



EANDC 85 "U"

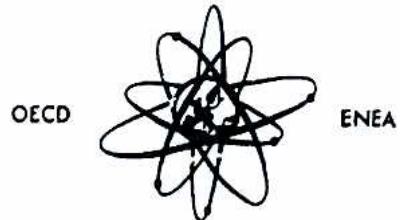
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RENTA

Compilation of
EANDC

Requests for Neutron Data Measurements



APRIL 1970

EUROPEAN-AMERICAN NUCLEAR DATA COMMITTEE

RENDA

Compilation of EANDC Requests for Neutron Data Measurements

APRIL 1970

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List of Requests for Nuclear Data 1

FOREWORD

This publication contains the up-dated compilation of EANDC requests for neutron data measurements. The list arranged according to atomic number Z, atomic weight A and requested quantity Q has been obtained with the RENDA system* processing. A brief description of the RENDA listing is given in the following pages.

The present compilation has been up-dated on the basis of the following sources :

1. CANADA

Canadian list of requests for measurements, EANDC (Can) 37 "L", and amendment communicated by Dr. G.C. Hanna on 13th January 1970.

2. BELGIUM - GERMANY - ITALY - THE NETHERLANDS

Euratom list of requests for nuclear data measurements (listing revised in October 1969 by Ceulemans Deruytter, Froehner, Knitter, Liskien, Paulsen, Schmidt).

3. FRANCE

Compilation of requests for neutron data measurements from France (October 1969).

4. JAPAN

Japanese list of requests for measurements. EANDC (J) 14 "AL", September 1969.

5. SWEDEN

Nuclear data requests for Sweden (October 1969).

6. SWITZERLAND

Nuclear data requests from Switzerland. Private communication from Dr. Hurlimann (September 1969).

* A detailed description of the RENDA system has been published under the code number EANDC 77 "U" (ENEA, Paris, November 1968).

7. UNITED KINGDOM

Current nuclear data requirements for the reactor programme in the United Kingdom (23rd January 1970).

8. UNITED STATES

Compilation of requests for nuclear cross-section measurements EANDC (US) 133 "A" (November 1969).

DESCRIPTION OF THE REQUESTS

In this listing each request is defined by the following quantities :

from left to right

1. Reference number

A serial number, the REFERENCE number, is attached to each entry of the listing sorted in ZAQ order. This number identifies an entry in one specific issue of RENDA only. (The number given in brackets below the reference number is of no use to the reader).

2. Target material

- (a) elements (natural isotopic mixture) are described by the chemical symbol according to Table 1;
- (b) separated isotopes are described by the chemical symbol and, for a specific nuclide, the atomic mass number;
- (c) molecules or mixtures are described by a five-symbol abbreviation for the chemical composition, located in the columns usually reserved for the element symbol and the mass number.

The entries for these compound nuclei are given at the end of the listing.

3. Type of microscopic data (quantity)

All the quantities presently used, along with brief descriptions of the physical notion they represent, are listed in Table 2. The system for quantities follows the scheme used in CINDA, with a few additions to include neutron-producing reactions and information on nuclear structure.

4. Descriptive modifier to the quantity (Table 3)

Some of the quantities are rather comprehensive, and a specification of the request is needed in the "comment" section. The supplementary information is normally given on the line below the standard quantity assignment: in special cases this information is given in the "comment" section.

5. Energy Range

This section is intended primarily to display the minimum and the maximum value of the incident particle or photon energy. Each of the extreme limits is recorded in units of eV as a two-digit number (between 1.0 and 9.9) along with the exponent for the corresponding positive or negative power of 10 (positive exponent if energy is above 1 eV and negative if it is below). Thus:

$$2.4 + 6 \text{ is to be read } 2.4 \times 10^6 \text{ eV} = 2.4 \text{ MeV}$$

$$2.5 - 2 \text{ is to be read } 2.5 \times 10^{-2} \text{ eV} = 0.025 \text{ eV}$$

Where only one energy is involved, such as the energy of a resonance, it is put in the E_{\min} columns, and the E_{\max} space is left blank. Where, as in resonance integrals, there is no upper bound, E_{\min} gives the low energy limits of the integral. (If, on the contrary, E_{\min} is left blank, the E_{\max} notation should be interpreted as "up to the E_{\max} value given".) An exponent with a mantissa left blank indicated the order of magnitude of energy, e.g. .. + 3 is to be read "keV energies" or the "keV region".

A limited number of alphabetic abbreviations can be used in special cases, for example for a continuous spectrum of incident neutron energies. The only presently accepted abbreviations are:

<u>Printout</u>	<u>Description</u>
COLD	below thermal
THR	thermal, normally when measured or corrected to a Maxwellian distribution characteristic of 293°K. Variations may be indicated in the "comments" section
PILE	pile spectrum (depends on source)
RES	resonance region
FISS	fission spectrum, normally U235 fissioned by thermal neutrons
TR	threshold or from threshold up to some energy specified in the E_{\max} column or the comments section
SPON	spontaneous (or fission)

6. Accuracy Requirements

The accuracy is given in per cent and tenths of per cent relative to the value measured. Thus:

$$10 \text{ is to be read } 10\%$$

$$1.5 \text{ is to be read } 1.5\%$$

$$< 5 \text{ is to be read "better than 5%"}$$

In the entries made up to the December 1968 edition of RENDA, the following special cases should be noted.

- (1) If the original request quotes a range of desired accuracy, e.g. 5 to 10%, the notation "better than" the highest figure is given in the "Accuracy" column (e.g. < 10%) and the range given in the "Comments" section.
- (2) If the original request gives many indications of the desired accuracy, e.g. for different parts of the energy range covered, no figure is given in this section and the details are given in the "Comments" section.
- (3) The accuracy requirements for U.K. requests are given in §12. A specific notation used in UK requests should be noted, viz. (E - κE) where κ in general equals 1.5 or 2, quoted along with a percentage error. For these requests the uncertainty represents the mean error over the range indicated (from E to κE).

In the new programmes the feature of supplementary information in the "accuracy" column has been included and up to five extra "words" of eight characters can be introduced. This gives the possibility to state precisely the information on accuracy that defines the request, and in most practical cases should be sufficient for the above three situations.

7. Priority Assignment

Three priorities, noted 1, 2 and 3 (1 being the highest), can be attributed to the requests. The priorities are defined as follows:

Priority 1

Nuclear data which satisfy the criteria of Priority 2 and which have been selected for maximum practicable attention, taking into account the urgency of nuclear energy programme requirements.

For example, the European American Committee for Reactor Physics 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:

- a. These data are still necessary to predict the different reactor properties after all information from integral experiments and operating reactors has been used;
or
- b. information on an important reactor parameter is in principle attainable through mathematical calculation from nuclear data only;
or
- c. these data are needed for materials required in reactor physics measurements."

Priority 2

Nuclear data which will be required during the next few years in the applied nuclear energy programme (e.g. the design of a reactor or fuel processing plant; data needed for optimum use of reactor fuel and construction materials such as neutron moderators, absorbers and radiation shields; space application and biomedical studies; data required for better understanding of some significant aspect of reactor behaviour).

Priority 3

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

Note: The priority quoted in the "Priority" column is that of the original request (see list of sources in the present compilation). In some cases, comments give further information on priority assignments.

8. Laboratory, institution (Table 4)

On the first line of a request, the laboratory or institution of the requester(s) is given in the LAB column. The abbreviations are explained in Table 4 (alphabetic order of abbreviations). The name of the requester is given in the "Comments" section immediately following the abbreviation of his laboratory or institution.

The separation between requesters' and measurers' comments (see "Comments" section) is indicated in the LAB column by the sign _____. Laboratory indications below this sign refer to work completed, in progress or planned according to the comment text following.

9. Requesters, measurers

The names of requesters are printed at the beginning of the comments section and adjacent to the corresponding laboratory abbreviation in the LAB column. The names of experimentalists are similarly entered in the comment field in connection to LAB entries below the separation line ____ (see section 8) in the LAB column. This procedure makes the names form part of the fixed format information, which can subsequently be retrieved.

10. Date of request

The year of origin of a request is indicated (when given) at the end of the first line of a request.

11. Comments

This section includes :

- I. (a) comments and specifications on the quantity requested;
 - (b) comments and specifications on the accuracy requested;
 - (c) comments on the experimental conditions, e.g. calibration, resolution of incident particle and in method of detection, etc.;
 - (d) the motivation of the request;
 - (e) other comments from requesters (for instance, modifications of request in relation to latest issue of the list).
- II. (a) remarks on existing work;
 - (b) remarks on forthcoming work;
 - (c) remarks on the status of the request.

(The laboratory indications are given in the associated LAB column space).

Sections I and II are separated by the indication in the LAB column. The laboratory abbreviations are listed in Table 4. The reference abbreviations (journals, reports) are in general those commonly used for citation in scientific literature. The CINDA reference abbreviations are given in Table 6. A few frequently-used references to conferences on nuclear data might, however, be mentioned :

3rd Conference, Geneva 1964	Proceedings of the 3rd International Conference on the Peaceful Uses of Atomic Energy, Geneva, May 1964
Symposium, Salzburg 1965, or SM/ (contribution number)	Proceedings of the IAEA Symposium on the Physics and Chemistry of Fission, Salzburg, March 1965
Conference, Antwerp 1965	Proceedings of the International Conference on the Study of Nuclear Structure with Neutrons, Antwerp, July 1965
Conference, Washington 1966 or Conference 660303	Proceedings of the Conference on Neutron Cross Sections and Technology, Washington, March 1966
Conference, Paris 1966, or CN/(contribution number)	Proceedings of the IAEA Conference on Nuclear Data - Microscopic Cross Sections and Other Data Basic for Reactors, Paris, October 1966
Conference, Washington 1968	Proceedings of the Conference on Neutron Cross Sections and Technology, Washington, March 1968

12. Comments on the accuracy requirements for U.K. data requests

As a general rule the uncertainty associated with each request should be regarded as the standard error for a single direct measurement of the parameter named. For some requests the uncertainty quoted represents the mean error over a range; between E and 2E, for example. It is difficult to present in a compact way the accuracy requirements for functions of two or more parameters, such as angular distributions of scattered neutrons, or energy spectra of secondary neutrons. It is hoped that the following commentaries may shed some light on these questions.

Accuracy requirements for secondary neutron distributions

The scattering cross-sections determine the transport and moderating properties of the medium; these properties affect the reactivity and the neutron spectrum in a reactor: however, the transport cross-section affects the reactivity more directly, while moderation plays the important role in determining the neutron spectrum. The accuracy requested in the tables for data on $\sigma_{n,n}(E, \theta)$, $\sigma_{n,n}(E, E')$ and $\sigma_{n,n}(E, E', \theta)$ might be taken as applying to measurements at each energy and each angle, but the following comments may help to show where there is most need for accuracy and where the requirements can be relaxed.

(a) Angular distributions: The measurement of angular distributions is not likely to prove very onerous, for several reasons which are given below :

- (i) It is not necessary to explore the scattering angular distribution in detail at each resonance; usually a poor resolution is quite adequate, as was pointed out earlier by Goldstein.
- (ii) At low energies the angular distribution is approximately linear; that is to say it is approximately proportional to $1 + \mu' \cdot b(E)$ where μ' is the cosine of the scattering angle in the centre of mass frame of reference. The elastic contributions to neutron transport and neutron moderation will both be adequately determined if

$$\sigma_{n,n}(E) \cdot [1 - \mu' \cdot (1 + 2/(3A))]$$

can be calculated from the data to the requested accuracy. In addition, the information available should suffice to determine $\sigma_{n,n}(E)$ to the same degree of accuracy and to confirm the approximate linearity of the angular distribution.

- (iii) At higher energies the elastic angular distribution may be sharply peaked in the forward direction, so that more detailed information becomes necessary. However, it is probable that the optical model can be used for interpolation if measurements are made at a few energies.
- (iv) The contribution of inelastic scattering to the transport cross-section is usually smaller than the elastic component and the anisotropy of inelastic scattering is usually small, and so the contribution to neutron transport will certainly be adequately determined if

$$\sigma_{n,n'}(E) \cdot [1 - \bar{\mu}' \cdot (1 + 2/3A)]$$

can be calculated from the data to the accuracy which has been requested for the elastic cross-section. Moderation by inelastic scattering is determined mainly by the reaction Q value and is nearly independent of the angular distribution.

(b) Spectrum of inelastic neutrons: The neutron spectrum in a fast reactor depends very strongly on the inelastic scattering $\sigma_{n,n'}(E, E')$, and very extensive measurements would be needed if it were not usually possible to extend the experimental information sufficiently accurately by using optical model and statistical theories. At present it is not clear what energy resolution will ultimately be needed: current limitations of computing power suggest a resolution of about 20 per cent in E and E^* . However, for many materials it is quite practicable to resolve the inelastic scattering components to the discrete energy levels of the target nucleus, and this would provide a firmer basis for theoretical extrapolations.

A minimum requirement on the cross-section data is that

$$\int_0^E \sigma_{n,n'}(E, E') \ln(E/E') dE'$$

should be determined to the requested accuracy. The accuracy required for the component cross-sections for scattering to individual levels depends on the relative contribution of each component to this integral. This expression shows that the partial cross-section is relatively more important when the energy change E/E' is large; however, it may be noted that the percentage accuracy requirement may be relaxed close to the threshold, because the cross-section is small when $E-E_T$ is small, where E_T is the threshold energy.

