DOE/NDC-16/U

MASTER

COMPILATION OF REQUESTS FOR NUCLEAR DATA

COMPILED AND EDITED BY THE
NATIONAL NUCLEAR DATA CENTER
FOR THE
DOE NUCLEAR DATA COMMITTEE

April 1979

**BROOKHAVEN NATIONAL LABORATORY
ASSOCIATED UNIVERSITIES, INC.
UPTON, NEW YORK 11973**

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UNDER CONTRACT NO. EY-76-C-02-0016 WITH THE

UNITED STATES DEPARTMENT OF ENERGY

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I. INTRODUCTION

The purpose of this compilation is to summarize the current needs of U.S. Nuclear Energy programs and other applied technologies for nuclear data. It is the result of a biennial review in which the Department of Energy (DOE) and contractors, Department of Defense Laboratories and contractors, and other interested groups have been asked to review and revise their requests for nuclear data. Because of the changing and continuing character of the need for this information, as well as the probability that current measurements may satisfy a portion of the requests, this report is to be regarded as a working document. In fact, it is maintained on a continuous access basis as a computer file by the National Nuclear Data Center (NNDC).

At the present time, as this document indicates, stated needs fall primarily in the area of neutron cross sections. However, no such limitation is intended. The DOE/NDC actively solicits and will include in future compilations requests for other types of nuclear data where there is a clearly stated need in an applied program.

The present request list is produced from a computerized data file by the NNEC. The system permits full use of upper case, lower case, Greek symbols, subscripts and superscripts. The contents of this document, except for requests withheld by sponsoring organizations, will be included in the forthcoming edition of WRENDATA published by the International Atomic Energy Agency.

This request list is ordered by target nucleus (Isotope) and then reaction type (Quantity). An attempt has been made to describe the Quantity in standard notation. In appendix A the user will find a glossary of these symbols with a short explanatory text.

Each request is assigned a unique identifying number. The first two digits of this number give the year the request was initiated. In the column headed -Year-, the year of the last revision to the request is given. All requests for a given Isotope and Quantity are grouped (or blocked) together. The requests in a block are followed by any status comments.

Each request has a unique Isotope, Quantity and Requester. The requester is identified by laboratory, last name, and sponsoring U.S. government agency as BET, STEEN, DNR. All requesters along with their addresses and phone numbers are given in appendix B.

All requests must give the energy (or range of energy) for the incident particle when appropriate. The accuracy needed in percent is also given. The error quoted is assumed to be 1σ at each measured point in the energy range requested unless a comment specifies otherwise. Sometimes a range of accuracy indicated by two values is given or some statement is given in the free text comments. An incident energy resolution in percent is sometimes given.

II. PROCEDURES FOR SUBMITTING REQUESTS

Requests for measurements of nuclear data should be transmitted by the requesting laboratories to the appropriate sponsoring division of the DOE or directly to the National Nuclear Data Center at Brookhaven National Laboratory. Requesters comments should include statements of the importance and application of the request.

In accepting a request for nuclear data, the DOE/NDC assumes that the originator or his sponsoring agency has established that the existing data base has been reviewed and determined to be inadequate. In this regard comments on evaluations that may be necessary or the need for data resulting from further theoretical work are included in the scope of the Request Compilation.

III. PRIORITY ASSIGNMENTS

The exact meaning of priority is difficult to assess but the following definitions, which closely resemble those used by both NEANDC and the NEACRP, have been adopted by the DOE/NDC.

PRIORITY I. Nuclear data which satisfy the criteria of Priority II and which have been selected for maximum practicable attention taking into account the urgency of nuclear energy program requirements.*

PRIORITY II. Nuclear data that will be required during the next few years in the applied nuclear energy programs (for example, data needed to make the best use of reactor fuel and construction materials such as neutron moderators, absorbers, and radiation shields, space and bio-medical applications,- data required for better understanding of some significant aspect of reactor behavior).

PRIORITY III. Nuclear data of more general interest and data required to fill out the body of information needed for nuclear technology.

*For example, the NEACRP assigns its highest priorities for reactor measurements as follows:
The highest priority should be given to requests for nuclear data for reactors to be built in the near future if these data are still necessary to predict the different reactor properties after all information from integral experiments and operating reactors has been used,- or information on an important reactor parameter is in principle attainable through mathematical calculations from nuclear data only,- or these data are needed for materials required in reactor physics measurements.

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Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
1-H-1	$\sigma_{n, Tot}$ (E)	II	1.00 keV 15.0 MeV	.3		NBS CASWELL	NBS	1978	78175
						To distinguish between Lomon-Wilson and Hopkins-Breit parameterizations.			
1-H-1	$\sigma_{n, \gamma}$ (E)		THERMAL	.3		BET STEEN	DNR	1978	78179
						To help resolve discrepancies in thermal criticality parameters.			
1-H-2	$\sigma_{n, n}$ (E)	III	1.00 eV 1.00 keV	1.		CBE VISNER	DRRT	1976	76072
						For thermal HWR applications.			
1-H-2	$\sigma_{n, Sct}$ (E)	I	1.00 eV 1.00 keV	.5		BET STEEN	DNR	1978	72002
		I	1.00 keV 10.0 MeV	5.		BET STEEN			
						Need free atom scattering cross section. For thermal reactor analysis.			
1-H-2	$\sigma_{n, 2n}$ (E)	I	THRESH 20.0 MeV	5.		LAS STEWART	OMA	1976	76043
		I	THRESH 20.0 MeV	5.		BET STEEN	DNR	1978	78180
						For thermal reactor analysis.			
1-H-2	$\sigma_{d, o}$ (E)	I	THERMAL 2.00 MeV	10. 30.		DOE HEAD	OFE	1978	78071
						Accuracy 10.0 % relative, 30.0 % absolute required. Required to calculate heating of plasma fuel by fusion product alphas.			
1-H-3	$\sigma_{n, n}$ (E, θ)	II	14.0 MeV	10.		LAS MOTZ	OMA	1965	65001
						Absolute values required.			
1-H-3	$\sigma_{n, 2n}$ (E)	III	12.5 MeV	10.		LAS MOTZ	OMA	1965	65002
						Absolute values required.			
1-H-3	$\sigma_{d, o}$ (E)	I	10.0 keV	10. 30.		DOE HEAD	OFE	1978	78069
						Accuracy 10.0 % relative, 30.0 % absolute required.			
1-H-3	$\sigma_{t, o}$ (E)	I	10.0 keV	10. 30.		DOE HEAD	OFE	1978	78070
						Accuracy 10.0 % relative, 30.0 % absolute required. Data required to analyze background neutrons and estimate tritium ion temperatures.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
1-H-3	$\sigma_{\alpha,\alpha}$ (E)	I	THERMAL 2.00 MeV	10.	30.	DOE HEAD	OFE	1978	78072
						Accuracy 10.0 % relative, 30.0 % absolute required. Required to calculate heating of plasma fuel by fusion product alphas.			
2-HE-3	$\sigma_{n,p}$ (E)	II	13.0 keV 3.00 MeV	1.		DOE HEMMIG	DRRT	1969	69001
						Absolute values required. Intermediate accuracy useful. For use as secondary standard.			
		I	1.00 keV .200 MeV	2.		NBS CASWELL	NBS	1978	69003
		I	.200 MeV 3.00 MeV	3.		NBS CASWELL	NBS		
						Absolute values required. Increasingly useful as a standard and for spectrometers.			
3-LI	$\sigma_{\alpha,n}$ (E)	II	.100 MeV 6.50 MeV	6.		LAS WALTON	DSS	1978	78167
						Thick target yields required. Relative error of 3.0 percent needed. Alpha energy resolution 100 keV.			
3-LI-6	$\sigma_{n,n}$ (E, θ)	II	14.0 MeV	5.		LAS YOUNG	CMA	1978	78044
						Complete angular distribution required.			
3-LI-6	$\sigma_{n,2n}$ (E)	I	8.00 MeV 16.0 MeV	5.		LAS MOTZ	OMA	1966	66001
						Absolute values required. Coincidence technique required. Not needed at 14.0 MeV. Needed to determine true energy dependence.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
3-LI-6	$\sigma_{n,t}$ (E)	I	1.00 keV 3.00 MeV	1.		ANL TILL	DRRT	1969	69009
		I	1.00 keV 3.00 MeV	1.		DOE HEMMIG			
		Accuracy of 3% useful. Energy resolution must reproduce true shape. For use as standard.							
		II	.500 keV 3.00 MeV	1.	3.	LAS HALE	OMA	1978	69011
		Absolute values required. For use as standard.							
		II	.500 MeV 13.0 MeV	3.	5.	LAS MOTZ	OMA	1976	72008
		Absolute values required.							
		I	10.0 eV .100 MeV	1.		NBS CASWELL	NBS	1978	72009
		For use as standard below 1 MeV.							
		I	.500 keV .100 MeV	5.		NBS CASWELL	NBS	1976	76109
Secondary energy-angle distribution wanted. Needed for use of Li^6 (n,o) standard.									
3-LI-6	$\sigma_{n,x\alpha}$ (E)	II	1.00 keV 18.0 MeV	10.		DOE HEAD	OFE	1978	78160
		Needed to describe breeding in D-T systems.							
3-LI-6	$\sigma_{n,x\alpha}$ (E)	II	1.00 keV 18.0 MeV	10.		HED MC ELROY	DRRT	1969	69012
For use as fluence monitor. Total He production for mass spectrometer.									
3-LI-6	$\sigma_{He-3,p}$ (E)	I	.500 MeV 2.00 MeV	10.	30.	DOE HEAD	OFE	1978	78073
Accuracy 10.0 % relative, 30.0 % absolute required. For advanced fuel fusion devices.									
3-LI-6	$\sigma_{Li-6,x}$ (E)	I	.500 MeV 2.00 MeV	10.	30.	DOE HEAD	OFE	1978	78074
Cross section for all significant charged particle reactions wanted. Accuracy 10.0 % relative, 30.0 % absolute required. For advanced fuel fusion devices.									
3-LI-7	$\sigma_{n,2n}$ (E)	I	8.00 MeV 16.0 MeV	5.		LAS MOTZ	OMA	1965	65004
Absolute values required. Omit 14 MeV point.									
3-LI-7	$\sigma_{n,xn}$ (E, θ , E_n)	I	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78042
For shielding, activation and transport studies of next generation D-T reactor designs.									

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
3-LI-7	σ_n, x_p (E)	I	3.00 MeV 14.0 MeV	10.		DOE HEAD Total hydrogen production wanted. For radiation damage studies of next generation D-T reactor designs.	OFE	1978	78051
3-LI-7	σ_n, x_p (E, θ , E_p)	II	14.0 MeV			DOE HEAD Accuracy to be determined. Data required for radiation damage calculations.	OFE	1978	78135
3-LI-7	σ_n, n, t (E)	II	11.0 MeV 14.0 MeV	10.		DOE HEAD Needed to describe breeding in D-T systems.	OFE	1978	78159
3-LI-7	σ_n, x_a (E)	I	9.00 MeV 14.0 MeV	10.		DOE HEAD Total helium production wanted. For radiation damage studies of next generation D-T reactor designs.	OFE	1978	78060
3-LI-7	σ_n, x_a (E, θ , E_a)	II	14.0 MeV			DOE HEAD Accuracy to be determined. Data required for radiation damage calculations.	OFE	1978	78114
4-BE-9	σ_n, x_n (E, θ , E_n)	II	1.80 MeV 5.00 MeV	15.	5%	DOE HEMMIG Accuracy 50 ns at 2 - 3 MeV. Resolution on E_n - 500keV. For Be moderated fast spectrum reactors and for thermal breeders or converters and neutron economy calculations. Must record neutrons down to a few hundred keV.	DRRT	1962	62002
		II	9.00 MeV 14.0 MeV	10.		DOE HEAD Data needed for shielding, activation and neutron transport calculations.	OFE	1978	78079
4-BE-9	σ_n, x_p (E)	II	9.00 MeV 14.0 MeV	10.	50.	DOE HEAD Total hydrogen production wanted. Accuracy to be determined from sensitivity studies. For radiation damage calculations.	CFE	1978	78103
4-BE-9	σ_n, x_p (E, θ , E_p)	II	14.0 MeV			DOE HEAD Accuracy to be determined. Data required for radiation damage calculations.	OFE	1978	78145

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
4-BE-9	$\sigma_{n,x\alpha}$ (E)	II	9.00 MeV 14.0 MeV	10.	50.	DOE HEAD	OFE	1978	78091
						Accuracy to be determined from sensitivity studies. For radiation damage calculations.			
4-BE-9	$\sigma_{n,x\alpha}$ (E, θ ,E $_{\alpha}$)	II	14.0 MeV			DOE HEAD	OFE	1978	78124
						Accuracy to be determined. Data required for radiation damage calculations.			
4-BE-9	$\sigma_{\alpha,n}$ (E)	II	1.100 MeV 6.50 MeV	6.		LAS WALTON	DSS	1978	78168
						Thick target yields required. Relative error of 3.0 percent needed. Alpha energy resolution 100 keV.			
5-B	$\sigma_{n,Tot}$ (E)	II	4.50 MeV 15.0 MeV	3.	4.	DOE HEMMIG	DRRT	1976	74001
						For shielding effect of B ₄ C.			
5-B	$\sigma_{n,n}$ (E, θ)	II	4.50 MeV 15.0 MeV	15.		DOE HEMMIG	DRRT	1976	74003
5-B	$\sigma_{n,n}$ (E, θ ,E $_{n'}$)	II	THRESH 15.0 MeV	10.	10.%	DOE HEMMIG	DRRT	1974	74005
						15% in energy spectra. 20% in angular distribution if not isotropic. ΔE_n - 10%.			
5-B	$\sigma_{n,xy}$ (E, θ_y ,E $_y$)	II	1.00 keV 15.0 MeV	15.	10.%	DOE HEMMIG	DRRT	1974	74007
						20% in angular distribution if not isotropic. ΔE_y - 10%.			
5-B-10	$\sigma_{n,xy}$ (E, θ_y ,E $_y$)	II	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78156
						Data needed for blanket, shield and magnet heat deposition calculations.			
5-B-10	$\sigma_{n,xn}$ (E, θ ,E $_{n'}$)	II	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78088
						Data needed for shielding, activation and neutron transport calculations.			
5-B-10	$\sigma_{n,xp}$ (E)	II	9.00 MeV 14.0 MeV	10.	50.	DOE HEAD	OFE	1978	78112
						Accuracy to be determined from sensitivity studies. For radiation damage calculations.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
5-B-10	$\sigma_{n,xp}(E, \theta, E_p)$	11	14.0 MeV			DOE HEAD	OFE	1978	76154
						Accuracy to be determined. Data required for radiation damage calculations.			
5-B-10	$\sigma_{n,\alpha}(E)$	I	30.0 keV .100 MeV	1.		ANL TILL	DRRT	1976	69373
		I	30.0 keV .100 MeV	1.		DOE HEMMIG			
		I	30.0 keV .100 MeV	1.		ORL MAIENSCHIEIN			
		I	.100 MeV .300 MeV	3.		ANL TILL			
		I	.100 MeV .300 MeV	3.		DOE HEMMIG			
		I	.100 MeV .300 MeV	3.		ORL MAIENSCHIEIN			
		I	.300 MeV 10.0 MeV	5.		ANL TILL			
		I	.300 MeV 10.0 MeV	5.		DOE HEMMIG			
		I	.300 MeV 10.0 MeV	5.		ORL MAIENSCHIEIN			
						Absolute values required for 480 keV gamma. 3% accuracy useful to 100 keV, 10% above. For use as standard.			
		I	50.0 keV .200 MeV	1.		NBS CASWELL	NBS	1978	72028
						Both total(n,c) and (n, α_1) cross sections required.			
		I	.500 keV .200 MeV	5.		NBS CASWELL	NBS	1976	76110
						Secondary energy-angle distribution wanted. Needed for thin foil measurements with B^{10} (n, α) standard.			
		I	10.0 mV 10.0 eV	1.		NBS CASWELL	NBS	1978	78176
						To see whether B is 1/V in this region.			
STATUS									

79				BNL	Stelts has measured distribution at 2 and 24 keV.				
79				ORE	Overly has data above 200 keV.				
5-B-10	$\sigma_{n,\alpha}(E)$	RATIO							
		I	1.00 keV .100 MeV	1.		ANL TILL	DRRT	1969	69364
		I	1.00 keV .100 MeV	1.		DOE HEMMIG			
		I	1.00 keV .100 MeV	1.		ORL MAIENSCHIEIN			
		I	.100 MeV .300 MeV	3.		ANL TILL			
		I	.100 MeV .300 MeV	3.		DOE HEMMIG			
		I	.100 MeV .300 MeV	3.		ORL MAIENSCHIEIN			
		I	.300 MeV 10.0 MeV	5.		ANL TILL			
		I	.300 MeV 10.0 MeV	5.		DOE HEMMIG			
		I	.300 MeV 10.0 MeV	5.		ORL MAIENSCHIEIN			
						Absolute values required. α_0/α_1 ratio needed for both α and γ detection. 3% accuracy useful to 100 keV, 10% above. For use as standard.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
5-B-10	$\sigma_{n,x_0}(E)$	I	1.00 keV 18.0 MeV	10.		HED MC ELROY	DRRT	1969	69026
						For use as fluence monitor. Total He production for mass spectrometer.			
5-B-10	$\sigma_{n,x_0}(E, \theta, E_0)$	II	9.00 MeV 14.0 MeV	10. 50.		DOE HEAD	OFE	1978	78100
						Accuracy to be determined from sensitivity studies. For radiation damage calculations.			
5-B-10	$\sigma_{n,x_0}(E, \theta, E_0)$	II	14.0 MeV			DOE HEAD	OFE	1978	78133
						Accuracy to be determined. Data required for radiation damage calculations.			
5-E-11	$\sigma_{n,x_\gamma}(E, \theta_\gamma, E_\gamma)$	II	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78157
						Data needed for blanket, shield and magnet heat deposition calculations.			
5-B-11	$\sigma_{n,x_n}(E, \theta, E_n)$	I	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78047
						For shielding, activation and transport studies of next generation D-T reactor designs.			
5-B-11	$\sigma_{n,x_p}(E)$	I	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78056
						Total hydrogen production wanted. For radiation damage studies of next generation D-T reactor designs.			
5-B-11	$\sigma_{n,x_p}(E, \theta, E_p)$	II	14.0 MeV			DOE HEAD	OFE	1978	78140
						Accuracy to be determined. Data required for radiation damage calculations.			
5-B-11	$\sigma_{n,x_0}(E)$	I	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78065
						Total helium production wanted. For radiation damage studies of next generation D-T reactor designs.			
5-B-11	$\sigma_{n,x_0}(E, \theta, E_0)$	II	14.0 MeV			DOE HEAD	OFE	1978	78119
						Accuracy to be determined. Data required for radiation damage calculations.			
5-B-11	$\sigma_{p,n}(E)$	I	.500 MeV 2.00 MeV	10. 30.		DOE HEAD	OFE	1978	78075
						Accuracy 10.0 % relative, 30.0 % absolute required. For advanced fuel fusion devices.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
5-B-11	$\sigma_{a,n}$ (E)	I	.500 MeV 2.00 MeV	10. 30.		DOE HEAD Accuracy 10.0 % relative, 30.0 % absolute required. For advanced fuel fusion devices.	OFE	1978	78077
5-B-11	$\sigma_{a,p}$ (E)	I	.500 MeV 2.00 MeV	10. 30.		DOE HEAD Accuracy 10.0 % relative, 30.0 % absolute required. For advanced fuel fusion devices.	OFE	1978	78076
6-C	$\sigma_{n,Tot}$ (E)	I	20.0 MeV 50.0 MeV	10. 15.		DOE HEAD For shield design in FMIT facility.	OFE	1978	78003
6-C	$\sigma_{n,n}$ (E, θ)	II	14.0 MeV	5.		LAS YOUNG Complete angular distribution required.	OMA	1978	76045
		I	20.0 MeV 50.0 MeV	10. 15.		DOE HEAD For shield design in FMIT facility.	OFE	1978	78006
6-C	$\sigma_{n,N_{tot}}$ (E)	I	20.0 MeV 50.0 MeV	10. 15.		DOE HEAD For shield design in FMIT facility.	OFE	1978	78009
6-C	$\sigma_{n,n'}(E, \theta_y)$	I	5.00 MeV 20.0 MeV	5.		DR. PEREY For 4.43 MeV gammas only. Measure for at least four angles.	DRRT	1978	74177
6-C	$\sigma_{n,Xn}(E, \theta, E_n)$	I	9.00 MeV 14.0 MeV	10.		DOE HEAD For shielding, activation and transport studies of next generation D-T reactor designs.	OFE	1978	78043
6-C	$\sigma_{n,Xp}(E)$	I	9.00 MeV 14.0 MeV	10.		DOE HEAD For radiation damage studies of next generation D-T reactor designs.	OFE	1978	78052
6-C	$\sigma_{n,Xp}(E, \theta, E_p)$	II	14.0 MeV			DOE HEAD Accuracy to be determined. Data required for radiation damage calculations.	OFE	1978	78136
6-C	$\sigma_{n,Xa}(E)$	I	9.00 MeV 14.0 MeV	10.		DOE HEAD For radiation damage studies of next generation D-T reactor designs.	OFE	1978	78061

