IEC-132

Progress with High Priority Requests

listed in

NEACRP-A-568 NEANDC-A-180 (fission)

and

NEANDC-A-207 (fusion)

Cumulative Report since 1985

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I. Introduction

Since 1985 till 1991, the NEA Nuclear Data Committee (NEANDC) had watched the progress of nuclear data activities especially in the differential measurements for the quantities with high priority requests listed in NEACRP-A-568, NEANDC-A-180 for fission and in NEANDC-A-207 for fusion. In its every meeting a special report entitled "Progress with High Priority Lists" was submitted as a NEANDC-A report.

The NEANDC disappeared at the end of 1991, and this series of "Progress" report also discontinued. Since 1992 the NEA Nuclear Science Committee (NEANSC) has taken over most of the NEANDC activities. A Working Party of International Evaluation Cooperation (WPIEC), which was established in 1989 under sponsorship of NEANDC and NEACRP, was carried over to NEANSC.

As an activities of WPIEC, a standing subgroup was set up to revise the high priority request list. The progress since 1985 is required for this revision work. I, Y. Kikuchi, was asked to prepare a cumulative report of the progress, as I was the last editor of the NEANDC-A report (period from June 1990 to October 1991).

After the cumulative report was prepared, it was found that lots of works were reported as planned, in progress or completed without any indication of their final reports. The final reports were searched in CINDA and some of them were found. Inquiries were made to the main laboratories on the final reports and further progress since 1991, and the results were also added.

II. Comments of Tables

II.1 Style

The style of the table is similar to the NEANDC-A reports. The progress were written chronologically. Required accuracies are added in the column of the quantities.

II.2 Remarks

In the column of remarks, the final publication and EXFOR numbers are added. The following marks are used:

c : continued to later periods,
Δ : not differential measurements,
* : final results are not found (even in CINDA).

II.3 Laboratory Codes

AEEW	:	AEE Winfrith, UK
AERE	:	Atomic Energy Research Establishment, Harwell, UK
ANL	:	Argonne National Laboratory, USA
AUA	:	Australian Nuclear Science and Technology Organization, Australia
Birmingham	:	University of Birmingham, UK
BRC	:	CEN Bruyêre le Châtel
CAD	:	CEN Cadarache, France
CBNM	:	Inst. of Reference Materials and Measurements, Geel, Belgium
ENEA	:	ENEA, Bologna, Italy
IRK	:	Institute für Radiumforschung und Kernphysik, Vienna, Austria

JAERI	:	Japan Atomic Energy Research Institute, Japan
(FNS)	:	(Fusion Neutron Source)
JEF	:	JEF Project Laboratories
KAPL	:	Knoll Atomic Power Laboratory, USA
KFA	:	Kernforschungsanlage, Jülich, Germany
KFK	:	Kernforschungszentrum, Karlsruhe, Germany
Kyoto U.	:	Kyoto University, Japan
(RRI)	:	(Research Reactor Institute)
Kyushu U.	:	Kyushu University, Japan
LANL	:	Los Alamos National Laboratory, USA
(WNR)	:	(Weapon Neutron Research)
NBS	:	National Bureau of Standards, USA
NEACRP	:	NEA Committee of Reactor Physics
NEA-DB	:	NEA Data Bank, France
NEANDC	:	NEA Nuclear Data Committee
NEANSC	:	NEA Nuclear Science Committee
NIST	:	National Institute of Standards and Technology, USA
ORNL	:	Oak Ridge National Laboratory, USA
Osaka U.	:	Osaka University, Japan
PTB	:	Physik-Tchnik Bundesanstalt, Braunschweig, Germany
Rikkyo U.	:	Rikkyo (St. Paul) University, Yokosuka, Japan
SAC	:	CEN Saclay, France
Studsvik	:	Studsvik Science Research Laboratory, Sweden
TIT	:	Tokyo Institute of Technology, Japan
Tohoku U.	:	Tohoku University, Japan
U. Lowel	:	University of Lowel, USA
U. Tokyo	:	University of Tokyo, Japan
(NERL)	:	(Nuclear Energy Research Laboratory)

Please let me know!!

IMF II	:	
INFN-LNL	:	Legnaro, Italy
INI	:	Mexico City, Mexico

B-10

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ none		
		1987.5 - 1988.9 ・ Measured $^{10}B(n,t)2\alpha$ at thermal energy; results reported at Mito Conference; S. Qaim et al.: 88 Mito 225	KFA	88 Mito 225 EXFOR 22102.003 EXFOR 22102.004
(n, α)	0.1 - 1 MeV (2 %)	1988.9 - 1990.6 ・ Working Group Meeting on $^{10}B(n,\alpha)$ at NIST on 25.4.89.		△
		1990.6 - 1991.10 ・ Transmission measurement (E < 1 MeV) planned for 1992. ・ (n, α) cross section being measured at WNR over range 1 - 30 MeV. Contact: R. Haight.	CBNM LANL	c *
		1991.10 - ・ Transmission measurement 80 eV < E < 100 keV (and 1.5 MeV < E < (~ 5 MeV)). Brusegan et al., Gatlinburg 1994, p.47.	CBNM	94 Gatlinburg 47
		1985.11 - 1987.5 ・ α_0/α_1 ratio measurements from 50 keV to 1 MeV underway. Completion of data acquisition expected in early summer 1987.	ORNL	c
		1987.5 - 1988.9 ・ LARRY WESTON measurement in progress of α_0/α_1	ORNL	c
		1988.9 - 1990.6 ・ Measurement of $^{10}B(n,\alpha\gamma)$ 477 keV gamma ray using a Ge detector, black NE119 flux monitor. 100 keV ≦ En ≦ 4 MeV. ・ LANL envisages measurements (probably in summer 1990).	ORNL/NIST LANL(WNR)	c *

α_0/α_1	0.1 - 1 MeV (2 %)	1990.6 - 1991.10 ・ Measurement of the $^{10}B(n,\alpha\gamma)^7Li$ cross section in the 0.3 to 4 MeV neutron energy interval. Schrack, et al., - presented at Jülich, full paper being reviwed. ・ New measurement underway down to ～ 50 keV. ・ Measurement of the $^{10}B(n,\alpha_0)/^{10}B(n,\alpha\gamma)$ ratio versus neutron energy. L.W. Weston and J.H. Todd: NSE 109, 113 (91). ・ JEF2 validation. 1991.10 -	ORNL ORNL ORNL SAC/CAD	91 Jülich 507 NSE 114, 352 (93) EXFOR 13515.002 ＊ NSE 109, 113 (91) EXFOR 13518.002 △
(n, γ)	Therm - 0.2 MeV (20 %)	1985.11 - 1987.5 ・ none 1987.5 - 1988.9 ・ none 1988.9 - 1990.6 ・ none 1990.6 - 1991.10 ・ none 1991.10 - ・ Cross sections were measured at neutron energies of 23, 40 and 61 keV. Presented at Gatlinburg Conf. and at Specialists' Meeting on "Measurement, Calculation and Evaluation of Photon Production Data" at Bologna 1994: NEA/NSC/DOC(95)1, p.269.	TIT	94 Gatlinburg 1045 94 Bologna 269

U-235

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks

		1985.11 - 1987.5		
		・ NBS-LANL collaboration in progress at WNR facility. Preliminary data obtained from 1-30 MeV.	NBS/LANL	c
		・ Angular anistropy of fission fragments for E_n < 6.0 MeV measured. Straede et al., Nucl. Phys. A462 (87) 85.	CBNM	NP A462, 85 (87)
		・ Measurements planned relative to H(n,n) in MeV region. Completed around 14 MeV.	Tohoku U.	c
		1987.5 - 1988.9		
		・ A number of NBS measurements reported at Mito Conference.:Shrock; 88 Mito 101.	NBS	88 Mito 101 EXFOR 13198.002 (below 1 keV)
		・ ENDF-VI concurrent evaluation complete but for correlation matrix.	ANL/NBS/ ORNL/LASL	△
		・ Measurement in the MeV region at WNR of LANL (3-35 MeV).	NBS/LANL	c
		・ Measurements completed around 14 MeV, presented at Mito Conference.	Tohoku U.	88 Mito 87 EXFOR 22091.002
		・ In progress, first runs finished some data analyzed. E_n = 1 - 40 MeV.	LANL/NBS/ ORNL	c
		・ LARRY WESTON Measurement made at 80 m.	ORNL	NSE 111, 415 (92) EXFOR 13488.002 (below 8 keV)
		1988.9 - 1990.6		
		・ Cross Section measured between 1 - 14 MeV.	NBS/LANL	c
(n,f)	0.1 - 14 MeV (1 %)	・ Validation of JEF 2 against clean integral data.	CAD/JEF	△
		1990.6 - 1991.10		
		・ Measurement is planned at 14 MeV by activation technique.	JAERI(FNS)	suspended
		・ Measurement of ^{235}U(n,f)/H(n,n) planned for 1992 (~0.3 MeV < E < 2 MeV). H-target: octacosanol (accuracy of H-content 0.5%).	CBNM	c
		・ Absolute cross section measurement has been completed at WNR over ranges 3-30 MeV (Contact: Carlson) and 30-200 MeV (Contact: Lisowski). Analysis of data almost complete.	LANL/NIST	Carlson et al., 91 Jülich 518
		・ JEF2 validation on integral data.	CAD/JEF	△
		1991.10 -		
		・ Measurement of ^{235}U(n,f)/H(n,n) planned for 1992 (~0.3 MeV < E	CBNM	continuing

		< 2 MeV).		