(c) Accuracy requirements for fission neutron spectra: In reactor calculations the spectrum of secondary neutrons from all reactions (elastic and inelastic scattering, fission, etc.) need not be resolved into its components. However, it is very convenient to resolve it into the component spectra of the individual reactions, because separately they have simpler properties and interpolation is then simpler and more reliable. The spectrum of fission neutrons varies little with the energy of the incident neutron and the secondary neutrons may have higher energies than the incident neutron: the opposite is true for scattering spectra. The secondary neutrons from fission and inelastic scattering are distributed approximately isotropically, whereas elastic scattering is strongly anisotropic at the higher energies.

When it is difficult to separate the spectra of neutrons from fission and inelastic scattering the set of accuracy requirements should be understood as applying to the combined spectrum. For fissile nuclides the fission neutron spectrum assumed in obtaining an inelastic scattering spectrum should be specified.

The requirements on the fission spectrum were first considered in terms of the fraction of neutrons emitted per unit lethargy interval, since the neutron importance varies more smoothly with lethargy than with energy. The requirement for Pu239, for example, is that the fraction of fission neutrons emitted in any unit lethargy interval should be determined to 1 per cent of the total spectrum.

Currently it is believed that a good measurement of the spectrum at one incident energy E (about 100 keV) will suffice, and that theory will then be adequate for extrapolation to other values of E . With regard to the secondary neutrons, it is felt that the fission spectrum can be adequately characterized if the mean energy E^* of the spectrum of neutrons emitted from fission is known to 2% and the integrated tails of the spectrum above 5 MeV and below 0.25 MeV are both known to 10%. These tails are each believed to contain about 5% of the total spectrum.

TABLE 1LIST OF ELEMENTS

H	1	hydrogen	Kr	36	krypton	Lu	71	lutetium
He	2	helium	Rb	37	rubidium	Hf	72	hafnium
Li	3	lithium	Sr	38	strontium	Ta	73	tantalum
Be	4	beryllium	Y	39	yttrium	W	74	tungsten
B	5	boron	Zr	40	zirconium	Re	75	rhenium
C	6	carbon	Nb	41	niobium	Os	76	osmium
N	7	nitrogen	Mo	42	molybdenum	Ir	77	iridium
O	8	oxygen	Tc	43	technetium	Pt	78	platinum
F	9	fluorine	Ru	44	ruthenium	Au	79	gold
Ne	10	neon	Rh	45	rhodium	Hg	80	mercury
Na	11	sodium	Pd	46	palladium	Tl	81	thallium
Mg	12	magnesium	Ag	47	silver	Pb	82	lead
Al	13	aluminium	Cd	48	cadmium	Bi	83	bismuth
Si	14	silicon	In	49	indium	Po	84	polonium
P	15	phosphorus	Sn	50	tin	At	85	astatine
S	16	sulphur	Sb	51	antimony	Rn	86	radon
Cl	17	chlorine	Te	52	tellurium	Fr	87	francium
Ar	18	argon	I	53	iodine	Ra	88	radium
K	19	potassium	Xe	54	zenon	Ac	89	actinium
Ca	20	calcium	Cs	55	cesium	Th	90	thorium
Sc	21	scandium	Ba	56	barium	Pa	91	protactinium
Ti	22	titanium	La	57	lanthanum	U	92	uranium
V	23	vanadium	Ce	58	cerium	Np	93	neptunium
Cr	24	chromium	Pr	59	praseodymium	Pu	94	plutonium
Mn	25	manganese	Nd	60	neodymium	Am	95	americium
Fe	26	iron	Pm	61	promethium	Cm	96	curium
Co	27	cobalt	Sm	62	samarium	Bk	97	berkelium
Ni	28	nickel	Eu	63	euroopium	Cf	98	californium
Cu	29	copper	Gd	64	gadolinium	Es	99	einsteinium
Zn	30	zinc	Tb	65	terbium	Fm	100	fermium
Ga	31	gallium	Dy	66	dysprosium	Md	101	mendelevium
Ge	32	germanium	Ho	67	holmium	No	102	nobelium
As	33	arsenic	Er	68	erbium	Lw	103	lawrencium
Se	34	selenium	Tm	69	thulium	Ku	104	kurchatovium
Br	35	bromine	Yb	70	ytterbium			

TABLE 2QUANTITIES (CROSS SECTIONS AND PARAMETERS)

(Notation used is that of H. Goldstein: "Nomenclature Scheme for Experimental Monoenergetic Nuclear Cross Sections", Fast Neutron Physics, Vol. II, p. 2227, Interscience, New York (1963).)

<u>Printout</u>	<u>Symbolic notation</u>	<u>Description</u>
TOTAL XSECT	$\sigma_{nT}(E)$	Total neutron cross section
RESON PARAMS	r, r_n, r_p, r_γ , etc.	Parameters characterizing a resonance or derived from properties of sets of resonances
ELASTIC	$\sigma_{n,n}(E)$	Total elastic scattering cross section
DIFF ELASTIC	$\sigma_{n,n}(E, \theta)$	Differential elastic scattering cross section
SCATTERING	$\sigma_{nS}(E)$ $\sigma_{nS}(E, \theta)$	Information on the total scattering cross section; $\sigma_{nS} = \sigma_{n,n} + \sigma_{n,n'}$
N PRODUCTION	$\sigma_{nP}(E)$ $\sigma_{nP}(E, \theta)$ $\sigma_{nP}(E, E')$ $\sigma_{nP}(E; E', \theta)$	Information on the collection of all processes in which one or more neutrons are produced; $\sigma_{nP} = \sigma_{n,n} + \sigma_{nM} = \sigma_{n,n} + \sigma_{n,n'} + 2\sigma_{n,2n} + 3\sigma_{n,3n} + \bar{v}\sigma_{n,f} + \sigma_{n,np} + \dots$
NONELASTIC	$\sigma_{nX}(E)$ $\sigma_{nX}(E, \theta)$ $\sigma_{nX}(E, E')$ $\sigma_{nX}(E; E', \theta)$	Information on the cross section for nonelastic processes: $\sigma_{nX}(E) = \sigma_T(E) - \sigma_{n,n}(E)$
EMISS XSECT	$\sigma_{nM}(E)$ $\sigma_{nM}(E, \theta)$ $\sigma_{nM}(E, E')$ $\sigma_{nM}(E; E', \theta)$	Information on neutron emission, i.e. on the collection of all processes in which one or more neutrons are emitted; $\sigma_{nM} = \sigma_{nP} - \sigma_{n,n}$
NONEL GAMMAS	$\sigma_{nG}(E)$ $\sigma_{nG}(E; E_\gamma)$ $\sigma_{nG}(E; E_\gamma, \psi)$	Information on the production of gamma rays by neutron interactions
TOT INELASTIC	$\sigma_{n,n}(E)$	Total neutron inelastic scattering cross section
DIFF INELAST	$\sigma_{n,n}(E, \theta)$ $\sigma_{n,n}(E, E')$ $\sigma_{n,n}(E; E', \theta)$	Cross section for inelastic scattering of neutrons represented as a function of angle, energy (or both) for the scattered neutron

<u>Printout</u>	<u>Symbolic notation</u>	<u>Description</u>
INELST GAMMA	$\sigma_{n,n,\gamma}(E, \psi)$ $\sigma_{n,n,\gamma}(E, E_\gamma)$ $\sigma_{n,n,\gamma}(E; E_\gamma, \psi)$	Information on photons emitted in inelastic neutron scattering processes
N2N XSECTION	$\sigma_{n,2n}(E)$ $\sigma_{n,2n}(E, E')$ $\sigma_{n,2n}(E; E', e)$	All information on the $(n, 2n)$ cross section, whether or not accompanied by other particles
N3N XSECTION	$\sigma_{n,3n}(E)$	All information on the $(n, 3n)$ cross section, whether or not accompanied by other particles
THRMLSCATLAW		All information on the thermal scattering law, on the scattering, both elastic and inelastic, of neutrons of thermal energies from molecules, liquids, crystals, etc.
FISSION	$\sigma_{n,f}(E)$	Cross section for neutron induced fission
ETA	η	Number of neutrons emitted per neutron absorption; $\eta = \bar{v} \cdot \frac{\sigma_{n,f}}{\sigma_{n,\gamma} + \sigma_{n,f}}$
ALPHA	α	The capture to fission ratio; $\alpha = \frac{\sigma_{n,\gamma}}{\sigma_{n,f}}$
NU	v	All information on the number of neutrons emitted per fission, chiefly as \bar{v} total, where not otherwise specified, but <u>not</u> delayed yields
F NEUT DELAY		All information, yields, energies, etc., on delayed neutrons from fission
FRAG NEUTS		Information on neutrons emitted by a given fission fragment
SPECT FISS N	$N_f(E, E')$	Spectrum of neutrons emitted in fission
SPECT FISS G	$N_f(E, E_\gamma)$	Spectrum of prompt photons emitted in fission
FISS YIELD		Yields of fission products or fission fragments
FRAG SPECTRA		Information on the energy, angle or velocity distribution of the fission fragments as a function of each other or of the fragment mass
FRAG CHARGE		Information on the charge distribution of fission fragments

<u>Printout</u>	<u>Symbolic notation</u>	<u>Description</u>
PHOTO-FISSN		Information on photon induced fission
FISS PROD GS		Information on gamma rays from fission products
RES INT FISS	$\int \frac{\sigma_{n,f}(E)}{E} dE$	Resonance integral for fission
ABSORPTION	$\sigma_{nA}(E)$	Absorption cross section; $\sigma_{nA} = \sigma_{nT} - \sigma_{nS}$
RES INT ABS	$\int \frac{\sigma_{nA}(E)}{E} dE$	Resonance integral for absorption (For fissionable nuclei includes RES INT FISS and RES INT CAPT)
DISAPPEARANC	$\sigma_{nD}(E)$	Neutron disappearance (or removal) cross sections; $\sigma_{nD}(E) = \sigma_{n,\gamma} + \sigma_{nC}$ (C = charged particle)
ACTIVATION	$\sigma_{act}(E {}^A_Z)$	Activation cross section for nuclide A_Z
RES INT ACT	$\int \frac{\sigma_{act}(E)}{E} dE$	Resonance integral for activation
RES INT CAPT	$\int \frac{\sigma_{n,\gamma}(E)}{E} dE$	Resonance integral for capture. Restricted in principle to fissionable nuclides - for non-fissionable nuclides see RES INT ABS
N, GAMMA	$\sigma_{n,\gamma}(E)$	Radiative capture cross section
SPECT NGAMMA	$N_\gamma(E; E_\gamma)$	Spectrum of gamma rays from radiative neutron capture
N, PROTON	$\sigma_{n,p}(E)$ $\sigma_{n,p}(E, \alpha)$	Information on reactions emitting one or more protons only
N, DEUTERON	$\sigma_{n,d}(E)$ $\sigma_{n,d}(E, \alpha)$	Information on reactions emitting one or more deuterons only
N, TRITON	$\sigma_{n,t}(E)$ $\sigma_{n,t}(E, \alpha)$	Information on reactions emitting one or more tritons only
N, HELIUM3	$\sigma_{n,{}^3He}(E)$ $\sigma_{n,{}^3He}(E, \alpha)$	Information on reactions emitting one or more helium-3 particles only
N, ALPHA	$\sigma_{n,\alpha}(E)$ $\sigma_{n,\alpha}(E, \alpha)$	Information on reactions emitting one or more alpha-particles only
N, N PROTON	$\sigma_{n,np}(E)$	Information on the (n,np) reactions
PROTON, N	$\sigma_{p,n}(E)$	Information on the (p,n) reactions

<u>Printout</u>	<u>Symbolic notation</u>	<u>Description</u>
GAMMA, N	$\sigma_{\gamma,n}(E_\gamma)$	Cross sections of photoneutron reaction.
NUCL. LEVELS		Information on details of nuclear structure: levels, spins and parities, etc.
LVL DEN LAW		All information on the density of levels in the continuum range: temperature, functional forms, etc.
MISCELLANEOUS		Information on various quantities defined in the associated comment, which are not naturally included in any one of the quantities listed

A few of the "collective" cross sections might be unfamiliar, and some "sum rules" for these cross sections may be helpful.

$$\begin{aligned}
 \text{Total} &= \sigma_{nT} = \sigma_{n,n} + \sigma_{nX} = \text{Elastic} + \text{Nonelastic} \\
 &= \sigma_{nS} + \sigma_{nA} = \text{Scattering and Absorption} \\
 \text{Scattering} &= \sigma_{nS} = \sigma_{n,n} + \sigma_{n,n'} = \text{Elastic} + \text{Inelastic} \\
 \text{Nonelastic} &= \sigma_{nA} = \sigma_{nT} - \sigma_{n,n} \\
 \text{N Production} &= \sigma_{nP} = \sigma_{n,n} + \sigma_{n,n'} + 2\sigma_{n,2n} + 3\sigma_{n,3n} + \bar{\nu}\gamma_{n,f} + \dots \\
 \text{Emission} &= \sigma_{nM} = \sigma_{n,n'} + 2\sigma_{n,2n} + 3\sigma_{n,3n} + \bar{\nu}\gamma_{n,f} + \dots \\
 \text{Absorption} &= \sigma_{nA} = \sigma_{nT} - \sigma_{nS} \\
 \text{Disappearance} &= \sigma_{nD} = \sigma_{n,\gamma} + \sigma_{nC} \quad (C = \text{charged particle})
 \end{aligned}$$