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
6-C	$\sigma_{n,\alpha} (E, \theta, E_\alpha)$	II	14.0 MeV			DOE HEAD Accuracy to be determined. Data required for radiation damage calculations.	OFE	1978	78115
6-C	$\sigma_{a,n} (E)$	II	.100 MeV 6.50 MeV	6.		LAS WALTON Thick target yields required. Relative error of 3.0 percent needed. Alpha energy resolution 100 keV.	DSS	1978	78169
6-C-12	$\sigma_{n,\alpha} (E)$	II	THRESH 30.0 MeV	10.		NBS CASWELL Measurement at threshold and several energies throughout the range should be sufficient. Needed for energy deposition calculations for radiotherapy.	DBER	1978	76111
6-C-12	$\sigma_{n,n',3\alpha} (E)$	I	THRESH 20.0 MeV	15.		ORL PEREY Spectra at several angles required. Must record neutrons down to a few hundred keV.	DRRT	1978	74174
		II	14.0 MeV	10.		LAS STEWART NBS CASWELL Measurement at threshold and several energies throughout the range should be sufficient. Needed for energy deposition calculations for radiotherapy.	OMA	1978	74223
		I	THRESH 30.0 MeV	10.		NBS CASWELL Measurement at threshold and several energies throughout the range should be sufficient. Needed for energy deposition calculations for radiotherapy.	DBER	1978	76112
7-N	$\sigma_{n,n} (E, \theta)$	I	3.50 MeV 6.00 MeV	5.		LAS YOUNG At several energies covering the cross section minimum.	OMA	1976	74157
		II	14.0 MeV	5.		LAS YOUNG Complete angular distribution required.	OMA	1978	76046
7-N	$\sigma_{n,\gamma} (E)$	II	1.00 keV 1.00 MeV	10.	20.%	DOE HEMMIG Resonance parameters needed.	DRRT	1974	74009
7-N-14	$\sigma_{n,xn} (E, \theta, E_n)$	I	11.0 MeV 14.0 MeV	10.		LAS STEWART Spectra at several angles required. Must record neutrons down to a few hundred keV.	OMA	1976	74213
		II	9.00 MeV 14.0 MeV	10.		DOE HEAD Data needed for shielding, activation and neutron transport calculations.	OFE	1978	78085

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
7-N-14	σ_n, x_p (E)	II	9.00 MeV 14.0 MeV	10.	50.	DOE HEAD	OFE	1978	78109
						Accuracy to be determined from sensitivity studies. For radiation damage calculations.			
7-N-14	σ_n, x_p (E, θ , E_p)	II	14.0 MeV			DOE HEAD	OFE	1978	78151
						Accuracy to be determined. Data required for radiation damage calculations.			
7-N-14	σ_n, x_a (E)	II	9.00 MeV 14.0 MeV	10.	50.	DOE HEAD	OFE	1978	78097
						Accuracy to be determined from sensitivity studies. For radiation damage calculations.			
7-N-14	σ_n, x_a (E, θ , E_a)	II	14.0 MeV			DOE HEAD	OFE	1978	78130
						Accuracy to be determined. Data required for radiation damage calculations.			
8-0	σ_n, Tot (E)	I	20.0 MeV 50.0 MeV	10.	15.	DOE HEAD	OFE	1978	78204
						For shield design in FMIT facility.			
8-0	σ_n, n (E)	I	5.00 keV 10.0 MeV		5.	BET STEEN	DNR	1976	76050
						To resolve discrepancies between calculated and measured multiplication factors in small critical facilities.			
8-0	σ_n, n (E, θ)	I	10.0 keV 16.0 MeV		5.	DOE HEMING	DRRT	1974	66028
						Needed for fast reactor reflector worths.			
		II	2.35 MeV		5.	LAS YOUNG	OMA	1976	74159
						At several energies near minimum.			
		II	14.0 MeV		5.	LAS YOUNG	OMA	1978	76047
						Complete angular distribution required.			
		I	5.00 keV 10.0 MeV		5.	BET STEEN	DNR	1976	76051
						To resolve discrepancies between calculated and measured multiplication factors in small critical facilities.			
		I	10.0 keV 20.0 MeV		5.	CBE VISNER	DRRT	1976	76073
						Improved leakage calculations for U^{233} and U^{235} benchmarks.			
		I	20.0 MeV 50.0 MeV	10.	15.	DOE HEAD	OFE	1978	78206
						For shield design in FMIT facility.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
8-0	$\sigma_{n,n'}(E)$	II	6.50 MeV 15.0 MeV	10.		LAS YOUNG	OMA	1976	74160
						Excitation function for first two levels (need not be separated) required. Determine important structure in excitation function. Measurements at several angles required. For air transport.			
8-0	$\sigma_{n,N\alpha n}(E)$	I	20.0 MeV 50.0 MeV	10. 15.		DOE HEAD	OFE	1978	78208
						For shield design in FMIT facility.			
8-0	$\sigma_{n,xn}(E,\theta,E_n)$	II	11.0 MeV 14.0 MeV	10.		LAS STEWART	OMA	1978	74214
						Spectra at several angles required. Must record neutrons down to a few hundred keV.			
		II	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78089
						Data needed for shielding, activation and neutron transport calculations.			
8-0	$\sigma_{n,xp}(E)$	II	9.00 MeV 14.0 MeV	10. 50.		DOE HEAD	OFE	1978	78113
						Accuracy to be determined from sensitivity studies. For radiation damage calculations.			
8-0	$\sigma_{n,xp}(E,\theta,E_p)$	II	14.0 MeV			DOE HEAD	OFE	1978	78155
						Accuracy to be determined. Data required for radiation damage calculations.			
8-0	$\sigma_{n,x\alpha}(E)$	II	9.00 MeV 14.0 MeV	10. 50.		DOE HEAD	OFE	1978	78101
						Accuracy to be determined from sensitivity studies. For radiation damage calculations.			
8-0	$\sigma_{n,x\alpha}(E,\theta,E_\alpha)$	II	14.0 MeV			DOE HEAD	OFE	1978	78134
						Accuracy to be determined. Data required for radiation damage calculations.			
8-0	$\sigma_{\alpha,n}(E)$	II	1.100 MeV 6.50 MeV	6.		LAS WALTON	DSS	1978	78170
						Thick target yields required. Relative error of 3.0 percent needed. Alpha energy resolution 100 keV.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
8-O-16	$\sigma_{n,n'}(E,\theta)$	II	4.0 MeV	10.		LAS STEWART	OMA	1978	74222
						Cross section for first two levels in O-16 required (need not be separated). Measurements needed at several angles.			
8-O-16	$\sigma_{n,\alpha}(E)$	II	THRESH 30.0 MeV	10.		NBS CASWELL	DBER	1978	76113
						Measurement at threshold and several energies throughout the range should be sufficient. Needed for energy deposition calculations for radiotherapy.			
8-O-16	$\sigma_{n,n,\alpha}(E)$	II	THRESH 30.0 MeV	10.		NBS CASWELL	DBER	1978	76114
						Measurement at threshold and several energies throughout the range should be sufficient. Needed for energy deposition calculations for radiotherapy.			
8-O-16	$\sigma_{n,n,\alpha,\gamma}(E)$	I	THRESH 30.0 MeV	10.		NBS CASWELL	DBER	1978	76115
						At least one measurement urgently needed for normalization. Measurement at threshold and several energies throughout the range should be sufficient. Needed for energy deposition calculations for radiotherapy.			
8-O-18	$\sigma_{\alpha,n}(E)$	III	THRESH 7.00 MeV	10.	200K	BET STEEN	DNR	1976	56010
						Needed for intrinsic source for clean uses.			
9-F-19	$\sigma_{n,n'}(E,\theta,E_{n'})$	I	100 MeV 20.0 MeV	15.		ORL PEREY	DRRT	1978	74169
						Only data at 14 MeV and below 3.6 MeV.			
9-F-19	$\sigma_{n,abs}(E)$	I	2.00 MeV 20.0 MeV	5.		ORL PEREY	DRRT	1978	74170
9-F-19	$N_{n,\gamma}(E,E_{\gamma})$	II	10.0 keV 1.00 MeV	5.		ORL PEREY	DNA	1974	74180
9-F-19	$\sigma_{n,xn}(E,\theta,E_{n'})$	II	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78087
						Data needed for shielding, activation and neutron transport calculations.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
9-F-19	$\sigma_{n,xp}$ (E)	II	9.00 MeV 14.0 MeV	10.	50.	DOE HEAD	OFE	1978	78111
						Total hydrogen production wanted. Accuracy to be determined from sensitivity studies. For radiation damage calculations.			
9-F-19	$\sigma_{n,xp}$ (E, θ , E_p)	II	14.0 MeV			DOE HEAD	OFE	1978	78153
						Accuracy to be determined. Data required for radiation damage calculations.			
9-F-19	$\sigma_{n,x\alpha}$ (E)	II	9.00 MeV 14.0 MeV	10.	50.	DOE HEAD	OFE	1978	78099
						Total helium production wanted. Accuracy to be determined from sensitivity studies. For radiation damage calculations.			
9-F-19	$\sigma_{n,x\alpha}$ (E, θ , E_α)	II	14.0 MeV			DOE HEAD	OFE	1978	78132
						Accuracy to be determined. Data required for radiation damage calculations.			
9-F-19	$\sigma_{\alpha,n}$ (E)	II	.100 MeV 6.50 MeV		6.	LAS WALTON	DSS	1978	78171
						Thick target yields required. Relative error of 3.0 percent needed. Alpha energy resolution 100 keV.			
11-NA-23	$\sigma_{n,Tot}$ (E)	I	10.0 keV 7.00 MeV	2.	5.	DOE HEMMIG	DRRT	1974	74010
		I	7.00 MeV 15.0 MeV		5.	DOE HEMMIG			
11-NA-23	$\sigma_{n,n}$ (E, θ)	II	10.0 keV 15.0 MeV		10.	DOE HEMMIG	DRRT	1974	74012
						15% in angular distribution.			
11-NA-23	$\sigma_{n,n}$ (E, E_n)	II	2.00 MeV 10.0 MeV	10.	10.%	ANL TILL	DRRT	1962	62006
		II	2.00 MeV 10.0 MeV	10.	10.%	DOE HEMMIG			
						Total integral over 4π required. Spectra at several angles if significantly anisotropic. $\Delta E_n \leq 10\%$.			
11-NA-23	$\sigma_{n,n}$ (E, θ , E_n)	II	THRESH 2.00 MeV	5.	10.%	DOE HEMMIG	DRRT	1974	74014
		II	2.00 MeV 15.0 MeV	10.	10.%	DOE HEMMIG			
						Accuracy of 15% in energy spectra. $\Delta E_n = 10\%$.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
11-NA-23	$\sigma_{n,\gamma}(E)$	II	1.00 keV - 100 MeV	20.		DOE HEMMIG	DRRT	1974	74016
						Accuracy of .5 mb or 20% wanted.			
11-NA-23	$N_{n,\gamma}(E, E_\gamma)$	II	3.00 keV	10.		ANL TILL	DRRT	1972	72332
						Sufficient accuracy in E_γ (3 keV) to compare with E_γ (thermal).			
11-NA-23	$\sigma_{n,x\gamma}(E, \theta_\gamma, E_\gamma)$	II	2.00 MeV - 15.0 MeV	15.	10.%	DOE HEMMIG	DRRT	1974	74018
						20% in angular distribution if not isotropic. $\Delta E_\gamma = 10\%$.			
11-NA-23	$\sigma_{n,2n}(E)$	II	THRESH - 16.0 MeV	15.		DOE HEMMIG	DRRT	1974	74020
						Needed for coolant activation.			
11-NA-23	Resonance Parameters	I	3.00 keV	10.		ANL TILL	DRRT	1962	62008
		I	3.00 keV	10.		DOE HEMMIG			
						Elastic and gamma widths wanted.			
12-MG	$N_{n,\gamma}(E, E_\gamma)$	II	10.0 keV - 1.00 MeV	10.		ORL PEREY	DNA	1974	74181
12-MG	$\sigma_{n,xp}(E)$	II	THRESH - 20.0 MeV	10.		ORL PEREY	DNA	1978	74189
12-MG	$\sigma_{n,x\alpha}(E)$	II	THRESH - 20.0 MeV	10.		ORL PEREY	DNA	1978	74190
12-MG	$\sigma_{\alpha,n}(E)$	II	.100 MeV - 6.50 MeV	6.		LAS WALTON	DSS	1978	78174
						Thick target yields required. Relative error of 3.0 percent needed. Alpha energy resolution 100 keV.			
13-AL-27	$\sigma_{n,xn}(E, \theta, E_n, I)$	II	11.0 MeV - 14.0 MeV	10.		LAS STEWART	OMA	1976	74215
						Spectra at several angles required. Must record neutrons down to a few hundred keV.			
		II	9.00 MeV - 14.0 MeV	10.		DOE HEAD	OFE	1978	78078
						Data needed for shielding, activation and neutron transport calculations.			
13-AL-27	$\sigma_{n,xp}(E)$	II	9.00 MeV - 14.0 MeV	10. 50.		DOE HEAD	OFE	1978	78102
						Accuracy to be determined from sensitivity studies. For radiation damage calculations.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
13-AL-27	$\sigma_{n,xp}(E,\theta,E_p)$	II	14.0 MeV			DOE HEAD	OFE	1978	78144
						Accuracy to be determined. Data required for radiation damage calculations.			
13-AL-27	$\sigma_{n,xa}(E)$	II	9.00 MeV 14.0 MeV	10.	50.	DOE HEAD	OFE	1978	78090
						Accuracy to be determined from sensitivity studies. For radiation damage calculations.			
13-AL-27	$\sigma_{n,xa}(E,\theta,E_p)$	II	14.0 MeV			DOE HEAD	OFE	1978	78123
						Accuracy to be determined. Data required for radiation damage calculations.			
13-AL-27	$\sigma_{a,n}(E)$	II	100 MeV 6.50 MeV	6.		LAS WALTON	DSS	1978	78172
						Thick target yields required. Relative error of 3.0 percent needed. Alpha energy resolution 100 keV.			
14-SI	$\sigma_{n,Tot}(E)$	I	20.0 MeV 50.0 MeV	10.	15.	DOE HEAD	OFE	1978	78001
						For shield design in FMIT facility.			
14-SI	$\sigma_{n,n}(E,\theta)$	I	20.0 MeV 50.0 MeV	10.	15.	DOE HEAD	OFE	1978	78004
						For shield design in FMIT facility.			
14-SI	$\sigma_{n,N_{on}}(E)$	I	20.0 MeV 50.0 MeV	10.	15.	DOE HEAD	OFE	1978	78007
						For shield design in FMIT facility.			
14-SI	$\sigma_{n,xn}(E,\theta,E_n)$	I	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78045
						For shielding, activation and transport studies of next generation D-T reactor designs.			
14-SI	$\sigma_{n,xp}(E)$	II	THRESH 20.0 MeV	10.		ORL PEREY	DNA	1978	74191
		I	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78054
						For radiation damage studies of next generation D-T reactor designs.			
14-SI	$\sigma_{n,xp}(E,\theta,E_p)$	II	14.0 MeV			DOE HEAD	OFE	1978	78138
						Accuracy to be determined. Data required for radiation damage calculations.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
14-Si	$\sigma_{n,x\alpha}$ (E)	II	THRESH 20.0 MeV	10.		ORL PEREY	DNA	1978	74192
		I	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78063
						For radiation damage studies of next generation D-T reactor designs.			
14-Si	$\sigma_{n,x\alpha}$ (E, θ , E_{α})	II	4.0 MeV			DOE HEAD	OFE	1978	78117
						Accuracy to be determined. Data required for radiation damage calculations.			
16-S	$\sigma_{n,Tot}$ (E)	II	10.0 keV .500 MeV	3.		DOE HEMMIG	DRRT	1974	74021
						For shielding effect of concrete.			
16-S	$\sigma_{n,\gamma}$ (E)	II	10.0 keV .500 MeV	10.		DOE HEMMIG	DRRT	1974	74023
						For shielding effect of concrete.			
16-S	$N_{n,\gamma}$ (E, E_{γ})	II	10.0 keV .500 MeV	15.		DOE HEMMIG	DRRT	1974	74025
						For shielding effect of concrete.			
20-CA	$\sigma_{n,Tot}$ (E)	I	20.0 MeV 50.0 MeV	10. 15.		DOE HEAD	OFE	1978	78002
						For shield design in FMIT facility.			
20-CA	$\sigma_{n,n}$ (E, θ)	I	20.0 MeV 50.0 MeV	10. 15.		DOE HEAD	OFE	1978	78005
						For shield design in FMIT facility.			
20-CA	$\sigma_{n,Nor}$ (E)	I	20.0 MeV 50.0 MeV	10. 15.		DOE HEAD	OFE	1978	78008
						For shield design in FMIT facility.			
20-CA	$\sigma_{n,\gamma}$ (E)	II	1.00 keV .500 MeV	10.		DOE HEMMIG	DRRT	1974	74029
						For shielding effect of concrete.			
20-CA	$N_{n,\gamma}$ (E, E_{γ})	II	2.00 keV 1.00 MeV	5.		ORL PEREY	DNA	1974	74183
20-CA	$\sigma_{\alpha,n}$ (E)	II	.100 MeV 6.50 MeV	6.		LAS WALTON	DSS	1978	78173
						Thick target yields required. Relative error of 3.0 percent needed. Alpha energy resolution 100 keV.			
21-SC-45	$\sigma_{n,\gamma}$ (E)	II	1.00 keV 18.0 MeV	10.		HED MC ELFOY	DRRT	1969	69065
						Activation is required. For use as fluence monitor.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
22-Tl	$\sigma_{n,n} (E, \theta)$	I	15.0 MeV 35.0 MeV	10.	50.	DOE HEAD	OFE	1978	78033
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
22-Tl	$\sigma_{n,x\gamma} (E, \theta_\gamma, E_\gamma)$	III	10.0 keV 16.0 MeV	20.		ORL BARTINE	DRRT	1976	69068
						For use in shielding calculations.			
		II	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78158
						Data needed for blanket, shield and magnet heat deposition calculations.			
22-Tl	$\sigma_{n,xn} (E, \theta, E_n)$	I	15.0 MeV 35.0 MeV	10.	50.	DOE HEAD	OFE	1978	78039
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
		II	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78080
						Data needed for shielding, activation and neutron transport calculations.			
22-Tl	$\sigma_{n,xp} (E)$	I	15.0 MeV 35.0 MeV	10.	50.	DOE HEAD	OFE	1978	78027
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
		II	9.00 MeV 14.0 MeV	10.	50.	DOE HEAD	OFE	1978	78104
						Accuracy to be determined from sensitivity studies. For radiation damage calculations.			
22-Tl	$\sigma_{n,xp} (E, \theta, E_p)$	II	14.0 MeV			DOE HEAD	OFE	1978	78146
						Accuracy to be determined. Data required for radiation damage calculations.			
22-Tl	$\sigma_{n,x\alpha} (E)$	II	9.00 MeV 14.0 MeV	10.	50.	DOE HEAD	OFE	1978	78092
						Accuracy to be determined from sensitivity studies. For radiation damage calculations.			
		I	15.0 MeV 35.0 MeV	10.	50.	DOE HEAD	OFE	1978	78212
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
22-Tl	$\sigma_{n,x\alpha} (E, \theta, E_\alpha)$	II	14.0 MeV			DOE HEAD	OFE	1978	78125
						Accuracy to be determined. Data required for radiation damage calculations.			
22-Tl-46	$\sigma_{n,p} (E)$	II	1.00 MeV 18.0 MeV	10.	100K	HED MC ELROY	DRRT	1969	69069
						Activation is required. Energy intervals - 500 keV. For use as fluence monitor.			