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quantity	energy range (MeV) accuracy (%)	plans for experiments, status of measurements/analysis. remarks	lab.	remarks
		1985.11 - 1987.5 ・ Survey paper at IAEA Leningrad meeting (Boldeman).	AUA	△
		1987.5 - 1988.9 ・ Simultaneous investigation of fission fragments and neutrons Nucl. Phys. A490 (88) 307.	CBNM	NP A490, 307 (88)
ν_n	(0.25 %)	1988.9 - 1990.6 ・ none		
		1990.6 - 1991.10 ・ none		
		1991.10 -		
$\chi(E)$	$\bar{E}$ (1 ~ 2 %) $\phi(E)$(5 ~ 10 %) (E > 5 ; E < 0.25)	1985.11 - 1987.5 ・ Neutron emission studied as function of E_n, θ_n, A, TKE. ・ Neutron spectrum measured for E_n > 15 MeV. ・ Situation reviewed by Boldeman at IAEA Meeting on Properties of Neutron Sources (Leningrad, June 1986).	CBNM PTB AUA	85 Santa Fe I, 341 NSE 106, 377 (90) △
		1987.5 - 1988.9 ・ none		
		1988.9 - 1990.6 ・ none		

		1990.6 - 1991.10 ・ none 1991.10 -		

2. DOSIMETRY

Priority 1 requirements from the EWGRD Request List

Ni-58

quantity	energy range (MeV) accuracy (%)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
(n,p)	averaged over U-235 fission spectra (2 %)	1985.11 - 1987.5 ・ Measured between 10 and 14 MeV. ・ Measurements in Be (d,n) field. 1987.5 - 1988.9 ・ Evaluation in progress. 1988.9 - 1990.6 ・ Measurements for fission spectrum average and at 14 MeV. 1990.6 - 1991.10 ・ Validation test of JENDL Dosimetry File was made. JAERI-1325(1992) ・ New evaluation for ENDF/B-VI (compiled in IRDF-90). ・ Measurement in Be(d,n) neutron field. Completed and reported at the Strasbourg Conference in 1990. What was measured was the ratio of this reaction to U-238(n,f). Smith D.L., et al., Proc. 7th ASTM/EURATOM Symposium on Reactor Dosimetry, Strasbourg, August 1990, (eds. Tsoridis G., et al.), Kluwer Academic Press (1992). 1991.10 - ・ Measurements of ^{235}U fission spectrum-averaged cross sections. K.Kobayashi et al., "Reactor Dosimetry", ASTM STP 1228, p.720 (1994).	PTB ANL ANL Kyoto U. (RRI) JAERI ORNL/JEF ANL Kyoto U.	NSE 106, 308 (90) EXFOR 22201.003,004 c △ given up in 1992 NSE 106, 332 (1990) EXFOR 22214.018,008 EXFOR 22093.015 △ △ 90 Strasburg Reactor Dosimetry, p.720 (1994)

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5		
		• By activation, relative to $^{238}U(n,f)$:	IRK/CBNM	ANE 15, 363 (88)
		E_n = 2.85 MeV : measurement and analysis completed		
		E_n = 7.90 MeV : measurement in progress		
		• Measurement in Be(d,n) field.	ANL	*
		• Comprehensive neutronic evaluation available.	ANL	△
		• Measurement completed 1-6 MeV. Document in preparation.	AERE/AEEW/ Birmingham	c
		1987.5 - 1988.9		
		• New measurements (largely AERE) are being used to update ENDF/B-VI evaluation.	ANL	△
		• Measurements at E_n = 8 MeV completed and presented at Mito Conference (in cooperation with CBNM).	IRK/CBNM	88 Mito 1049
		• Results reported at Mito Conference (Paper CH 05) of activation measurements. Energy range 1 to 6 MeV. Work complete.	AERE/AEEW/ Birmingham	88 Mito 1057 EXFOR 22085.002
(n,n')m	Thresh. - 8 MeV (5 %)	1988.9 - 1990.6		
		• ANL evaluation in progress for ENDF/B-VI. Expected completion: mid '90.	ANL	△
		1990.6 - 1991.10		
		• Measurement is done at 14 MeV and planned at 2 - 3 MeV.	JAERI(FNS)	c
		• ANL evaluation for ENDF/B-VI completed, and adopted in ENDF/B-VI Activation File. Smith D.L. and Geraldo L.P., ANL/NDM-117 (1990).	ANL	△ ANL/NDM-117
		• Validation test of JENDL Dosimetry File was made. JAERI-1325(1992)	JAERI	△
		• New evaluation was made for IRDF-90.	IRK	△
		1991.10 -		
		• 14 MeV results published.	JAERI(FNS)	NST 30, 967 (93)
		• Measurement is planned at 2 - 3 MeV, Depending on FNS machine time.	JAERI(FNS)	in preparation

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quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ none		
		1987.5 - 1988.9 ・ Comprehensive study of neutron induced reactions in In; in progress at ANL, maximum energy 10 MeV.	ANL	PR 42, 2487 (1990)
(n,n')m	averaged over U-235 fission spectra (2 %)	1988.9 - 1990.6 ・ Comprehensive evaluation with covariances completed(ANL,NDM-115).	ANL	△ c
		1990.6 - 1991.10 ・ New ANL evaluation by S. Chiba et al. (Adopted in JENDL Dosimetry File and IRDF-90). ANL-NDM-115 (1990).	ANL	△ ANL-NDM-115 (90)
		1991.10 -		

Np-237

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ NBS-LANL collaboration in progress at WNR facility. Preliminary data obtained from 1-30 MeV.	NBS/LANL	c
		・ New results available in 14-15 MeV range.	ANL	ANE 15, 421 (88)
		・ Results in Be(d,n) field being analysed.	ANL	c
		・ Measurement at 13.4-14.9 MeV completed. Technology Report of the Tohoku University 52 (1988) p.97.	Tohoku U.	Tech. Rep. Tohoku U. 52, 97(88)

(n, f)	8 - 15 MeV (5 %)	1987.5 - 1988.9 ・ Ratio to ^{235}U finished, data reduction in progress. E_n : 1 - 400 MeV	LANL/NBS/ ORNL	88 Mito 97
		・ Measurements in Be(d, n) spectrum Argonne. Completed and published in 1988 Mito Conference. p.541.	ANL	88 Mito 541
		1988.9 - 1990.6 ・ none		
		1990.6 - 1991.10 ・ Validation test of JENDL Dosimetry File was made. JAERI-1325(1992)	JAERI	△
		・ Intercomparison and validation test of evaluated data planned under NEACRP/NEANDC International Evaluation Cooperation.	NEANDC	△ c
		・ JEF2 validation on integral data.	CAD	△
		1991.10 - ・ Intercomparison and validation test of evaluated data continued under NEANSC International Evaluation Cooperation.	NEANSC	in progress

Cr

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ none		
		1987.5 - 1988.9 ・ Measurement of capture gamma rays is going on at the neutron energies of 10 keV to 600 keV. Observed spectra indicate strong gamma-ray transitions to the ground and first excited states of ^{53}Cr.	TIT	c
(n, γ)	0.01 - 0.1 MeV (20 %)	1988.9 - 1990.6 ・ Capture γ-ray spectra were measured at the neutron energies of 30, 60 and 100 keV. ・ 40 m $\sigma_{n,\gamma}$ planned for ^{50,52,53,54}Cr 2 keV - 450 MeV ・ New ENDF/B-VI evaluations for Cr isotopes completed. ・ Validation of JEF 2 on clean integral experiments.	TIT ORNL ORNL CAD/JEF	91 Jülich 48 * △ △
		1990.6 - 1991.10 ・ Intercomparison among ENDF/B-VI, JEF-2 and JENDL-3 in progress under NEACRP/NEANDC International Evaluation Cooperation. Contact: C.Y. Fu (ORNL). ・ JEF2 validation on integral data. 1991.10 -	NEANDC CAD/ENEA	△* △
		1985.11 - 1987.5 ・ none		
		1987.5 - 1988.9 ・ none		
		1988.9 - 1990.6		

(n,tot)	0.01 - 0.1 MeV	• 200 m scattering measurement at 6 angles complete for ^{52}Cr 10 - 850 keV. • 200 m σ_T planned for ^{50,52,53,54}Cr 10 eV - 20 MeV 1990.6 - 1991.10 • ^{52}Cr σ_T measurements planned 20 eV → 40 MeV. • ^{52}Cr high resolution scattering data 20 keV - 5 MeV obtained, data being reduced by J.A. Harvey. 1991.10 -	ORNL ORNL ORNL ORNL	* * * *
res. param.		1985.11 - 1987.5 • Resonance parameters of ^{50}Cr, ^{53}Cr and ^{53}Cr up to respectively 300 keV, 500 keV and 200 keV reported at Santa Fe. Analysis of transmission data extended to 1 MeV for even isotopes. Journal publication in progress for ^{52}Cr. • ^{53}Cr(γ,n) measurement in range 0.02-0.3 MeV; to be analysed; partial $\Gamma\gamma$ widths and resonance spins will be obtained. 1987.5 - 1988.9 • Paper on ^{53}Cr+n resonances submitted for publication. Study on discontinuities of level spacing of ^{52}Cr+n published at Mito Conf. • Resonance of ^{52}Cr measured with threshold photoneutron technique. No analysis of measured data presently planned. 1988.9 - 1990.6 • ^{52}Cr results (GELINA) for (n,γ) and (n,T) between 1 keV and 500 keV (1 MeV) published (Phys. Rev. C39,2). 1990.6 - 1991.10 • none 1991.10 -	CBNM ENEA CBNM ENEA CBNM	85 Santa Fe 1, 663 EXFOR 22041 * 88 Mito 779 * PR/C 39, 2 (89) EXFOR 22131

Fe

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5		
		・ (n, γ) measurement relative to Au from few eV to 120 keV Emphasis 1.15 keV resonance of ^{56}Fe. Analysis in progress. Further measurements planned.	AERE	c
		1987.5 - 1988.9		
		・ Measurements of capture yield 190 eV to 120 keV reported at Mito Conference (Paper CA 17). Further measurements under consideration.	AERE	88 Mito 157 *
		・ Capture gamma-ray spectra have been observed at the neutron energies of 10 keV to 600 keV.	TIT	c
		1988.9 - 1990.6		
		・ Validation of JEF 2 on clean integral experiments.	CAD/JEF	△
		・ Capture γ-ray spectra were measured at the neutron energies of 27, 36, 70, 200 and 570 keV.	TIT	88 Mito 67
(n, γ)	100 eV - 1 MeV	1990.6 - 1991.10		
		・ Intercomparison among ENDF/B-VI, JEF-2 and JENDL-3 in progress under NEACRP/NEANDC International Evaluation Cooperation. Contact: C.Y. Fu (ORNL).	NEANDC	△*
		・ Covariance estimation underway under NEACRP/NEANDC International Evaluation Cooperation. Contact: H. Vonach (IRK).	NEANDC	△*
		・ JEF2 validation	CAD/ENEA	△
		1991.10 -		
		1985.11 - 1987.5		
		・ (n,T) measurement complete up to 1 MeV. Emphasis 1.15 keV resonance of ^{56}Fe. Preliminary analysis of this resonance	AERE	*