TABLE 3
QUANTITY MODIFIERS

<u>Printout</u>	<u>Description</u>
energy dist	energy distribution (spectrum) of emitted particles or photons
(energy)	energy distribution requested as a secondary or alternative quantity
<energy >	average over the energy interval stated is requested as a supplementary or alternative quantity
angular dist	angular distribution of emitted particles or photons
expans.coeff	coefficients for expansion in orthogonal polynomials
energy, angle	energy distributions requested as a function of angle
(averaged)	a specified average (see comment) of the principal quantity is requested as secondary or alternative quantity
spectrum	(specified in comment)
ratio xsect	ratio of cross sections or cross section measured relative to standard specified in comment
relative	quantity other than cross section measured relative to standard specified in comment
(alpha)	capture to fission ratio
(eta)	the number of neutrons emitted per absorption
reson.integ	resonance integral of principal quantity
(res. int)	resonance integral requested as secondary or alternative quantity
() res. int	resonance integral requested for region above energy range stated for principal request
(res. param)	resonance parameters requested as secondary or alternative quantity
see comment	more extensive explanation given in comment
gammaspectra	energy spectra of emitted gamma rays
absolute	an absolute measurement (i.e. not directly or indirectly related to a standard)
yield	yield of emitted particles is requested as secondary or alternative quantity
res.energy	
alpha width	
fissionwidth	
gamma width	
neutronwidth	
protonwidth	
total width	
absorpwidth	

For requests on resonance parameters the Quantity "Resonance Parameters" is used and the request is specified by supplementary modifiers or in the comment

TABLE 4LABORATORIES (ALPHABETIC BY ABBREVIATION)

AC	AEROSPACE CORPORATION, SAN BERNARDINO, CALIFORNIA	USA
AE	AB ATOMENERGI, STUDSVIK + STOCKHOLM	SWEDEN
AFT	AIR FORCE INSTITUTE OF TECHNOLOGY	USA
AFW	AIR FORCE WEAPONS LABORATORY, KIRTLAND, NEW MEXICO	USA
AI	ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.	USA
ALD	AWRE, ALDERMASTON	UNITED KINGDOM
AMS	U. OF AMSTERDAM+IKO	NETHERLANDS
ANL	ARGONNE NATIONAL LAB., LEWIS, ILLINOIS	USA
BRC	BROWN-BOWERI/KRUPP, MANNHEIM	GERMANY
BCN	BOSTON COLLEGE, BOSTON, MASS.	USA
BET	WESTINGHOUSE, BETTIS ATOMIC POWER LAB., PITTSBURGH	USA
BLG	BELGIUM	BELGIUM
BN	BELGONUCLEAIRE	BELGIUM
BNL	BROOKHAVEN NATIONAL LAB., UPTON, N.Y.	USA
BNN	BATTELLE-NORTHWEST, RICHLAND, WASH. (FORM. HANF. AT. PROD.)	USA
BOL	BOLOGNA	ITALY
BOS	BOSE INST., CALCUTTA	INDIA
BRC	CEN BRUYERE LE CHATEL	FRANCE
CAD	CDRABACHE, BOUCHES DU RHONE	FRANCE
CCP	USSR	USSR
COL	COLUMBIA U., NEW YORK CITY, N.Y.	USA
CRC	CRALK RIVER, ONTARIO	CANADA
DAV	U. OF CALIFORNIA, AT DAVIS	USA
DSM	DOUGLAS AIRCRAFT, SANTA MONICA, CALIFORNIA	USA
DUB	JOINT INSTITUTE FOR NUCLEAR RESEARCH, DUBNA	USSR
PAR	FONTEWAY-AUX-ROSES, SEINE	FRANCE
PEI	PIZIKO-ENERGETICHESKIJ INSTITUT, OMINNSK	USSR
POA	RESEARCH INSTITUTE OF NAT'L DEFENSE, STOCKHOLM	SWEDEN
PR	FRANCE	FRANCE
FRK	J. W. GOETHE UNIVERSITY, FRANKFURT	GERMANY
FSU	FLORIDA STATE U., TALLAHASSEE, FLORIDA	USA
GA	GENERAL ATOMIC, SAN DIEGO, CALIFORNIA	USA
GDT	GENERAL DYNAMICS, PORT WORTH, TEXAS	USA
GE	GENERAL ELECTRIC - NUCLEAR MATERIALS	USA
GEL	R.C.N. EURATOM, GEEL	BELGIUM
GES	GE-SCHENECTADY (DIFFERENT FROM KAPL)	USA
HAN	INST. FUR EXPERIMENTALPHYSIK, HAMBURG	GERMANY
HAR	AWRE, HARWELL	UNITED KINGDOM
IAP	INTER. ATOMIC ENERGY AGENCY, VIENNA	AUSTRIA
IPU	INSTITUT FIZIKI AN UKRAINSKOJ SSR, KIEV	USSR
INC	IDAH0 NUCLEAR CORPORATION, IDAHO FALLS, IDAHO	USA
ISP	EURATOM, ISRA	ITALY

JAE	JAPAN ATOMIC ENERGY RESEARCH INST. TOKAI	JAPAN
JUL	KERNFORSCHUNGSAVAGE JUELICH	GERMANY
KAP	KNOLLS ATOMIC POWER LAB., SCHENECTADY, NEW YORK	USA
KPK	KERNPFSCHUNGSZENTRUM KARLSRUHE	GERMANY
KIL	U. OF KIEL	GERMANY
KUR	I.V. KURCHATOV ATOMIC ENERGY INST., MOSCOW	USSR
LAS	LOS ALAMOS SCIENTIFIC LAB., NEW MEXICO	USA
LEB	LEBEDEV-PIZ-TEKH INST. (PIAN), MOSCOW	USSR
LOK	LOCKHEED AIRCRAFT, SUNNYVALE, CALIF.	USA
LOM	U. OF LONDON	UNITED KINGDOM
LRC	NASA LEWIS RES.CENTRE, CLEVELAND, OHIO	USA
LRL	LAWRENCE RADIATION LAB., LIVERMORE, CALIFORNIA	USA
MCA	MCMASTER U., ONTARIO	CANADA
MND	MOND LAB., MIAMISBURG, OHIO	USA
MOL	CEB MOL	BELGIUM
MTR	PHILLIPS PETROLEUM CO.-ATR., IDA FALLS, IDAHO	USA
MUA	MUSLIM UNIVERSITY, ALIGARH	INDIA
MUN	TECHNISCHE HOCHSCHULE MUENCHEN, MUNICH	GERMANY
MAP	U. OF NAPLES	ITALY
MCS	NORTH CAROLINA STATE COLLEGE, RALEIGH	USA
MOL	U.S. ARMY NUCLEAR DEFENCE LAB.	USA
MED	NETHERLANDS	NETHERLANDS
MPL	NATIONAL PHYSICAL LABORATORY, TEDDINGTON	UNITED KINGDOM
ORL	OAK RIDGE NATIONAL LAB., TENNESSEE	USA
PAD	U. OF PADUA	ITALY
RDT	DIV.OF REACTOR DEV.+ TECH., USARC	USA
RPI	RENSSELAER POLYTECHNIC INST., TROY, NEW YORK	USA
SAC	CEN SACLAY, SEINE ET OISE,	FRANCE
SCT	U. OF CAPE TOWN	SOUTH AFRICA
SNP	SPACE NUCLEAR PROPULSION OFFICE, CLEVELAND, OHIO	USA
SRE	SIRIENS REACTORENTWICKLUNG, ERLANGEN	GERMANY
SRL	SAVANNAH RIVER LAB., AIKEN, S.C.	USA
TNC	TEXAS NUCLEAR CORP., AUSTIN, TEXAS	USA
TUR	U. OF TORINO	ITALY
JI	U. OF ILLINOIS	USA
OKW	WINDSCALE REACTOR DEVELOPMENT LAB., UKAEA	UNITED KINGDOM
VNV	CEN VILLENEUVE	FRANCE
WAL	WESTINGHOUSE ASTRONUCLEAR LAB., PITTSBURGH	USA
WIN	ABE, WINFIELD	UNITED KINGDOM
WUR	EIDG. INSTITUT FUER REAKTORFORSCHUNG, WUERENLINGEN	SWITZERLAND
WNA	U. OF WARSAW+PAN.	POLAND
TAC	YALE U., NEW HAVEN, CONNECTICUT	USA

TABLE 5LIST OF REQUESTERS

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TABLE 6JOURNALS (CINDA ABBREVIATIONS)

(JOURNAL ABBREVIATIONS GENERALLY FOLLOW THOSE GIVEN IN
 NUCL.SCI.ABSTRACTS VOLUME 20, 1)
 (FOR REPORTS SEE ALSO REPORT COUP INDEX IN NUCL.SCI.ABSTRACTS)

55GENEVA UN. CONF. ON PEACEFUL USES OF AT. ENERGY, GENEVA 1955	
55MOSKVA CONF. USSR ACADEM. SCI ON PEACEFUL USE OF AT. EN.	USSR
56KIEV KIEV CONFERENCE, 1956	USSR
57COLUMBIA CONFERENCE AT COLUMBIA UNIVERSITY, 1967	USA
58GENEVA UN. CONF. ON PEACEFUL USES OF AT. ENERGY, GENEVA 1958	
58PARIS PARIS CONF. ON NUCLEAR SPECTROSCOPY, JULY 1958	FRANCE
59TASHKENT TASHKENT CONF.	USSR
60KINGSTON (FORMERLY ENTERED AS PIC KINGTN) U.N.CONFERENCE, KINGSTON, CANADA, AUG. 1960	CANADA
60VIENNA PILE NEUTRON RESEARCH IN PHYSICS, OCTOBER 1960	Austria
60VIN-IN (TO BE CHANGED TO 60VIEN)	
THE SCAT NEUTRONS IN LIQUIDS+ SOLIDS, VIENNA, OCT 1960 TAPA	
60WALTAIR NUCLEAR PHYSICS SYMPOSIUM, WALTAIR, FEBRUARY 1960	INDIA
61BOMBAY NUCLEAR PHYSICS SYMPOSIUM, BOMBAY, FEBRUARY 1961	INDIA
61MARCH PROCEEDINGS OF THE RUTHERFORD JUBILEE INTERNATIONAL CONFERENCE MANCHESTER 4-8 SEPTEMBER 1961 J.R. BIRKS EDITOR, LONDON 1961	
62RPI (=NEUTRAPHYS. INST.)	
61SACLAY PANDC TIME-OF-FLIGHT CONF. SACLAY, JULY 1961=NEUTTCP (PANDC) JULY 1961=NEUTTOF (PANDC)	FRANCE
61VIENNA PHYSICS OF FAST AND INTERMEDIATE REACTORS, VIENNA, AUGUST 1961 TAPA STI/PUR/49	
62BNL PROCEEDINGS OF THE BROOKHAVEN CONFERENCE ON NEUTRON THERMALIZATION, BROOKHAVEN NATIONAL LAB., UPTON, N.Y., APRIL 30-MAY 2, 1962. PUBLISHED AS PNL-719	
62CHALKR INELASTIC SCAT OF NEUTRONS IN LIQUIDS+ SOLIDS, SYMPOSIUM CHALK RIVER, SEPTEMBER 1962	CANADA
62MADRAS NUCLEAR PHYSICS SYMPOSIUM, MADRAS, FEBRUARY 1962	INDIA
62PADUA DIRECT INTERACTIONS AND NUCLEAR REACTION MECHANISMS, PADUA, SEPTEMBER 3-8, 1962. GORDON AND BREACH NEW YORK 1963	
62VIENNA OLD 61 VIENNA ENTRIES WERE MADE AS 62VIENNA	
63ANL INTERNATIONAL CONFERENCE ON NUCLEAR PHYSICS WITH REACTOR NEUTRONS, ARGONNE NATIONAL LAB., ARGONNE, ILLINOIS, OCTOBER 15-17, 1963. PUBLISHED AS ANL-6797	
63HOUST PROGRESS IN FAST NEUTRON PHYS., PICP D. U.S.A	
63MARCH CONF. ON LOW+MEDIUM ENERGY NUC. PHYS., MANCHESTER	UK
63SAO PAULO UTILISATION OF RESEARCH REACTORS SYMPOSIUM, SAO PAULO 1963	BRAZIL
64DURNA DURNA CONFERENCE, 1964	USSR
64GENEVA UN. CONF. ON PEACEFUL USES OF AT. ENERGY, GENEVA 1964	
64BOMBAY PROC. OF AN IAEA SYMPOSIUM ON 'INELASTIC SCATTERING OF NEUTRONS IN SOLIDS AND LIQUIDS' BOMBAY 1964	
65CHANDIGARH NUCLEAR+SOLID STATE PHYS. SYMPOSIUM, CHANDIGARH	