Isotope	Quantity		Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
22-Tl-47	$\sigma_{n,p}(E)$	II	1.00 MeV	10.	100K	HED MC ELROY	DRRT	1969	69071
						Energy requested is a minimum value only. Activation is required. Energy intervals - 1 MeV. For use as fluence monitor.			
22-Tl-48	$\sigma_{n,p}(E)$	II	1.00 MeV	10.	100K	HED MC ELROY	DRRT	1969	69073
						Energy requested is a minimum value only. Activation is required. Energy intervals - 500 keV. For use as fluence monitor.			
23-V	$\sigma_{n,n}(E,\theta)$	III	1.40 MeV 10.0 MeV	10.	500K	ANL TILL	DRRT	1962	62009
		III	1.40 MeV 10.0 MeV	10.	500K	DOE HEMMIG			
		I	15.0 MeV 35.0 MeV	10.	50.	DOE HEAD	OFE	1978	78032
						Angular resolution 10°. Accuracy to be determined from sensitivity studies. For material damage calculations.			
23-V	$\sigma_{n,n}(E,E_n)$	III	1.50 MeV 10.0 MeV	15.		ANL TILL	DRRT	1962	62011
		III	1.50 MeV 10.0 MeV	15.		GEB GREEBLER			
		III	1.50 MeV 10.0 MeV	15.		DOE HEMMIG			
						Total integral over 4 π required. Spectra at several angles if significantly anisotropic.			
23-V	$\sigma_{n,abs}(E)$	III	1.00 keV .150 MeV	10.	10.%	ANL TILL	DRRT	1962	62015
		III	1.00 keV .150 MeV	10.	10.%	GEB GREEBLER			
		III	1.00 keV .150 MeV	10.	10.%	DOE HEMMIG			
						To resolve discrepancies in existing data.			
23-V	$\sigma_{n,xn}(E,\theta,E_n)$	I	15.0 MeV 35.0 MeV	10.	50.	DOE HEAD	OFE	1978	78038
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
		II	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78086
						Data needed for shielding, activation and neutron transport calculations.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
23-V	σ_n, x_p (E)	I	15.0 MeV 35.0 MeV	10. 50.		DOE HEAD	OFE	1978	78026
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
		II	9.00 MeV 14.0 MeV	10. 50.		DOE HEAD	OFE	1978	78110
						Accuracy to be determined from sensitivity studies. For radiation damage calculations.			
23-V	σ_n, x_p (E, θ , E_p)	II	14.0 MeV			DOE HEAD	OFE	1978	78152
						Accuracy to be determined. Data required for radiation damage calculations.			
23-V	σ_n, x_o (E)	II	9.00 MeV 14.0 MeV	10. 50.		DOE HEAD	OFE	1978	78098
						Accuracy to be determined from sensitivity studies. For radiation damage calculations.			
		I	15.0 MeV 35.0 MeV	10. 50.		DOE HEAD	OFE	1978	78211
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
23-V	σ_n, x_o (E, θ , E_o)	II	14.0 MeV			DOE HEAD	OFE	1978	78131
						Accuracy to be determined. Data required for radiation damage calculations.			
24-CR	σ_n, Tot (E)	II	1.00 keV 20.0 MeV	3.		DOE HEMMIG	DRRT	1974	72035
						5% accuracy minima. Energy resolution - sufficient to resolve major structure.			
		II	1.00 keV 20.0 MeV	3.		GEB GREEBLER	DRRT	1974	74031
						5% accuracy in deep minima.			
24-CR	σ_n, n (E, θ)	III	.100 MeV 15.0 MeV	10.		DOE HEMMIG	DRRT	1974	74032
		I	15.0 MeV 35.0 MeV	10. 50.		DOE HEAD	OFE	1978	78217
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
24-CR	σ_n, n (E, E_n)	II	.500 MeV 15.0 MeV	10.		GEB GREEBLER	DRRT	1974	66012
		II	.500 MeV 15.0 MeV	10.		DOE HEMMIG			
						Total integral over 4 π required. Spectra at several angles if significantly anisotropic. Energy resolution required to determine major structure.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
24-CR	$\sigma_{n,\gamma} (E)$	II	1.00 keV .200 MeV	15.	20.%	GEB GREEBLER	DRRT	1976	72036
		II	1.00 keV .200 MeV	15.	20.%	DOE HEMMIG			
						Resonance parameters needed, especially gamma widths.			
24-CR	$\sigma_{n,\gamma} (E, E_\gamma)$	II	15.0 MeV	10.		DOE HEMMIG	DRRT	1974	72037
						Energy requested is a maximum value only. Gamma-ray intervals - 500 kev. For use in shielding calculations.			
24-CR	$\sigma_{n,x_n} (E, \theta, E_n)$	I	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	73049
						For shielding activation and transport studies of next generation D-T reactor designs.			
		I	15.0 MeV 35.0 MeV	10.	50.	DOE HEAD	OFE	1978	78218
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
24-CR	$\sigma_{n,x_p} (E)$	I	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78058
						For radiation damage studies of next generation D-T reactor designs.			
		I	15.0 MeV 35.0 MeV	10.	50.	DOE HEAD	OFE	1978	78215
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
24-CR	$\sigma_{n,x_p} (E, \theta, E_p)$	II	14.0 MeV			DOE HEAD	OFE	1978	78142
						Accuracy to be determined. Data required for radiation damage calculations.			
24-CR	$\sigma_{n,x_o} (E)$	I	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78067
						For radiation damage studies of next generation D-T reactor designs.			
		I	15.0 MeV 35.0 MeV	10.	50.	DOE HEAD	OFE	1978	78216
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
24-CR	$\sigma_{n,x_o} (E, \theta, E_o)$	II	14.0 MeV			DOE HEAD	OFE	1978	78121
						Accuracy to be determined. Data required for radiation damage calculations.			
24-CR-50	Resonance Parameters	II	.100 MeV	10.		ORL PEREY	DRRT	1974	74033
						Energy requested is a maximum value only. Neutron width, gamma width, spin and parity wanted.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
24-CR-52	Resonance Parameters	II	.100 MeV	10.		ORL PEREY	DRRT	1974	74034
						Energy requested is a maximum value only. Neutron width, gamma width, spin and parity wanted.			
24-CR-53	Resonance Parameters	II	.100 MeV	10.		ORL PEREY	DRRT	1974	74035
						Energy requested is a maximum value only. Neutron width, gamma width, spin and parity wanted.			
25-MN-55	$\sigma_{n, Tot}$ (E)	II		4.		ORL PEREY	DRRT	1974	74195
						Need values in Fe windows.			
25-MN-55	$\sigma_{n, \gamma}$ (E)	II	1.00 mV .500 eV	1.		BET STEEN	DNR	1976	76052
						Needed to interpret manganese bath measurements of nu and eta.			
25-MN-55	Capture RI	II	.500 eV	5.		BET STEEN	DNR	1974	74036
						Energy requested is a minimum value only. Needed for analysis of manganese bath experiments.			
26-FE	$\sigma_{n, Tot}$ (E)	I	20.0 MeV 50.0 MeV	10. 15.		DOE HEAD	OFE	1978	78203
						For shield design in FMIT facility.			
26-FE	$\sigma_{n, n}$ (E, θ)	I	.500 MeV 3.00 MeV	5.	1.2	ORL BARTINE	DRRT	1969	69085
						Required at several peaks and in valleys. Required in valleys for shielding.			
						ANL TILL	DRRT	1974	69086
						Energy resolution - to at least resolve intermediate structure.			
						DOE HEMMIG	DRRT	1974	69087
						DOE HEAD	OFE	1978	78030
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
						DOE HEAD	OFE	1978	78205
						For shield design in FMIT facility.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
26-FE	$\sigma_{n,n'} (E, E_{n'})$	I	.850 MeV 2.00 MeV	5.	20K	GEB GREEBLER	DRRT	1974	65016
		I	.850 MeV 2.00 MeV	5.	20K	DOE HEMMIG			
		II	2.00 MeV 5.00 MeV	10.	20K	GEB GREEBLER			
		II	2.00 MeV 5.00 MeV	10.	20K	DOE HEMMIG			
						Total integral over 4m required. Spectra at several angles if significantly anisotropic. $\Delta E_{\gamma} = 20$ keV			
		II	THRESH 15.0 MeV	10.		ORL BARTINE	DRRT	1976	76075
						To resolve spectra measurements from stainless steel.			
26-FE	$\sigma_{n,non} (E)$	I	20.0 MeV 50.0 MeV	10.	15.	DOE HEAD	OFE	1978	78207
						For shield design in FMIT facility.			
26-FE	$\sigma_{n,\gamma} (E)$	I	1.00 keV 1.00 MeV	5.	10.	ORL PEREY	DRRT	1974	74040
		I	1.00 keV 1.00 MeV	5.	10.	DOE HEMMIG			
		I	1.00 keV 1.00 MeV	5.	10.	ANL TILL			
26-FE	$N_{n,\gamma} (E, E_{\gamma})$	I	24.0 keV		10.	ORL PEREY	DRRT	1978	74179
						No measurements available in 24 keV iron window.			
		II	1.00 keV 1.00 MeV	5.		ORL PEREY	DRRT	1978	74184
		I	1.00 keV 5.00 keV	5.		WEW DONCALS	DRRT	1976	76039
26-FE	$\sigma_{n,xn} (E, e, E_{n'})$	I	11.0 MeV 14.0 MeV	10.		LAS STEWART	OMA	1976	74216
						Spectra at several angles required. Must record neutrons down to a few hundred keV.			
		I	15.0 MeV 35.0 MeV	10.	50.	DOE HEAD	OFE	1978	78035
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
		I	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78048
						For shielding, activation and transport studies of next generation D-T reactor designs.			
26-FE	$\sigma_{n,xp} (E)$	I	15.0 MeV 35.0 MeV	10.	50.	DOE HEAD	OFE	1978	78024
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
		I	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78057
						For radiation damage studies of next generation D-T reactor designs.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
26-FE	$\sigma_{n,xp}(E, \theta, E_p)$	II	14.0 MeV			DOE HEAD	OFE	1978	78141
						Accuracy to be determined. Data required for radiation damage calculations.			
26-FE	$\sigma_{n,x\alpha}(E)$	I	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78066
						For radiation damage studies of next generation D-T reactor designs.			
		I	15.0 MeV 35.0 MeV	10. 50.		DOE HEAD	OFE	1978	78209
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
26-FE	$\sigma_{n,x\alpha}(E, \theta, E_p)$	II	14.0 MeV			DOE HEAD	OFE	1978	78120
						Accuracy to be determined. Data required for radiation damage calculations.			
26-FE-54	$\sigma_{n,p}(E)$	II	1.00 MeV 18.0 MeV	10. 250K		HEO MC ELROY	DRRT	1969	69099
						Activation wanted. Energy intervals - 500 keV. For use as fluence monitor.			
		I	1.00 MeV 40.0 MeV	20.		DOE HEAD	OFE	1978	78018
						Dosimetry for FMIT facility.			
26-FE-54	$\sigma_{n,\alpha}(E)$	I	1.00 MeV 40.0 MeV	20.		DOE HEAD	OFE	1978	78019
						Dosimetry for FMIT facility.			
26-FE-54	Resonance Parameters	II	.100 MeV	10.		ORL PEREY	DRRT	1974	74043
		II	.100 MeV	10.		DOE HEMMIG			
		II	.100 MeV	10.		ANL TILL			
						Energy requested is a maximum value only. Neutron width, gamma width, spin and parity wanted.			
26-FE-56	$\sigma_{n,\alpha}(E)$	II	THERMAL 10.0 MeV	15.		GEB GREEBLER	DRRT	1972	72040
						To determine He production in fast reactors.			
26-FE-56	Resonance Parameters	I	.400 MeV	10.		ORL PEREY	DRRT	1974	74046
		I	.400 MeV	10.		DOE HEMMIG			
		I	.400 MeV	10.		ANL TILL			
						Energy requested is a maximum value only. Neutron width, gamma width, spin and parity wanted.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
26-FE-57	Resonance Parameters	II	.100 MeV	10.		ORL PEREV	DRRT	1974	74049
		II	.100 MeV	10.		DOE HEYMIG			
		II	.100 MeV	10.		ANL TILL			
						Energy requested is a maximum value only. Neutron width, gamma width, spin and parity wanted.			
26-FE-58	$\sigma_{n,\gamma}$ (E)	II	1.00 keV 18.0 MeV	10.		HED MC ELROY	DRRT	1969	69104
						Activation is required. For use as fluence monitor.			
27-CO-58	$\sigma_{n,\gamma}$ (E)		RADIOACTIVE 71.3 DAY						
		II		10.		BET STEEN	DNR	1974	72046
						All energies. Thermal cross section most important. Resonance integral also needed. For interpretation of Ni ⁵⁸ (n,p) fluence monitor data.			
27-CO-58	$\sigma_{n,\gamma}$ (E)		METASTABLE 9.1 HR						
		II		10.		BET STEEN	DNR	1974	72045
						All energies. Thermal cross section most important. Resonance integral also needed. For interpretation of Ni ⁵⁸ (n,p) fluence monitor data.			
27-CO-59	$\sigma_{n,\gamma}$ (E)	II	1.00 keV 18.0 MeV	10.		HED MC ELROY	DRRT	1969	69106
						Activation is required. To ground and metastable states. For use as a fluence monitor.			
27-CO-59	$\sigma_{n,2n}$ (E)	I	THRESH 40.0 MeV	20.		DOE HEAD	OFE	1978	78014
						Dosimetry for FMIT facility.			
27-CO-59	$\sigma_{n,3n}$ (E)	I	THRESH 40.0 MeV	20.		DOE HEAD	OFE	1978	78015
						Dosimetry for FMIT facility.			
27-CO-59	$\sigma_{n,4n}$ (E)	I	THRESH 40.0 MeV	20.		DOE HEAD	OFE	1978	78016
						Dosimetry for FMIT facility.			
27-CO-59	$\sigma_{n,p}$ (E)	I	1.00 MeV 40.0 MeV	20.		DOE HEAD	OFE	1978	78017
						Dosimetry for FMIT facility.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
28-Ni	$\sigma_{n, Tot} (E)$	II	1.00 keV 20.0 MeV	3.		DOE HEMMIG	DRRT	1974	72047
						Accuracy needed to 3-5% in deep minima. Energy resolution sufficient to resolve major structure. For use in Inconel shield calculations.			
28-Ni	$\sigma_{n, n} (E, \theta)$	II	.100 MeV 15.0 MeV	5. 10.		ANL TILL	DRRT	1974	72048
		II	.100 MeV 15.0 MeV	5. 10.		DOE HEMMIG			
		Energy resolution - resolution of intermediate structure probably adequate.							
		I	15.0 MeV 35.0 MeV	10. 50.		DOE HEAD	OFE	1978	78031
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
28-Ni	$\sigma_{n, n} (E, E_n)$	II	THRESH 15.0 MeV	10. 10.%		GEB GREEBLER	DRRT	1976	66024
		II	THRESH 15.0 MeV	10. 10.%		DOE HEMMIG			
		Total integral over 4π required. Spectra at several angles if significantly anisotropic. $\Delta E_n = 10\%$. Energy resolution required to determine major structure. For Inconel shield design.							
28-Ni	$\sigma_{n, \gamma} (E)$	II	1.00 keV 1.00 MeV	10.		ORL PEREY	DRRT	1974	74053
		II	1.00 keV 1.00 MeV	10.		DOE HEMMIG			
		II	1.00 keV 1.00 MeV	10.		ANL TILL			
		II	1.00 keV 1.00 MeV	10.		WEW DONCALS			
28-Ni	$\sigma_{n, xy} (E, E_\gamma)$	I	THERMAL .600 MeV	20.		DOE HEMMIG	DRRT	1976	72052
						All gammas are of interest. For shielding and gamma heating calculations.			
28-Ni	$\sigma_{n, xn} (E, \theta, E_n)$	I	15.0 MeV 35.0 MeV	10. 50.		DOE HEAD	OFE	1978	78037
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
		I	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78044
						For shielding, activation and transport studies of next generation D-T reactor designs.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
28-NI	$\sigma_{n,xp}$ (E)	I	15.0 MeV 35.0 MeV	10.	50.	DOE HEAD	OFE	1978	78025
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
		I	5.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78053
						For radiation damage studies of next generation D-T reactor designs.			
28-NI	$\sigma_{n,xp}$ (E, θ , E_p)	II	14.0 MeV			DOE HEAD	OFE	1978	78137
						Accuracy to be determined. Data required for radiation damage calculations.			
28-NI	$\sigma_{n,\alpha}$ (E)	II	THERMAL 10.0 MeV	15.		GEB GREEBLER	DRRT	1972	72051
						To determine He production in fast reactors.			
28-NI	$\sigma_{n,x\alpha}$ (E)	I	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78062
						For radiation damage studies of next generation D-T reactor designs.			
		I	5.0 MeV 35.0 MeV	10.	50.	DOE HEAD	OFE	1978	78210
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
28-NI	$\sigma_{n,x\alpha}$ (E, θ , E_α)	II	14.0 MeV			DOE HEAD	OFE	1978	78116
						Accuracy to be determined. Data required for radiation damage calculations.			
28-NI-58	$\sigma_{n,2n}$ (E)	I	THRESH 40.0 MeV	20.		DOE HEAD	OFE	1978	78020
						Dosimetry for FMIT facility.			
28-NI-58	$\sigma_{n,3n}$ (E)	I	THRESH 40.0 MeV	20.		DOE HEAD	OFE	1978	78021
						Dosimetry for FMIT facility.			
28-NI-58	$\sigma_{n,p}$ (E)	III	THRESH 15.0 MeV	5.		BET STEEN	DNR	1976	72055
						For use as fluence monitor.			
		I	1.00 MeV 40.0 MeV	20.		DOE HEAD	OFE	1978	78022
						Dosimetry for FMIT facility.			
28-NI-58	Resonance Parameters	II	.100 MeV	10.		ORL PEREY	DRRT	1974	74056
		II	.100 MeV	10.		DOE HEMMIG			
		II	.100 MeV	10.		ANL TILL			
						Energy requested is a maximum value only. Neutron width, gamma width, spin and parity wanted.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
28-NI-60	$\sigma_{n,p}$ (E)	I	1.00 MeV 40.0 MeV	20.		DOE HEAD	OFE	1978	78023
						Dosimetry for FMIT facility.			
28-NI-60	Resonance Parameters	II	.100 MeV	10.		ORL PEREY	DRRT	1974	74059
		II	.100 MeV	10.		DOE HEMMIG			
		II	.100 MeV	10.		ANL TILL			
						Energy requested is a maximum value only.			
						Neutron width, gamma width, spin and parity wanted.			
28-NI-61	Resonance Parameters	III	.100 MeV	10.		ORL PEREY	DRRT	1974	74062
		III	.100 MeV	10.		DOE HEMMIG			
		III	.100 MeV	10.		ANL TILL			
						Energy requested is a maximum value only.			
						Neutron width, gamma width, spin and parity wanted.			
28-NI-62	Resonance Parameters	III	.100 MeV	10.		ORL PEREY	DRRT	1974	74065
		III	.100 MeV	10.		DOE HEMMIG			
		III	.100 MeV	10.		ANL TILL			
						Energy requested is a maximum value only.			
						Neutron width, gamma width, spin and parity wanted.			
28-NI-63	Half-life	II		10.		BET STEEN	DNR	1976	76054
						Flux monitor from Cu(n,p) reaction.			
28-NI-63	$\sigma_{n,\gamma}$ (E)	II	1.00 MeV 10.0 MeV	10.		BET STEEN	DNR	1976	76053
						Flux monitor from Cu(n,p) reaction.			
28-NI-64	Resonance Parameters	III	.100 MeV	10.		ORL PEREY	DRRT	1974	74068
		III	.100 MeV	10.		DOE HEMMIG			
		III	.100 MeV	10.		ANL TILL			
						Energy requested is a maximum value only.			
						Neutron width, gamma width, spin and parity wanted.			
29-CU	$\sigma_{n,n}$ (E,e)	I	15.0 MeV 35.0 MeV	10. 50.		DOE HEAD	OFE	1978	78034
						Accuracy to be determined from sensitivity studies.			
						For material damage calculations.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
29-CU	$\sigma_{n,xn} (E, \theta, E_n)$	I	13.0 MeV 35.0 MeV	10.	50.	DOE HEAD	OFE	1978	78040
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
29-CU	$\sigma_{n,xn} (E, \theta, E_n)$	I	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78046
						For shielding, activation and transport studies of next generation D-T reactor designs.			
29-CU	$\sigma_{n,xp} (E)$	I	15.0 MeV 35.0 MeV	10.	50.	DOE HEAD	OFE	1978	78028
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
29-CU	$\sigma_{n,xp} (E, \theta, E_p)$	I	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78055
						For radiation damage studies of next generation D-T reactor designs.			
29-CU	$\sigma_{n,xp} (E, \theta, E_p)$	II	14.0 MeV			DOE HEAD	OFE	1978	73139
						Accuracy to be determined. Data required for radiation damage calculations.			
29-CU	$\sigma_{n,x\alpha} (E)$	I	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78064
						For radiation damage studies of next generation D-T reactor designs.			
29-CU	$\sigma_{n,x\alpha} (E)$	I	15.0 MeV 35.0 MeV	10.	50.	DOE HEAD	OFE	1978	78213
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
29-CU	$\sigma_{n,x\alpha} (E, \theta, E_\alpha)$	II	14.0 MeV			DOE HEAD	OFE	1978	78118
						Accuracy to be determined. Data required for radiation damage calculations.			
29-CU-63	$\sigma_{n,\gamma} (E)$	II	THERMAL 1.00 keV	2.	5.	DOE HEMMIG	DRRT	1967	67001
						Accuracy - 2% near thermal, 5% above thermal. For detector applications.			
		II	1.00 keV 18.0 MeV	10.		HED MC ELROY	DRRT	1969	69132
						Activation of Cu ⁶⁴ is required. For use as fluence monitor.			
29-CU-63	$\sigma_{n,\gamma} (E)$	II	1.00 nV 15.0 MeV	5.		BET STEEN	DNR	1976	76056
						Needed for long term flux monitor.			
29-CU-63	$\sigma_{n,p} (E)$	II	THRESH 15.0 MeV	5.		BET STEEN	DNR	1976	76055
						Needed for long term flux monitor.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
29-CU-63	$\sigma_{n,\alpha}$ (E)	11	5.00 MeV 18.0 MeV	10.		HED MC ELROY Activation is required. For use as fluence monitor.	DRRT	1969	69133
29-CU-65	$\sigma_{n,\gamma}$ (E)	11	THERMAL 1.00 keV	2. 5.		DOE HEMMIG Accuracy - 2% near thermal, 5% above thermal. For detector applications.	DRRT	1967	67002
36-KR-82	$\sigma_{n,\gamma}$ (E)	11	40.0 eV	10.		NBS CASWELL Values for a few higher resonances also needed. Needed to ground, first and second excited states for gamma ray laser.	NBS	1976	76116
36-KR-83	Resonance Parameters	11	1.00 mV 1.00 keV 1.00 mV 1.00 keV	10. 10.		BET STEEN KAP FEINER For fission product absorption calculation.	DNR	1976	67190
40-ZR	$\sigma_{n,n}$ (E, θ)	11	.200 MeV 1.50 MeV 7.00 MeV 14.0 MeV	10. 20.	5. % 2.5 %	KAP FEINER KAP FEINER To resolve discrepancies in existing data.	DNR	1969	69295
40-ZR	$\sigma_{n,\gamma}$ (E)	11	THERMAL 1.00 keV 1.00 mV 50.0 keV	5. 10.		RL ORTON For reactor moderation and reactivity effects. BET STEEN Low resolution measurement above thermal desired. Want 2 percent accuracy in thermal value. For verification of recent measurements.	DFCP DNR	1974 1976	67005 76057
40-ZR	$\sigma_{n,xn}$ (E, θ , E_n)	1	3.00 MeV 14.0 MeV 3.00 MeV 14.0 MeV	10. 10.	10. % 10. %	KAP FEINER $\Delta E_n = 10\%$. For design of pressurized water reactors using Zr. ANL TILL $\Delta E_n = 10\%$.	DNR DRRT	1974 1974	67003 67004
40-ZR	Capture R1	1	.500 eV .500 eV	2. 2.		KAP FEINER BET STEEN Energy requested is a minimum value only. Shielded integrals down to 0.4 times dilute integral also wanted. To resolve discrepancies in existing data.	DNR	1978	69143