		available. New analysis to ~ 300 keV in progress.		
		1987.5 - 1988.9 ・ none		
		1988.9 - 1990.6 ・ none		
(n,tot)	100 eV - 1 MeV	1990.6 - 1991.10 ・ High resolution (2.5ps/m) transmission measurement (0.3 - 5 MeV) planned for 1992. ・ ^{54}Fe high resolution σ_γ data, high resolution scattering data measured.	CBNM ORNL	c EXFOR 12971
		1991.10 - ・ High resolution (2.5ps/m) transmission measurement (0.3 - 5 MeV) completed: Berthold et al, Gatlingurg 94,p.218.	CBNM	94 Gatlinburg 218
		1985.11 - 1987.5 ・ ^{54}Fe resonance parameters analysed up to 800 keV. ・ ^{54}Fe resonance parameter analysis of 200 m transmission data is well advanced. ・ ^{57}Fe(γ,n) measurements performed in range 0.02-0.3 MeV; analysis in progress. Partial $\Gamma\gamma$ widths and resonance spins will be obtained. ・ (n,γ) measurement planned at the Linac with 500 ℓ liquid scintillator tank and ^{6}Li glass detector.	CBNM ORNL ENEA JAERI	unpublished c, * given up
res. param.		1987.5 - 1988.9 ・ Shape analysis of Harwell transmission data below 200 keV in progress. Analysis of capture data planned. ・ ^{54}Fe resonance parameter analysis done.	AERE ORNL	c *
		1988.9 - 1990.6 ・ Resonance parameter analysis complete for ^{nat}Fe thermal to 180 keV, based on new 200 m ^{nat}Fe data. ・ Shape analysis of Harwell transmission data below 200 keV in progress. Analysis of capture data planned when response of	ORNL AERE	* 88 Mito 37 *

		detector understood. ・ New ENDF/B-VI evaluation of Fe istoptes completed. 1990.6 - 1991.10 1991.10 - ・ Extension of res. param. analysis for ^{56}Fe up to 1 MeV (1993).	ORNL CBNM	△ in progress
		1985.11 - 1987.5 ・ Detailed measurement in progress to 10 MeV. ・ New evaluation with particular attention to double differential emission at higher energies (updating ENDF-V). ・ Measurements of $\sigma_{nn'}$ (E; E', θ) for E=14.1 MeV in progress. ・ Neutron emission spectra measured at 14.1 MeV. ・ DDX measurements for 15 angles at 14.1 MeV completed. 1987.5 - 1988.9 ・ Comprehensive measurement program to 10 MeV.	ANL ORNL IRK Tohoku U. Osaka U. ANL	c △ * 88 Mito 291 EXFOR 22025 88 Mito 205 c
scattering (n,n')	Thresh. - 4 MeV (5 ～ 10 %) 4 - 15 MeV (5 ～ 30 %)	1988.9 - 1990.6 ・ Work continuing between 4.5 and 10 MeV. ・ ^{nat}Fe, ^{56}Fe(n,xγ) preliminary measurement being analysed. (n,n'γ) may be used to infer (n,n') cross sections, 2 < En < 200 MeV. ・ ^{56}Fe (n,$\alpha\gamma$) Ge detector 400 keV - 40 MeV, analysis nearly complete, Eγ to 3.5 MeV. 1990.6 - 1991.10 ・ ^{56}Fe (n,n'γ) measurement in progress at WNR covering energy range 1 - 200 MeV, using high-resolution γ-ray detector. Analysis of data in progress. Contact: R. Nelson. ・ Work is continuing at ANL to 10 MeV. PTB is planning a cooperative extension to higher energies. ・ ^{56}Fe high resolution scattering data at 6 angles, 50 keV - 5 MeV described in ORNL/TM-11742 (Dec. 1990). ・ DDX analysis reported at 91 Beijing Symp. Fast Neutron Physics.	ANL LANL(WNR) ORNL LANL ANL ORNL Osaka U.	c c * * * ORNL/TM-11742 91 Beijing 3

		1991.10 - ・ Measurements of neutron scattering cross section of ^{56}Fe at 14.2 MeV completed. T. Nishio et al.: JAERI-M 94-019, p.230 (1990).	Rikkyo U.	JAERI-M 94-019, 230

Fe-56

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ Measurement of the response function and efficiency curve of a C_6D_6 detector with (p, γ) reactions at a V.d.G. completed. Publication in progress.	CBNM	c
		・ Resonance averaged capture γ-ray spectra measured for E_n 20-600 keV.	TIT	88 Mito 67
		1987.5 - 1988.9		
(n, γ)	0.01 - 1 MeV (10 ~ 15 %)	・ Capture yield data for 1.15 keV resonance obtained. Preliminary area analysis reported at Mito Conference (Paper CA 17).	AERE	88 Mito 157
		・ Response function and efficiency of C_6D_6 detectors - publication in NIM - studies continued	CBNM	c
		1988.9 - 1990.6 ・ Experimental study on the weighting function for a C_6D_6 neutron capture detector published (NIM A265, 475) (1.15 keV Task Force).	CBNM	NIM A265, 475
		1990.6 - 1991.10 ・ Tentative plans to measure capture cross section.	ORNL	*
		・ JEF2 validation	CAD/ENEA	△
		・ Re-analysis of older capture data with improved weighting function; Jülich Conference.	CBNM	91 Jülich 44
		1991.10 -		

(n,tot)	0.01 - 1 MeV	1985.11 - 1987.5 ・ New high-resolution data (200 m) acquired. Differential scattering data a 6 angles and 200 m measurement planned for fall 1987. Data will be analyzed for resonance parameters up to 800 keV. ・ Measurements of 1.15 keV resonance at 20° C and -186° C complete. Analysis in progress. 1987.5 - 1988.9 ・ $\sigma_{n,\gamma}$ measured at 200 m flight path.	ORNL CBNM ORNL	c discontinued 91 Jülich 41 EXFOR 13511.003
		1988.9 - 1990.6 ・ none 1990.6 - 1991.10 ・ Analysis of high resol. transmission (^{56}Fe). Berthold et al., Gatlinburg 94, p.218 1991.10 -	 CBNM	 94 Gatlinburg 218
res. param.		1985.11 - 1987.5 ・ none 1987.5 - 1988.9 ・ Invited paper at Mito Conf. (Task Force) ・ 1.15 keV capture reported at Mito. ・ Res. parameters analysis in progress. ・ New measurements planned for 1989. ・ Ground state partial widths $\Gamma\gamma_0$ and spins in the range 20 -350 keV published in Proceedings of Leuven Conference 1988.	 AERE/CBNM ORNL ORNL ORNL ENEA	 88 Mito 37 88 Mito 379 c c 88 Leuven Conf.

		1988.9 - 1990.6 • New measurement and analysis of 1.15 keV resonance underary. • SAMMY resonance parameter analysis complete for ^{56}Fe 180 - 850 keV. 1990.6 - 1991.10 • (n, γ) re-analysed (weighting) → reson. parameters for E < 300 keV; published (Corvi et al.) Jülich Conf. • New resonance parameter data and analysis thermal to 850 keV, C.M. Perey et al. ORNL/TM-11742 Dec. 1990. 1991.10 -	 ORNL ORNL CBNM ORNL	 * c 91 Jülich 44 91 Jülich 41 EXFOR 13511.005

Fe-57

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
scattering (n,n')	Thresh. - 10 MeV (20 %)	1985.11 - 1987.5 • none 1987.5 - 1988.9 • none 1988.9 - 1990.6 • none 1990.6 - 1991.10 • Neutron-induced gamma-ray production in ^{57}Fe for incident neutron energy between 0.16 and 21 MeV, Nucl. Sci. Eng. 84, 12 (1983) may be useful. Extracts σ(n,n') for 136, 367 keV levels. 1991.10 -	 ORNL	 *

Ni

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ Measurement of resonance averaged capture γ-ray spectra between 30-100 keV planned.	TIT	c
		1987.5 - 1988.9 ・ ^{58,60,61}Ni: transmission measurements partly finished. Capture measurements to be started in October 88.	CBNM	c
		・ Capture gamma-ray spectra have been observed at the neutron energies of 10 keV to 600 keV.	TIT	c
		1988.9 - 1990.6 ・ Capture and transmission measurements in the resonance range prepared for ^{56}Ni, ^{60}Ni and ^{61}Ni (GELINA).	CBNM	c
		・ Capture analysis complete to 450 keV.	ORNL	PR/C 47, 1143 (93)
(n, γ)	100 eV - 1 MeV (10 ～ 20 %)	・ Validation of JEF 2 on clean integral data.	CAD/JEF	△
		・ Capture γ-ray spectra were measured at the neutron energies of 16, 30, 60 and 550 keV.	TIT	88 Mito 67
		1990.6 - 1991.10 ・ Transmission and (n, γ) measurements on separated isotopes in progress (partly finished).	CBNM	c
		・ Intercomparison among ENDF/B-VI, JEF-2 and JENDL-3 in progress under NEACRP/NEANDC International Evaluation Cooperation. Contact: C.Y. Fu (ORNL).	NEANDC	△＊
		・ JEF2 validation	CAD/ENEA	△
		・ Resonance parameters from ^{60}Ni(n, γ), Jülich Conf.	CBNM	91 Jülich 44
		1991.10 - ・ Resonance parameters from ^{58}Ni(n, γ), Gatlinburg Conf.	CBNM	94 Gatlinburg 221

(n,tot)	100 eV - 1 MeV	1985.11 - 1987.5 ・ none 1987.5 - 1988.9 ・ ^{58,60,61}Ni: transmission measurements partly finished. Capture measurements to be started in October 88. 1988.9 - 1990.6 ・ Transmission measurements and data reduction for ^{58}Ni, ^{60}Ni and ^{61}Ni between 0.1 and 20 MeV finished (GELINA). ・ Capture and transmission measurements in the resonance range prepared for ^{58}Ni, ^{60}Ni and ^{61}Ni (GELINA). 1990.6 - 1991.10 ・ Transmission and (n,γ) measurements on separated isotopes in progress (partly finished). ・ Transmission with 2.5 ps/m on ^{58}Ni, ^{60}Ni. ・ ^{60}Ni σ_γ 0.5 - 115 keV, new data and SAMMY analysis (1990), results used in MOD 1 of ENDF/B-VI (July 1991). 1991.10 - ・ High resolution transmission measurement (2.5 ps/m) on ^{58}Ni, ^{60}Ni.	CBNM CBNM CBNM CBNM CBNM ORNL CBNM	c 91 Jülich 71 c c c 91 Jülich 41 94 Gatlinburg 224
		1985.11 - 1987.5 ・ Linac measurements of resonance parameters of ^{58}Ni, ^{60}Ni, ^{61}Ni are planned. Transmission measurement on ^{58}Ni has been started. ・ ^{58}Ni : High resolution transmission and scattering data (200 m) analyzed up to 813 keV; below 450 keV capture data were also used. Analysis completed and is in the process of being published. ・ ^{60}Ni : Transmission and capture data analyzed for resonance parameters and published. 1987.5 - 1988.9 ・ ^{58,60}Ni: transmission, capture and scattering analyzed with resonance parameters up to 850 keV.	CBNM ORNL ORNL ORNL	c c PR/C 27, 2556 (83) c