	FEBRUARY 1964	INDIA
64PARTS	COMPTES RENDUS DU CONGRES INTERNATIONAL DE PHYSIQUE NUCLEAIRE, PARIS, 2-9 JUILLET 1964	
65CALCUTTA	NUCLEAR+SOLID STATE PHYS. SYMPOSIUM, CALCUTTA,	
	FEBRUARY 1965	INDIA
65IAEA	PERSONNEL DOSIMETRY FOR RADIATION ACCIDENTS. PROC. SYMP. VIENNA 8-12 MARCH 1965	
65ANTWERP	INTERNATIONAL CONFERENCE ON THE STUDY OF NUCLEAR STRUCTURE WITH NEUTRONS ANTWERP, 19-23 JULY 1965	
65KPR	INT. SYM. ON POLARIZ. PHEN. IN NUCLEI, KARLSRUHE	GERMANY
65KRESRKh	SYMPOSIUM ON PULSED NEUTRON RESEARCH, KARLSRUHE, 10-14 MAY 1965	
65MINSK	NUC. SPECTROSCOPY CONFERENCE, JAN. 1965. PAPERS IN IZV 29-30, 1965/66	USSR
65SAALZP	CONF. ON THE PHYSICS AND CHEMISTRY OF FISSION, SALZBURG, 1965	
66ANL	CONF. ARGONNE NAT'L LAB, OCT. 1966 PUBLISHED AS ANL-7320 USA	
66PERKELEY	RADIATION MEASUREMENTS IN NUCLEAR POWER CEGB CONFERENCE, PERKELEY, ENGLAND, SEPTEMBER 1966	UK
66BOMBAY	NUCLEAR+SOLID STATE PHYS. SYMPOSIUM, BOMBAY,	
ACA	ANALYTICA CHIMICA ACTA	NETHERLANDS
ACJ	ACTA CRYM. SCANDINAVICA	DENMARK
ACR	ACTA CRYSTALLOGRAPHICA	DENMARK
ACT	(THE ACTINIDE ELEMENTS) NAT'L NUCLEAR ENERGY SERIES, DIVISION IV, VOL. 14A, 1954	
AD-	DEPT OF DEFENSE, REPORT SERIES	USA
ADC	ANNALES DE CHIMIE	FRANCE
ACP	ANN. PHYSIK (ANNALEN DER PHYSIK)	GERMANY
AE	ATOMNAYA ENERGIYA /SJA//EAP/(/JEP/)	USSR
AE-	AKTIEBOLAGET ATOMENERGI, STOCKHOLM, REPORT SERIES	SWEDEN
AEC-TP-	DIV. OF TECH. INFO. EXT. AEC TRANSLATIONS	USA
AECO-	(CONT. OF AEC-TP) E.T.T.P. REPORTS EPP.DISCNT. 1960	USA
AECD/	REPORTS OF ATOMIC ENERGY CENTRE, DACC	PAKISTAN
AECL-	ATOMIC EN. OF CAN. LIM., CHALK RIVER, REPORT SERIES	CANADA
AECLU-	DIV. OF TECH. INFO. EXT. AEC REPORT SERIES. EXTINCT	USA
AEET	ATOMIC ENERGY EST. TROMRAY REPORT SERIES	INDIA
AEER-	APPN-WTPPEITH REPORT SERIES	UK
AEJ	J. AT ENERGY SOC. JAPAN (NIPPON GENSHIRYOKU GAKKAISHI) JAPAN	
AEPE-	AEPE-BARWELL REPORT SERIES	UK
AF	AREKV FOR FYSIK	SWEDEN
APSAC-TR-	AIR FORCE SPEC. WEAP. CENTER, KIRTLAND REPORT SERIES	USA
APSAC-TDR-	AIR FORCE SPEC. WEAP. CENTER, KIRTLAND REPORT SERIES	USA
APWL-	AIR FORCE WEAPONS LAB, KIRTLAND, NEW MEXICO	USA
AHP	ACTA PHYS. ACAD. SCI. HUNG.	HUNGARY
AHT	ACTA TECH. ACAD. SCI. HUNG.	HUNGARY
AHSR(S)R	OKARA, HEALTH+SAFETY BRANCH. RISLEY, REPORTS.	UK
AI	ATOMICS INTERNATIONAL, CANOGA PARK, CALIF. REPORTS.	USA
ATP	ADVANCES IN PHYSICS (SUPPL. TO PHOT. MAG.)	UK
IJ	ASTROPHYSICAL JOURNAL	USA
AJP	AMERICAN J. OF PHYSICS	USA
AJS	AUSTRALIAN J. SCI.	AUSTRALIA
AK	ATOMKI KOZLEMENYPK	HUNGARY
AKR	ATOMKERNENERGIE	GERMANY
AKS	ATOMKI KOZLEMENYPK, SUPPLEMENT	HUNGARY
AN-	AFROJET GENERAL NUCLEARONICS, SAN RAMON, CALIF.	USA
ANA	ANALYST, TRP	UK
ANL-	ARGONNE NAT'L LABORATORY, REPORT SERIES	USA

ANN REV N SCI (SEE ARR)	ANNUAL REVW. OF NUC. SCIENCE	USA
ANS	TRANS. AREP. NUCL. SCI.	USA
AP	ANN. PHYS. (NY) (ANNALS OF PHYSICS)	USA
APA	ACTA PHYSICA AUSTRIACA	AUSTRIA
APEX-	GEN. EL.CO., AIRCRAFT NUCL.PROP.DRPT.,CTNCT.,EXTINCT.	USA
APH	ANN. PHYS. (PARIS) (ANNALES DE PHYSIQUE)	FRANCE
APE	APPLIED PHYSICS LETTERS	USA
APP	ACTA PHYSICA POLONICA	POLAND
APS	ACTA POLYTECH. SCAND., PHYS.NUCL. SER.	SWEDEN
APP-	ARMOUR RESEARCH FOUNDATION REPORTS	USA
ART	INTERN. J. APPL. RADIATION ISOTOPES	UK
ARR	ANNUAL REVIEW OF NUCLEAR SCIENCE	USA
ARS	ANALES REAL SOC. ESPAN. FIS. QUIM. (MAEPID)	SPAIN
ASI	ACTA PHYSICA SINICA	CHINA
ASS	ANN. SOC.SCI. BRUXELLES. SPR. T	BELGIUM
AT	ATOMES (PARTS)	FRANCE
ATP	ATOMPRAXIS	GERMANY
ATT	ATOMTECHNIKAT	HUNGARY
ATW	ATOMWIRTSCHAFT	GERMANY
AUJ	AUSTRALIAN J. PHYS.	AUSTRALIA
AWRF-	AWRE-ALCEMARSH REPORT SERIES	UK
AWS	SHOULD BE CAVS. THE ENTRIES WILL BE CHANGED	
BAP	BULL. AM. PHYS. SOC.	USA
BAPS	EARLIER FORM FOR BULL. AM. PHYS. SOC.	USA
BARC-	TOMRAY REPORT SERIES,FORMERLY APPT	IRELAND
BAS	BULL. ACAD. SCT. USSR, PHYS. SER. (COLUMBIA TRANS.) //IZV//	
BAW-	BAPCOCK AND WILCOX CO,LYNCHBURG,REPORT SERIES	USA
BAW-TH-	BAPCOCK AND WILCOX CO,LYNCHBURG,REPORT SERIES	USA
BCP	BULL. SOC. CRIM.	FRANCE
BCI	BULL. RES. COUNCIL ISRAEL, SECTION F.	ISRAEL
PCS	BULL. CLASSP SCI. , ACAD. POY. BELG.	BELGIUM
EJA	BRITISH J. OF APPLIED PHYSICS	UK
BJAP	(COMPLETE) BRITISH JOURNAL OF APPL.PHYSICS	UK
BJADSUP	SUPPLEMENT TO BRITISH JOURN.APPLIED PHYSICS	UK
BKE	BULL. INST. BORIS KIDRIC, VOL.18 ELECTRONICS	YUGOSLAVIA
BKN	BULL. INST. BORIS KIDRIC, VOL.18 NUCL.ENG.	YUGOSLAVIA
BKP	BULL. INST. BORIS KIDRIC, VOL.18 PHYSICS	YUGOSLAVIA
BNE	J. BRIT. NUCL. ENERGY SOC.	UK
RNL-	BROOKHAVEN NATIONAL LAB. REPORT SERIES	USA
RNLW-	PATTERSON-NORTHWEST,RICHLAND,REPORT SERIES	USA
BOS	TRANS. ROSE RPS. TNST. (CALCUTTA)	INDIA
BPC	BULL. ACAD. POLON. SCI., SER. SCI. CHIM.	POLAND
BPP	BULL. ACAD. POLON. SCI.,SER. SCI. MATH. ASTRO. PHYS.POLAND	POLAND
BPT	BULL. ACAD. POLON. SCI.,SER. SCI. TECH.	POLAND
BR-	EARLY REPORTS FROM CALENDAR LAB.	UK
PSI	FOLLETTINO DELLA SOCIETA ITALIANA DI FISICA	ITALY
CAHP	(ISFP CPP) CAHIERS DE PHYSIQUE	FRANCE
CCEN-	INSTITUT FATA COMPT. CENTRE, SACLAY. REPORTS	FRANCE
CDF	CAHIERS DE PHYSIQUE	FRANCE
CEA-	CENTRE D'ETUDES NUCLÉAIRES, SACLAY, REPORT SERIES	FRANCE
CJC	CAN. J. CRM.	CANADA
CHP	CHINESE J.PHYS. (TATWAN)	FORMOSA
CJP	CAN. J. PHYS. (FORMERLY CAN. J. OF RESEARCH VOL 1-28)	CANADA
CJR	CAN. J. OF RESEARCH (EXTINCT)	CANADA
CLOR-	PPPC. PIĘTRO PILECKI. RZĄDU DO SPRZĘTU WYKORZYST. EN. JAD. POLAND	

CHAPR	CONFERENCE NUCL. RES.+TRAINING CENTER, REPORTS.	TURKEY
CHEA-	COMMISSION NATIONALE DE ENERGIA ATOMICA REPORT SEP.	ARGENTINA
CNEA-PI/PI	COM. NAZ. PER L'ENERGIA NUCLEARE REPORT SEP.	ITALY
CNT	CAN. NUCL. TECHNOL.	CANADA
CONF-	USAEC CONFERENCE PROCEEDINGS	USA
COO	AEC, CHICAGO OPERATIONS OFFICE REPORTS	USA
CP-	REPORTS OF ARGONNE NATIONAL LAB., LE MONT ILLINOIS	USA
CR	COMPTES RENDUS	FRANCE
CRAS	(SER CR) COMPTES RENDUS	FRANCE
CRP	COMPTES RENDUS DE L'ACADEMIE BULGARAE D'ESCIENCES	BULGARIA
CRC-	NAT'L RPS. CCUN. CP CAN. CHALK RIVER, REPORT SERIES	CANADA
CRGP-	CHALK RIVER, ONTARIO, EARLY REPORTS	CANADA
CRRP-	CHALK RIVER REFCIT SERIES	CANADA
CRT-	NAT'L RES. COUNC. OF CAN., CHALK RIVER REPORT SERIES	CANADA
CU-	COLUMBIA U., NEW YORK REPORT SERIES	USA
CVAC-	CCNS. VOLTEC AIRCRAFT CORP., REPORT SERIES. EXTINCT	USA
CBR-	CORTISS-WRIGHT CORP. REPORT SERIES EXTINCT	USA
CZC	COLLECTIVE OF CZECHOSLOVAK CHEMICAL COMMUNICATIONS	CZECHOSLOVAKIA
CZJ	CZECHOSLOVAK JOURNAL OF PHYSICS	CZECHOSLOVAKIA
D2-	POURING AIRPLANE CO., SEATTLE EXTINCT	USA
DA	DISSERTATION ABSTRACTS	USA
DC-	GEN. EL. CO., AIRCRAFT NUCL. PROP. PROJ. EXTINCT	USA
DOK	DOKLADY AKADEMII NAUK SSSR /SPC/	USSR
DP-	DU PONT DE NEMOURS & CO. SAVANNAH RIVER LAB., AIKEN, REP. USA	USA
DRB-	EUPNA REPORT SERIES, ALSO KNOWN AS JTNP-REPORTS	USSR
EAF	ENERGIE ATOMTOFF	//REP//
EURDC(CAN)	EUROPEAN-AMERICAN NUCL. DATA COMMITTEE DOCUMENTS	CANADA
EURDC(B)	EUROPEAN-AMERICAN NUCL. DATA COMMITTEE DOCUMENTS	EUROPE (6)
EURDC(J)	EUROPEAN-AMERICAN NUCL. DATA COMMITTEE DOCUMENTS	JAPAN
EURDC(OR)	EUROPEAN-AMERICAN NUCL. DATA COMMITTEE DOCUMENTS	CENTER REGION
EURDC(UK)	EUROPEAN-AMERICAN NUCL. DATA COMMITTEE DOCUMENTS	UK
EURDC(US)	EUROPEAN-AMERICAN NUCL. DATA COMMITTEE DOCUMENTS	USA
PAT	ENERGIA ES ATOMTECHNIKA	HUNGARY
EOP-	REPORTS, REACTIFICE DE FRANCE	FRANCE
EPN	ERGEGNISSE DER EXAKTEN NATURWISSENSCHAFTEN	GERMANY
EIP-	EING. INST. REAKTORFORSCH. WURZENBERG REPORT SERIES	SWITZERLAND
EN	ENERGIA NUCLEARE (MILAN)	ITALY
ENP	ENERGIE NUCLEAIRE	FRANCE
EXP	EXPERIMENTAL NUCLEAR PHYSICS, E. SEGRE, 1959	UK
FON	FUNDAMENTAL (EXTINCT MAY 1966)	GERMANY
ETP	EXPTL. TECH. PHYSIK	GERMANY
FUR-	FUNDATOR REPORTS (PROG. FUR)	GERMANY
FXP	EXPERIENTIA	SWITZERLAND
FASITRISTIKAFA	PHYSICS OF FAST AND INTERMEDIATE REACTORS, VTPRNA, AUGUST 1961, TARA STI/PUR/49	
FEP	FORTSCHR. PHYSIK	GERMANY
FIIZ-	FIIZ.-ENERG.-INSTITUT, CHINISK., REPORT SERIES	USSR
FNP	FAST NEUTRON PHYSICS, FABION AND FOWLER, N.Y., 1960	
FCA4-	RES. INST. OF NAT'L DEFENCE DEPT'D REPORT SERIES	SWEDEN
PRC	'FAST REACTOR CROSS SECTIONS', S. YUPTAH ET AL. INTERNATIONAL SERIES OF MONOGRAPHS ON NUCLEAR ENERGY, PERGAMON PRESS 1960	
FPM-	FORSCHUNGS REACTOR MUNCHEN, REPORT SERIES	GERMANY
FT	FYSISK TIDSSKRIFT	DENMARK