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
40-ZR-93	$\sigma_{n,\gamma}$ (E)	II	1.00 keV 10.0 MeV	20.		HED SCHENTER	DRRT	1974	74071
						Calculation of fission product poison for fast reactors.			
40-ZR-95	$\sigma_{n,\gamma}$ (E)		RADIOACTIVE 65.5 DAY						
		III	1.00 eV 10.0 keV	20.		BET STEEN	DNR	1976	67010
		II	.500 eV 10.0 keV	10. 20.		KAP FEINER			
						Thermal cross section and RI wanted. Accuracy - 10% if $\sigma > 100$ barns, 20% if 10-100 barns. Energies above 1 eV of interest to give - 10% in RI if > 1000 barns, 20% if 100-1000 barns. Decays to important fission product.			
		II	1.00 keV 10.0 MeV	20.		HED SCHENTER	DRRT	1974	74073
						Calculation of fission product poison for fast reactors.			
40-ZR-96	Resonance Parameters	I	.300 keV	10.		KAP FEINER	DNR	1974	74074
						Neutron and gamma widths required. Needed to verify measurement on 300 eV resonance and remove discrepancies.			
41-NB-93	$\sigma_{n,n}$ (E, θ)	I	15.0 MeV 35.0 MeV	10. 50.		DOE HEAD	OFE	1978	78221
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
41-NB-93	$\sigma_{n,\gamma}$ (E)	II	1.00 keV .100 MeV	10.		DOE HEMMIG	DRRT	1962	62049
		II	1.00 keV .100 MeV	10.		ANL TILL			
						Look for non-1/v below 1 eV. Accuracy - 5% in calculated dilute and self-shielded resonance integral. For fast reactor calculations, to resolve discrepancies in thermionic reactor worths.			
41-NB-93	$\sigma_{n,xn}$ (E, θ , E_n)	II	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78081
						Data needed for shielding, activation and neutron transport calculations.			
		I	.5.0 MeV 35.0 MeV	10. 50.		DOE HEAD	OFE	1978	78222
						Accuracy to be determined from sensitivity studies. For material damage calculations.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
41-NB-93	$\sigma_{n,xp}$ (E)	II	9.00 MeV 14.0 MeV	10.	50.	DOE HEAD	OFE	1978	78105
						Accuracy to be determined from sensitivity studies. For radiation damage calculations.			
		I	15.0 MeV 35.0 MeV	10.	50.	DOE HEAD	OFE	1978	78219
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
41-NB-93	$\sigma_{n,xp}$ (E, θ , E_p)	II	14.0 MeV			DOE HEAD	OFE	1978	78147
						Accuracy to be determined. Data required for radiation damage calculations.			
41-NB-93	$\sigma_{n,x0}$ (E)	II	9.00 MeV 14.0 MeV	10.	50.	DOE HEAD	OFE	1978	78093
						Accuracy to be determined from sensitivity studies. For radiation damage calculations.			
		I	15.0 MeV 35.0 MeV	10.	50.	DOE HEAD	OFE	1978	78220
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
41-NB-93	$\sigma_{n,x0}$ (E, θ , E_0)	II	14.0 MeV			DOE HEAD	OFE	1978	78126
						Accuracy to be determined. Data required for radiation damage calculations.			
41-NB-95	$\sigma_{n,\gamma}$ (E)	RADIOACTIVE II THERMAL	35.1 DAY			KAP FEINER	DNR	1967	67012
				20.		Thermal average useful. Accuracy - 20% if absorption cross section is 10-100 barns, 10% if greater. Decays to important fission product poison.			
42-MO	$\sigma_{r,n}$ (E, E_n)	III	1.50 MeV 3.00 MeV	20.	20.%	ANL TILL	DRRT	1972	72070
		III	1.50 MeV 3.00 MeV	20.	20.%	DOE HEMMIG			
						Total integral over 4π is required. Spectra at several angles if significantly anisotropic. $\Delta E_n = 20\%$.			
42-MO	$\sigma_{n,\gamma}$ (E)	III	1.00 keV 1.00 MeV	10.		DOE HEMMIG	DRRT	1972	72072
						To resolve discrepancy in reactivity worth measurements.			
42-MO	$\sigma_{n,xn}$ (E, θ , E_n)	II	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78084
						Data needed for shielding, activation and neutron transport calculations.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
42-MO	$\sigma_{n,xp}$ (E)	II	9.00 MeV 14.0 MeV	10.	50.	DOE HEAD	OFE	1978	78108
						Accuracy to be determined from sensitivity studies. For radiation damage calculations.			
42-MO	$\sigma_{n,xp}$ (E, θ , E_p)	II	14.0 MeV			DOE HEAD	OFE	1978	78150
						Accuracy to be determined. Data required for radiation damage calculations.			
42-MO	$\sigma_{n,x\alpha}$ (E)	II	9.00 MeV 14.0 MeV	10.	50.	DOE HEAD	OFE	1978	78096
						Accuracy to be determined from sensitivity studies. For radiation damage calculations.			
42-MO	$\sigma_{n,x\alpha}$ (E, θ , E_α)	II	14.0 MeV			DOE HEAD	OFE	1978	78129
						Accuracy to be determined. Data required for radiation damage calculations.			
42-MO-95	Capture RI	III	.500 eV 10.0 keV	10.		BET STEEN	DNR	1976	74075
						Major fission product for thermal reactors.			
42-MO-99	$\sigma_{n,\gamma}$ (E)	RADIOACTIVE 66 HR				BET STEEN	DNR	1976	67013
		III	1.00 μ V 1.00 keV	20.		KAP FEINER			
		III	1.00 μ V 1.00 keV	20.					
						Resonance parameters also wanted. Accuracy - 10% if $\sigma > 100$ barns, 20% if 10-100 barns. Energies above 1 eV of interest to give - 10% in RI if > 1000 barns, 20% if 100-1000 barns. Decays to important fission products.			
43-TC-99	$\sigma_{n,\gamma}$ (E)	II	1.00 μ V 10.0 keV	10.		BET STEEN	DNR	1976	74076
						Thermal cross section and RI wanted. Important fission product for thermal reactors.			
44-RU-101	$\sigma_{n,\gamma}$ (E)	III	1.00 μ V 10.0 keV	10.		BET STEEN	DNR	1976	74077
						Thermal cross section and RI wanted. Calculation of fission product poison for thermal reactors.			
		I	1.00 keV 10.0 MeV	10.		HED SCHENTER	DRRT	1974	74078
						Calculation of fission product poison for fast reactors.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
44-RU-103	$\sigma_{n,\gamma}$ (E)	RADIOACTIVE 39.6 DAY							
		III	1.00 mV 1.00 keV	20.		BET STEEN	DNR	1967	67015
		III	1.00 mV 1.00 keV	20.		KAP FEINER			
						Accuracy - 10% if $\sigma > 100$ barns, 20% if 10-100 barns. Energies above 1 eV of interest to give - 10% in RI if > 1000 barns, 20% if 100-1000 barns. For calculation of fission product poisons.			
		II	1.00 keV 10.0 MeV	20.		HED SCHENTER	DRRT	1974	74079
						Calculation of fission product poison for fast reactors.			
44-RU-104	$\sigma_{n,\gamma}$ (E)	RADIOACTIVE 4.35 MIN							
		I	1.00 keV 10.0 MeV	10.		HED SCHENTER	DRRT	1974	74081
						Calculation of fission product poison for fast reactors.			
44-RU-106	$\sigma_{n,\gamma}$ (E)	RADIOACTIVE 2.18 HOUR							
		I	1.00 keV 10.0 MeV	10		HED SCHENTER	DRRT	1974	74082
						Calculation of fission product poison for fast reactors.			
45-RH-103	$\sigma_{n,\gamma}$ (E)								
		II	1.00 mV 1.00 eV	10.		GEB GREEBLER	DRRT	1967	67018
						Energies above 1 eV of interest to give RI to 10%. For calculation of fission product poisons.			
45-RH-105	$\sigma_{n,\gamma}$ (E)	RADIOACTIVE 35.5 HR							
		II	1.00 mV 1.00 eV	10.		GEB GREEBLER	DRRT	1967	67019
						For calculation of fission product poisons.			
46-PD-105	$\sigma_{n,\gamma}$ (E)								
		I	1.00 keV 10.0 MeV	10.		HED SCHENTER	DRRT	1974	74086
						Calculation of fission product poison for fast reactors.			
46-PD-107	$\sigma_{n,\gamma}$ (E)	RADIOACTIVE 6.5X(10**6)YR							
		I	1.00 keV 10.0 MeV	10.		HED SCHENTER	DRRT	1974	74084
						Calculation of fission product poison for fast reactors.			
47-AG-109	$\sigma_{n,\gamma}$ (E)								
		II	1.00 mV 1.00 eV	10.		GEB GREEBLER	DRRT	1967	67021
						Fission product poison.			
50-SN	$\sigma_{n,n}$ (E, θ)								
		I	15.0 MeV 35.0 MeV	10. 50.		DOE HEAD	OFE	1978	78035
						Accuracy to be determined from sensitivity studies. For material damage calculations.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
50-SN	$\sigma_{n,xn}(E, \theta, E_n)$	I	15.0 MeV 35.0 MeV	10.	50.	DOE HEAD	OFE	1978	78041
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
50-SN	$\sigma_{n,xn}(E)$	II	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	73083
						Data needed for shielding, activation and neutron transport calculations.			
50-SN	$\sigma_{n,xp}(E)$	I	15.0 MeV 35.0 MeV	10.	50.	DOE HEAD	OFE	1978	78029
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
50-SN	$\sigma_{n,xp}(E, \theta, E_p)$	II	9.00 MeV 14.0 MeV	10.	50.	DOE HEAD	OFE	1978	78107
						Accuracy to be determined from sensitivity studies. For radiation damage calculations.			
50-SN	$\sigma_{n,xp}(E, \theta, E_p)$	II	14.0 MeV			DOE HEAD	OFE	1978	78149
						Accuracy to be determined. Data required for radiation damage calculations.			
50-SN	$\sigma_{n,x\alpha}(E)$	II	9.00 MeV 14.0 MeV	10.	50.	DOE HEAD	OFE	1978	78095
						Accuracy to be determined from sensitivity studies. For radiation damage calculations.			
50-SN	$\sigma_{n,x\alpha}(E, \theta, E_\alpha)$	I	15.0 MeV 35.0 MeV	10.	50.	DOE HEAD	OFE	1978	78214
						Accuracy to be determined from sensitivity studies. For material damage calculations.			
50-SN	$\sigma_{n,x\alpha}(E, \theta, E_\alpha)$	II	14.0 MeV			DOE HEAD	OFE	1978	78128
						Accuracy to be determined. Data required for radiation damage calculations.			
52-TE-127	$\sigma_{n,\gamma}(E)$		METASTABLE 109 DAY						
		II	1.00 mV 1.00 eV	20.		KAP FEINER	DNR	1967	67022
						Thermal average or 0.025 eV value useful. For calculation of fission product poisons.			
53-I-129	$\sigma_{n,\gamma}(E)$		RADIOACTIVE 1.59X(10**7) YEAR						
		II	1.00 keV 10.0 MeV	20.		HED SCHENTER	DRRT	1974	74087
						Calculation of fission product poison for fast reactors.			
53-I-133	$\sigma_{n,\gamma}(E)$		RADIOACTIVE 20.8 HR						
		II	1.00 mV 1.00 eV	20.		BET STEEN	DNR	1967	67024
						Accuracy 10% if $\sigma > 9000$ barns. Above 1 eV want RI to 20% if in range 9000-90,000 barns, to 10% if larger. For calculation of fission product poisons.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
54-XE-131	$\sigma_{n,\gamma}$ (E)	I	1.00 mV 1.00 keV	10.		BET STEEN	DNR	1976	67025
						Thermal cross section and RI wanted. Energies above 1 eV of interest to give RI to 10%. Important fission product poison.			
		II	1.00 mV 1.00 keV	10.		GEB GREEBLER	DRRT	1974	67026
						Thermal cross section and RI wanted. Energies above 1 eV of interest to give RI to 10%. Important fission product poison.			
54-XE-133	$\sigma_{n,\gamma}$ (E)	RADIOACTIVE 5.29 DAY							
		II	THERMAL	10.		GEB GREEBLER	DRRT	1967	67027
						Thermal average or 0.025 eV value. For calculation of fission product poisons.			
		II	1.00 mV 5.00 keV	10.		BET STEEN	DNR	1976	74088
						Thermal cross section and RI wanted. For fission product poison calculations.			
54-XE-135	$\sigma_{n,\gamma}$ (E)	II	1.00 mV 5.00 eV	3.		KAP FEINER	DNR	1976	76070
						Better data needed to improve xenon poisoning calculations.			
54-XE-135	$\sigma_{n,\gamma}$ (E)	RADIOACTIVE 9.17 HR							
		II	1.00 mV 2.00 eV	5.		GA DAHLBERG	DNRA	1967	67028
						For design of thorium cycle reactors.			
		I	1.00 mV 5.00 eV	2.		BET STEEN	DNR	1978	74089
		I	5.00 eV 5.00 keV	5.		BET STEEN			
						Thermal cross section wanted to 3%. For fission product poison calculations.			
54-XE-135	$\sigma_{n,\gamma}$ (E, E _{γ})	RADIOACTIVE 9.17 HR							
		II	THERMAL	10. 20.		KAP FEINER	DNR	1967	67029
						For gamma energies 1-8 MeV. Gamma-energy resolution - 10-20%. For gamma shielding and heat calculations.			
55-CS-133	Capture RI	I	.500 eV 1.00 keV	10		GEB GREEBLER	DRRT	1967	67032
						For calculation of fission product poisons.			
		I	.500 eV 1.00 keV	10		BET STEEN	DNR	1967	67033
						For calculation of fission product poisons.			
55-CS-135	$\sigma_{n,\gamma}$ (E)	RADIOACTIVE 3.3X(10**6) YEAR							
		II	1.00 mV 10.0 keV	10.		BET STEEN	DNR	1976	74090
						Thermal cross section and RI wanted. For fission product poison calculations.			
		I	1.00 keV 10.0 MeV	10.		HED SCHENTER	DRRT	1974	74091
						Calculation of fission product poison for fast reactors.			