res. param.	100 eV - 1 MeV	1988.9 - 1990.6 • ^{58}Ni resonance parameter analysis complete from thermal to 813 keV, based on SAMMY analysis of transmission, scattering and capture data.	ORNL	c
		1990.6 - 1991.10 • ^{58}Ni simultaneous analysis of σ_T, σ_S, $\sigma\gamma$ (high resolution ORNL data; ORNL/TM-10841, C.M. Perey et al. Sept. '88). Analysis extended to cover thermal to 813 keV, paper under review (1991).	ORNL	PR/C 47.1143 (93) EXFOR 12972.006 EXFOR 12972.007
		• ^{60}Ni σ_T 0.5 - 115 keV, new data and SAMMY analysis (1990), results used in MOD 1 of ENDF/B-VI (July 1991).	ORNL	91 Jülich 41
		• Resonance analysis in progress (results of ^{60}Ni at Jülich Conf.). for ^{58,60}Ni up to ~ 500 keV (transmission) and 300 keV (n, γ) for ^{61}Ni up to ~ 50 keV.	CBNM	c
		• Resonance parameter from ^{60}Ni(n, γ), Jülich Conf.	CBNM	91 Jülich 44
		1991.10 - • Resonance parameter from ^{58}Ni(n, γ), Gatlinburg Conf.	CBNM	94 Gatlinburg 221
		• Resonance paramter from high resolution transmission of ^{58}Ni and ^{60}Ni.	CBNM	94 Gatlinburg 224
scattering (n, n')	Thresh. - 4 MeV (5 %) 4 - 15 MeV (5 ~ 30 %)	1985.11 - 1987.5 • Measurement and physical interpretation are nearing completion to 10 MeV. A high energy evaluation (> 600 keV) will be done.	ANL	c
		• Neutron emission spectra measured at 14.1 MeV.	Tohoku U.	88 Mito 291 EXFOR 22025
		1987.5 - 1988.9 • Comprehensive study of ^{58}Ni(n,n) scattering to 10 MeV.	ANL	c
		1988.9 - 1990.6 • Comprehensive measurements completed for ^{58}Ni, 1.5 - 10 MeV. Report in preparation.	ANL	c
		• ^{58,x}Ni(n, xγ) Ge preliminary measurements being analysed. 2 < E_n < 200 MeV.	LANL(WNR)	
		1990.6 - 1991.10 • DDX measured at OKTAVIAN facility for 15 angles at 14.1 MeV.	Osaka U.	91 Beijing 3

		Report at 91 Beijing Symposium Fast Neutron Physics. ・ Extensive Ni-58 measurements have been completed at ANL. The formal report is NDM-120. ・ ^{58}Ni(n,n) high resolution scattering cross sections measured from 50 keV - 5 MeV, described in ORNL/TM 10841 (Sept. 1988). ・ ^{60}Ni(n,n) high resolution scattering data also measured, data reduction underway. 1991.10 -	ANL ORNL ORNL	ANL-NDM-120 EXFOR 13523.003 ORNL/TM-10841 EXFOR 12972.005 ＊

Zr

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ none 1987.5 - 1988.9		
		・ Extensive studies on (n,p) and (n,α) reactions on individual Zr isotopes underway. Activation technique. Energy range 4 to 10.5 MeV.	KFA	NSE 104, 271 (91) EXFOR 22144 EXFOR 22180
(n,γ) (n,tot)	Thermal (5 %)	1988.9 - 1990.6 ・ none 1990.6 - 1991.10 ・ JEF2 validation 1991.10 -	 SAC/CAD	 △
		1985.11 - 1987.5 ・ none		

res. param.	RI (5 %)	1987.5 - 1988.9 ・ Resonance analysis at KAPL. 1988.9 - 1990.6 ・ none 1990.6 - 1991.10 ・ none 1991.10 -	KAPL	*

4. COOLANT AND MODERATOR MATERIALS

II-1

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
(n, γ)	Therm - 10 eV (0.3 %)	1985.11 - 1987.5 ・ none 1987.5 - 1988.9 ・ none 1988.9 - 1990.6 ・ none 1990.6 - 1991.10 ・ none 1991.10 -		

5. FISSION PRODUCT CAPTURE

Nuclide	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ none 1987.5 - 1988.9 ・ none 1988.9 - 1990.6 ・ Winters-Macklin $\sigma\gamma$ Maxwellian averaged Astr. J. 313, 808 (1987).	ORNL	Astr. J. 313, 808 (87) EXFOR 12753.002
Tc-99	20 eV - 400 keV	1990.6 - 1991.10 ・ New evaluation for JENDL-3 was completed.(J. Nucl. Sci. Technol. 29, 195 (1992)). 1991.10 - ・ Measurements in low resoonance region (0.5 eV - 1 keV) planned for 1995 Lepretre et al., Collabolation. CEA-Saclay/IRMM-Geel.	JAERI SCA/CBNM	△

Nuclied	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ JEF requests $\sigma_{n,n'}$ (at least for the excitation of the first 2^+ state) for light fission products (e.g. Ru and Pd isotopes) between threshold and a few MeV. Objective: to detect errors in the $\sigma_{n,n'}$ evaluations of fission products. 1987.5 - 1988.9 ・ none	JEF	△

Pb-107	500 eV - 500 keV (10 %)	1988.9 - 1990.6 ・ R.L. Macklin. NSE 89 79 (1985). 1990.6 - 1991.10 ・ New evaluation for JENDL-3 was completed.(J. Nuci. Sci. Technol.29, 195 (1992)). 1991.10 -	ORNL JAERI	NSE 89, 79 (85) EXFOR 12874.003 △

Nuclide	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ none 1987.5 - 1988.9 ・ none		
Xe-131	4 keV - 500 keV (20 %)	1988.9 - 1990.6 ・ none 1990.6 - 1991.10 ・ New evaluation for JENDL-3 was completed.(J. Nucl. Sci. Technol.29, 195 (1992)). 1991.10 -	 JAERI	 △

Nuclide	energy range	plans for experiments, status of measurements/analysis, remarks	lab.	remarks

	(accuracy)			
Cs-135	100 eV - 500 keV (10 %) Res. parameters	1985.11 - 1987.5 ・ none 1987.5 - 1988.9 ・ none 1988.9 - 1990.6 ・ none 1990.6 - 1991.10 ・ New evaluation for JENDL-3 was completed.(J. Nucl. Sci. Technol.29. 195 (1992)). 1991.10 -	JAERI	△

Nuclide	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
Sm-149	25 keV (point value) (5 %)	1985.11 - 1987.5 ・ Linac measurements planned with 500 ℓ liquid scintillator. ・ capture measurement from 2.5 to 700 keV completed. 1987.5 - 1988.9 ・ none 1988.9 - 1990.6 ・ none 1990.6 - 1991.10 ・ none 1991.10 - ・ Capture cross sections were measured in an energy region of 10 to 60	JAERI ORNL TIT	given up EXFOR 12966.004 94 Bologna 269

keV. Presented at Specialists' Meeting in Bologna (NEA/NSC/DOC(95)1).

6. PRIMARY ACTINIDES

6.1 ν_s

Pu-239

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
ν_p	Therm - 0.5 MeV (0.3 %) - 15 MeV (0.5 %)	1985.11 - 1987.5 ・ none 1987.5 - 1988.9 ・ Evaluation completed between 10^{-5} eV - 20 MeV. Benchmark test completed. ・ Ratio to ^{235}U data complete, analysis in progress E_n= 1-400 MeV. 1988.9 - 1990.6 ・ Evaluation in 1988. Revised 1989 for JEF 2. Permanent scrutiny. 1990.6 - 1991.10 ・ none 1991.10 -	CAD/SAC LANL/NBS/ ORNL CAD/JEF	△ ＊ △

Pu-241

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
ν_p	1 keV - 1 MeV	1985.11 - 1987.5 ・ none 1987.5 - 1988.9 ・ Evaluation completed between 10^{-5} eV - 10 eV; to be completed up to 20 MeV.	CAD	△

	(2 %)	1988.9 1990.6 ・ none 1990.6 - 1991.10 ・ none 1991.10 -		

6.2 Cross section shapes at thermal energies (σ_t, σ_a, α and η)

U-235

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ Linac measurement and analysis between 1 meV and 100 meV finished; extension of these measurements down to μeV range planned at ILL reactor.	CBNM	85 Santa Fe 1,499
(n,f)	10 meV - 1 eV (0.5 %)	1987.5 - 1988.9 ・ Measurements at μeV energies performed at ILL. Publ. Mito Conf. ・ Measurements for E_n > 2 meV performed at GELINA. Publ. Mito Conf. 1988.9 - 1990.6 ・ none 1990.6 - 1991.10 ・ Finished and published (Wagemann et al.) Mito-Conf. ・ Experiments in progress to study normalization problems. ・ Validation of JEF2 1991.10 -	CBNM CBNM CBNM ORNL SAC/CAD	88 Mito 131 c 88 Mito 91 EXFOR 22080.003 * △

		1985.11 - 1987.5		
		・ Linac measurement and analysis between 2 meV and 400 meV finished; new measurements planned at ILL reactor to improve quality of the data at the low energy end.	CBNM	c
		・ Linac measurement from few meV to 1 eV complete; analysis nearly finished; document in preparation. Data on $\bar{\nu}\sigma_f$ also obtained.	AERE	c
		1987.5 - 1988.9		
		・ Measurements at ILL postponed, now planned for October 88.	CBNM	c
		・ Some investigation on the importance of cristalline structure effects.	CAD	88 Mito 47
		・ Measurement complete, preliminary results reported at Mito Conference (Paper AA 08).	AERE	88 Mito 75
		・ α measurements planned at ORELA by Gwin.	ORNL	c
		1988.9 - 1990.6		
		・ ILL measurements and their analysis completed. Publication planned at the PHYSOR Conference, Marseille.	CBNM	c
		・ Evaluation for JEF 2 (based on CBNM data obtained at GELINA and ILL).	SAC/NEA・DB	△
		・ Evaluation of ν_p、ν_α for JEF 2.	CAD	△
		・ Joint experiment with Oak Ridge performed on ORELA. Analysis in progress.	AERE/ORNL	c
		・ Plans are being made for measurements of α using the BaF_2 multicrystal spectrometer.	ORNL	c
		1990.6 - 1991.10		
η	10 meV - 1 eV (0.5 %)	・ Evaluation underway under NEACRP/NEANDC International Evaluation Cooperation. Contact: H. Tellier (Saclay).	NEANDC	91 Jülich 169
		・ $\alpha(\eta)$: 2 meV < E < 300 meV; presented Jülich Conf. η decreasing between 25 and 2 meV by ~1.2%.	CBNM	91 Jülich 38
		・ Earlier direct η-measurement: Conf. Physor '90, Marseille.	CBNM	90 Marseille 3,33 EXFOR 22194.002
		・ Measurement completed at ORNL. Preliminary results available. Problems with corrections being considered with GEEL and ORNL.	AERE	*
		・ Experiments of α in progress with multi-crystal BaF_2 detector.	ORNL	*
		・ Validation of JEF2	SAC/CAD	△