PZK-	REPORTS GENERAL DYNAMICS, PORT WORTH, TEXAS	USA
GA-	GENERAL ATOMIC DIV., GEN. ATOM. CORP., REPORT SERIES	USA
GACD-	GENERAL ATOMIC DIV., GEN. ATOM. CORP., REPORT SERIES	USA
GEAF-	REPORTS GENERAL ELECTRIC CO., CALIFORNIA	USA
GENP-	GEN. EL. CO. ATLTGR. PROF. LAB. CINCINNATI REPORT SERIES	USA
GK	GENSHIRYOKU KOGYO (NUCL. ENG.)	JAPAN
HAB	SYN. ON NEUTRON DETECTION, DOSIMETRY AND STANDARDISATION, RAPPORT, 1962	
RHI-P-	RATH-MEITWE INSTITUT, BERLIN, REPORT SERIES	GERMANY
HP	HEALTH PHYSICS	UK-USA
HPA	HELV. PHYS. ACTA	SWITZERLAND
HW-	HANPCED REPORT SERIES (PRCH 1965 ENRL)	USA
HW-SA-	GEN. EL. CO., HANFORD AT. PROD. OP. REP. SER. (NOW RHEC)	USA
IA-	ISRAEL AEC, PEROVOT, REPORT SERIES	ISRAEL
IAA	IAEA BULLETIN	TABA
IAE-	REPORTS PRCH INST. ATOMNOJ ENERGII, KURCHATOV, MOSKVA USSR	
IAN-	INST. DE ASUNTOS NUCLEARES, BOGOTA, REPORT SERIES	COLOMBIA
IAN-P	IZV. AKAD. NAUK. EST. SSR, SER. FIZ. MATH. I TIP. NAUK	USSR
IPJ-	INST. BADAJ JADROWICZ REPORT SERIES	POLAND
IBK	BULL. INST. BORIS KIDRIC, VOL. 1-17	YUGOSLAVIA
ICD-	BULL. INF. CENT. EC JADERNY DANNYH, CBNINSK	USSR
IDO-	IDAHO OPERATIONS OFFICE, AEC, REPORT SERIES	USA
IEA-	INSTITUTO DE ENERGIA ATOMICA, UNIVERSIDADE SAO PAULO BRAZIL	
IPA-	PEPTS. ROMANIA ACAD. SCI. INST. ATOMIC PHYS.	ROMANIA
ITTRI-	REPORTS OF ILLINOIS INST. OF TECHNOLOGY	USA
IJM	ISRAEL JOURNAL OF MATHEMATICS	ISRAEL
IJP	INDIAN J. PHYS.	INDIA
IKP-	INSTITUT FUR KERNPHYSIK, FRANKFORT REPORT SERIES	GERMANY
IN-	REPORTS ICARO OP-OFFICE, AEC	USA
INCC-	REPORTS IAEA NUCL. DATA UNIT, INT. NUCL. DATA COMMITTEE, IAEA	
INDSEG-	DOCUMENTS DISTR. BY IAEA NUCL. DATA UNIT, VIENNA	IAEA
INPN	INST. NAZIONALE FISICA NUCLEARE, FLORENCE, REPORTS	ITALY
INP-	INST. PTZ. JADROWEJ (NUCL. PHYS.) PAN KRAKOW, REPORTS	POLAND
INP-	INST. PADAN JADROWICZ (NUCL. PHYS.), WARSAW, REPORTS	POLAND
IPA	INDIAN J. OF PURE AND APPLIED PHYSICS	INDIA
TPPCZ	CZECOSLOVAK PLASMA PHYSICS REPORTS	CZECHOSLOVAKIA
TRR	IEEE TRANS. ON NUCL. SCI. (VOLS 1-9) IEEE TRANS. NUCL. SC.) USA	
TS/P	BNL REPORT SERIES	USA
ITE-	REPORTS OF ITE, MOSCOW	USSR
IVU	IZV. VYSSHikh UCHEB. ZAVEDENij FIZika	USSR
IZV	IZV. AKADE. NAUK SSSR, SER. FIZ /BAS/	USSR
JAFRI-	ATOMIC ENERGY RESEARCH INST., TOKYO	JAPAN
JAP	J. APPL. PHYS.	USA
JRS	J. RES. NATL. BUR. STD.	USA
JCP	J. CHEM. PHYS.	USA
JF	JADROVA ENERGIA	CZECHOSLOVAKIA
JEL	JETP LETTERS	//ZEP//
JENER-	JOINT ESTABL. NUCL. RES., KJELLER REP. SERIES	NORWAY
JET	SOVIET PHYS.-JETP	//ZEP//
JPI	J. FRANKLIN INST.	USA
JTM	J. INORG. NUCL. CHEM.	UK
JINC	FARSIER FORM FOR J. INORG. NUCL. CHEM.	UK
JNC	J. NUCL. ENRG.	UK
JNM	J. NUCL. MATER.	NETHERLANDS
JPC	JOURNAL DE CHIMIE PHYS. ET DE PHYSICOCHIMIE BIOL. FRANCE	

JPJ	J. PHYS. SOC. JAPAN	JAPAN
JPR	JOURNAL DE PHYSIQUE(VOLS 1-23=J.PHYS.RADIOM)	FRANCE
JPST	(SPE JPJ) J. PH. SOC. JAPAN	JAPAN
JUEL-	KERNFORSCHUNGSAVLAGE, JUELICH, REPORT SERIES	GERMANY
FAPE CSBRHOELS AT.POW.LAB. CROSS SECTION NEWSLETTERS		USA
KAPE-	KNOLES ATOMIC POWER LAB., REPORT SERIES,	USA
KDV	KGL.DANSKE VIDENSKAB. SLESKAB, NAT.-PHYS. MEDD.	DENMARK
KE	KEPNENERGIP	GERMANY
KFI	KFKI KÖZLEMÉNYEK	HUNGARY
KPK-	KEPNUFORSCHUNGSZENTRUM KARLSRUHE REPORT SERIES	GERMANY
KRI	KRISTALLOGRAFIYA /SPC/	USSR
KT	KERNTECHNIK, ISOTOPENTECHNIK UND -CRETE	GERMANY
KUR-	KUPRATOV INST. REPORT SER. ALSO KNOWN AS IAE-PEPTS	USSR
LACC-	LOS ALAMOS REP. SER. CLOSED SEPT. 1968	USA
LANS-	LOS ALAMOS SC.LAB. REPORT SERIES CLOSED SEPT. 1968	USA
LA-	LOS ALAMOS SCIENTIFIC LAB. REPORT SERIES	USA
LA-DC-	LOS ALAMOS SCIENTIFIC LAB. REPORT SERIES	USA
LA-T	LOS ALAMOS REPT.SERIES	USA
LENSE-	LOCKHEED AIRCRAFT CORP. REPORT SERIES	USA
ERL-	CALIF.RES. AND DEVELOP. CO. REPORT SERIES	USA
LR-	REPORTS CP INST. INVESTIGACION AERONAUTICA Y ESP.	ARGENTINA
HAB	HOMESTEAD,DEUT.AKAD.WISS.BERLIN	GERMANY
MDDC-	MANHATTAN DISTR.,OAK RIDGE,(CONT'D AS ARCD-) RPP.SER. USA	USA
MIT	MIT, CAMBRIDGE, MASS. REPORTS	USA
MITHE-	MIT,DEP'T OF NUCL.ENGINEERING, REPORT SERIES	USA
RFP	HAGYAR FIZIKAI POLYOKPAT	HUNGARY
MSC	PER. SOC. ROY. SCI. LIEGE	BELGIUM
NAA-	NORTH AMERICAN AVIATION, DONETTE,CALIF., REPORT SPR.	USA
NAT	NATURE	UK
NAB	PROC. K. NED. AKAD. WETENSCH.	NETHERLANDS
NC	NUOVO CIMENTO	ITALY
NCS	NUOVO CIMENTO (SUPPL.)	ITALY
NC-S	(SPE NCS) NUOVO CIMENTO (SUPPL)	ITALY
ND	NUCLEAR DATA	USA
NEA-	UNITED NUCLEAR CORP. REPORT SERIES	EXTINCT
NEA-PHYS.-UNITED NUCLEAR CORP. REPORT SERIES		EXTINCT
NDP	NOTAS FIS., CENTRO BRESIL, PESQUISAS FIS.	BRAZIL
NDL-TR-	ARMY CHEM.CORPS NUCL.DEP.LAB., NC. REPORT SERIES	USA
NE	NUCLEAR ENGINEERING	UK
NEJTRONIYZ NEJTRONNAJA FIZIKA(MOSCOW 1961). TRANSLATED AS SOVIET PROGRESS IN NEUTRON PHYSICS(CONSULTANTS BUREAU,N.Y)		
NEW	NUKLEARNA ENERGIJA	YUGOSLAVIA
NEUTPHYS YEATR	NEUTRON PHYSICS,RPI, MAY 1961. PROCEEDINGS EDITED BY H.L. YEATER	
NEUTRDIFFR NEUTRON DIFFRACTION (BACON)		
NEUTTOP(PANDC)	PROCEEDINGS OF THE NEUTRON TIME-OF-FLIGHT CONFERENCE,SACLAY,JULY 1961-61SACLAY	FRANCE
NP	NUCLEAR FUSION	IAEA
NI	(SEE NIM) NUCLEAR INSTRUMENTS AND METHODS	NETHERLANDS
NIM	NUCLEAR INSTRUMENTS AND METHODS	NETHERLANDS
NIJS-	REPORTS OF NUK. INST JOSEF STEPAN, LJUBLJANA	YUGOSLAVIA
NKA	NUKLEONIKA	POLAND
NP	NUCLEAR PHYSICS	NETHERLANDS
NP-	D.T.I.E NUMBERING OF NON PROJECT REPORTS	USA
NPOS	UNKNOWN	UK

