaneous evaluation-(n,t),(n,n) reactions, nearly completed.
Be	LLNL/ANL/U. of Ohio	In progress.
$^{10}\text{B}$	LANL	Analysis complete for ENDF/B-VI.
$^{10}\text{B}$	ANL	Simultaneous evaluation-(n, $\alpha_0$ ), (n, $\alpha_1\gamma$ ) (n,n) reactions, nearly completed.
$^{11}\text{B}$	LANL	New evaluation in progress.
C	NBS	New evaluation started.
$^{15}\text{N}$	LANL	New evaluation in progress.
Al	LANL	Proton and Neutron-induced data. Evaluation to 50 MeV started.
V	ANL	In progress (with the Univ. of Illinois).
$^{52,53}\text{Cr}$	ORNL	All reactions 1-20 MeV in progress.
Fe	LANL	Evaluation of element to 50 MeV started.
$^{56}\text{Fe}$	ORNL	Nearing completion.
Co	ANL/LLNL	In progress.
Ni	LANL	Evaluation of element to 50 MeV started.
$^{58,60}\text{Ni}$	ORNL	All reactions 1-20 MeV in progress. Analysis completed.
Ni	ANL/LLNL	Evaluation of high energy portion in progress.
Cu	LANL	Evaluation of element to 50 MeV started.
$^{63,65}\text{Cu}$	ORNL	Isotopic evaluations complete.
Y	ANL	Comprehensive evaluation completed. See ANL/NDM-94

Nb	ANL	Comprehensive evaluation completed. See ANL/NDM-88
$^{165}\text{Ho}$	LANL	New theoretical analysis in progress.
W	LANL	Evaluation of element to 50 MeV started.
$^{197}\text{Au}$	LANL	New theoretical evaluation complete. 10 keV to 20 MeV.
$^{151,153}\text{Eu}$	LANL	New theoretical analysis/evaluations in progress.
$^{155,157}\text{Gd}$	LANL	New theoretical analysis/evaluations in progress.
$^{197}\text{Au}$	ANL	Simultaneous evaluation-(n, $\gamma$ ) reaction, nearly completed.
$^{235}\text{U}$	ANL	Simultaneous evaluation-(n,f) reaction, nearly completed.
$^{238}\text{U}$	ANL/LLNL	Simultaneous evaluation-(n, $\gamma$ ),(n,f) reactions, nearly completed. Reactions for E>45 keV in progress.
$^{238}\text{U}$	ORNL	Resonance region. In progress.
$^{239}\text{Pu}$	ANL	Simultaneous evaluation-(n,f) reaction, nearly completed.
$^{239}\text{Pu}$	ORNL	Resonance region reevaluated, nearly complete.
$^{240}\text{Pu}$	ORNL	Nearly completed. Under review.
FP Yields	LANL	Preliminary eval. for 50 sets each of independent and cumulative yields. (ENDF/B Format)
$v_d$ Precursor spectra	LANL	Preliminary evaluation of 30 precursor spectra.
$v_d$ Pn	HEDL/LANL	~ 70 Precursor emission probabilities. reevaluated

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 June 1986

## EUROPEAN FUSION FILE (EFF)

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Names : H. Gruppelaar, D. Nierop (file management)

The EFF-project is part of the European Fusion Technology Programme of the European Community (EC). The following laboratories are contractors in the EFF-project: CEA (Saclay), ECN (Petten), ENEA (Bologna) and KfK (Karlsruhe). Moreover, JRC (Ispra) and CBNM (Geel) are involved as EC institutes. The project is conducted by the NET team at Garching and by EC (Brussels); the file maintenance and management is performed at ECN (Petten). Other European laboratories are also involved: SCK/CEN (Mol) with an experimental programme performed at CBNM, the UK laboratories Harwell, Birmingham and Culham (JET), ENEA (Frascati), KFA (Jülich), IKE (Stuttgart) and EIR (Würenlingen). Furthermore, technical support is received from the NEA Data Bank.