Isotope	Quantity	F	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
58-CE-144	$\sigma_{n,\gamma}$ (E)		RADIOACTIVE 284 DAY						
		I	1.00 keV 10.0 MeV	10.		HED SCHENTER	DRRT	1974	74093
						Calculation of fission product poison for fast reactors.			
60-ND-143	$\sigma_{n,\gamma}$ (E)								
		I	1.00 mV 1.00 keV	10.		GEB GREEBLER	DRRT	1974	67035
						Thermal cross section and RI wanted. Energies above 1 eV of interest to give RI to 10%. For calculation of fission product poisons.			
60-ND-143	Capture RI								
		I	.500 eV 1.00 keV	5.		BET STEEN	DNR	1976	67034
						For calculation of fission product poisons.			
60-ND-145	$\sigma_{n,\gamma}$ (E)								
		I	1.00 mV 1.00 keV	10.		GEB GREEBLER	DRRT	1974	67037
						Thermal cross section and RI wanted. Energies above 1 eV of interest to give RI to 10%. For calculation of fission product poisons.			
		I	1.00 keV 10.0 MeV	10.		HED SCHENTER	DRRT	1974	74094
						Calculation of fission product poison for fast reactors.			
60-ND-145	Capture RI								
		I	.500 eV 1.00 keV	10.		BET STEEN	DNR	1976	67036
		I	.500 eV 1.00 keV	10.		KAP FEINER			
						For calculation of fission product poisons.			
60-ND-147	$\sigma_{n,\gamma}$ (E)		RADIOACTIVE 11 DAY						
		I	1.00 mV 1.00 keV	5.	10.	BET STEEN	DNR	1974	67040
		II	1.00 mV 1.00 keV	5.	10.	KAP FEINER			
						Thermal cross section and RI wanted.			
61-PM-148	$\sigma_{n,\gamma}$ (E)		RADIOACTIVE 5.37 DAY						
		II	1.00 mV 1.00 keV	10.		BET STEEN	DNR	1976	67046
		II	1.00 mV 1.00 keV	10.		GEB GREEBLER			
						Thermal cross section and RI wanted. Look for 1/v above 1 eV. For calculation of fission product poisons.			
		II	1.00 mV 1.00 eV	10.		KAP FEINER	DNR	1976	67048
						Thermal average or value at 0.025 eV wanted. For calculation of fission product poisons.			
61-PM-148	$\sigma_{n,\gamma}$ (E)		METASTABLE 41.3 DAY						
		II	1.00 mV 1.00 keV	10.		BET STEEN	DNR	1976	67044
		II	1.00 mV 1.00 keV	10.		GEB GREEBLER			
						Thermal cross section and RI wanted. Energies above 1 eV of interest to give RI to 10%. For calculation of fission product poisons.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
61-PM-149	$\sigma_{n,\gamma}$ (E)	RADIOACTIVE 53.1 HR							
		II	1.00 mV 1.00 keV	20.		BET STEEN	DNR	1976	67049
		II	1.00 mV 1.00 keV	20.		GEB GREEBLER			
						Thermal cross section and RI wanted. Accuracy - 10% if $\sigma > 1000$ barns, 20% if from 10-1000 barns. Energies above 1 eV of interest to give - 10% in RI if $> 10,000$ barns, 20% if 1000-10,000 barns.			
61-PM-151	$\sigma_{n,\gamma}$ (E)	RADIOACTIVE 28.4 HR							
		II	1.00 mV 1.00 keV	10.		BET STEEN	DNR	1974	67057
						Thermal cross section and RI wanted. Energies above 1 eV of interest to give RI to 10%. For calculation of fission product poisons.			
		II	1.00 mV 1.00 keV	10.		GEB GREEBLER	DRRT	1974	67058
62-SM-149	$\sigma_{n,\gamma}$ (E)	RADIOACTIVE 93 YR							
		I	1.00 keV 10.0 MeV	10.		HED SCHENTER	DRRT	1974	74095
						Calculation of fission product poison for fast reactors.			
		II	1.00 mV .500 eV	10.		BET STEEN	DNR	1976	76058
62-SM-151	$\sigma_{n,\gamma}$ (E)	RADIOACTIVE 93 YR							
		II	1.00 mV 1.00 keV	5.	5%	BET STEEN	DNR	1976	67054
		I	1.00 mV 1.00 keV	5.	5%	GEB GREEBLER			
						Thermal cross section and RI wanted. Energies above 1 eV of interest to give RI to 10%. For calculation of fission product poisons.			
62-SM-153	$\sigma_{n,\gamma}$ (E)	RADIOACTIVE 46.5 HR							
		I	1.00 keV 10.0 MeV	10.		HED SCHENTER	DRRT	1974	74096
						Calculation of fission product poison for fast reactors.			
		II	1.00 mV 1.00 keV	10.	20.	BET STEEN	DNR	1976	67061
62-SM-153	$\sigma_{n,\gamma}$ (E)	RADIOACTIVE 46.5 HR							
		II	1.00 mV 1.00 keV	10.	20.	KAP FEINER			
						Thermal cross section and RI wanted. Accuracy - 10% if $\sigma > 30,000$ barns, 20% if lower. Energies above 1 eV of interest to give - 10% in RI if > 300 barns, 20% if 30-300 barns. For calculation of fission product poisons.			
		II	1.00 mV 1.00 keV	10.	20.				

Isotope	Quantity	P	Energy Range		Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
64-GD	$\sigma_{n,n} (E, \theta)$	I	1.50 MeV	10.0 MeV	10.		GEB GREEBLER Accuracy in (1-cos θ).	DRRT	1967	67070
64-GD	$\sigma_{n,xn} (\Xi, \theta, E_n)$	I	1.50 MeV	10.0 MeV	15.	15%	GEB GREEBLER $\Delta E_n = 15\%$. For design of thermal reactors having appreciable quantities of Gd.	DRRT	1967	67071
64-GD	Capture RI	I	.500 eV		5.		GEB GREEBLER Energy requested is a minimum value only. For evaluating resonance parameters.	DRRT	1969	69180
64-GD-155	$\sigma_{n,\gamma} (E)$	I	.500 eV	1.00 keV	5.		GEB GREEBLER Energies above 1 eV of interest to give RI to 5%. Needed to define negative energy resonance in either Gd ¹⁵⁵ or Gd ¹⁵⁷ .	DRRT	1974	67072
64-GD-155	Resonance Parameters	I		.500 keV	10.		GEB GREEBLER Elastic and gamma widths wanted. Energy to include lowest resolved resonance. To verify existing measurements.	DRRT	1969	69182
64-GD-155	Capture RI	I	.500 eV		5.		GEB GREEBLER Energy requested is a minimum value only. For evaluating resonance parameters. Needed to define negative energy resonance in either Gd ¹⁵⁵ or Gd ¹⁵⁷ .	DRRT	1974	69181
64-GD-156	$\sigma_{n,\gamma} (E)$	I	1.00 eV	1.00 keV	5.		GEB GREEBLER Energies above 1 eV of interest to give RI to 5%.	DRRT	1967	67073
64-GD-156	Resonance Parameters	I		2.00 keV	5.		GEB GREEBLER Elastic and gamma widths wanted. Energy to include lowest resolved resonance. To verify existing measurements.	DRRT	1969	69183
64-GD-156	Capture RI	I	.500 eV		5.		GEB GREEBLER Energy requested is a minimum value only. For evaluating resonance parameters.	DRRT	1969	69298

Isotope	Quantity	P	Energy Range	Accuracy ΔE	Lab Requester	Sponsor	Year	No.
64-GD-157	$\sigma_{n,\gamma}$ (E)	I	.500 eV 1.00 keV	5.	GEB GREEBLER	DRRT	1967	67074
					Energies above 1 eV of interest to give RI to 5%. For calculation of burnup in thermal reactors.			
64-GD-157	Resonance Parameters	I	1.00 keV	10.	GEB GREEBLER	DRRT	1969	69185
					Elastic and gamma widths wanted. Energy to include lowest resolved resonance. To verify existing measurements.			
64-GD-157	Capture RI	I	.500 eV	5.	GEB GREEBLER	DRRT	1969	69184
					Energy requested is a minimum value only. For evaluating resonance parameters.			
64-GD-158	Resonance Parameters	I	2.00 keV	10.	GEB GREEBLER	DRRT	1974	74109
					Elastic and gamma width wanted. Energy to include lowest resolved resonance. To verify existing measurements.			
64-GD-160	Resonance Parameters	I	2.00 keV	10.	GEB GREEBLER	DRRT	1974	74110
					Elastic and gamma width wanted. Energy to include lowest resolved resonance. To verify existing measurements.			
68-ER-166	$\sigma_{n,\gamma}$ (E)	II	1.00 mV 1.00 keV	5.	GEB GREEBLER	DRRT	1978	78199
					Resonance parameters of interest. For thermal and intermediate spectrum reactors.			
68-ER-167	$\sigma_{n,\gamma}$ (E)	II	2.00 eV	3.	GA DAHLBERG	DNRA	1974	74133
					Energy requested is a maximum value only. Needed for burnable poison in Triga reactors.			
		I	1.00 mV 1.00 eV	2.	GEB GREEBLEF	DRRT	1978	78202
					Resonance parameters of interest. For thermal and intermediate spectrum reactors.			
68-ER-168	$\sigma_{n,\gamma}$ (E)	II	1.00 mV 1.00 keV	5.	GEB GREEBLEF	DRRT	1978	78200
					Resonance parameters of interest. For thermal and intermediate spectrum reactors.			
70-YB-170	$\sigma_{n,\gamma}$ (E)	II	1.00 mV 1.00 keV	5.	GEB GREEBLER	DRRT	1978	78201
					Resonance parameters of interest. For thermal and intermediate spectrum reactors.			

Isotope	Quantity	P	Energy	Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.	
72-HF	$\sigma_{n,\gamma}$ (E)	I	1.00	mV	1.00	eV	2.	BET STEEN	DNR	1976	62024
		I	1.00	mV	1.00	eV	2.	KAP FEINER			
To resolve discrepancies in thermal data. For Monte Carlo calculations of burnup in thermal reactors.											
72-HF-176	$\sigma_{n,\gamma}$ (E)	I	1.00	mV	5.00	keV	10. 40.	BET STEEN	DNR	1974	62026
		I	1.00	mV	5.00	keV	10. 40.	KAP FEINER			
Accuracy - thermal value: 20%, <1 eV: 40%, 10-100 eV: Γ_{tot} , Γ_n , Γ_γ to 10%, 100 eV-5 keV: Γ_{tot} , Γ_n , Γ_γ to 20%, avg. p-wave Γ_γ to 20%, s-wave strength fn. to 40%. To resolve discrepancies in RI. For Monte Carlo burn-up calculations.											
72-HF-177	$\sigma_{n,\gamma}$ (E)	I	1.00	mV	5.00	keV	4. 20	BET STEEN	DNR	1974	62028
		I	1.00	mV	5.00	keV	4. 20	KAP FEINER			
Accuracy - <1 eV: 4%, 10-100 eV: Γ_{tot} , Γ_n , Γ_γ to 10%. 100 eV-5 keV: Γ_{tot} , Γ_n , Γ_γ to 20%. 5.89, 6.57, 8.87 eV: widths to 5%. avg. p-wave Γ_γ to 20%. s-wave strength fn. to 20%. To resolve discrepancies in RI. For Monte Carlo burn-up calculations.											
72-HF-178	$\sigma_{n,\gamma}$ (E)	I	1.00	mV	5.00	keV	3. 20.	BET STEEN	DNR	1974	62030
		I	1.00	mV	5.00	keV	3. 20.	KAP FEINER			
Accuracy - <1 eV: 5%. 10-100 eV: Γ_{tot} , Γ_n , Γ_γ to 10%. 100 eV- 5 keV: Γ_{tot} , Γ_n , Γ_γ to 20%. 7.78 eV: widths to 3%. avg. p-wave Γ_γ to 20%. s-wave strength fn. to 20%. To resolve discrepancies in RI. For Monte Carlo burn-up calculations.											

Isotope	Quantity	P	Energy	Range	Accuracy	ΔE	Lab	Requester	Sponsor	Year	No.
72-HF-179	$\sigma_{n,\gamma}$ (E)	I	1.00	mV	5.00 keV	5.	20.	BET STEEN	DNR	1974	62032
		I	1.00	mV	5.00 keV	5.	20.	KAP FEINER			
								Accuracy - <1 eV: 5%.			
								10-100 eV: Γ_{tot} , Γ_n , Γ_γ to 10%.			
								100 eV- 5 keV: Γ_{tot} , Γ_n , Γ_γ to 20%.			
								5.68 eV: widths to 5%.			
								avg. p-wave Γ_γ to 20%.			
								s-wave strength fn. to 20%.			
								To resolve discrepancies in RI.			
								For Monte Carlo burn-up calculations.			
72-HF-180	$\sigma_{n,\gamma}$ (E)	I	1.00	mV	5.00 keV	4.	20.	BET STEEN	DNR	1974	67080
		I	1.00	mV	5.00 keV	4.	20.	KAP FEINER			
								Accuracy - <1 eV: 4%.			
								10-100 eV: Γ_{tot} , Γ_n , Γ_γ to 10%.			
								100 eV- 5 keV: Γ_{tot} , Γ_n , Γ_γ to 20%.			
								avg. p-wave Γ_γ to 20%.			
								s-wave strength fn. to 20%.			
								To resolve discrepancies in RI.			
								For Monte Carlo burn-up calculations.			
73-TA-181	$\sigma_{n,\gamma}$ (E)	II	1.00	eV	1.00 keV	10.		DOE HEMMIG	DRRT	1969	69192
		II	1.00	keV	.150 MeV	5.		DOE HEMMIG			
		II	.150	MeV	.500 MeV	10.		DOE HEMMIG			
								Doubt accuracy useful.			
								Fast breeder control and burn-up calculations.			
73-TA-181	$\sigma_{n,\gamma}$ (E)	II	1.00	eV	16.0 MeV	15.		DOE HEMMIG	DRRT	1974	74111
								Gamma rays below 1 MeV important.			
74-W	$\sigma_{n,\gamma}$ (E, θ_γ , E_γ)	I	1.00	keV	1.00 MeV	20.		ORL BARTINE	DRRT	1974	63004
								All gamma energies of interest.			
								For use in shielding calculations.			
74-W	$\sigma_{n,xn}$ (E, θ , E_n)	II	4.00	MeV	16.0 MeV	5.	5%	ORL BARTINE	DRRT	1974	66040
								Low energy neutrons should be included.			
								Spectra at a few angles may suffice.			
								Angular resolution, 10°.			
								$\Delta E_n = 500$ keV			
		II	9.00	MeV	14.0 MeV	10.		DOE HEAD	OFE	1978	73082
								Data needed for shielding, activation and neutron transport calculations.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
74-W	$\sigma_{n,xp}$ (E)	II	9.00 MeV 14.0 MeV	10.	50.	DOE HEAD	OFE	1978	78106
						Accuracy to be determined from sensitivity studies. For radiation damage calculations.			
74-W	$\sigma_{n,xp}$ (E, θ , E_p)	II	14.0 MeV			DOE HEAD	OFE	1978	78148
						Accuracy to be determined. Data required for radiation damage calculations.			
74-W	$\sigma_{n,x\alpha}$ (E)	II	9.00 MeV 14.0 MeV	10.	50.	DOE HEAD	OFE	1978	78094
						Accuracy to be determined from sensitivity studies. For radiation damage calculations.			
74-W	$\sigma_{n,x\alpha}$ (E, θ , E_α)	II	14.0 MeV			DOE HEAD	OFE	1978	78127
						Accuracy to be determined. Data required for radiation damage calculations.			
74-W-182	$\sigma_{n,\gamma}$ (E)	II	.500 eV 10.0 MeV	5.		DOE HEMMIG	DRRT	1978	69202
						Resonance parameters also of interest. Fast breeder control and burn-up calculations.			
74-W-183	$\sigma_{n,\gamma}$ (E)	II	.500 eV 10.0 MeV	5.		DOE HEMMIG	DRRT	1978	69203
						Resonance parameters also of interest. Fast breeder control and burn-up calculations.			
74-W-184	$\sigma_{n,\gamma}$ (E)	II	.500 eV 10.0 MeV	5.		DOE HEMMIG	DRRT	1978	69204
						Resonance parameters also of interest. Fast breeder control and burn-up calculations.			
74-W-186	$\sigma_{n,\gamma}$ (E)	II	.500 eV 10.0 MeV	5.		DOE HEMMIG	DRRT	1978	69207
						Resonance parameters also of interest. Fast breeder control and burn-up calculations.			
78-PT	$\sigma_{n,n}$ (E, θ)	I	10.0 mV 10.0 eV	10.		NBS CASWELL	NBS	1978	78177
						For scattering corrections in Pt fission deposit backings.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
79-AU-197	$\sigma_{n,\gamma}$ (E)	II	.500 eV 1.00 keV	1.		BET STEEN	DNR	1967	67082
						Ind vidual and average resonance parameters required. Energies above 0.5 eV wanted so as to give infinite dilute RI to 1%. For use as standard.			
		I	10.0 keV 1.00 MeV	2.		NBS CASWELL	NBS	1972	72073
79-AU-197	$\sigma_{n,2n}$ (E)	I	THRESH 40.0 MeV	20.		DOE HEAD	OFE	1978	73010
						Dosimetry for FMIT facility.			
79-AU-197	$\sigma_{n,3n}$ (E)	I	THRESH 40.0 MeV	20.		DOE HEAD	OFE	1978	78011
						Dosimetry for FMIT facility.			
79-AU-197	$\sigma_{n,4n}$ (E)	I	THRESH 40.0 MeV	20.		DCE HEAD	OFE	1978	78012
						Dosimetry for FMIT facility.			
79-AU-197	$\sigma_{n,5n}$ (E)	I	THRESH 40.0 MeV	20.		DCE HEAD	OFE	1978	78013
						Dosimetry for FMIT facility.			
81-TL-204	$\sigma_{n,\gamma}$ (E)	II	RADIOACTIVE 3.78 YR THERMAL	10.		RL ORTON	DFCP	1965	65008
						To test feasibility of Tl^{204} production.			
82-FB	$N_{n,\gamma}$ (E, E_γ)	II	2.00 keV .600 MeV	5.		ORL PEREY	CMFE	1976	74186
82-PB	$\sigma_{n,xn}$ (E, θ , E_n)	III	2.00 MeV 16.0 MeV	5.	250K	ORL BARTINE	DRRT	1976	63005
						Angular dependence only if significantly anisotropic. Energy intervals - 500 keV. Angular resolution - 3° in 10° intervals.			
		I	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78050
						For shielding, activation and transport studies of next generation D-T reactor designs.			
82-PB	$\sigma_{n,xp}$ (E)	I	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78059
						For radiation damage studies of next generation D-T reactor designs.			
82-PB	$\sigma_{n,xp}$ (E, θ , E_p)	II	14.0 MeV			DOE HEAD	OFE	1978	78143
						Accuracy to be determined. Data required for radiation damage calculations.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
82-PB	$\sigma_{n,x\alpha}$ (E)	I	9.00 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78068
						For radiation damage studies of next generation D-T reactor designs.			
82-PB	$\sigma_{n,x\alpha}$ (E, θ , E_{α})	II	14.0 MeV			DOE HEAD	OFE	1978	78122
						Accuracy to be determined. Data required for radiation damage calculations.			
90-TH-230	$\sigma_{n,\gamma}$ (E)	II	THERMAL 1.00 MeV	10.		ORL BARTINE	DRRT	1978	78196
						Key reaction for production of U^{232} .			
90-TH-232	$\sigma_{n,Tot}$ (E)	II	1.00 mV 6.00 eV	.5		BNW LEONARD	DRRT	1976	76080
						Needed for thermal cross section evaluation.			
		II	1.00 mV 20.0 eV	.5		BET STEEN	DNR	1978	78181
		I	60.0 eV 100 MeV	2.		ORL PEELLE	DRRT	1978	78197
						For resolved resonance parameter evaluation.			
90-TH-232	$\sigma_{n,n}$ (E, θ)	III	1.00 MeV 5.00 MeV	10.		ANL TILL	DRRT	1972	72074
90-TH-232	$\sigma_{n,n}$ (E, E_n)	III	1.00 MeV 4.00 MeV	5.	20.%	ANL TILL	DRRT	1972	72075
						$\Delta E_n = 20\%$. Accuracy of 20% in $(1-\cos\theta)$, if anisotropic.			
90-TH-232	$\sigma_{n,\gamma}$ (E)	I	1.00 mV 20.0 eV	2.		BET STEEN	DNR	1978	62034
		I	20.0 eV 5.00 keV	5.		BET STEEN			
						Thick sample transmission and self-indication experiments desirable. Resonance parameters and resonance integral also needed. Need thermal value to 0.5 %. Need accuracy of 5% in resonance parameters. Thermal shape important for thermal breeder calculations.			
		II	THERMAL 20.0 MeV	3.		CBE VISNER	DRRT	1976	76079
						For thermal reactor fuel cycle evaluation.			
90-TH-232	$\sigma_{n,x\gamma}$ (E, E_{γ})	I	100 MeV 10.0 MeV	5. 10.		ORL BARTINE	DRRT	1976	76078
						Needed for gas cooled fast reactor shielding.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
90-TH-232	$\sigma_{n,2n}$ (E)	I	THRESH 10.0 MeV	10.		GEE GREEBLER	DRRT	1967	67083
						For control of U^{232} production.			
		II	THRESH 15.0 MeV	5.		BET STEEN	DNR	1976	76065
						For calculation of fuel activity in Th^{232} cycle reactors.			
		II	11.0 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78161
						For hybrid system design.			
90-TH-232	$\sigma_{n,3n}$ (E)	II	11.0 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78162
						For hybrid system design.			
90-TH-232	$\sigma_{n,f}$ (E)	II	11.0 MeV 14.0 MeV	10.		DOE HEAD	OFE	1978	78163
						For hybrid system design.			
90-TH-232	$N_{n,f}$ (E, E_n) (delayed)	I		2.		BET STEEN	DNR	1978	78182
						Need fast group yields and spectra.			
						To verify existing evaluations.			
91-PA-231	$\sigma_{n,\gamma}$ (E)	II	THERMAL 10.0 MeV	10.		GEE GREEBLER	DRRT	1976	69219
		II	THERMAL 10.0 MeV	10.		BNW LEONARD			
						For control of U^{232} production.			
		II	1.00 MeV 1.00 keV	5. 10.		BET STEEN	DNR	1976	76066
						Also need resonance parameters and resonance integral.			
						For calculation of fuel activity in Th^{232} cycle reactors.			
91-PA-231	$N_{n,f}$ (E, E_n) (delayed)	I		5.		BET STEEN	DNR	1978	78183
						Need fast group yields and spectra.			
						To verify existing evaluations.			
91-PA-233	$\sigma_{n,Tot}$ (E)	II	3.00 MeV	3.		ORL PEELE	DRRT	1978	78198
						For thorium cycle reactor evaluation.			
91-PA-233	$\sigma_{n,\gamma}$ (E)	II	1.00 MeV 2.00 eV	5.		GA DAHLBERG	DNRA	1967	67085
		II	2.00 eV 1.00 keV	10.		GA DAHLBERG			
						For design of thorium cycle reactors.			
		II	1.00 MeV 1.00 keV	5.		BET STEEN	DNR	1976	76059
						Resonance parameters also desired.			
						Needed for analysis of Th^{232} cycle thermal reactors.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
92-U	Half-life (alpha decay)	I		.5		NBS GRUNDL	NBS	1976	76118
						For mass determination of fissionable deposits.			
92-U-232	$\sigma_{n,\gamma}$ (E)	II	.500 keV 10.0 MeV	2.	10.	GA DAHLBERG	DNRA	1974	74134
						For fast reactor blankets.			
		II	1.00 mV 1.00 keV	2.	5.	BET STEEN	DNR	1976	76067
						Also need resonance parameters and resonance integral.			
						For calculation of fuel activity in Th ²³² cycle reactors.			
92-U-233	Half-life	I		.5		BET STEEN	DNR	1976	74115
						Verification of latest measurements desired.			
92-U-233	Half-life (alpha decay)	I		1.		NBS GRUNDL	NBS	1976	76119
						For mass determination of fissionable deposits.			
92-U-233	Spon. ν	II	14.0 MeV	2.		LAS YOUNG	OMA	1978	78164
						Prompt ν wanted.			
						Needed for multipurpose evaluation.			
92-U-233	$\sigma_{n,Tot}$ (E)	II	1.00 mV 2.00 eV	.5		BNW LEONARD	DRRT	1976	76082
						Needed for thermal cross section evaluation.			
		I	60.0 eV .100 MeV	3.		LAS STEWART	DRRT	1979	79001
						Needed to cover the unresolved range and overlap the recent ANL data which begins at 42 keV.			
92-U-233	$\sigma_{n,n'}$ (E, E _{n'})	II	40.0 keV 7.00 MeV	10.	20.	ANL TILL	DRRT	1978	67086
						Accuracy of 5-10% above 0.5 MeV.			
92-U-233	$\sigma_{n,\gamma}$ (E)	I	1.00 mV .500 eV	1		BET STEEN	DNR	1976	74112
		I	.500 eV 2.00 eV	2		BET STEEN			
						Verification of recent ORNL results desired.			
		I	.100 keV 1.50 MeV	5.	10	ORL PELLE	DRRT	1978	76081
						Most important below 0.5 MeV.			
		I	60.0 eV .500 MeV	5.	8.	LAS STEWART	DRRT	1979	79002
						Needed to cover the unresolved range and to extend to higher energies.			
						No data available above 2 keV except alpha measurements of Divin.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
92-U-233	$\sigma_{n,2n} (E)$	II	THRESH 15.0 MeV	10.		LAS BARR	OMA	1967	67087
		II	THRESH 15.0 MeV	10.		DOE HEMMIG	DRRT	1978	67088
						For contamination of U ²³³ by U ²³²			
92-U-233	$\sigma_{n,xn} (E, \theta, E_n)$	II	1.00 MeV	5.	10.	LAS STEWART	DRRT	1979	79004
						Absolute cross sections required. Measure at several angles and detect low energy neutrons.			
92-U-233	$\sigma_{n,f} (E)$	I	1.00 MeV 1.00 keV	10.		GA DAHLBERG	DNRA	1974	62036
						Shape important at low energies. Want eta to 0.25% below 1 eV. Want integral eta to 1% below 1 keV.			
		I	1.00 MeV 20.0 MeV			BET STEEN	DNR	1978	78184
						Accuracy wanted - 1 percent below 100 eV, 5 percent above.			
		I	60.0 eV 100 MeV	5.	8.	LAS STEWART	DRRT	1979	79003
						For thermal reactor analysis. Measurements relative to U-235 not desired due to large cross section fluctuations. Needed to cover the unresolved range and overlap the ratio measurements of Carlson.			
92-U-233	$\sigma_{n,f} (E)$	RATIO							
		I	1.00 keV 10.0 MeV	1.	3%	DOE HEMMIG	DRRT	1976	63226
						Ratio to U ²³⁵ fission wanted. Accuracy of 2-3% useful. Energy calibration - 1%.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
92-U-233	Alpha (E)	I	5.00 mV .500 eV	2.	8.	BET STEEN	DNR	1978	62041
		II	.500 eV 10.0 keV		3.	BET STEEN			
		II	10.0 keV 20.0 MeV	5.	10.	BET STEEN			
						Capture cross section equally useful. Integral experiments needed to resolve discrepancies.			
						Want eta to - 0.25% below 3 eV (1% useful below 1 eV), 1% from 30 eV to 1 keV (5% useful).			
						Want eta to 2% from 1 - 30 keV.			
						Want verification of recent ORNL and Bettis work.			
		I	1.00 mV 1.00 keV	2.	8.	GA DAHLBERG	DNRA	1962	62042
		II	1.00 keV 3.00 MeV	10.	20.	GA DAHLBERG			
						Capture cross section equally useful. Want eta to - 0.25% below 3 eV (1% useful below 1 eV), 1% from 30 eV to 1 keV (5% useful).			
92-U-233	Eta (E)	I	1.00 keV 3.00 MeV	10.	20.	ANL TILL	DRRT	1976	62043
						Capture cross section equally useful. Want eta to 2% from 1 - 30 keV.			
		II	1.00 keV 3.00 MeV	10.	20.	DOE HEMMIG	DRRT	1967	67090
						Capture cross section equally useful. Want eta to 2% from 1 - 30 keV.			
		I	1.00 mV 1.00 eV		.4	BET STEEN	DNR	1976	74113
						Thermal value and shape needed. To verify manganese bath results.			
92-U-233	ν (E)	I	1.00 mV 30.0 eV		.25	GA DAHLBERG	DNRA	1976	66075
		I	30.0 eV 1.00 keV		1.	GA DAHLBERG			
		I	1.00 keV 30.0 keV		2.	GA DAHLBERG			
		II	30.0 keV 3.00 MeV	1.	3.	GA DAHLBERG			
						Intermediate accuracy of 1.5% useful. To look for structure below 1 MeV.			
		I	1.00 mV 30.0 eV		.25	BET STEEN	DNR	1978	69443
		I	30.0 eV 1.00 keV		1.	BET STEEN			
		I	1.00 keV 10.0 keV		2.	BET STEEN			
		II	10.0 keV 1.50 MeV	1.	3.	BET STEEN			
						Measurement relative to U ²³⁵ and Pu ²³⁹ preferred. Low energy structure may be important. Needed to resolve discrepancies in thermal parameters and breeding prediction.			
92-U-233	ν (E) (delayed)	I	THERMAL		5.	BET STEEN	DNR	1974	74116
						To resolve discrepancies.			