NDDC-	AER-E-BARRELL EFFECT SERIES	UK
NRL-	NAVAL RES.LAB. WASHINGTON DC, REPORT SERIES	USA
NP/P	NUCLEAR WEAPONS GROUP APPENDIX, ALDERSHASTON REP.SER.	UK
NSA	NUCLEAR SCIENCE ABSTRACTS	USA
NSR	NUCLEAR SCI. ENG.	USA
NSJ	NUCL. SCI. ABSTR. JAPAN	JAPAN
NSE	NUCLEAR SCIENCE AND APPLICATIONS	PAKISTAN
NST	NUCLEAR SCIENCE AND TECHNOLOGY	JAPAN
NTH	NFT. TIJESCR. NATURK.	NETHERLANDS
NUC	NUCLEONICS	USA
NUCL	(COMPLETE) NUCLEONICS	USA
NUR	NUKLECHNIK	GERMANY
NUKL	(SEE NUR) NUKLEONIK	GERMANY
NWS	NATURWISSENSCHAFTEN	GERMANY
NYA	TRANS N.Y. ACAD. SCI.	USA
NYO	NEW YORK OPERATIONS OFFICE, REPORT SERIES	USA
OAWA	OESTERR. AKAD. WISS., MATH+NATURW. ANZEIGER	AUSTRIA
OAWS	(PPPTV.OAW) OESTERR.AKAD.WISS., MATH+NATURW. SITZBER	AUSTRIA
OF	LAONDE ELECTRODE	FRANCE
ORNL-	OAK RIDGE NAT'L LAB. REPORT SERIES	USA
ORNL-P-	OAK RIDGE NAT'L LAB. PREPRINTS	USA
ORNL-TR-	OAK RIDGE NAT'L LAB. TECHNICAL MEMOS	USA
ORC-	REPORTS OAK RIDGE OPERATIONS OFFICE, AEC	USA
*P	A PRIVATE COMMUNICATION IS INDICATED BY *P FOLLOWED BY A PENCIL SYMBOL. USERS SHOULD CONTACT THE CENTRE COVERING THEIR GEOGRAPHICAL AREA FOR FURTHER INFORMATION.	
PA	PHYSICS ABSTRACTS	UK
PAN	POLISH ACADEMY OF SCIENCES REPORTS	POLAND
PAS	PHYSIKALISCHE ABHANDLUNGEN AUS DER SOWJETUNION (EXTINCT 1961)	
PP	PHYSIKALISCHE BLATTTER	GERMANY
PCP	PROC. CARRIDGE PHIL. SOC.	UK
PP	POSTEY PIĘTKI	POLAND
PPN	PROGR. IN FAST NEUTRON PHYSICS, PHILLIPS, RISSPR, MARION RICE UNIVERSITY 1963	
PRN	NOTES SCIENTIFIQUES, U. DE GRENOBLE	FRANCE
PRY	PHYSICA	NETHERLANDS
PHYS	(COMPLETE) PHYSICA	NETHERLANDS
PIA	PROC. INDIAN ACAD. SCI., SECT A	INDIA
PIC	GENEVA CONFERENCE (PARLISS FORM)	YARA
PIC KINGTON U.N.CONFERENCE, KINGTON, JAMAICA, 1961		YARA
PJA	PROC. JAPAN ACAD. (TOKYO)	JAPAN
PL	PHYSICS LETTERS	NETHERLANDS
PR	PHIL. MAG.	UK
PNA	PROC. NATEL. ACAD. SCI. U.S.	USA
PNE	PROGRESS IN NUCLEAR ENERGY SERIES 1. PHYSICS AND MATHEMATICS, RUGRES, LAMBERS, AND ROPOHTZ, 1958	
PNJ	PHILIPPINES NUCLEAR JOURNAL	PHILIPPINES
PNP	PROGRESS IN NUCLEAR PHYS., PRESCH, LONDON	UK
PNG	PROG.OF THE NUCL.PHYS. AND SOLID STATE PHYS. SYMP. INDIA 1962 RAERAS, 1963 BOMBAY, 1964 CHANDIGARH, 1965 CALCUTTA	INDIA
PNV	PHYSICA NORVEGICA	NORWAY
PPA	PROCEEDINGS OF PAKISTAN ACAD. SCI.	PAKISTAN
PPS	PROC. PHYS. SOC. (LONDON)	UK
PR	PHYS. REV.	USA

PR-P-	AT. EN.CF CAN.LTE, CHALK RIVER, REPORT SERIES	CANADA
PRF	PPCC. ROY. SOC. EDINBURGH	UK
PRL	PROS. REV. LETTERS	USA
PES	PPCC. ROY. SOC. (LONDON)	UK
PSS	PHYSICA STATUS SOLIDI	GERMANY
PT	PHYSICS TODAY	USA
PTF	PRIORY I TEORIJA EKSPERIMENTA	USSR
PTP	PROGR. THEORET. PHYS. (KYOTO)	JAPAN
PTPJ	(OFSOLETE) PROG.THEORETICAL PHYS., KYOTO	JAPAN
PTC-	REPORTS PRINCETON UNIVERSITY, N.J., PALMER PHYS. LAB.	USA
PTAC-	PEATT AND WHITNEY AIRCRAFT DIV., HARTFORD, REP. SERIES	USA
PZ	PHYSIKALISCHE ZEITSCHRIFT	GERMANY
PAK	PATRIOTICHESKAIA /SPA/	USSR
PCA	PATIOPHIMICA ACTA	GERMANY
PEA	ATOMIC ENERGY REVIEW	IAPB
RFF-	AKTIEFOLGET ATOMFEGGI, STOCKHOLM REPORT SERIES	SWEDEN
RIC	RIC. SCI. PPND., SPZ. A	ITALY
RISO-	RISO RESEARCH INST. REPORT SERIES	COPENHAGEN
RIZ	RADIOAKTIVNI IZOTOPI I ZRACENJA	YUGOSLAVIA
REL-	USABC MISCELLANEOUS REPORT SERIES	USA
RMP	REVISTA MEXICANA DE FISICA	MEXICO
RNP	REV. MOD. PHYS.	USA
RPC	REACTOR PHYSICS CONSTANTS NEWSLETTER (ARGONNE)	USA
PPC-	REPORTS PREIOPLAN CO., VAN NUYS, CALIF.	USA
RPI-	PENNSYLVANIA POLYTECHNIC INST. REPORTS	USA
PPP	REPORTS ON PROGRESS IN PHYSICS	UK
RR	RADIATION RESEARCH	USA
RRF	REVUE ROMAINE DE PHYSIQUE	ROMANIA
RSF	TRANS. ROY. SOC. EDINBURGH	UK
RSI	REV. SCI. INSTR.	USA
SAJ	S. AFRICAN J. SCI.	SOUTH AFRICA
SCP	ACAD. PEE. POPULARE. POSING, STUDII CERCETARI FIZ.	ROMANIA
SCI	SCIENCE, (AMFR. ASSN. FOR ADV. OF SCI.)	USA
SCP	SCI. PAPERS INST. PHYS. CHEM. RES. (TOKYO)	JAPAN
SCS	SCIENTIA SINICA (PEKING)	CHINA
SGAB-	CESTNER.GESPLIES.ATOMEN. VIENNA REPORT SERIES	AUSTRIA
SJA	SOVIET J. OF AT. ENERGY	//AP//
SND	SOVIET J. OF NUCL. PHYS.	//YPP//
SP	UNKNOWN	USSR
SPC	SOVIET PHYSICS-CRYSTALLOGRAPHY	//KRT//
SPD	SOVIET PHYSICS - DOKLADY	//DOK//
SPN	SOVIET PROGRESS IN NEUTRON PHYSICS, MOSCOW, 1961	
SPT	SOVIET PHYS.-TECH. PHYS.	//ZTP//
SPU	SOVIET PHYS.-USPEKHI	//UP//
GRA	SOVIET RADIOPHYSICS	//RAK//
SUI-	ICHA STATE U. ICWA CITY, REPORT SERIES	USA
TDS-	AECL, NUCL. POW. PLANT DIV., REPORT SERIES	CANADA
THA-	REPTS ATOMIC ENERGY FOR PEACE, BANGKOK	THAILAND
TIC-	ITV.OF TECH.TNPDRY.EXT., APC REPORT SERIES	USA
TNCC(CAN)-TRIPARTITE NUCL. CROSS-SECTIONS COMMITTEE	EXTINCT CANADA	
TNCC(UK)-TRIPARTITE NUCL. CROSS-SECTIONS COMMITTEE	EXTINCT UK	
TNCC(US)-TRIPARTITE NUCL. CROSS-SECTIONS COMMITTEE	EXTINCT USA	
TUR	'THE TRANSURANIUM ELEMENTS' NAT'L NUCLEAR ENERGY SERIES, DIVISION IV, VOL. 14P, 1964	
TUC	TRANS. CHALMERS UNIV. TECHNOL., GOTTHENSBURG	SWEDEN

UCRL-	CALIFORNIA U. REPORT SERIES	USA
UFN	USPEKHI FIZ. NAUK /SPD/	USSR
UFZ	UKRAINSKIJ FIZICHESKIJ ZHURNAL	USSR
UVJ-	ESTAV JAD. VYZKUMU (INST. NUCL. RES.), PRAHA REP'D SFR. CZECHOSLOVAKIA	
UNC-	UNITED NUCLEAR CORP., REPORT SERIES	USA
UR/C	REPTS ATOM. EN. OF CANADA, CHALK RIVER PROJECT	CANADA
UP-	REPORTS OF UNIV. ROCHESTER, NEW YORK	USA
USHNRL-	NAVAL RADIOLOG. DEP.LAB., SAN FRANCISCO REP. SERIIPS	USA
VAN	VESTNIK AKADEMII NAUK SSSR	USSR
WADC-	WRIGHT AFB DEV. CENTER, OHIO, REPORT SERIES	USA
WADC-TN	WRIGHT AFB DEV. CENTER, OHIO, REPORT SERIES	USA
WADD-TR	WRIGHT AFB DEV. DIV., OHIO, REPORT SERIES	USA
WANL-	REPORTS WESTINGHOUSE ELECTR. CORP. ASTRONUCL. LAB.	USA
WANL-THE	WESTINGHOUSE ASTRO-NUCLEAR LAB, PITTSBURG	USA
WAPD-	WESTINGHOUSE, ATOMIC POWER DIV., REPORT SERIES	USA
WASH-	APC, WASHINGTON REPORTS TO THE NCSAG	USA
XBC-	GPN. EL.CO., CINCINNATI, REPORT SERIES. PINTSHPP	USA
YF	YADERNAYA FIZIKA /SNP/	USSR
YFI	JAEFERNO-FIZICHESKIE ISSLEDOVANIJA (PROGRESS REPORTS) USSR	
YI9	YEAR TWO HPMG	CHINA
ZAP	Z. ANGEW. PHYS.	GERMANY
ZEP	ZETP LETTERS TO THE EDITOR /JPL/	USSR
ZET	Z.R. FIZSPERIM. I TEOR. FIZ. /JET/	USSR
ZFK-RH-	ZENTRALINST. KERNPHYSIK, ROSENHDCRF REPORT SERIIPS	GERMANY
ZFK-TPH-	ZENTRALINST. KERNPHYSIK, ROSENHDCRF REPORT SERIIPS	GERMANY
ZFK-DOS-	ZENTRALINST. KERNPHYSIK, ROSENHDCRF REPORT SERIIPS	GERMANY
ZFK-BP-	ZENTRALINST. KERNPHYSIK, ROSENHDCRF REPORT SERIIPS	GERMANY
ZK	Z. KRISTALLOGRAFIE	GERMANY
ZMM	Z. ANGEW. MATH. MECH.	GERMANY
ZMP	Z. ANGEW. MATH. PHYS.	SWITZERLAND
ZN	Z. NATURFORSCH.	GERMANY
ZP	Z. PHYSIK	GERMANY
ZPC	Z. PHYSIK. CHEM. (LEIPZIG)	GERMANY
ZPF	Z. PHYSIK.CHEM. (FRANKFURT)	GERMANY
ZTF	ZH. TEKH. FIZ.	USSR

REF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P	LAB	REQUESTER	COMMENTS	RAD
			MIN MAX	(%)				
1 [2176+]	^{1H}	TOTAL XSECT	1.0+5 2.0+7	0.5	1	RNL	Avery, F. ANL Butler, D.K. ORNL Maienschein, F.C. For use as standard, accuracy of 1% useful.	69
2 [2177+]	^{1H}	TOTAL XSECT	1.0+5 2.0+7	0.5	1	NCS	Landon, H.H. For use as standard, accuracy of 1% useful.	69
3 [2178+]	^{1H}	DIFF ELASTIC	3.0+6 2.0+7	0.5	1	NCS	Landon, H.H. For use as standard, 0.5% accuracy. No data to required accuracy.	69
4 Withdrawn	^{1H}	γ ,GAMMA	THR	< 0.3	1	JAE	Japanese Nuclear Data Committee (JNDC). Precise standardization of emission rate of neutron source. Data available about 0.6%.	68
5 [2179+]	^{1H}	γ ,GAMMA	1.0+6 1.5+7	2.0	2	GR	Russell, J. Required is radiative capture cross section relative to elastic scattering of hydrogen. To get $D(\gamma,n)$ via reciprocity; to have standard $\epsilon(\gamma,n)$.	69
6 Withdrawn	^{2D}	DIFF ELASTIC	8. -3 1.5-2	5	1	SAC	Joly, R. $D(\text{THETA})$ ABOUT 5%	68
7 [1529+]	^{2D}	DIFF ELASTIC	8. +6 1.5+7	5	1	VNV	Vidal, J.C. $D(\text{THETA})$ ABOUT 5%	69
8 [1362]	^{2D}	#2W XSECTION TR	1.5+7 <10'	1	VNV	Vidal, J.C. Threshold about 3MeV.	68	
9 [1530+]	^{2T}	#2W XSECTION TR	1.5+7 <20	2	VNV	Vidal, J.C. Threshold about 8MeV.	69	
10 [2180+]	^{3He}	TOTAL XSECT	1.0+3 3.0+6	1.0	1	GA	Russell, J. As standard cross section for He ³ detectors. Absolute values are required. No data exist which cover this energy range	69
11 [2181+]	^{3He}	DIFF ELASTIC	1.0+3 3.0+6	7.0	2	GA	Russell, J. As standard cross section for He ³ detectors. Absolute values are required. No data exist which cover this energy range	69
12 [2182+]	^{3He}	DIFF ELASTIC	1.4+7	10	3	LAS	Hotz, H.T. Absolute values are required. Needed to establish limit on non-elastic. No data exist which cover this energy range	69
13 [1531+]	^{3He}	γ ,PROTON	1. +3 1.5+7	1F	2	VNV	Vidal, J.C.	69
14 [2184+]	^{3He}	γ ,PROTON	1.0+3 3.0+6	3.0	1	GA NCS	Pussell, J. Landon, H.H. For use as secondary standard. Intermediate accuracy useful. Absolute values required. No data exist which cover this energy range	69
15 [2183+]	^{3He}	γ ,PROTON	1.0+4 3.0+6	1.0	2	GA	Nordheim, L.W. ANL Butler, D.K. For use as secondary standard. Intermediate accuracy useful. Absolute values required. No data exist which cover this energy range	69
16 [1576+]	^{3He}	γ ,PROTON	1. +5 1. 6	2	2	HAP	Rose, R. Used as a standard in cross-section measurements. Energy dependence needed more accurately. Note changed energy range.	69