		1991.10 - ・ Final analysis of combined AERE/CBNM data presented at Gatlinburg Conference: Moxon et al., Gatlinburg Conf., p.642 (1994).	AERE/CBNM	94 Gatlinburg 642

U-238

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ Linac measurement and analysis between 2 meV and 100 meV finished.	CBNM	c
		1987.5 - 1988.9 ・ Shape measured between 2 meV and 1 eV. Publ. Mito Conf.	CBNM	c
(n, γ)	5 meV - 6 eV (± 0.03 barn)	1988.9 - 1990.6 ・ Finished and published (Corvi et al.) Mito Conf.	CBNM	88 Mito 127 EXFOR 22115.002
		1990.6 - 1991.10 ・ Validation of JEF2	SAC/CAD	△
		1991.10 -		

Pu-239

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ Low energy shape measurement started at the Linac.	CBNM	c

(n,f)	10 meV - 1 eV (0.75 %)	1987.5 - 1988.9 ・ Measurements for E_n > 2 meV performed at GELINA. Publ. Mito Conf. ・ Evaluation completed between 10^{-5} eV - 1 keV. Possible complement in 1989. 1988.9 - 1990.6 ・ Plans are being made for measurements using the BaF_2 multicrystal spectrometer. 1990.6 - 1991.10 ・ Finished and published (Wagemans et al.) Conf. Physor '90. Marseille. ・ Experiments in progress to study normalization problems. ・ Validation of JEF2 1991.10 -	CBNM CAD/ORNL ORNL CBNM ORNL SAC/CAD	88 Mito 91 △ c 90 Marseille 1,9 EXFOR 22080.004 ＊ △

Pu-241

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
(n,f)	10 meV - 15 eV (0.5 ～ 6 %)	1985.11 - 1987.5 ・ Low energy shape measurement planned at the Linac. 1987.5 - 1988.9 ・ Measurements for E_n > 2 meV finished. Analysis started. ・ Evaluation completed between 10^{-5} eV-150 eV. Possible complement in 1989. 1988.9 - 1990.6 ・ Measurements and their analysis completed at subthermal-thermal energies. 1990.6 - 1991.10	CBNM CBNM CAD/ORNL CBNM	c c △ c

		• Finished and published (Wagemans et al.) JÜlish Conf. '91. • Validation of JEF2 1991.10 -	CBNM SAC/CAD	91 JÜlich 35 EXFOR 22193.002 △

6.3 Resonance Parameters

Th-232

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 • Resonance parameter analysis of transmission published. • Transmission and self indication measurements between 1 - 30 keV at the Linac. Analysis ongoing.	ORNL Kyoto U. (RRI)	NSE 82, 293 (82) EXFOR 10973.002.004 ANE 15, 381 (88) NST 28, 879 (91) EXFOR 22123
Res.	- 10 keV (10 %)	1987.5 - 1988.9 • none 1988.9 - 1990.6 • none 1990.6 - 1991.10 • none 1991.10 -		

U-235

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
Res.	1 eV - 1 keV (1 %)	1985.11 - 1987.5 ・ New transmission data from 0.01 eV to 50 keV, taken at 18 and 80 meters, are being analyzed for resonance parameters up to 2 keV with 18 m fission data. New high-resolution fission measurements. at 85 m are being planned for the summer of 1987.	ORNL	c
		1987.5 - 1988.9 ・ Resonance parameters analysis in progress	ORNL	NSE 109, 1 (91)
		1988.9 - 1990.6 ・ none		
		1990.6 - 1991.10 ・ High resolution fission cross section measurements of ^{235}U and ^{239}Pu. L.W. Weston and J.H. Todd, NSE 111, 415 (1992) ・ JEF2 validation	ORNL CAD/JEF	NSE 111, 415 (92) EXFOR 13488.002 △
		1991.10 -		

U-238

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ New resonance analysis of available transmission and (n, γ) data in progress below 10 keV using REFIT. ・ New high-resolution capture measurement has been completed from 1 to 100 keV, using the 150 m flight path. Three sample thicknesses were used. A new recoil proton detector has been developed and will be used in the summer of 1987 to obtain transmission data above 2 keV at the 200 m flight path.	AERE/ NEA・DB ORNL	c c

		Transmission and capture data will be analyzed for resonance parameters to 15 keV. ・ Tansmission and self indication measurements between 1-30 keV at the Linac. Analysis ongoing.	Kyoto U. (RRI)	c
Res.	1 keV - 30 keV (3 %)	1987.5 - 1988.9 ・ New data (n, γ) and transmission being analysed. ・ Analysis of Oak Ridge transmission and capture data in progress 0 - 10 keV. Status of analysis reported at Mito Conf. (Paper 1A 04).	ORNL AERE/ NEA•DB	ANE 18, 567 (91) EXFOR 13526 88 Mito 37 88 Jackson H 1, 281
		1988.9 - 1990.6 ・ Analysis of Oak Ridge transmission and capture data in progress. Status to be reported at PHYSOR '90.	AERE	90 Marseille 1, 41
		1990.6 - 1991.10 ・ Evaluation in progress 0 - 10 keV. Lack of funds delaying progress. ・ JEF2 validation ・ Tansmission and self indication measurements between 1-30 keV at the Linac. Published: H. Oigawa et al. NST 28, 879 (91).	AERE CAD/JEF Kyoto U. (RRI)	* △ NST 28, 879 (91)
		1991.10 -		

Pu-239

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ New transmission measurement has been completed, using the 80 m flight path and three sample thicknesses, cooled to liquid nitrogen temperature. The data are being analyzed to 1 keV for resonance parameters with some 18 m fission data. New high-resolution fission measurements, at 85 m are being planned for	ORNL	c

		the summer 1987.		
		1987.5 - 1988.9 ・ Evaluation completed up to 1.1 keV.	CAD/ORNL	c ORNL-TM-10986
Res. σ_T Res. σ_f	1 eV – (3 %) (1 %)	1988.9 - 1990.6 ・ Analysis of recent transmission experiment performed at ORELA (1 eV - 2 keV). New resonance parameters derive for JEF 2, ENDF/B-6.	CAD/ORNL	c
		1990.6 - 1991.10 ・ SAMMY analysis in progress up to 2.5 keV. ・ High resolution fission cross section measurements of ^{233}U and ^{239}Pu. L.W. Weston and J.H. Todd. NSE 111, 415 (1992). ・ Analysis of σ_ϵ, σ_T, measurements up to 500 keV ・ Resonance parameters produced up to 2 keV.	JAERI ORNL CAD/ORNL CAD/ORNL	c NSE 111, 415 (92) EXFOR 13488.003 NST 29, 794 (92) NSE 106, 434 (90)
		1991.10 - ・ Analysis from 1 keV to 2.5 keV with SUMMY completed and pulished by H. Derrien.	JAERI	NST 30, 845 (93)

Pu-240

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ A paper on the 1 eV resonance has been accepted for publication in NS&E.	ORNL	NSE 96, 318 (87)
		1987.5 - 1988.9 ・ none		
Res.	1 eV (1 %)	1988.9 - 1990.6 ・ none		

		1990.6 - 1991.10 ・ none 1991.10 -		

6.4 Fission measurements, including ratio measurements to U-235 (n,f)

U-235

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ Accurate value of $\bar{\nu}\sigma f$ could be obtained from results of η measurements ・ High-resolution (80 m) measurement planned for the summer of 1987. 1987.5 - 1988.9 ・ none	AERE ORNL	88 Mito 75 c
(n,f)	1 eV - 1 keV (1 %)	1988.9 - 1990.6 ・ Analysis and publication of very high neutron energy resolution measurements are in progress. 1990.6 - 1991.10 ・ JEF2 validation 1991.10 -	ORNL CAD/JEF	NSE 111, 415 (92) △

Pu-239

quantity	energy range	plans for experiments, status of measurements/analysis, remarks	lab.	remarks

	(accuracy)			
		1985.11 - 1987.5		
		• High-resolution (80 m) measurement planned for the summer of 1987.	ORNL	c
		• Measurement relative to $^{235}U(n,f)$ planned between 0.3 and 15 MeV.	Tohoku U.	88 Mito 119
		1987.5 - 1988.9		
		• Evaluation underway in unresolved resonance range - Possibly reanalysis of Weston's data.	CAD/ORNL	△
		• Evaluation completed between in 30 keV - 20 MeV. Checking on selected integral information.	CAD	△
		• Pre- and final analysis of previously measured σ_f from 1-20 MeV.	KfK/IMF II	*
		• New measurements by Weston.	ORNL	c
		1988.9 - 1990.6		
		• Analysis and publication of very high neutron energy resolution measurements are in progress.	ORNL	NSE 111, 415 (92) EXFOR 13488.003
		• Revision of JEF 2 planned. Participation in NEA-NDC/CRP Task Force.	CAD/JEF	△
		1990.6 - 1991.10		
(n,f)	1 eV - 1.5 MeV (1 ～ 3 %)	• Measurement (thermal to 1 keV) planned for 1992.	CBNM	c
		• Experiments in progress to study normalization problems. L.W. Weston and J.H. Todd.	ORNL	c
		• JEF2 validation	CAD/JEF	△
		• Measurement of cross section began Aug. 1991 at LANSCE, to continue Spring, 1992. Energy range: few eV to 1 MeV. Absolute normalization at thermal energy. Contacts: A. Carlson (NIST), P. Lisowski (LANL).	LANL	*
		• NEACRP/NEANDC International evaluation cooperation in progress for the fission cross section between 1 and 100 keV. Contact: E. Fort (Cadarache)	NEANDC	91 Jülich 854 △
		1991.10 -		
		• Normalization problems resolved by Weston and Todd.	ORNL	NSE 115, 164 (93) EXFOR 13548.002
		• "Normalization of the ^{239}Pu fission cross section" C. Wagemans et al., Nucl. Sci. Eng. 115 (1993) 173.	CBNM	NSE 115, 173 (93)

Pu-240

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
(n,f)	1 keV - 1 MeV (10 %)	1985.11 - 1987.5 ・ Measurement planned, subject to availability of sample 1987.5 - 1988.9 ・ Evaluation planned for 1989. ・ Final analysis of previously measured σ_f from 1-20 MeV. 1988.9 - 1990.6 ・ none 1990.6 - 1991.10 ・ Relative to ^{235}U from 0.6 to 7 MeV. 1991.10 -	Tohoku U. CAD KfK/IMF II Tohoku U.	c △ * NST 27, 885 (90) EXFOR 22211.002

Pu-241

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
(n,f)	Therm 10 eV	1985.11 - 1987.5 ・ none 1987.5 - 1988.9 ・ none 1988.9 - 1990.6		