Isotope	Quantity	F	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
92-U-233	$N_{n,f}$ (E, E_n)	I	THERMAL	1.		BET STEEN	DNR	1978	78185
						Need shape of neutron energy distribution from 100 keV to 15 MeV. Relative peak to 1 percent. Needed for criticality calculations.			
92-U-233	$Y_{n,f}$ (E, nuclide)	I	THERMAL	1.		BET STEEN	DNR	1978	78191
		I	THERMAL	1.		KAP FEINER	DNR	1978	
						Nuclides of interest are Y^{89} , Sr^{90} , Mo^{95} , Tc^{99} , Rh^{103} , Rh^{105} , Xe^{135} , Cs^{135} , Xe^{136} , Cs^{137} , La^{139} , Pr^{141} , Pm^{147} , Nd^{147} , Sm^{149} , Sm^{151} , Sm^{152} and Eu^{153} . Data needed to improve accuracy of predicted fission product poisons.			
92-U-233	Resonance Parameters	III	THERMAL	.100 keV	10.	ANL TILL	DRRT	1967	67195
		III	THERMAL	.100 keV	10.	DOE HEMMIG			
		III	.100 keV	5.00 keV	20. 30.	ANL TILL			
		III	.100 keV	5.00 keV	20. 30.	DOE HEMMIG			
						Multilevel parameters, statistical distributions in eV range. For thermal breeder calculations.			
92-U-234	Half-life (alpha decay)	I			.3	NBS GRUNDL	NBS	1976	76120
						For mass determination of fissionable deposits.			
92-U-234	$\sigma_{n,\gamma}$ (E)	II	1.00 mV	2.00 eV	3.	ANL TILL	DRRT	1978	69400
		II	2.00 eV	10.0 keV	6.	ANL TILL			
		II	10.0 keV	1.00 MeV	10.	ANL TILL			
		II	1.00 MeV	10.0 MeV	20.	ANL TILL			
						To evaluate isotope buildup in thermal reactors.			
92-U-234	$\sigma_{n,3n}$ (E)	II	THRESH	15.0 MeV	20.	LAS BARR	OMA	1967	67099
92-U-234	$N_{n,f}$ (E, E_n) (delayed)	I			5.	BET STEEN	DNR	1978	78187
						Need fast group yields and spectra. No measurements available. For non-destructive assay of U^{233} Th^{232} fuel.			
92-U-235	Half-life (alpha decay)	I			.3	NBS GRUNDL	NBS	1976	76121
						For mass determination of fissionable deposits.			

Isotope	Quantity	P	Energy Range		Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
92-U-235	$\sigma_{n,Tot} (E)$	I	1.00 mV	1.00 eV	.5		BNN LEONARD	DRRT	1976	76083
							Needed for thermal cross section evaluation.			
92-U-235	$\sigma_{n,n} (E, \theta)$	II	1.00 MeV	5.00 MeV	20.	0.5M	ANL TILL	DRRT	1969	69237
							DOE HEMMIG			
							Needed for analyzing fast critical experiments.			
92-U-235	$\sigma_{n,n'} (E, E_{n'})$	II	50.0 keV	6.00 MeV	10.	10.%	ANL TILL	DRDR	1969	72076
							DOE HEMMIG			
							Low energy (~300 keV) neutrons must be included. Absolute spectra at 30° and 75° may suffice. $\Delta E_n = 10\%$.			
92-U-235	$\sigma_{n,\gamma} (E)$	I	1.00 mV	1.00 eV	1.		BET STEEN	DNR	1976	74117
							Shape especially important at low energy. To resolve discrepancies in thermal parameters.			
92-U-235	$\sigma_{n,2n} (E)$	I	THRESH	16.0 MeV	10.		LAS YOUNG	OMA	1978	78165
							Needed for multipurpose evaluation.			
92-U-235	$\sigma_{n,3n} (E)$	II	THRESH	16.0 MeV	10.		LAS BARR	OMA	1967	67193
92-U-235	$\sigma_{n,xn} (E, \theta, E_{n'})$	I	14.0 MeV		10.		LAS STEWART	OMA	1974	74217
							Spectra at several angles required. Must record neutrons down to a few hundred keV.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
92-U-235	$\sigma_{n,f}$ (E)	II	1.00 eV 1.00 keV	3.		GEB GREEBLER	DRRT	1969	69241
						For use as a standard at higher energies.			
		I	1.00 MeV 20.0 MeV	1.		NBS CASWELL	NBS	1978	69245
						Excitation function with absolute calibration at several energies.			
		I	1.00 keV 20.0 keV	2.		GEB GREEBLER	DRRT	1969	69449
		I	1.00 keV 20.0 keV	2.		DOE HEMMIG			
		I	1.00 keV 20.0 keV	2.		WEW DONCALS			
		I	20.0 keV 3.00 MeV	1.		GEB GREEBLER			
		I	20.0 keV 3.00 MeV	1.		DOE HEMMIG			
		I	20.0 keV 3.00 MeV	1.		WEW DONCALS			
		I	3.00 MeV 14.0 MeV	2.		GEB GREEBLER			
		I	3.00 MeV 14.0 MeV	2.		DOE HEMMIG			
		I	3.00 MeV 14.0 MeV	2.		WEW DONCALS			
						Absolute values required.			
						Accuracy of 3-5% useful.			
						For fast reactor calculations and for use as standard.			
		I	1.00 mV 1.00 eV	5.		BET STEEN	DNR	1974	74118
						Shape especially important at low energy.			
I	5.00 mV 1.00 eV	1.		NBS CASWELL	NBS	1978	76107		
				Needed as a reference standard for cross section measurement.					
I	7.50 eV 11.5 eV	1.		NBS CASWELL	NBS	1976	76108		
				For normalization of U^{235} measurements.					
I	10.0 keV 15.0 MeV	1.		LAS YOUNG	OMA	1978	78166		
				Absolute measurements required at several energies possibly coupled to a more detailed relative measurement.					
				A reference which is vital to several nuclear systems.					
92-U-235	$\sigma_{n,f}$ (E)	RATIO							
		I	1.00 keV 14.0 MeV	1.		ANL TILL	DRRT	1969	69246
		I	1.00 keV 14.0 MeV	1.		DOE HEMMIG			
		I	1.00 keV 14.0 MeV	1.		ORL MAIENSCHIEIN			
						Ratio to $H(n,p)$ and $B^{10}(n,\alpha)$ wanted.			
				Intermediate accuracy of 3% useful.					
				To compare standards.					

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
92-U-235	Alpha (E)	II	1.00 mV 7.00 MeV	5.	10.	ANL TILL	DRRT	1974	69249
		II	1.00 mV 7.00 MeV	5.	10.	GEB GREEBLER			
		II	1.00 mV 7.00 MeV	5.	10.	DOE HEMMIG			
						Capture cross section equally useful. Experimental uncertainties need verification.			
		I	1.00 mV 1.00 eV	1.		BET STEEN	DNR	1974	72077
						Capture cross section equally useful. Experimental uncertainties need verification.			
92-U-235	Eta (E)	II	THERMAL 50.0 keV	0.5	2.	ANL TILL	DRRT	1967	67100
		II	THERMAL 50.0 keV	0.5	2.	GEB GREEBLER			
		II	THERMAL 50.0 keV	0.5	2.	DOE HEMMIG			
						Accuracy 0.5% at thermal, 2% elsewhere.			
		I	1.00 mV 1.00 eV		.4	BET STEEN	DNR	1976	74119
						Shape especially important at low energy. Use technique other than manganese bath.			
92-U-235	ν (E)	I	THERMAL 3.00 MeV	1.		ANL TILL	DRRT	1976	69253
		I	THERMAL 3.00 MeV	1.		GEB GREEBLER			
		I	THERMAL 3.00 MeV	1.		DOE HEMMIG			
						Accuracy of 2% useful. Better than .5% required at thermal.			
						To cross check with other isotopes.			
92-U-235	ν (E)	RATIO							
		I	1.00 mV 1.00 eV		.2	BET STEEN	DNR	1978	78189
						Measurements relative to U ²³³ and Pu ²³⁹ wanted.			
92-U-235	ν (E) (delayed)	I		3.		BET STEEN	DNR	1974	74120
						For the entire energy range. To resolve uncertainties in available data.			
92-U-235	$N_{\alpha,f}$ (E, E _n)	II	THERMAL 3.00 MeV	5.		ANL TILL	DRRT	1969	69256
		II	THERMAL 3.00 MeV	5.		DOE HEMMIG			
						Verification of fission spectrum.			
		I	THERMAL	1.		BET STEEN	DNR	1978	72080
						100 keV to 15 MeV. Relative peak to 1%. Needed for criticality calculations.			
92-U-235	$N_{\alpha,f}$ (E, E _n) (delayed)	II	THERMAL 5.00 MeV	5.		DOE HEMMIG	DRRT	1969	69260
						Yield, half-life and energy needed. For analysis of fast criticals and to check existing data.			

Isotope	Quantity	P	Energy Range	Accuracy ΔE	Lab Requester	Sponsor	Year	No.	
92-U-235	$N_{n,f}(E, E_\gamma)$ (delayed)	III	THERMAL	15.	LAS WALTON	DSS	1978	70029	
					Spectra 0.25-5 MeV and time-dependent yield 1 msec-12 hr. Associate gammas with fission products. Ge(Li) resolution - 2.5 keV at 1.2 MeV. For non-destructive assays of U ²³⁵ . Need shape of neutron energy distribution from				
92-U-235	$Y_{n,f}(E, \text{nuclide})$	I	THERMAL	1.	BET STEEN	DNR	1978	78192	
		I	THERMAL	1.	KAP FEINER	DNR	1978		
					Nuclides of interest are Rh ¹⁰⁵ , Xe ¹³⁵ , Cs ¹³⁵ , Cs ¹³⁷ , Nd ¹⁴⁷ , Sm ¹⁴⁹ and Eu ¹⁵³ . Data needed to improve accuracy of predicted fission product poisoning.				
92-U-235	Resonance Parameters	I	THERMAL	.200 keV	10.	ANL TILL	DRRT	1969	69262
		I	THERMAL	.200 keV	10.	GEB GREEBLER			
		I	THERMAL	.200 keV	10.	DOE HEMMIG			
					Multilevel fit where feasible. For extrapolation to unresolved resonance region.				
		II	THERMAL	.200 keV	10.	BET STEEN	DNR	1976	69263
					Multilevel fit where feasible. Verification of existing data useful.				
92-U-236	$\sigma_{n,\gamma}(E)$	I	THERMAL	1.00 keV	10.	GEB GREEBLER	DRRT	1974	67109
		II	1.00 keV	1.00 MeV	10.	GEB GREEBLER			
					Require 10% accuracy in capture widths. For control of U ²³² production.				
92-U-236	$N_{n,f}(E, E_n)$ (delayed)	I		5.	BET STEEN	DNR	1978	78188	
					Need fast group yields and spectra. No measurements available. For non-destructive assay of U ²³³ Th ²³² fuel.				
92-U-237	$\sigma_{n,f}(E)$		RADIOACTIVE	6.75 DAY					
		II	.100 keV	16.0 MeV	10.	LAS BARR	OMA	1967	67110
92-U-238	Half-life (alpha decay)	I		.3	NBS GRUNDL	NBS	1976	76122	
					For mass determination of fissionable deposits.				