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REF [REG]	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P MIN MAX (%)	LAB	REQUESTER , COMMENTS	YEAR	
17 [2185+]	^3He	n,PROTON	1.0×10^5 to 10^6	3.0 to 5.0	2 LAS	Diven, B.C. For use as secondary standard. Intermediate accuracy useful. Absolute values required. --- No data exist which cover this energy range	69	
18 Withdrawn	^3He	n,PROTON	1.0×10^6 to 10^6	2	2 HAR WIN	Wright, S.R. Campbell, C.G. Flux monitor for neutron spectrum measurements and for fast reactors. --- See IZV 32,148 (1/66), also PR 122,1853 (6/61)		
19 Withdrawn	^3He	n,PROTON angular dist	1.0×10^6 to 10^6	10	2 HAR WIN	Wright, S.R. Campbell, C.G. Flux monitor for neutron spectrum measurements and for fast reactors.		
20 [2186+]	^3He	n,PROTON	3.0×10^6 to 10^7	5.0	2 LAS	Diven, B.C. For use as secondary standard. Intermediate accuracy useful. Absolute values required. --- No data exist which cover this energy range	69	
21 Withdrawn	Li	DIFF PLASTIC	4.0×10^6 to 10^7	<20	2 PAR	Pastoin, J. Accuracy on $\langle 1 - \cos \theta \rangle$ above 6MeV. Inelast xsect for the first level has to be included. ~5MeV accuracy on energy and 5° to 10° accuracy on angle. Request may be satisfied by recent results (Hopkins and Drake) up to 7.5MeV.		
22 [2187+]	Li	MONEL GAMMAS	2.0×10^5 energy,angle	15 OR 5RR	2 SNP	Pleishman, R.P. Incident energy : 258±10keV. Absolute $\sigma(\text{Fy})$ required for all $\text{E}_y > 200\text{keV}$. Neutron energy intervals required : resonance region: reproduce major variations in $\sigma(\text{Fy})$ over 1 MeV : 50-keV intervals. Gamma energy resolution required: <2.5MeV, 10% ; > 2.5MeV, 250 keV. --- None which satisfy criteria.	69	
23 [1587+]	Li	MONEL GAMMAS	4.0×10^6 to 10^7	15 OR 5RR	1 SNP	Pleishman, R.P. Energy resolution : ±1.5keV. Absolute $\sigma(\text{Fy})$ required for all $\text{E}_y > 200\text{keV}$. Neutron energy intervals required : resonance region: reproduce major variations in $\sigma(\text{Fy})$ over 1 MeV : 50-keV intervals. Gamma energy resolution required: <2.5MeV, 10% ; > 2.5MeV, 250 keV. --- None which satisfy criteria.	69	
24 [1589+]	^{10}Li	TOTAL XSECT	THR	1.0×10^5	1.0	1 NCS	Landon, H.H. Needed as an aid to determining (n,α) . --- Harwell has recent 1964-1969 data. See PR/NP 14.	66
25 [1588+]	^{10}Li	TOTAL XSECT	5.0×10^2 to 10^6	2.0	1 LAS	Motz, H.T. Needed as an aid to determining (n,α) . --- Harwell has recent 1964-1969 data. See PR/NP 14.	66	
26 [1590+]	^{10}Li	ELASTIC	THR	1.0×10^5 1 TO 5%	1 NCS	Landon, H.H. Accuracy 1 to 5%, to obtain n,α to 2% $\sigma(\theta)$ may be required at upper end. $\sigma(n,n)$ inferred from resonance parameters= ARPE PR/NP-14.	69	
27 [1363]	^{10}Li	DIFF PLASTIC	7.5×10^6 to 10^7	5	2 VNV	Vidal, J.C. Experimental data and theoretical models are in agreement for $\cos(\theta) < .5$.	68	
28 [1364+]	^{10}Li	N2N XSECTION	THR	1.0×10^7 to 10^7	2 VNV	Vidal, J.C. Threshold about 6MeV. Discrepancies exist on value at 14.1MeV. No data below.		
29 Withdrawn	^{10}Li	ABSORPTION	1.0×10^4 to 10^5	2	2 WIN	Campbell, C.G. For fast reactors. See Cox JNP 21,271 (3/67).		

REF [PEG]	NUCLIDE	QUANTITY	ENERGY (EV)			ACCURACY (%)	LAB	REQUESTER, COMMENTS	YEAR
			MIN	MAX	(%)				
30	^6Li	absorption	2.0+5	1. +6	1.5	2	MIN ---	Campbell, C.G. For fast reactors. See Cox JNE 21,271 (3/67).	
Withdrawn									
31	^6Li	absorption	1. +6	5. +6	10	2	MIN ---	Campbell, C.G. For fast reactors. See Cox JNE 21,271 (3/67)	
Withdrawn									
32	^6Li	n, deuteron	TR	1.5+7	5.0	1	SAC	Joly, R.	69
Withdrawn									
33	^6Li	n, alpha angular dist	THR	1.4+7	3.0	1	NCS	Landon, H.H. Accuracy 2% below 100 keV, 3% above. Ratio to $^{10}\text{B}(n,\alpha)$ desired. Harwell infers from total AERE PR/NP/14.	69
[1594+]				1 TO 3%			---		
34	^6Li	n, alpha ratio x-sect	THR	1.6+5	2.0	1	NCS	Landon, H.H. Ratio to $^{81}\text{O}(n,\alpha)$ required, to aid in determining possible structure.	69
[1595+]				1 TO 2%					
35	^6Li	n, alpha angular dist	5.0+2	3.0+6	3	1	LAS	Hansen, G. For use as standard below 3 MeV. Accuracy of 3% useful E-resolution must reproduce true shape. Absolute n's required standard below 150 keV. Harwell infers from total AERE PR/NP/14.	69
[1592+]				1 TO 3%			---		
36	^6Li	n, alpha	1.0+3	3.0+6	1.0	1	ANL ANL	Avery, R. Butler, D.K. For use as standard below 3 MeV. Accuracy of 3% useful E-resolution must reproduce true shape. Harwell infers from total AERE PR/NP/14.	69
[1591+]							---		
37	^6Li	n, alpha angular dist	1.0+3	3.0+6	3.0	1	GA	Russell, J. For use as standard below 3 MeV. Accuracy of 3% useful E-resolution must reproduce true shape. Harwell infers from total AERE PR/NP/14.	69
[1593+]							---		
38	^6Li	n, alpha see comment	1.0+3	1.8+7	10.0	2	BNW	Mc Elroy, W.N. Quantity : total alpha production. For use as fluence monitor. Total helium production for mass spectrometer.	69
[1596+]									
39	^6Li	n, alpha angular dist	5. +3	5. +5	5	1	MOL	Motte, P. Determination of n-spectra from triton energy distributions. Ang.resol.10°, neutron energy resol 5 keV up to 150 keV and 10 keV up to 500 keV.	68
[1418]									
40	^6Li	n, alpha	5. +3	1.5+7	5	1	KPK MOL	Kuechle, M. Motte, P. Discussion on data from thermal to 1 MeV by Spaepen (conf.Paris 1966). See also discussion of experimental discrepancies by Bergstroem et al. in CCNR - newsletter nr.3, Oct.66.	
[23]							---		
41	^6Li	n, alpha angular dist	5.3+3	1.3+7	5	1	LAS	Botz, H.T. For use as standard below 3 MeV. Accuracy of 3% useful E-resolution must reproduce true shape. Absolute n's required standard below 150 keV. Harwell infers from total AERE PR/NP/14.	69
[1593+]				TO 5%			---		
42	^6Li	n, alpha	1.0+4	5. +6	2	2	HAR WTN	Wright, S.B. Campbell, C.G. Flux monitor for neutron spectrum measurements and for fast reactors. See Schwarz CCNR-NW/3 (7/66) -- also Coates APPR-DR/NP 11 and WASH 1074,68 (4/67) and WASH 1071,135 (N/66)	
Withdrawn							---		
43	^6Li	n, alpha angular dist	1. +4	5. +6	5	3	HAR WTN	Wright, S.B. Campbell, C.G. Flux monitor for neutron spectrum measurements. Discrepancies are particularly large above 350 keV.	
[26]							---		

REF [REG]	NUCLIDE	QUANTITY	ENERGY (EV) MIN MAX	ACCURACY P %	LAB	RECDPSTER , COMMENTS	YEAR	
			(S)					
44 [1532]	⁶ Li	N,ALPHA	1.0+5 1.5+7	5	2	VNT Vidal, J.C.		
45 [1597+]	⁷ Li	TOTAL XSECT	1.0+2 3.0+6	2.0	?	LAS Motz, H.T. Linac measurement to check Van de Graaff. None which satisfy criteria.	66	
46 [1533+]	⁷ Li	N,N TRITON	TR	1.5+7 <10	2	VNT Vidal, J.C. Threshold about 2.8MeV. Present accuracy is around 25%.	69	
47 [1598+]	⁷ Li	ALPHA,N	4.0+6 6.0+6	1.0	2	NCS Landon, H.H. Accuracy for 1%-inverse reaction. Energy to correspond to 10 keV to 1 MeV for inverse reaction: ⁸ Li(n,alpha).	69	
48 Withdrawn	Be	DIFF ELASTIC	6.0+6 1.6+7 <20 <1-COS>	1	PAR	Rastoin, J. Accuracy on ave (1-cos), 10% desired.		
49 [1599+]	Be	DIFF ELASTIC	7.0+6 2.0+7	10	1	LRL Hoverton, P.J. Resolution : DE = ±250 keV ; DA = 3.0°. None which satisfy resolution requested.	62	
50 [1600+]	Be	EMISS XSECT energy,angle	1.8+6 5.0+6	15	2	AI BNL GE POA SAC	Alter, H. Chernick, J. Snyder, T. For Be moderated fast spectrum reactors and for thermal breeders or converters, neutron economy calculations, energy resolution 5% incident; 500keV on ⁿ n', Accuracy 5% at 2 to 3 MeV. Excitation function measured by Holmberg and Hansen IAEA Paris Conf.Proc.I,209. Time of flight at 3 angles Bouchez, IAEA Paris Conf.Proc.I,211.	62
51 [1601+]	Be	EMISS XSECT energy,angle	2.0+6 2.0+7	10.0	2	LPL Hoverton, P.J. Need:secondary neutron energy and angle distribution. Low energy neutrons must be included, absolute σ(En') at a few angles may suffice. POA Excitation function measured by Holmberg and Hansen IAEA Paris Conf.Proc.I,209. SAC Time of flight at 3 angles Bouchez, IAEA Paris Conf.Proc.I,211.	62	
52 [1602+]	Be	EMISS XSECT energy,angle	2.0+6 1.6+7	5.0	2	ANL ORNL POA SAC	Butler, D.K. Clifford, C.E. For Be moderated fast spectrum reactors and for thermal breeders or converters, neutron economy calculations, energy resolution 5% incident; 500keV on ⁿ n', Accuracy 5% at 2 to 3 MeV. Excitation function measured by Holmberg and Hansen IAEA Paris Conf.Proc.I,209. Time of flight at 3 angles Bouchez, IAEA Paris Conf.Proc.I,211.	67
53 [40]	Be	N2N XSECTION TR	1.4+7	10	2	BRC JUL	Gieszer, W. Gerwin, H. For neutron multiplication in Be. Accuracy of existing data (BNL 325, suppl.2) not high enough. Measurements by Holmberg and Hansen between 2.0 and 6.5 MeV in progress.	
54 [1603+]	Be	N,GAMMA	1.0+2 1.0+5	10	2	GA	Preskitt, C.A. To resolve discrepancies in thermonuclear reactor worths	69
55 [46]	Be	N,GAMMA	1.0+2 1.0+6	50	2	JUL	Gerwin, H. No activity known.	