	20 - 400 keV (3 %)	• none 1990.6 - 1991.10 • none 1991.10 -		

6.5 Capture and alpha

Th-232

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 • none 1987.5 - 1988.9 • Measurement of the Bondarenko-type self-shielding factor between 1 and 30 keV. Finished. A study is needed for the difference of detector response for p- and s-wave captures	Kyoto U. (RRI)	NST 28, 879 (91)
(n, γ)	4 keV - 2 MeV (5 %) 2 MeV - 10 MeV (10 %)	1988.9 - 1990.6 • none 1990.6 - 1991.10 • JEF 2 validation. 1991.10 -	SAC	△

U-233

quantity	energy range	plans for experiments, status of measurements/analysis, remarks	lab.	remarks

	(accuracy)			
(n, γ)	Therm - 1 MeV (20 %)	1985.11 - 1987.5 ・ none 1987.5 - 1988.9 ・ none 1988.9 - 1990.6 ・ Plans are being made for α-measurement using the BaF_2 multicrystal spectrometer. 1990.6 - 1991.10 ・ JEF2 validation 1991.10 -	ORNL SAC	* △

U-238

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5		
		・ (n, γ) measurement planned when measurement on Fe is complete.	AERE	c
		・ A high-resolution capture measurement has been completed from 1 to 100 keV, using the 150 m flight path. Three sample thicknesses were used.	ORNL	c
		1987.5 - 1988.9		
		・ New measurements of (n, γ).	ORNL	ANE 18, 567 (91)
		・ Measurement planned in range 5 eV to 1 MeV. Starting 1988.	AERE	*
		・ Measurement of the Bondarenko-type self-shielding factor between 1 and 30 keV. Finished. A study is needed for the difference of detector response for p- and s-wave captures.	Kyoto U. (RRI)	c
		・ Part of concurrent ENDF/B-VI evaluation. Done but for correlation matrix.	ANL/LANL/ NBS/ORNL	△

(n, γ)	1 keV - 30 keV (3 %) 30 keV - 1 MeV (2 ～ 3 %) Therm - 80 keV (3 %)	1988.9 - 1990.6 ・ none 1990.6 - 1991.10 ・ Reevaluation completed under NEACRP/NEANDC International Evaluation Cooperation. Contact: Y. Kanda (Kyushu U.). ・ The ratios between 24. 55 and 146 keV neutron capture cross sections have been measured using Fe- and Si- filtered neutrons. K. Kobayashi. ・ Self-shielding factors of neutron capture cross section have been measured between 4 and 40 keV, for dilution cross sections between 1 and 100 barns, with about 3% experimental errors. ・ JEF2 validation 1991.10 -	NEANDC Kyoto U. (RRI) Kyoto U. (RRI) CAD/JEF	91 Jülich 851 91 Jülich 65 NST 28, 879 △

Pu-239

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ none 1987.5 - 1988.9 ・ Evaluation completed between in 30 keV - 20 MeV. Checking on selected integral information. 1988.9 - 1990.6	CAD/ORNL	△
(n, γ)	- 600 keV (6 %)	・ Plans are being made for α-measurement using the BaF_2 multicrystal spectrometer. ・ Participation in NEA-NDC/CRP Task Force. 1990.6 - 1991.10 ・ none	ORNL CAD	* △

		1991.10 -		

Pu-240

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
(n, γ)	Therm - 100 keV (3 %)	1985.11 - 1987.5 ・ none 1987.5 - 1988.9 ・ Evaluation completed between in 30 keV - 20 MeV. Checking on selected integral information. 1988.9 - 1990.6 ・ none 1990.6 - 1991.10 ・ JEF2 validation 1991.10 -	CAD CAD	△ △

6.6 Inelastic scattering

U-238

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ Comprehensive data base obtained on actinide $\sigma_{n,n'}$ now going into evaluation	ANL	c

		· Mmeasurement at MeV energies, in particular at 14 MeV planned.	Tohoku U.	c
		1987.5 - 1988.9		
		· Continuing work at ANL.	ANL	c
		· Measurements are in progress of secondary spectra for MeV neutrons.	Tohoku U.	c
		1988.9 - 1990.6		
		· Continuing work ≦ 10 MeV.	ANL	c
(n,n')	Thresh - 10 MeV (5 ～ 7 %) 0.5 - 5 MeV (5 %)	1990.6 - 1991.10		
		· Energy-differential cross sections have been measured at 1.2, 2.0, 4.2, 6.1 and 14.1 MeV. M. Baba, NST 27, 601 (1990).	Tohoku U.	NST 27, 601 (90) EXFOR 22158.
		· Work underway in cooperation with JAERI.	ANL	c
		· Reevaluation underway under NEACRP/NEANDC International Evaluation Cooperation. Contact: Y. Kanda (Kyushu U.).	NEANDC	c
		· JEF2 validation	CAD/JEF	△
		1991.10 -		
		· To be published in ANE.	ANL	
		· Inelastic scattering at 4 distinct energies below 220 keV measured with filtered beam technique. Moxon et al., Gatlinburg Conf. p.981, (1994).	CBNM	94 Gatlinburg 981
		· Reevaluation underway under NEANSC International Evaluation Cooperation. Contact: Y. Kanda (Kyushu U.).	NEANSC	in progress

Pu-239

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5		
		· Some relevant work at Lowell.	U. Lowel	*
		1987.5 - 1988.9		
		· Evaluation completed between in 30 keV - 20 MeV. Checking on	CAD	△

		selected integral information.		
(n,n')	0.05 - 10 MeV (10 ～ 15 %)	1988.9 - 1990.6 ・ none 1990.6 - 1991.10 ・ JEF2 validation 1991.10 -	CAD/JEF	△

Pu-240

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ none 1987.5 - 1988.9 ・ Evaluation completed between in 30 keV - 20 MeV. Checking on selected integral information.	CAD	△
(n,n')	Thresh - 10 MeV (20 ～ 25 %)	1988.9 - 1990.6 ・ none 1990.6 - 1991.10 ・ JEF2 validation 1991.10 -	CAD/JEF	△

6.7 Spectra of outgoing neutrons

U-235

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
(n, Xn)	0.1 - 14 MeV (10 ~ 15 %)	1985.11 - 1987.5 · none 1987.5 - 1988.9 · none 1988.9 - 1990.6 · none 1990.6 - 1991.10 · none 1991.10 -		

Pu-239

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
(n, Xn)	0.1 - 14 MeV (10 ~ 15 %)	1985.11 - 1987.5 · Prompt fission neutron spectrum measured relative to that of ^{235}U from 1.0 to 10.0 MeV for 0.55 MeV incident neutrons. 1987.5 - 1988.9 · ANL 235/239 ratio published in NS&E. 1988.9 - 1990.6 · none 1990.6 - 1991.10 · none	ANL ANL	c NSE 97, 235 (87)

		1991.10 -		

6.8 Total cross section

Pu-239

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
(n,tot)	1 eV - 500 keV (3 %) 1 - 200 keV (2 %)	1985.11 - 1987.5 ・ none		
		1987.5 - 1988.9 ・ Evaluation completed between in 30 keV - 20 MeV. Checking on selected integral information.	CAD	△
		1988.9 - 1990.6 ・ Analysis of transmission data obtained at ORNL.	CAD/BRC	c
		1990.6 - 1991.10 ・ New analysis of ORNL transmission measurement by Derrien 1 - 500 keV. ・ Deformed OMP derived	CAD/ORNL BRC	NST 28, 794 (92) *
		1991.10 -		

Pu-240

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ Weston completed evaluation for ENDF/B-VI. No experimental $\sigma_{n,\gamma}$	ORNL	△

		above 5 MeV. 1987.5 - 1988.9 ・ Evaluation completed between in 30 keV - 20 MeV. Checking on selected integral information.	CAD	△
(n,tot)	5 keV - 10 MeV (1 ～ 2 %)	1988.9 - 1990.6 ・ none 1990.6 - 1991.10 ・ none 1991.10 -		

6.9 Prompt fission neutron spectrum

U-238

quantity, energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
	1985.11 - 1987.5 ・ χ measurement planned for E_n > 5 MeV	Tohoku U.	c
	1987.5 - 1988.9 ・ U-238 fission spectrum; measurement is in progress for 2 MeV neutrons.	Tohoku U.	c
	1988.9 - 1990.6 ・ none		
$\bar{E}$/E(Cf-252) (1 ～ 1.5 %)	1990.6 - 1991.10 ・ Fission neutron energy spectrum has been measured for 2- MeV incident neutrons at 135- and 90-deg. (En' < 12 MeV). M. Baba NST 27, 601 (1990).	Tohoku U.	NST 27, 601 (90) EXFOR 22112.
	1991.10 -		

Pu-239

quantity, energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
	1985.11 - 1987.5		
	・ Prompt fission neutron spectrum measured relative to that of ^{235}U from 1.0 to 10.0 MeV for 0.55 MeV incident neutrons.	ANL	c
	・ New fission spectrum results agree with ENDF/B-V.	ANL	△
	1987.5 - 1988.9		
Mean Ē (2 %)	・ ANL 235/239 ratio published in NS&E.	ANL	NSE 97, 235 (87)
fractions: > 5 MeV, < 300 keV (10 %)	1988.9 - 1990.6 ・ none		
Ē/Ē (Cf-252) (1 ～ 1.5 %)	1990.6 - 1991.10 ・ none		
	1991.10 -		

6.10 Delayed neutron yield

Nuclide	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ none		
		1987.5 - 1988.9 ・ none		

U-238	Thresh - 5 MeV (3 - 5 absolute)	1988.9 - 1990.6 ・ Program Conrad on Masurka for β_{eff} measurement planned for 1992. Derivation of β-value and more basic data.	CAD + European Coop. on Fast Breeders	c
		1990.6 - 1991.10 ・ NEACRP/NEANDC International Evaluation Cooperation in progress. Contact: G. Rudstam (U. Uppsala) and A. Filip (Cadarache).	NEANDC/ NEACRP	c
		1991.10 -		

Am-241

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
(n, γ)		1985.11 - 1987.5 ・ Average capture results (1-200 keV) published at Santa Fe conference	CBNM	85 Santa Fe 493
		1987.5 - 1988.9 ・ none		
	100 eV - 100 keV (8 %) 500 keV - 1 MeV (10 %) 1 MeV - 15 MeV (20 %) Branching ratio	1988.9 - 1990.6 ・ Analysis of Gardner's data in comparison with integral data.	CAD	*
		1990.6 - 1991.10 ・ Data validation planned under NEACRP/NEANDC International Evaluation Cooperation. Contact: T. Nakagawa (JAERI).	NEANDC	c
		・ Integral value determined for 63-day irradiation of ^{241}Am in the Dounreay PFR reactor for ^{242m}Am is within 30% agreement based upon pre-irradiation analysis, ORNL-6266 (1986). Data obtained for 400-day irradiation being reduced (J.K. Dickens).	ORNL	*
		・ JEF2 validation	CAD/JEF	△
		1991.10 - ・ Data validation in progress under NEANSC International Evaluation Cooperation. Contact: H. Takano and T. Nakagawa (JAERI).	NEANSC	in progress