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.				
92-U-238	$\sigma_{n,n} (E, \theta)$	I	1.00 keV .300 MeV	10.		ANL TILL	DRRT	1969	69407				
		I	1.00 keV .300 MeV	10.		GEB GREEBLER							
		I	1.00 keV .300 MeV	10.		DOE HEMMIG							
		I	.300 MeV 2.00 MeV	5.		ANL TILL							
		I	.300 MeV 2.00 MeV	5.		GEB GREEBLER							
		I	.300 MeV 2.00 MeV	5.		DOE HEMMIG							
		I	2.00 MeV 10.0 MeV	10.		ANL TILL							
		I	2.00 MeV 10.0 MeV	10.		GEB GREEBLER							
		I	2.00 MeV 10.0 MeV	10.		DOE HEMMIG							
		Accuracy lower by factor of 2 would be useful on short term.											
92-U-238	$\sigma_{n,n} (E, E_n)$	I	50.0 keV 10.0 MeV	5.	5.%	ANL TILL	DRRT	1976	69270				
		I	50.0 keV 10.0 MeV	5.	5.%	GEB GREEBLER							
		I	50.0 keV 10.0 MeV	5.	5.%	DOE HEMMIG							
		I	50.0 keV 10.0 MeV	5.	5.%	WEW DONCALS							
		Emission cross sections instead of inelastic and (n,2n) might be useful.											
		Accuracy of 20% useful.											
	I	45.0 keV 3.00 MeV	5.		GEB GREEBLER	DRRT	1976	76084					
For fast reactor calculations.													
92-U-238	$\sigma_{n,\gamma} (E)$	I	.500 keV 1.00 keV	6.		ANL TILL	DRRT	1969	69419				
		I	.500 keV 1.00 keV	6.		GEB GREEBLER							
		I	.500 keV 1.00 keV	6.		DOE HEMMIG							
		I	1.00 keV .300 MeV	4.		ANL TILL							
		I	1.00 keV .300 MeV	4.		GEB GREEBLER							
		I	1.00 keV .300 MeV	4.		DOE HEMMIG							
		I	.300 MeV .500 MeV	6.		ANL TILL							
		I	.300 MeV .500 MeV	6.		GEB GREEBLER							
		I	.300 MeV .500 MeV	6.		DOE HEMMIG							
		I	.500 MeV 10.0 MeV	10.		ANL TILL							
		I	.500 MeV 10.0 MeV	10.		GEB GREEBLER							
		I	.500 MeV 10.0 MeV	10.		DOE HEMMIG							
		Above 10 keV, 10% accuracy useful.											
		For fast reactor calculations.											
			I	1.00 eV 20.0 keV	5.					BET STEEN	DNR	1976	74123
		Need parameters for lowest resonances.											
Thick sample transmission and self-indication measurements desirable.													
To resolve discrepancies among integral and differential experiments when strong self-shielding exists.													
	I	.100 eV 6.00 eV	.5		BNW LEONARD	DRRT	1976	76085					
For thermal cross section evaluation.													

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
92-U-238	$\sigma_{n,\gamma}$ (E)	RATIO							
		I	10.0 keV .300 MeV	1.5		ANL TILL	DRRT	1969	69435
		I	10.0 keV .300 MeV	1.5		GEB GREEBLER			
		I	10.0 keV .300 MeV	1.5		DOE HEMMIG			
		I	.300 MeV 10.0 MeV	7.		ANL TILL			
		I	.300 MeV 10.0 MeV	7.		GEB GREEBLER			
		I	.300 MeV 10.0 MeV	7.		DOE HEMMIG			
						Ratio to $\text{Pu}^{239}(n,f)$ or $\text{U}^{235}(n,f)$ wanted.			
						Intermediate accuracy useful for short term.			
						Ratio data discrepant with absolute measurements.			
92-U-238	$\sigma_{n,\gamma}$ (E, θ_γ , E_γ)	II	1.00 mV 15.0 MeV	10.		DOE HEMMIG	DRRT	1974	72079
						For all gamma energies.			
						Gamma-energy intervals ~ 500 keV.			
						For shielding and γ heating calculations.			
92-U-238	$\sigma_{n,2n}$ (E)	I	THRESH 10.0 MeV	7.		GEB GREEBLER	DRRT	1974	72078
						Important to production of U^{238} .			
92-U-238	$\sigma_{n,xn}$ (E, E_n)	I	5.00 MeV 15.0 MeV	20.		LLL HOWERTON	OMA	1974	70034
						For $E_n \geq 0.2$ MeV.			
92-U-238	$\sigma_{n,xn}$ (E, θ , E_n)	I	14.0 MeV	10.		LAS STEWART	OMA	1974	74218
						Spectra at several angles required.			
						Must record neutrons down to a few hundred keV.			
92-U-238	$\sigma_{n,f}$ (E)	RATIO							
		I	.500 keV 1.30 MeV	4.	3%	DOE HEMMIG	DRRT	1969	69416
		I	1.30 MeV 5.00 MeV	2.		DOE HEMMIG			
		I	5.00 MeV 14.0 MeV	3.		DOE HEMMIG			
						Ratio to $\text{Pu}^{239}(n,f)$ wanted.			
						Intermediate accuracy useful.			
						Energy calibration - 1%.			
92-U-238	ν (E)	RATIO							
		I	10.0 MeV	1.		ANL TILL	DRRT	1974	69275
		I	10.0 MeV	1.		DOE HEMMIG			
						Energy requested is a maximum value only.			
						Ratio to Cf^{252} wanted.			
						To verify measurement of Soleilac.			
92-U-238	ν (E) (delayed)	III	5.00 MeV 14.0 MeV	5.		LAS WALTON	DSS	1978	70035
						Calculation of moderating assemblies for U assay.			
						Data needed for extrapolation to 15 MeV.			
		I	THRESH 5.00 MeV	5.		DOE HEMMIG	DRRT	1976	76087

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
92-U-238	$N_{n,f}(E, E_n)$	I	THERMAL 5.00 MeV			DOE HEMMIG	DRRT	1976	72145
						Want average secondary energy to 5%. To resolve discrepancies in existing data.			
92-U-238	Resonance Parameters	I	1.00 eV 20.0 keV	10.		DOE HEMMIG	DRRT	1969	69286
		I	1.00 eV 20.0 keV	10.		ANL TILL			
		I	1.00 eV 20.0 keV	10.		GEB GREEBLER			
		I	1.00 eV 20.0 keV	10.		WEW DONCALS			
		I	1.00 eV 20.0 keV	10.		CBE VISNER			
						To as high energy as can be measured. For Doppler effect on fast breeders. To resolve questions of missing p-wave levels and uncertainties of gamma-widths. Existing data > 1 keV discrepant.			
		I	5.00 keV	3.		ORL PEELLE	DRRT	1978	78193
						Needed to compute capture in highly self-shielded thermal systems.			
93-NP-137	$\sigma_{n,f}(E)$	I	50.0 keV 7.00 MeV	2.		NBS CASWELL	NBS	1978	78178
						For materials dosimetry.			
93-NP-237	Half-life (alpha decay)	I		.5		NBS GRUNDL	NBS	1978	76123
						For mass determination of fissionable deposits.			
93-NP-237	$\sigma_{n,\gamma}(E)$	I	1.00 mV 1.00 keV	3.	10.	GEB GREEBLER	DRRT	1974	67115
		II	1.00 keV 5.00 MeV	10.		GEB GREEBLER			
						Accuracy - 3% from thermal to 10 eV, 5% in Γ_n , 10% in Γ_γ from thermal to 1 keV. For thermal reactor calculations and Pu ²³⁸ production.			
93-NP-237	$\sigma_{n,2n}(E)$	II	THRESH 15.0 MeV	10.		SRL BENJAMIN	DFCP	1967	67112
						To evaluate contamination of Pu ²³⁸ by Pu ²³⁶ .			
		II	THRESH 15.0 MeV	10.		GEB GREEBLER	DRRT	1969	69290
						For control of U ²³² production. To evaluate contamination of Pu ²³⁸ by Pu ²³⁶ .			
		I	THRESH 15.0 MeV	5.		LLL HOWERTON	OMA	1978	70036
						Activation is required. Accuracy required at each point.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
94-PU-238	Half-life (fission)	I		1.		ANL PERRY	DSS	1974	74151
						Accuracy 3-5% useful in short term. For calculation of the effective Pu^{240} for spontaneous fission measurements of Pu in nuclear materials safeguards.			
94-PU-238	Spon. τ	II		1.		ANL PERRY	DSS	1974	74154
						Accuracy 3-5% useful in short term. For calculation of the effective Pu^{240} for spontaneous fission measurements of Pu in nuclear materials safeguards.			
94-PU-238	$\sigma_{n,Abs}$ (E)	I	1.00 keV 1.00 MeV	5.		LAS MOTZ	OMA	1966	66048
						Destruction of target wanted.			
94-PU-238	$\sigma_{n,2n}$ (E)	I	THRESH 15.0 MeV	15.		LLL HOWERTON	OMA	1978	69299
						Accuracy required at each point. Needed for evaluation.			
94-PU-238	$\sigma_{n,3n}$ (E)	I	14.0 MeV	50.		LLL HOWERTON	OMA	1978	69300
						Accuracy required at each point. Needed for evaluation.			
94-PU-238	$\sigma_{n,f}$ (E)	I	RATIO 10.0 keV 5.00 MeV	3.		LAS MOTZ	OMA	1978	65047
						Ratio to $U^{235}(n,f)$ wanted.			
94-PU-238	$\sigma_{n,Tot}$ (E)	I	1.00 eV .500 MeV	3.		GEB GREEBLER	DRRT	1974	74124
						Energy resolution to show secondary structure up to 10 keV.			
		I	.500 eV 5.00 eV	1.		BNW LEONARD	DRRT	1976	76088
						Needed for thermal cross section evaluation.			
94-PU-239	$\sigma_{n,n}$ (E, θ)	II	1.00 MeV 3.00 MeV	10.	50K	ANL TILL	DRRT	1969	69303
		II	1.00 MeV 3.00 MeV	10.	500K	DOE HEMMIG			
94-PU-239	$\sigma_{n,n}$ (E, E_n)	I	10.0 keV 10.0 MeV	20.		DOE HEMMIG	DRRT	1969	72084

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
94-PU-239	$N_{\gamma, \gamma} (E, E_{\gamma})$	III	THERMAL	100 keV	20.	LAS WALTON	DSS	1970	70044
						Spectra for gamma energies above 1.2 MeV. Ge(Li) resolution - 2.5 keV at 1.2 MeV. Development of new Pu assay technique.			
		III	THERMAL		20.	LAS WALTON	DSS	1978	74138
						Absolute spectrum required. For development of nondestructive assay methods.			
94-PU-239	$\sigma_{n, 2n} (E)$	I	THRESH	15.0 MeV	10.	LAS BARR	OMA	1967	67122
		II	5.00 MeV	10.0 MeV	10.	DOE HEMMIG	DRRT	1969	69306
						To predict buildup of Pu^{238} .			
		I	THRESH	15.0 MeV	5.	LLL HOWERTON	OMA	1978	70040
						Activation is required. Accuracy required at each point.			
94-PU-239	$\sigma_{n, 3n} (E)$	II	THRESH	15.0 MeV	20.	LAS BARR	OMA	1967	67123
		I	THRESH	15.0 MeV	5.	LLL HOWERTON	OMA	1978	70041
						Activation is required. Accuracy required at each point.			
94-PU-239	$\sigma_{n, xn} (E, \theta, E_n)$	I	14.0 MeV		10.	LAS STEWART	OMA	1974	74219
						Spectra at several angles required. Must record neutrons down to a few hundred keV.			
94-PU-239	$\sigma_{n, f} (E)$	I	1.00 eV	3.00 MeV	2.	ANL TILL	DRRT	1976	69467
		I	1.00 eV	3.00 MeV	2.	DOE HEMMIG			
		I	1.00 eV	3.00 MeV	2.	GEB GREEBLER			
		I	3.00 MeV	10.0 MeV	3.	ANL TILL			
		I	3.00 MeV	10.0 MeV	3.	DOE HEMMIG			
		I	1.00 MeV	10.0 MeV	3.	GEB GREEBLER			
						Verification of current accuracy or intermediate accuracy useful. Need related accuracy for 5-10% energy bins. For fast reactor calculations.			
		II	THERMAL	1.00 keV	1.	GEB GREEBLER	DRRT	1974	72085
						Improved precision needed for thermal reactors. Direct measurements disagree. U and Pu half lives should be confirmed as they affect these measurements.			
		I	1.00 eV	20.0 keV	3.	WEW DONCALS	DRRT	1976	76040
		I	20.0 keV	3.00 MeV	5.	WEW DONCALS			
						Needed for fast reactor calculations.			
		II	100 MeV	20.0 MeV	2.	GEB GREEBLER	DRRT	1976	76089
						Absolute measurement desired.			

isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
94-PU-239	$\sigma_{n,f}$ (E)	RATIO							
		I	10.0 keV 14.0 MeV	2.	3.%	DOE HEMMIG	DRRT	1972	72086
						Ratio to $U^{235}(n,f)$ required.			
						Avg. over 10-20% energy intervals			
94-PU-239	Alpha (E)	II	10.0 keV 1.00 MeV	2.		GEB GREEBLER	DRRT	1974	74125
						Ratio to $U^{235}(n,f)$ wanted.			
		I	.100 keV 1.00 keV	8.		ANL TILL	DRRT	1969	69314
		I	.100 keV 1.00 keV	8.		GEB GREEBLER			
94-PU-239	Alpha (E)	I	.100 keV 1.00 keV	8.		DOE HEMMIG			
		I	.100 keV 1.00 keV	8.		ORL MAIENSCHIEIN			
		I	1.00 keV 50.0 keV	4.		ANL TILL			
		I	1.00 keV 50.0 keV	4.		GEB GREEBLER			
		I	1.00 keV 50.0 keV	4.		DOE HEMMIG			
		I	1.00 keV 50.0 keV	4.		ORL MAIENSCHIEIN			
		I	50.0 keV .600 MeV	6.		ANL TILL			
		I	50.0 keV .600 MeV	6.		GEB GREEBLER			
		I	50.0 keV .600 MeV	6.		DOE HEMMIG			
		I	50.0 keV .600 MeV	6.		ORL MAIENSCHIEIN			
		I	.600 MeV 10.0 MeV	10.		ANL TILL			
		I	.600 MeV 10.0 MeV	10.		GEB GREEBLER			
		I	.600 MeV 10.0 MeV	10.		DOE HEMMIG			
		I	.600 MeV 10.0 MeV	10.		ORL MAIENSCHIEIN			
						Capture cross section equally useful.			
94-PU-239	Eta (E)	I	THERMAL 1.00 eV	.5		GEB GREEBLER	DRRT	1967	67124
						Need 0.025 eV value. For Pu-fueled reactor calculations.			
94-PU-239	ν (E)	I	THERMAL 3.00 MeV	.3		ANL TILL	DRRT	1976	66050
		I	THERMAL 3.00 MeV	.3		GEB GREEBLER			
		I	THERMAL 3.00 MeV	.3		DOE HEMMIG			
						Accuracy of 0.5% useful. For fast reactor calculations.			
		I	THERMAL 1.00 keV	1.		KEW DONCALS	DRRT	1976	76041
		I	1.00 keV 3.00 keV	.5		KEW DONCALS			
		I	3.00 keV 10.0 MeV	1.		KEW DONCALS			
						Essential for accurate fast reactor calculations.			
94-PU-239	ν (E)	RATIO							
		I	1.00 mV 1.00 eV	.2		BET STEEN	DNR	1978	78190
94-PU-239	ν (E) (delayed)					Measurements relative to U^{233} and U^{235} wanted.			
		II	THERMAL 5.00 MeV	5.		ANL TILL	DRRT	1976	76090

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
94-PU-239	$N_{n,f}(E, E_n)$	II	THERMAL	20.0 MeV	10.	GEB GREEBLER	DRFT	1976	76091
		II	THERMAL		1	BET STEEN	DNF	1978	78186
						Need shape of neutron energy distribution from 100 keV to 15 MeV. Relative peak to 1 percent. Needed for criticality calculations.			
94-PU-239	$N_{n,f}(E, E_n)$ (delayed)	II	THERMAL	5.00 MeV		ANL TILL	DRRT	1976	69312
		II	THERMAL	5.00 MeV		DOE HEMMIG			
						Half-life and energy spectrum needed. For analysis of fast criticals and fast reactor calculations.			
94-PU-239	$N_{n,f}(E, E_\gamma)$ (delayed)	III	THERMAL		15.	LAS WALTON	DSS	1978	70043
		Spectra 0.25-5 MeV and time-dependent yield for 1 msec-12 hr. Associate gammas with fission products, if possible. Ge(Li) resolution - 2.5 keV at 1.2 MeV. For non-destructive assays of Pu ²³⁹ .							
94-PU-239	$Y_{n,f}(E, \text{nuclide})$	II	THERMAL		3.	BET STEEN	DNR	1967	67125
		Cumulative and direct yield of Xe ¹³⁵ (inclusive of 15-min isomer). For calculation of fission product poisons.							
		II	THERMAL		1.	BET STEEN	DNR	1967	67126
		Yield of Cs ¹³⁷ wanted. For burnup indicator standard.							
94-PU-239	$Y_{n,f}(E, \text{nuclide})$	II	THERMAL		3.	BET STEEN	DNR	1967	67128
		Yields of Nd ¹⁴⁷ and Sm ¹⁴⁹ wanted. For calculation of fission product poisons.							
94-PU-239	$Y_{n,f}(E, \text{nuclide})$	II	THERMAL	15.0 MeV	5.	GEB GREEBLER	DRRT	1974	74126
		All fission products.							
94-PU-239	Resonance Parameters	II	THERMAL	.600 keV	10.	ANL TILL	DRRT	1974	69319
		II	THERMAL	.600 keV	10.	CBE VISNER			
		For thermal reactors, and to determine statistical parameters for extrapolation to higher energy. For fast reactor calculations.							
		II	THERMAL	50.0 eV	10.	DOE HEMMIG	DRRT	1969	69320
94-PU-239	Resonance Parameters	II	THERMAL	50.0 eV	10.	GEB GREEBLER			
		For thermal reactors, and to determine statistical parameters for extrapolation to higher energy. For fast reactor calculations.							