### 1. Recent publications and reports

- [1] H. Gruppelaar; Status of the European Fusion File, Inv. paper, IAEA Advisory Group Meeting on Nuclear Data for Fusion Reactor Technology, Dresden, 1-6 December 1986.
- [2] H. Gruppelaar, D. Nierop and J.M. Akkermans; Processing of double-differential cross sections in the new ENDF-VI format - GROUPXS code description and users' manual -, ECN-182 (1986).

### 2. Work recently completed

- Distribution of EFF-1 file to European users.
- Compilation of GEF-1 multi-group constant library (VITAMIN-J format).

### 3. Work in progress

Revision of cross sections for  ${}^7\text{Li}$ , Be, Al, Fe, Cr, Ni by various laboratories.

### 4. Work planned for the future

- Compilation of EFF-2 data library.
- Compilation of a European Activation File (EAF) for fusion technology.

### 5. Work on nuclear model codes

The GROUPXS code [2] for file-handling and multi-group constant calculations of double-differential cross sections stored in MF6 of ENDF-VI has been submitted to the CPL of the NEA Data Bank.

### 6. Other subjects of interest

Since a large part of EFF-1 consists of evaluations taken from JEF-1, the same distribution policy as for JEF-1 (NEA Data Bank Member countries) is followed. Different evaluations in EFF-1 are given for Li-7, Be-9, Al, Si, Pb.

Compiled by: H. Gruppelaar

## Joint Evaluated File (JEF)

### NEA Data Bank

Address: F-91191 Gif-sur-Yvette  
FRANCE

### Version 1.1 of the JEF library

At the last meeting of the JEF Scientific Coordination Group (SCG) on 7th May 1986, it was decided to issue an updated version of the JEF-1 file.

Since the distribution in April 1985 of the first version of the library, a number of errors, mostly format errors, have been detected when processing the data, and it was therefore felt that a new version called JEF-1.1 should be issued. The corrected files were automatically distributed to members of the SCG. Other users of the library could obtain the data from the NEA Data Bank upon request. The distribution is restricted to member countries of the NEA Data Bank.

### Recent JEF Meetings

A JEF Working Group Meeting was held on 13th and 14th November 1986 at the NEA Data Bank. The first day was devoted to benchmark testing and the next day to evaluation efforts.

Progress in the benchmark testing of JEF-1 in different areas, such as shielding, thermal and fast systems, and fuel cycle, were reviewed and improvements to processing codes were discussed. It was generally felt that the quality of the file was very good, but some areas of improvement were identified and the information was communicated to the evaluators working for the JEF-2 library. Special attention was given to the thermal region of the most important actinides and different sources for Eta-values and thermal constants were extensively discussed. It was decided that a summary report on the different benchmark studies performed on the JEF-1 library should be written, aimed at publication in the middle of 1987.

The status of the evaluation efforts for JEF-2 were reviewed and the progress was generally felt to be satisfactory considering the timescale for the completion of the JEF-2 library. B. Patrick presented the conclusions from the CSEWG Standards Sub-committee meeting, where the ENDF/B-VI standards file, which would be the preferred standards file for JEF-2, had been discussed. A dosimetry file based on the JEF-1 library had been constructed and reviewed at Petten and some problems had been identified and were forwarded to the Working Group.

The experimental activities of the Geel laboratory were presented by H. Liskien, and the possibility for this laboratory to support the evaluation activity for JEF-2 with experimental data were discussed. P. Ribon reported on the differences in calculating cross sections from resonance parameters in a symmetrical or a non-symmetrical mode.



Recent publications related to JEF

JEF Report 7    Analysis of Selected Thermal Reactor Benchmark Experiments  
(IKE 6-157)    based on the JEF-1 Evaluated Nuclear Data File; W. Bernnat,  
M. Mattes, M. Arshad, D. Ermendoerfer, J. Keinert, B. Pohl.

This report, which is published as an IKE Report has no restrictions on its distribution.

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