Am-243

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5		

(n, γ)	100 eV - 100 keV	• none 1987.5 - 1988.9 • none 1988.9 - 1990.6 • none 1990.6 - 1991.10 • JEF2 validation 1991.10 -	CAD/JEF	△

8. EXTRA HIGH PRIORITY REQUEST LIST FOR FUSION

Li-6

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
(n,T)	3 - 15 MeV (3 %)	1985.11 - 1987.5 ・ Considerable discrepancy between t-production determined by t-assay and from charged particle measurements. Situation summarized by A.B. Smith. ・ (n,t) measurements planned for 13.3 - 15 MeV. 1987.5 - 1988.9 ・ Remeasurement of absolute cross sections $\sigma(\theta)$ for ^{6}Li(n,t) and ^{6}Li(n,d) at 14.1 MeV. DWBA analysis of $\sigma(\theta)$. 1988.9 - 1990.6 ・ none 1990.6 - 1991.10 ・ none 1991.10 -	(ANL) JAERI(FNS) Rikkyo U.	△ suspended 88 Mtio 249 EXFOR 21694.
(n,nem)	2 - 16 MeV (5 ～ 10 %)	1985.11 - 1987.5 ・ none 1987.5 - 1988.9 ・ Laboratory report in progress, E_n = 14.1 MeV. 1988.9 - 1990.6 ・ none 1990.6 1991.10 ・ Neutron emission spectrum has been measured at 14.1-MeV incident energy. Matsuyama, 91 Jülich 474. ・ DDX measured at OKTAVIAN facility for 15 angles at 14 MeV.	LANL Tohoku U. Osaka U.	85 Santa Fe 145 EXFOR 12928.002 91 Jülich 474 EXFOR 22188. 91 Beijing 3

		Reported at 91 Beijing Symp. Fast Neutron Physics, p.3. ・ Measurements of differential cross sections (n,n') and (n,nem) planned for 1991 and 1992 in the energy range 3 - 12 MeV. ・ Considering study to 10 MeV. 1991.10 -	INFN-LNL/ ININ ANL	* *

Li-7

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ (n,n't) fission neutron spectrum average and for 13.4 to 14.8 MeV. ・ (n,n't) cross section was measured between 8 and 10.6 MeV and a comprehensive review of tritium gas counting was given. A new evaluation is suggested. ・ (n,n't) data between 13.3 and 15 MeV available upon request. ・ US task force. Comprehensive assessment (evaluation LANL). 1987.5 - 1988.9 ・ Measurements completed in the energy range of 7.9 to 10.5 MeV. Analysed all the (n,n't) data obtained via tritium counting. Results published in NSE.	U. Tokyo KFA JAERI(FNS) USA KFA	c c JAERI-M 86-125, 130 (86) △ NSE 96, 52 (87) EXFOR 22049
(n,n'T)	up to 15 MeV (5 %)	・ Remeasurement of absolute cross sections $\sigma(\theta)$ for ^{7}Li(n,t) and ^{7}Li(n,d) at 14.1 MeV. DWBA analysis of $\sigma(\theta)$. 1988.9 - 1990.6 ・ A recent evaluation of data acquired during 1980's has been performed by Young, LANL. 1990.6 - 1991.10 ・ Measurement and analysis completed for ^{235}U fission spectrum averaged cross sections.	Rikkyo U. LANL U. Tokyo	88 Mito 249 EXFOR 22150.004 △ *

		1991.10 -		
(n,nem)	2 - 16 MeV (5 ～ 10 %)	1985.11 - 1987.5 ・ Angular distributions of neutrons scattered on ^{7}Li for E_n between 4 and 8.5 MeV. ・ Double differential neutron emission cross section for E_n between 1 and 16 MeV. 1987.5 - 1988.9 ・ Fast neutron scattering cross sections have been measured at 11 and 13 MeV. The angular distribution for the elastic plus 1st excited state (0.478 MeV) and the 2nd level (4.63 MeV) were deduced. Ref. S. Chiba et al., J. Nucl. Sci. Technol. 25 (1988) 210-214. ・ Measurements between 1 and 16 MeV published in NSE. ・ Laboratory report in progress, E_n = 14.1 MeV. 1988.9 - 1990.6 ・ none 1990.6 - 1991.10 ・ DDX measured at OKTAVIAN facility for 15 angles at 14 MeV. Reported at 91 Beijing Symp. Fast Neutron Physics, p.3. ・ Measurements of differential cross sections (n,n') and (n,nem) planned for 1991 and 1992 in the energy range 3 - 12 MeV. ・ Considering study to 10 MeV. 1991.10 -	CBNM CBNM JAERI CBNM LANL Osaka U. INFN-LNL/ ININ ANL	86 Dubrovnk 275 EXFOR 22018 c NST 25, 210 (88) NSE 97, 353 (87) EXFOR 22031 * 91 Beijing 3 * *

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
(n,2n)	1.7 - 15 MeV (5 %)	1985.11 - 1987.5 ・ US task force on n + Be system. Comprehensive assessment.	USA	△
		1987.5 - 1988.9 ・ Experiment prepared at GELINA. Start probably begin 89	CBNM	c
		1988.9 - 1990.6 ・ Measurements performed in 1989 are being analysed. New measurement campaign evisage with U-Be-target.	CBNM	91 Jülich 326
		1990.6 - 1991.10		
		1991.10 -		
(n,nem)	2 - 16 MeV (5 ～ 10 %)	1985.11 - 1987.5 ・ Measurement at 14.1 MeV in progress.	Tohoku U.	c
		1987.5 - 1988.9 ・ TOF measurement of absolute cross section $\sigma(\theta)$ ^{9}Be(n,n') at 14.1 MeV. In preparation.	Rikkyo U.	given up
		・ Comprehensive neutron scattering measurements 4 - 10 MeV.	ANL	c
		・ Measurement completed at 14 MeV, presented at Mito Conf.	Tohoku U.	c
		1988.9 - 1990.6 ・ Detailed results reported, NSE-103-37 (1989) 4.5→10 MeV.	ANL	NSE 103, 37 (89)
		・ Neutron emission spectra have been measured down to 80 keV secondary energies at 14 MeV incident energy.	Tohoku U.	88 Mito 209 EXFOR 22157.
		・ DDX have been made from at 14.1 MeV.	Osaka U.	88 Mito 205 EXFOR 22075, 20076.
		1990.6 - 1991.10 ・ DDX-measurements done for 1.6 MeV < E < 11 MeV, preliminary data	CBNM	91 jülich 326

		sent to U. Birmingham (U.K.), final analysis in progress. • Measurements of differential cross sections (n,nem) planned for 1991 and 1992 in the energy range 3 - 12 MeV. • Considering extending recent measurements. • DDX reanalysis reported at 91 Beijing Symp. Fast Neutron Physics. 1991.10 -	INFN-LNL/ ININ ANL Osaka U.	* * 91 Beijing 3

O-nat

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 • Measurement underway at ANL. • Remeasurement planned at 14.1 MeV with improved resolution. • Measurements at 8.8, 10, 11.7 MeV. 1987.5 - 1988.9	ANL Tohoku U. BRC	* c *
(n,nem)	6 - 15 MeV (10 %)	• Measurement completed at 14 MeV, presented at Mito Conf. 1988.9 - 1990.6 • none 1990.6 - 1991.10 • DDX measured at OKTAVIAN facility for 15 angles at 14 MeV. Reported at 91 Beijing Symp. Fast Neutron Physics. 1991.10 - • Measurements of the neutron scattering cross section completed at 14.2 MeV. T. Nishino et al.: JAERI-M 94-019, p.230 (1994).	Tohoku U. Osaka U. Rikkyo U.	88 Mito 209 EXFOR 22157 91 Beijing 3 JAERI-M 94-019, 230

Mg-24

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
(n,p)	5 - 15 MeV (5 %)	1985.11 - 1987.5 ・ Measurement planned at ANL. ・ Data are available between 13.3. and 15 MeV.	ANL JAERI(FNS)	c JAERI-1312 (88) EXFOR 22089.004
		1987.5 - 1988.9 ・ Measurements from threshold to 10 MeV completed at ANL. Data processing nearly done. Results from PTB up to 15 MeV reported at Mito.	ANL/PTB	c 88 Mito 1025
		1988.9 - 1990.6 ・ ^{24,25,26}Mg (n,xγ) preliminary measurement being analyzed $2 < E_n < 200$ MeV. Expect to see (n,p,γ)...., High resolution Ge detector. ・ Measurements completed at ANL to 10 MeV. Published. L.P. Geraldo et al. Ann. Nucl. Energy 16, N° 6 p. 293-299 (1989). ・ New evaluation with covariances completed.	LANL(WNR) ANL IRK	c ANE 16, 293 (89) △
		1990.6 - 1991.10 ・ Mg(n,xγ) $3 < E_n < 200$ MeV, $0.2 < E\gamma < 4$ MeV at WNR. Contact: R. Nelson.	LANL	*
		1991.10 -		

Cr-nat

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ Measurement underway at ANL. ・ Measurement of $\sigma_{n,n'}$ (E; E', θ) completed for E_n = 14.1 MeV.	ANL IRK	c *

		• Measurement performed at 14.1 MeV for E_n = 0.4 ～ 14 MeV.	Tohoku U.	c
		1987.5 - 1988.9		
		• Comprehensive scattering measurements ≦ 10 MeV.	ANL	c
		• Measurement completed at 14 MeV, presented at Mito Conf.	Tohoku U.	88 Mito 291 EXFOR 22025
		1988.9 - 1990.6		
		• ^{nat}Cr(n, xγ) preliminary measurement being analyzed 2 < E_n < 200 MeV. Expect to see (n, 2nγ), (n, 3nγ), otheres. Ge detector.	LANL(WNR)	*
(n, nem)	5 - 16 MeV (15 ～ 20 %)	• Work in progress 4.5 - 10 MeV.	ANL	c
		• Measurement planned 1 < E_n < 20 MeV, 3 angles, 50 m FP.	ORNL	c
		1990.6 - 1991.10		
		• Results available to 10 MeV.	ANL	ANL-NDM-114
		• Measurements planned at 5 angles using Ne-213, ～1 < E_n < 20 MeV.	ORNL	*
		1991.10 -		