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
94-PU-240	Half-life (alpha decay)	I		1.		NBS GRUNDL	NBS	1976	76125
						For mass determination of fissionable deposits.			
94-PU-240	Half-life (fission)	II		1.		ANL PERRY	DSS	1974	74152
						Accuracy 3-5% useful in short term. For calculation of the effective Pu^{240} for spontaneous fission measurements of Pu in nuclear materials safeguards.			
94-PU-240	Spon. γ	II		1.		ANL PERRY	DSS	1974	74155
						Accuracy 3-5% useful in short term. For calculation of the effective Pu^{240} for spontaneous fission measurements of Pu in nuclear materials safeguards.			
94-PU-240	$\sigma_{n,n'} (E)$	II	.150 MeV 10.0 MeV	20.		DOE HEMMIG	DRRT	1972	72087
		II	.150 MeV 10.0 MeV	20.		GEB GREEBLER			
						Emission cross section might be equally useful at the higher energies.			
94-PU-240	$\sigma_{n,\gamma} (E)$	I	THERMAL .100 keV	3.		GEB GREEBLER	DRRT	1967	67194
		I	.500 keV .150 MeV	5.		ANL TILL	DRRT	1969	69389
						Improved precision needed for thermal reactor. Accuracy of 15% would be useful. For fast reactor calculations.			
		I	.150 MeV 1.00 MeV	10.		DOE HEMMIG	DRRT	1969	69390
						Accuracy of 15% useful. For fast reactor calculations.			
		I	.150 MeV 1.00 MeV	10.		GEB GREEBLER	DRRT	1972	72137
						For fast reactor calculations.			
94-PU-240	$N_{n,\gamma} (E, E_\gamma)$	I	THERMAL	20.		LAS WALTON	DSS	1978	74139
						Absolute spectra required. For development of nondestructive assay methods.			
94-PU-240	$\sigma_{n,f} (E)$	II	.500 MeV 10.0 MeV	5.		GEB GREEBLER	DRRT	1972	72088
						For fast reactor calculations.			
		II	.500 keV .100 MeV	9.		DOE HEMMIG	DRRT	1972	72089
						For fast reactor calculations.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
94-PU-240	$\sigma_{n,f}$ (E)	RATIO							
		III	1.00 keV .100 MeV	5.		DOE HEMMIG	DRRT	1972	72090
						Ratio to $U^{235}(n,f)$ wanted. Accuracy of 5% useful.			
		II	.100 MeV 2.00 MeV	3.		DOE HEMMIG	DRRT	1978	72091
						Ratio to $U^{235}(n,f)$ wanted. Accuracy of 5% useful.			
94-PU-240	ν (E)	II	THRESH 10.0 MeV	3.		DOE HEMMIG	DRRT	1969	69323
		II	THRESH 10.0 MeV	3.		ANL TILL	DRRT	1972	72092
						Accuracy of 5% useful.			
94-PU-240	ν (E) (delayed)	II	THERMAL 5.00 MeV	10.		DOE HEMMIG	DRRT	1976	76092
94-PU-240	Resonance Parameters	II	.100 keV 5.00 keV	10.		ANL TILL	DRRT	1969	69391
		II	.100 keV 5.00 keV	10.		DOE HEMMIG			
						To resolve discrepancies in existing data. For fast reactor calculations, including Doppler effect.			
		II	.100 keV 5.00 keV	10.		CBE VISNER	DRRT	1976	
						For thermal reactor applications including Doppler effects.			
94-PU-241	$\sigma_{n, Tot}$ (E)	I	10.0 mV 3.00 eV	1.		ORL PELLE	DRRT	1978	78195
						Total cross-section not consistent with partials.			
94-PU-241	$\sigma_{n,\gamma}$ (E)	I	THERMAL 30.0 keV	3.		GEB GREEBLER	DRRT	1967	67132
						Alpha also wanted. Accuracy of 3% in eta. Improved precision needed for thermal reactors. Also wanted for fast reactors.			
		III	THERMAL 30.0 keV	3.		CBE VISNER	DRRT	1976	76094
						For thermal reactor calculations.			
94-PU-241	$N_{n,\gamma}$ (E, E_γ)	I	THERMAL	20.		LAS WALTON	DSS	1978	74140
						Absolute spectra required. For development of nondestructive assay methods.			
94-PU-241	$\sigma_{n,f}$ (E)	I	10.0 eV 30.0 keV	10.		WEW DONCALS	DRRT	1976	76042
						Ratio to U^{235} or Pu^{239} would be useful.			
		I	1.00 mV 3.00 eV	1.		BNW LEONARD	DRRT	1976	76095
						For thermal cross section evaluation.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
94-PU-241	$\sigma_{n,f}$ (E)		RATIO						
		I	THERMAL 10.0 eV	3.		ANL TILL	DRRT	1978	69328
		I	THERMAL 10.0 eV	3.		GEB GREEBLER			
		I	20.0 keV .400 MeV	3.		Ratio to U ²³⁵ or Pu ²³⁹ would be useful. DOE HEMMIG Ratio to U ²³⁵ (n,f) wanted.	DRRT	1978	72094
94-PU-241	Alpha (E)	I	1.00 keV 2.00 MeV	10.		GEB GREEBLER	DRRT	1974	69331
		I	1.00 keV 2.00 MeV	10.		Capture cross section equally useful. DOE HEMMIG	DRRT	1974	69332
94-PU-241	ν (E)	I	1.00 keV 1.00 MeV	2.		DOE HEMMIG	DRRT	1976	69330
94-PU-241	Resonance Parameters	II	THERMAL .100 keV	5.		ANL TILL	DRRT	1972	72140
		II	.100 keV .400 keV	10.		ANL TILL			
		II	THERMAL .400 keV	10.		CBE VISNER	DRRT	1976	
		I	1.00 eV	1.		For thermal reactor applications at high burnup. ORL PEELE	DRRT	1978	76194
						Resonance strongly influences thermal cross-section evaluation.			
94-PU-242	Spon. γ	II		1.		ANL PERRY	DSS	1974	74156
						Accuracy 3-5% useful in short term. For calculation of the effective Pu ²⁴⁰ for spontaneous fission measurements of Pu in nuclear materials safeguards.			
94-PU-242	$\sigma_{n,\gamma}$ (E)	I	1.00 keV 7.00 MeV	15. 20.		COE HEMMIG	DRRT	1972	72098
		I	THERMAL .100 keV	3.		For fast breeder calculations, Cm, Cf production. GEB GREEBLER	DRRT	1972	72142
		I	.100 keV 1.00 keV	10.		GEB GREEBLER			
		I	1.00 keV 70.0 MeV	15. 20.		GEB GREEBLER			
		II	THERMAL 1.00 keV	3.		Want resonance parameters to 10-20% below 10 keV. For fast breeder calculations, Cm, Cf production. CBE VISNER	DRRT	1976	76097
						For thermal reactor applications at high burnup.			
94-PU-242	$N_{n,\gamma}$ (E, E _{γ})	I	THERMAL	20.		LAS WALTON	DSS	1978	74141
						Absolute spectra required. For development of nondestructive assay methods.			
94-PU-242	ν (E)	II	.500 MeV 10.0 MeV	5.		DOE HEMMIG	DRRT	1969	69334

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
95-AM-241	$\sigma_{n, Tot}$ (E)	II	THERMAL	2.	3.	RL ORTON	DFCP	1969	69336
95-AM-241	$\sigma_{n, \gamma}$ (E)	I	THERMAL 1.00 keV	10.		SRL BENJAMIN	DFCP	1967	67135
						Production of both Am^{242} and Am^{242m} wanted. For Pu^{238} program and production of Cm^{244} .			
		II	THERMAL 1.00 keV	10.		RL ORTON	DFCP	1967	67136
						Production of both Am^{242} and Am^{242m} wanted. For Pu^{238} program and production of Cm^{244} .			
		I	THERMAL 1.00 keV	10.		LLL HOWERTON	OMA	1978	70048
		I	1.00 keV .300 MeV	50.		LLL HOWERTON			
						Production of both Am^{242} and Am^{242m} wanted. Accuracy required at each point.			
		II	THERMAL 10.0 MeV	15.		GEB GREEBLER	DRRT	1972	72099
						For spent fuel shielding.			
		I	1.00 keV 2.00 MeV	20.		DOE HEMMIG	DRRT	1974	74127
						Production of both Am^{242} and Am^{242m} wanted. For spent fuel shielding.			
			THERMAL 10.0 MeV	10.		CBE VISNER	DRRT	1976	76098
						For spent fuel shielding. Fast breeder applications.			
95-AM-241	$N_{n, \gamma}$ (E, E_{γ})	II	THERMAL	20.		LAS WALTON	DSS	1974	74142
						Absolute spectra required. For development of nondestructive assay methods.			
95-AM-241	$\sigma_{n, f}$ (E)	II	10.0 keV 1.50 MeV	5.	10.	ORL PELLE	DRRT	1976	76099
						Accuracy required - 5.0 to 10.0 percent.			
95-AM-242	$\sigma_{n, Tot}$ (E)	II	THERMAL 10.0 keV	10.		SRL BENJAMIN	DFCP	1974	67137
						Need Am^{242} and Am^{242m} resonance energies. For Pu^{238} production.			
95-AM-242	$\sigma_{n, \gamma}$ (E)	I	THERMAL 1.00 MeV	10.		LLL HOWERTON	OMA	1978	69340
						Accuracy required at each point. Needed for evaluation.			
		II	THERMAL 10.0 MeV	15.		GEB GREEBLER	DRRT	1972	72100
95-AM-242	$\sigma_{n, \gamma}$ (E)		RADIOACTIVE 16 HR AND 152-YR ISOMERS						
		II	THERMAL 10.0 keV	10.	20.	SRL BENJAMIN	DFCP	1974	69341
						Thermal value and RI wanted For Pu^{238} production.			
95-AM-242	$\sigma_{n, f}$ (E)		RADIOACTIVE 16 HR AND 152-YR ISOMERS						
		II	THERMAL 10.0 keV	10.	20.	SRL BENJAMIN	DFCP	1974	69339

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
95-AM-243	$\sigma_{n,\gamma}$ (E)	I	THERMAL	10.0 MeV	10.	GEB GREEBLER	DRRT	1974	72101
						Accuracy of 5-10% in thermal value and RI. To determine Cm ²⁴⁴ production. For long term reactivity calculations and for spent fuel shielding.			
		I	1.00 keV	10.0 MeV	30.	DOE KEMMIG	DRRT	1974	74128
			THERMAL	10.0 MeV	10.	CBE VISNER	DRRT	1976	76100
						For spent fuel shielding. Fast reactor applications.			
96-CM-242	$\sigma_{n,\gamma}$ (E)	II	RADIOACTIVE THERMAL	163-DAY	20.	SRL BENJAMIN	DFCP	1974	67139
						For Pu ²³⁸ production.			
96-CM-242	Resonance Parameters	II	THERMAL	1.00 keV	20.	CBE VISNER	DRRT	1976	76101
						For fast breeder applications.			
96-CM-242	Resonance Parameters	III	RADIOACTIVE THERMAL	163-DAY	20.	RL ORTON	DFCP	1974	67192
						Elastic and gamma widths wanted. For Pu ²³⁸ production.			
96-CM-244	$\sigma_{n,\gamma}$ (E)	II	10.0 keV	10.0 MeV	10.	GEB GREEBLER	DRRT	1967	67142
						Accuracy of 5-10% in RI. For spent fuel shielding. To evaluate Cf production.			
		II	10.0 keV	10.0 MeV	10.	CBE VISNER	DRRT	1976	76102
						For spent fuel shielding. Fast reactor applications.			
96-CM-245	$\sigma_{n,Tot}$ (E)	II	THERMAL	10.0 keV	10.	SRL BENJAMIN	DFCP	1976	67144
						Shape of thermal cross section especially important. Accuracy of 10% in RI. To evaluate Cf production.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
96-CM-245	$\sigma_{n,\gamma}$ (E)	I	THERMAL	10.0 keV	10.	SRL BENJAMIN	DFCP	1974	69348
						Shape of thermal cross section especially important. Resonance structure needed. Accuracy of 10% in RI. Need integral alpha to 10%. To evaluate Cf production.			
		II	THERMAL	10.0 keV	10.	CBE VISNER	DRRT	1976	76103
						For fast breeder applications.			
96-CM-245	$\sigma_{n,f}$ (E)	I	THERMAL	10.0 keV	10.	SRL BENJAMIN	DFCP	1974	67145
						Shape of thermal cross section especially important. Accuracy of 10% in σ and RI. Need integral alpha to 10%. To evaluate Cf production.			
		II	THERMAL	10.0 keV	10.	CBE VISNER	DRRT	1976	
						For fast breeder applications.			
96-CM-246	$\sigma_{n,Tot}$ (E)	II	THERMAL	10.0 keV	10.	SRL BENJAMIN	DFCP	1974	67146
						Shape of thermal cross section especially important. Resonance structure needed. Accuracy of 10% in RI.			
		II	THERMAL	10.0 keV	10.	CBE VISNER	DRRT	1976	76105
						For fast breeder applications.			
96-CM-246	$\sigma_{n,\gamma}$ (E)	I	THERMAL	10.0 keV	10.	SRL BENJAMIN	DFCP	1969	69350
						Accuracy of 10% in RI. To evaluate Cf production.			
96-CM-247	$\sigma_{n,\gamma}$ (E)	I	THERMAL	10.0 keV	5. 10.	SRL BENJAMIN	DFCP	1974	67149
						Shape of thermal cross section especially important. Accuracy of 5-10% in thermal value and RI. To evaluate Cf production.			
96-CM-247	$\sigma_{n,f}$ (E)	I	THERMAL	10.0 keV	5. 10.	SRL BENJAMIN	DFCP	1974	67148
						Shape of thermal cross section especially important. Accuracy of 5-10% in thermal value and RI.			

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
96-CM-247	Resonance Parameters	I	THERMAL 10.0 keV	20.		SRL BENJAMIN Accuracy of 20% in RI. To evaluate Cf production.	DFCP	1976	67147
97-BK-249	$\sigma_{n,\gamma}$ (E)	I	THERMAL 10.0 keV	10.		SRL BENJAMIN Shape of thermal cross section especially important. Accuracy of 10% in thermal value and RI. To evaluate Cf production.	DFCP	1974	69354
97-BK-249	Resonance Parameters	II	THERMAL 10.0 keV	20.		SRL BENJAMIN Accuracy of 20% in RI. To evaluate Cf production.	DFCP	1976	57151
98-CF-249	$\sigma_{n,f}$ (E)	II	10.0 keV 3.00 MeV	10.		LAS STEWART Needed for evaluation.	OMA	1976	74220
98-CF-250	$\sigma_{n,\gamma}$ (E)	I	THERMAL 10.0 keV	10.		SRL BENJAMIN Accuracy of 10% in RI. To evaluate Cf production.	DFCP	1969	69357
98-CF-250	$\sigma_{n,f}$ (E)	I	THERMAL 10.0 keV	10.		SRL BENJAMIN Accuracy of 10% in RI. To evaluate Cf production.	DFCP	1967	67153
98-CF-250	Resonance Parameters	I	THERMAL 10.0 keV	20.		SRL BENJAMIN Accuracy of 20% in RI. To evaluate Cf production.	DFCP	1976	67152
98-CF-251	$\sigma_{n,\gamma}$ (E)	I	THERMAL 10.0 keV	10.		SRL BENJAMIN Accuracy of 10% in RI. To evaluate Cf production.	DFCP	1967	67154
98-CF-251	$\sigma_{n,f}$ (E)	I	THERMAL 10.0 keV	10.		SRL BENJAMIN Thermal cross section shape especially important. 10% in resonance integral. To evaluate Cf production.	DFCP	1974	74132
		II	10.0 keV 3.00 MeV	10.		LAS STEWART Needed for evaluation.	OMA	1976	74221
98-CF-251	Resonance Parameters	I	THERMAL 10.0 keV	10.		SRL BENJAMIN	DFCP	1976	76106

Isotope	Quantity	P	Energy Range	Accuracy	ΔE	Lab Requester	Sponsor	Year	No.
98-CF-252	Spon. ν	I		.25		NBS CASWELL	NBS	1969	69359
		I		.25		For use as standard. DOE HEMMIG	DRRT	1974	72103
		I		.25		Accuracy of 1% useful. For use as standard. BET STEEN	DNR	1976	76063
98-CF-252	$N_{\text{spon}, f}(E_n)$	I		5.		NBS CASWELL	NBS	1972	72105
		I		1.		Information at low energies still needed. ΔE_n - 5%. KAP FEINER	DNR	1974	74131
		I		1.		Mean spectrum energy to 1%. For use as a standard. BET STEEN	DNR	1976	76064
		Detector efficiency must be determined from well below 1 MeV to above 10 MeV. Mean spectrum energy desired to 1 percent. For interpretation of nu ratio measurements.							
98-CF-252	$\sigma_{n, \gamma}(E)$	I	THERMAL 10.0 keV	10.		SRL BENJAMIN	DFCF	1967	67155
						Accuracy of 10% in R. To evaluate Cf production.			
98-CF-252	$\sigma_{n, f}(E)$	I	THERMAL 10.0 keV	10.		SRL BENJAMIN	DFCF	1974	74129

APPENDIX A

REACTION TABLES FOR DOE-NDC REQUEST LIST

PAGE A1

QUANTITY SYMBOL

DEFINITION

A. STRUCTURE INFORMATION

Half-life	Half life
Half-life (alpha decay)	Alpha half life
Half-life (fission)	Fission half life
Spon. ν	Average number of neutrons emitted per fission
$N_{\text{spon},f}(E_n)$	Energy distribution of fission neutrons

C. NEUTRON INTERACTIONS

$\sigma_{n,\text{Tot}}(E)$	Total cross section
$\sigma_{n,n}(E)$	Elastic cross section
$\sigma_{n,n}(E,\theta)$	Angular distribution of elastically scattered particles
$\sigma_{n,n'}(E)$	Inelastic cross section
$\sigma_{n,n'}(E,\theta)$	Angular distribution of inelastically scattered particles
$\sigma_{n,n'}(E,E_n')$	Energy distribution of inelastic particles
$\sigma_{n,n'}(E,\theta,E_n')$	Double differential (energy,angle) inelastic cross section
$\sigma_{n,\text{Sct}}(E)$	Total scattering cross section (elastic + inelastic)
$\sigma_{n,\text{Non}}(E)$	Non-elastic cross section
$\sigma_{n,\text{Abs}}(E)$	Absorption cross section
$\sigma_{n,\gamma}(E)$	Capture cross section
$N_{n,\gamma}(E,E_\gamma)$	Capture gamma ray spectra
$\sigma_{n,n'\gamma}(E,\theta_\gamma)$	Angular distribution of photons from inelastic scattering
$\sigma_{n,x\gamma}(E)$	Total photon production cross section from all photon-emitting processes
$\sigma_{n,x\gamma}(E,E_\gamma)$	Energy distribution of photons from all photon emitting processes
$\sigma_{n,x\gamma}(E,\theta_\gamma,E_\gamma)$	Double differential (energy,angle) total photon emission cross section
$\sigma_{n,2n}(E)$	Two neutron production cross section e.g. (n,2n)
$\sigma_{n,3n}(E)$	Three neutron production cross section e.g. (n,3n)
$\sigma_{n,4n}(E)$	Four neutron production cross section e.g. (n,4n)
$\sigma_{n,5n}(E)$	Five neutron production cross section e.g. (n,5n)
$\sigma_{n,xn}(E,E_n')$	Energy distribution of neutrons from all neutron emitting processes
$\sigma_{n,xn}(E,\theta,E_n')$	Double differential (energy,angle) neutron emission cross section
$\sigma_{n,p}(E)$	Proton production cross section e.g. (n,p)
$\sigma_{n,xp}(E)$	Total proton production cross section from all processes
$\sigma_{n,xp}(E,\theta,E_p')$	Double differential (energy,angle) proton emission cross section
$\sigma_{n,t}(E)$	Triton production cross section
$\sigma_{n,n't}(E)$	Neutron and triton production cross section
$\sigma_{n,\alpha}(E)$	Alpha production cross section
$\sigma_{n,n'\alpha}(E)$	Neutron and alpha production cross section
$\sigma_{n,n'3\alpha}(E)$	Emission of a neutron and three alpha particles
$\sigma_{n,n'4\alpha}(E)$	Emission of a neutron and four alpha particles
$\sigma_{n,x\alpha}(E)$	Total alpha production cross section from all processes

QUANTITY SYMBOLDEFINITIONC. NEUTRON INTERACTIONS

$\sigma_{n,\alpha}$ (E, θ E $_{\alpha}$)	Double differential (energy, angle) alpha emission cross section
$\sigma_{n,f}$ (E)	Fission cross section
Alpha (E)	Capture to fission ratio e.g. (n,g/n,f)
Eta (E)	Number of neutrons emitted per neutron absorption
ν (E)	Average number of neutrons emitted per fission
ν (E) (delayed)	Average number of delayed neutrons emitted per fission
$N_{n,f}$ (E, E $_n$)	Energy distribution of fission neutrons
$N_{n,f}$ (E, E $_n$) (delayed)	Energy distribution of delayed fission neutrons
$N_{n,\gamma}$ (E, E $_{\gamma}$) (delayed)	Spectrum of delayed gamma rays emitted in fission
$Y_{n,f}$ (E, nuclide)	Fission product mass yield spectrum
Resonance Parameters	Resonance parameters
Capture RI	Capture resonance integral

D. PROTON INTERACTIONS

$\sigma_{p,n}$ (E)	Neutron production cross section e.g. (d,n)
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E. DEUTERON INTERACTIONS

$\sigma_{d,\alpha}$ (E)	Alpha production cross section
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F. TRITON INTERACTIONS

$\sigma_{t,\alpha}$ (E)	Alpha production cross section
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G. HELIUM-3 INTERACTIONS

$\sigma_{He-3,p}$ (E)	Proton production cross section e.g. (n,p)
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H. ALPHA INTERACTIONS

$\sigma_{\alpha,\alpha}$ (E)	Elastic cross section
$\sigma_{\alpha,n}$ (E)	Neutron production cross section e.g. (d,n)
$\sigma_{\alpha,p}$ (E)	Proton production cross section e.g. (n,p)

J. LITHIUM-6 INTERACTIONS

$\sigma_{Li-6,x}$ (E)	Charged particle production (where x is one of many charged particles allowed)
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APPENDIX B

FILE OF REQUESTERSPAGE B1

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