Mn-55

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5		
		• none		
		1987.5 - 1988.9		
		• Measurement completed at 14 MeV, presented at Mito Conf.	Tohoku U.	88 Mito 291
		1988.9 - 1990.6		
		• ^{55}Mn(n, xγ) preliminary measurement being analyzed 2 < E_n < 200 MeV. Expect to see (n, 2nγ), (n, 3nγ) others. Ge detector	LANL(WNR)	*
(n, nem)	6 - 15 MeV	• Check early ORNL measurement 1 - 20 MeV.	ORNL	△
		1990.6 - 1991.10		

		・ DDX measured at OKTAVIAN facility for 15 angles at 14 MeV. Reported at 91 Beijing Symp. Fast Neutron Physics. 1991.10 -	Osaka U.	91 Beijing 3

Fe-nat

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ LANL has extensively studied high energy region. ・ Measurement of $\sigma_{n,n'}$ (E; E', θ) in progress for E_n = 14.1 MeV. ・ Measurement at 14.1 MeV and 18 MeV completed for E_n = 0.4 MeV, remeasurement at 18 MeV planned. 1987.5 - 1988.9 ・ Comprehensive measurements program ≦ 10 MeV. ・ Measurement completed at 14 MeV, presented at Mito Conf. ・ TOF measurement of absolute cross section $\sigma(\theta)$ for ^{nat}Fe(n,n') at 14.1 MeV. In preparation. ・ $d\sigma_{0,n'}/d\Omega$ measured Sn^{2+} and $^{3-}$ in ^{56}Fe at 21.6 MeV. Data handling in progres. ・ DDX measured at OKTAVIAN for 15 angles at 14.1 MeV. Reported at 88 Mito Conf. 1988.9 - 1990.6 ・ ^{nat}Fe(n,xγ) preliminarly measurement being analyzed (n,n'γ), (n,2n), (n,3n) observed 2 < E_n < 200 MeV. Ge detector. ・ Work in progress, 1.5 - 10 MeV. ・ Analysis of steel transmission benchmark experiment using 14 MeV neutrons. ・ Measurements underway 1 < E_n < 20 MeV, 3 angles. 1990.6 - 1991.10	LANL IRK Tohoku U. ANL Tohoku U. Rikkyo U. Studsvik Osaka U. LANL(WNR) ANL CAD ORNL	c * c c 88 Mito 291 EXFOR 22025 c * 88 Mito 205 * c △ c

(n,nem) (n,n')	5 - 16 MeV (10 %) up to 20 MeV (5 %)	• Neutron emission spectra have been measured down to 80 keV secondary energies at 14 MeV incident energy.	Tohoku U.	INDC(NDS)-281('93) p.27
		• Measurements of neutron emission spectra are in progress for 14.1 MeV and 18.0 MeV incident neutrons.	Tohoku U.	INDC(NDS)-272
		• Measurement is planed at incident energy around 6 MeV.	Tohoku U.	given up
		• Measurement of energy spectra $d^2\sigma(\theta)/d\Omega dE_n$ for $\theta_n < 90°$ at E_n=14.1 MeV. DWBA (DWUCK4) and statistical model (ELIESE3) analyses and deformation parameter (β_2, β_4) determination. Hata, JAERI-M 91-032, p.328.	Rikkyo U.	JAERI-M 91-032, 328
		• DDX reanalysis reported at 91 Beijing Symp. Fast Neutron Physics.	Osaka U.	91 Beijing 3
		• Work in Progress.	ANL	*
		• (n,xn) measurements at 5 scattering angles using Ne-213 detectors for E_n to 20 MeV completed. Data reduction initiated.	ORNL	*
		• EFF validation.	CAD	△
		1991.10 -		
		• DDX measured at 14.2 MeV. T. Nishino et al., JAERI-M 94-019, p.230.	Rikkyo U.	JAERI-M 94-019, 230

Ni, Ni-nat

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5		
		• LANL has extensively studied high energy region.	LANL	c
		• Measurement at 14.1 MeV and 18 MeV completed for $E_{n'}$ = 0.4 MeV, remeasurement at 18 MeV planned.	Tohoku U.	88 Mito 291 EXFOR 22025.
		1987.5 - 1988.9		
		• Comprehensive measurements program ≦ 10 MeV.	ANL	c
		• $d\sigma_{n,n'}/d\Omega$ measured Sn^{2+} in ^{56,60}Ni at 21.6 MeV. Data handling in progres.	Studsvik	*
		1988.9 - 1990.6		
		• ^{nat}Ni(n,xγ) preliminary measurements being analyzed 2 < E_n < 200	LANL(WNR)	*

		MeV. Ge detector.		
		• Work completed, 1.5 - 10 MeV, ^{58}Ni.	ANL	c
		• Analysis of steel transmission benchmark experiment using 14 MeV neutrons.	CAD	△
		• Measurement planned 1 < E_n < 20 MeV, 3 angles.	ORNL	c
		1990.6 - 1991.10		
(n,n')	up to 20 MeV	• Differential cross sections of ^{60}Ni have been measured at 18.5 MeV and coupled channel analyses have been made. Yamanouchi, 91 Jülich 717.	JAERI	91 Jülich 717
(n,nem)	(5 %)	• DDX of ^{nat}Ni measured at OKTAVIAN for 15 angles at 14.1 MeV. Reported at 91 Beijing Symp. Fast Neutron Phys.	Osaka U.	91 Beijing 3
	5 - 16 MeV	• Detailed results for ^{58}Ni to 10 MeV. See NDM-120.	ANL	ANL-NDM-120
	(15 %)			EXFOR 13523.003
		• (n,xn) measurements planned at 5 angles using Ne-213 detector for ~ 1 < E_n < 20 MeV.	ORNL	*
		• EFF validation	CAD	△
		• ^{nat}Ni DDX at 14 MeV.	Tohoku U.	INDC(NDS)-272
		1991.10 -		

Zn-64

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5		
		• Measurement will be performed between 13.3 and 15 MeV.	JAERI(FNS)	c
		• Data obtained in Be(d,n) field; measurements at 14 MeV complete; evaluation of the 14 MeV region.	ANL	*
		1987.5 - 1988.9		
		• Measurements to 10 MeV will eventually be redone at ANL to try and resolve discrepancy.	ANL	given up
		1988.9 - 1990.6		

		• New evaluation with covariances completed.	IRK	△
(n,p)	9 - 15 MeV (5 %)	1990.6 - 1991.10 • Cross sections have been measured at 9.5, 10.3 and 13.3 - 14.9 MeV. Y. Ikeda, 91 Jülich 294. 1991.10 ~	JAERI(FNS)	91 Jülich 294 EXFOR 22209.005

In-115

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 • Data obtained in Be(d,n) field are being analysed. • Precise measurement planned for D-D and D-T fusion neutrons. • Measurement will be performed at 14 MeV.	ANL U. Tokyo JAERI(FNS)	c c c'
		1987.5 - 1988.9 • Comprehensive study of neutron induced reactions in In; in progress at ANL, maximum energy 10 MeV.	ANL	c
		1988.9 - 1990.6 • Work completed, 1.5 - 10 MeV, comprehensive evaluation (ANL/NDM-115).	ANL	ANL/NDM-115
(n,n')	0.8 - 3.0 MeV (5 %) 14 MeV (5 %)	• Double differential neutron emission cross sections have been measured at nine angles (20°, 30°, 50°, 70°, 90°, 110°, 130°, 150° and 160°) with 14.1 MeV neutrons. The experimental and analyzed results have been reported in Phys. Rev. C37, 963 (1988) (Note that natural In sample has been used).	Kyushu U. / Osaka U.	PR C37, 963 (88)
		1990.6 - 1991.10 • Measurement is planned between 0.8 and 1.3 MeV. • Cross sections have been measured at 2 - 3 MeV, 9.5 - 13 MeV and	U. Tokyo JAERI(FNS)	* 91 Jülich 294

		13.2 - 14.9 MeV. Y. Ikeda, 91 Jülich 294. ・ Recent results published in Phys. Rev. 1991.10 -	ANL	EXFOR 22209.008 *

Pb-nat

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ Measurement of $\sigma_{nn'}$ (E; E', θ) in progress for E_n = 14.1 MeV.	IRK	c
		1987.5 - 1988.9 ・ Cross section for the Pb(n,Xn) reaction was measured at 11 MeV. S. Iwasak(Tohoku U.): JAERI-M 87-115, p.187. ・ TOF measurement of absolute cross section $\sigma(\theta)$ for ^{nat}Pb(n,n') at 14.1 MeV. In preparation. ・ Measurement at 14.1 MeV incident energy planned for second half of 1988.	JAERI Rikkyo U. IRK	JAERI-M 87-115,187 * *
(n,nem)	5 - 16 MeV (5 ～ 10 %)	1988.9 - 1990.6 ・ ^{nat}Pb, ^{204,206,207,208}Pb(n,xγ) preliminary measurement being analyzed 2 < E_n < 200 MeV. Ge detector. ・ Neutron emission spectra have been measured down to 80 keV secondary energies at 14 MeV incident energy. M.Baba,88 Mito,229. ・ DDX have been measured at OKTAVIAN facility at 14.1 MeV. A. Takahashi, NST 25, 215 (1988). 1990.6 - 1991.10 ・ Measurement is planed at incident energy around 6 MeV. ・ DDX-measurements on ^{207}Pb and ^{nat}Pb planned for 1992. Measurement done, analysis postponed (lack of manpower). ・ (n,xn) measurements planned at 5 angles using Ne-213 detector for ～ 1 < E_n < 20 MeV.	LANL(WNR) Tohoku U. Osaka U. Tohoku U. CBNM ORNL	* 88 Mito 229 INDC(NDS)-281('93) NST 25, 215 (88) EXFOR 22075, 22076 given up discontinued *

		1991.10 -		

Pb

quantity	energy range (accuracy)	plans for experiments, status of measurements/analysis, remarks	lab.	remarks
		1985.11 - 1987.5 ・ Measurements on some Pb isotopes will be performed.	JAERI(FNS)	c
		1987.5 - 1988.9 ・ ^{204}Pb data published in JAERI-1312 (88).	JAERI(FNS)	JAERI-1312 (88)
(n,2n)	7 - 16 MeV (5 %)	1988.9 - 1990.6 ・ ^{nat}Pb, ^{204,206,207,208}Pb(n,xγ) preliminary measurement being analyzed 2 < E_n < 200 MeV. Ge detector. Data taken on (n,xγ) from which (n,2n) cross section might be deduced via model calculations.	LANL(WNR)	c
		1990.6 - 1991.10 ・ ^{208,207,206}Pb(n,2nγ) measurement in progress, WNR, E_n=3-100 MeV. Contact: R. Nelson. 1991.10 -	LANL(WNR)	*