REF [REG]	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P MIN MAX (%)	LAB	REQUESTER , COMMENTS	YEAR
56 [1604+]	Be	n,PROTON see comment	1.4+7 1.6+7	5.u 1	LAS	Keepin, G.R. Quantity : (n,p) Li ⁷ . (Beta ₂ - Be ⁸ - n) accuracy should be 5% or a few tenths mb. Absolute delayed neutron yield required. Development of non destructive assay techniques. None which gives energy dependence.	69
57 [47]	Be	n,ALPHA	TR	1.0+7	10	2 JUL	Gervin, R.
58 [1534+]	⁷ Be	DISAPPEARANCE THR	3.0+5	10	2	VIN	Vidal, J.C. Half-life is 53.6 days.
59 Withdrawn	⁷ Be	n,DEUTERON	1. +3 1.5+7	16.0	1	PP	Dosimetry
60 [1312]	⁹ Be	n2n XSECTION	2.6+6 2.3+7	<10	2	JAP	Japanese Nuclear Data Committee (JNDC). For neutron age calculations.
61 Withdrawn	⁹ Be	THRMNSCATLAW THB			3	WIN	Kinchin, G.H. Temperature range 20°C to 1200°C. --- Existing accuracy may be sufficient. See Egelstaff JAERI 1995 (5/65)--also Beyster GA 7952 (8/67)--and Sinclair IAEA, Chalk River (/62).
62 [1605+]	¹⁰ B	TOTAL XSECT	THR	1.0+5	1.0	1 NCS	Landon, H.H. Desired for B(n,alpha) standard.
63 [1606+]	¹⁰ B	TOTAL XSECT	1.0+5 1.0+6	3.0 1 TO 3%	2	NCS	Landon, H.H. Desired for B(n,alpha) standard.
64 [1607+]	¹⁰ B	ELASTIC	THR	1.0+5 1 TO 5%	5.0	1 NCS	Landon, H.H. Desired for B(n,alpha) standard.
65 [1608+]	¹⁰ B	ELASTIC	1.0+5 1.0+6	3.0 1 TO 3%	2	NCS	Landon, H.H. Desired for B(n,alpha) standard.
66 Withdrawn	¹⁰ B	DIFF ELASTIC	8.0+4	5. +6	10	2 WIN	Campbell, C.G. For fast reactors. --- HAR ALD Asami: in progress 40-150keV. Towle: in progress 0.15-5MeV. See Lane: BAP12,87,PD10 (1/67); also Aqee: LN-3538-MS VI (9/66).
67 Withdrawn	¹⁰ B	DIFF INELAST TR energy dist	5. +6	30	2	WIN	Campbell, C.G. For fast reactors. --- HAR ALD Asami: in progress 40-150keV. Towle: in progress 0.15-5MeV. See Glazkov: JME 18,656 (/68); also Hopkins: WASH1056 VIIIR3 (3/65), and Hellis: WASH1074, 119 (4/67).
68 [1313]	¹⁰ B	ABSORPTION	1.0+2 1.0+7	10	1	JAP	Japanese nuclear data committee (JNDC). For fast reactor calculations.
69 [55#]	¹⁰ B	ABSORPTION	1. +4 2. +5	2	3	WIN	Campbell, C.G. For fast reactors. Note reduced priority. --- HAR Re-evaluation below 200kev in progress by Patrick, Sowerby and Uttley.
70 [56#]	¹⁰ B	ABSORPTION	8. +4 3. +6	10 5% BELOW .5MeV	1	CAD	Barre, J-Y. Needed for control rod calculations and as a standard for measurements.
71 [57#]	¹⁰ B	ABSORPTION	2. +5 1. +6	5	3	WIN	Campbell, C.G. For fast reactors. Note reduced priority. --- HAR Re-evaluation below 200kev in progress by Patrick, Sowerby and Uttley.
72 [58#]	¹⁰ B	ABSORPTION	1. +6 5. +6	10	3	WIN	Campbell, C.G. For fast reactors. Note reduced priority. --- HAR Re-evaluation below 200kev in progress by Patrick, Sowerby and Uttley.

REF [REG]	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY	P	LAB	REQUESTER	COMMENTS	YEAR
			MIN	%	(S)				
73 [1610+]	^108 N,ALPHA	THR	1.0×5	1.0	1	NCS	Landon, H.H. (Alpha) 2 /(alpha)1 ratio needed for both alpha and γ detection.		69
74 [1609+]	^108 N,ALPHA	1.0×3 1.0 $\times 7$	5.0 1 TO 5%	1	1	ANL ANL ORNL	Avery, R. Butler, D.K. Maienschein, F.C. 1-100keV ,accuracy 1% ; 3% useful. 100-300 keV ,accuracy 3% ; 10% useful. 0.3-10 MeV ,accuracy 5% ; 10% useful. Needed as standard; absolute s's required. (Alpha) 2 /(alpha)1 ratio needed for both alpha and γ detection.		69
75 [1612+]	^108 N,ALPHA gammaspectra	1.0×3 1.0 $\times 7$	5.0 1 TO 5%	1	1	ANL ANL ORNL	Avery, R. Butler, D.K. Maienschein, F.C. $E_\gamma = 0.49$ keV ; 1-100 keV , accuracy 1% ; 3% useful. 100-300 keV , accuracy 3% ; 10% useful .0.3-10 MeV , accuracy 5% ; 10% useful. Needed as standard; absolute s's required.		69
76 [1614+]	^108 N,ALPHA see comment	1.0×3 1.0 $\times 7$	10	2	2	BNS	Mc Elroy, W.W. Quantity : total alpha production. For use as a fluence monitor.Total helium production for mass spectrometer.		69
77 [1419]	^108 N,ALPHA	1.0×0 1.0 $\times 5$	1.0	1	1	MOL GEL	Motte, P. Standard xsection. Calc.of standard neutron spectrum. Evaluation by Gubernator and Motte EUR 3950.e.		68
78 [600]	^108 N,ALPHA see comment	1.0×0 1.0 $\times 6$	2	2	2	MAP	Rose, R. Used as a standard in cross-section measurements. Energy dependence needed more accurately. Also (n,alpha gamma). Note reduced priority. Evaluation below 200keV in progress by Patrick, Soverby and Utley.		
79 [1613+]	^108 N,ALPHA gammaspectra	5.0×0 1.0 $\times 6$	4.0	1	1	NCS	Landon, H.H. $E_\gamma = 0.49$ keV ; 1-100 keV , accuracy 1% ; 3% useful. 100-300 keV , accuracy 3% ; 10% useful .0.3-10 MeV , accuracy 5% ; 10% useful. Needed as standard; absolute s's required.		69
80 [1420]	^108 N,ALPHA	1.0×5 1.0 $\times 6$	3.0	1	1	MOL GEL	Motte, P. Standard xsection. Calc.of standard neutron spectrum. Evaluation by Gubernator and Motte EUR 3950.e.		69
81 [1611+]	^108 N,ALPHA	1.0×5 1.0 $\times 6$	4.0	2	2	NCS	Landon, H.H. (Alpha) 2 /(alpha)1 ratio needed for both alpha and γ detection.		69
82 [118] Withdrawn	TOTAL XSECT	5.0×5 5.0 $\times 6$	10	2	2	WIK ---	Campbell, C.G. For fast reactors. See Note: LA-3534-RS VI (9/66).		68
83 [118] Withdrawn	DIPP ELASTIC	5.0×5 5.0 $\times 6$	10	2	2	WIK TCD	Campbell, C.G. For fast reactors. Towier measurement planned. See Note: RAP 12, 87, PD1C (1/67)--also Note: LA-3534-RS VI (9/66).		
84 [1619+]	C	DIPP ELASTIC	1.0×3 2.5 $\times 6$	1.0	1	ANL ANL	Butler, D.K. Need as standard for scattering measurements. Accuracy of 3% useful for near-term. Lane has elastic and polarisation data from 1/2 to 2 MeV . WASH -1079		69
85 [1620+]	C	DIPP ELASTIC	1.0×3 2.0 $\times 6$	1.0	1	NCS ANT	Landon, H.H. Need as standard for scattering measurements. Accuracy of 3% useful for near-term. Lane has elastic and polarisation data from 1/2 to 2 MeV . WASH -1079		60

REF	SUBCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR
			MIN MAX	(%)			
86 [668]	C	DIFF PLASTIC	5. +6 1.5+7	<2% <1-COS > DESIRED: 10%	1	PAP Rastoin, J. Angular resolution: 5° to 10°. For high temperature graphite reactor calculation.	
87 [1615+]	C	DIFF ELASTIC	6.0+6 1.5+7	5.0	2	NFW Schaefer, R.R. 25'-keV intervals or as dictated by structure. Resol: DE (incident and exit) =100keV or 1%. DA=±2.5° (-30°), ±5° (30-180°). --- Few poor-resol points scattered about 14 MeV .	69
88 [1621+]	C	DIFF ELASTIC	7.0+6 1.4+7	10 2.5 ACC. ACCEPT.	3	KAP Shtrlich, R. E-resol 50 keV from 7 to 8.2MeV , 100 keV from 8.2 -14 MeV , and larger from 14-18 MeV . Angle-resol 3° from 7 to 9.4MeV , 10° , from 9.4-14 MeV . For shielding Afor resonance or optical model fitting. Fick Nucl.Inst.Meth, 93, 312, 1.6-12 MeV .	62
89 [1616+]	C	DIFF ELASTIC	8.0+6 1.6+7	5.0	2	LAS Biggers, W. 25'-keV intervals or as dictated by structure. Resol: DE (incident and exit) =100keV or 1%. DA=±2.5° (-30°), ±5° (30-180°). --- Few poor-resol points scattered about 14 MeV .	66
90 [1618+]	C	DIFF ELASTIC	8.0+6 1.5+7	10	2	MNL Eccleshall, D. 25'-keV intervals or as dictated by structure. Resol: DE (incident and exit) =100keV or 1%. DA=±2.5° (-30°), ±5° (30-180°). --- Few poor-resol points scattered about 14 MeV .	69
91 [1617+]	C	DIFF ELASTIC	9.0+6 1.4+7	10	1	LPL Howerton, W.J. 25'-keV intervals or as dictated by structure. Resol: DE (incident and exit) =100keV or 1%. DA=±2.5° (-30°), ±5° (30-180°). --- Few poor-resol points scattered about 14 MeV .	62
92 [1624+]	C	EMISS XSPCT	6.0+6 1.5+7	10	2	MDL Eccleshall, D. Every 253keV : σ(A) if significantly anisotropic. DA=±5° (<30°) and ±10° (>30°); DE = .252 KeV . All neutrons,including low energy,needed. Absolute σ(A n', En') from (n,n'3 alpha) must be included.	66
93 [1623+]	C	EMISS XSECT	7.0+6 1.5+7	5.0	2	LAS Biggers, W. Every 253keV : σ(A) if significantly anisotropic. DA=±5° (<30°) and ±10° (>30°); DE = .252 KeV . All neutrons,including low energy,needed. Absolute σ(A n', En') from (n,n'3 alpha) must be included.	66
94 [1622+]	C	EMISS XSECT	8.0+6 1.5+7	10	2	PAP Schaefer, R.P. Every 253keV : σ(A) if significantly anisotropic. DA=±5° (<30°) and ±10° (>30°); DE = .252 KeV . All neutrons,including low energy,needed. Absolute	69
95 [1625+]	C	NOMEL GAMMAS	6.0+6 1.6+7	<10 energy,angle	3	LAS Biggers, W. σ(Δγ) For Eγ= 4.4 MeV required. Upper limit on other γ's will suffice. TMC 14.8MeV (15% results) NPO -2791-24.	65
96 [1511+]	C	DIFF INELAST	8. +6 1.3+7	10 angular dist	3	RPC Phllis, C.	
97	C	THRMESCATLAW	THR		3	WIN Kinchin, G.H. Temperature range 100°C to 300°C existing accuracy may be sufficient. MAP Pade provisional data--see Hom, ANS 12,203 (6/67)-- also Thermo-PANDC(CAN) 29 L (7/66) and Suyder GA 7/91 (8/66).	69
98 [1626+]	C	ABSORPTION	1.0+7 1.5+7	5.0	2	PAP Schaefer, R.P. Three points at 10,12,16 MeV might suffice.	69

Withdrawn

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P MIN MAX (%)	LAB REQUESTER , COMMENTS	TERM	
[1627+]	^{12C}	MISCELLANEOUS	4.0+6 5.5+6	15	2 KAP	Ehrlich, R. Quantity : polarization $P(\theta n)$. Σ -resol about 5% keV . Needed to resolve discrepancy between theory and experiment. Reynolds, Phys.Rev. 176, 103, has calculated to 5 MeV.	69
		see comment			—		
[1628+]	¹⁰⁰	N TOTAL XSECT	1.0+6 1.5+7	3.0 2 TO 3%	1 APW AC GA	Schaefer, R.P. Greenbow, C.R. GA find higher θ 's than Hinford. Need verify Carlson has data to 9 MeV , GA-9147.	69
Withdrown		DIFF ELASTIC	+ 1.8+7	10	3 HAR ---	Butler, J. Air scattering calculations. See Bauer: NP A93,673 (3/67)--also Anderson: WASH 7L68,64 (3/66).	
[80+]	¹⁰²	N DIFF ELASTIC	1. +6 1.6+6	<20 <1-COS > DESIRED: 10%	2 PAR	Rastoin, J. Angular resolution: 2.5° up to 20°. 5° from 20° to 180°. For air scattering calculation.	
[80+]	¹⁰³	N DIFF ELASTIC	1. +6 1.6+6	<20 <1-COS > DESIRED: 10%	2 PAR	Rastoin, J. Angular resolution: 2.5° up to 20°. 5° from 20° to 180°. For air scattering calculation.	
[1629+]	¹⁰⁴	N DIFF ELASTIC	7.0+6 1.5+7	5.0	1 APW AC TMC	Schaefer, R.P. Greenbow, C.R. Every 500 keV or as dictated by structure. $\Delta\theta = \pm 2.5^\circ$ (30°) and $\pm 5^\circ$ ($>30^\circ$); include $\theta < 20^\circ$. $D(E_n) = 100$ keV or 10%. More data needed to resolve discrepancies. Experiments planned fall 1969, 9 and 11 MeV .	69
[1631+]	¹⁰⁵	N DIFF ELASTIC	7.0+6 1.5+7	5.0	1 NDL TMC	Eccleshall, D. Every 500 keV with 5% Σ -resol. $\Delta\theta = \pm 1^\circ$ every 5° for $\theta < 20^\circ$; needed to check importance of small angle data. $\Delta\theta = \pm 1.5^\circ$ every 10° for $\theta > 20^\circ$. Data needed to resolve discrepancies. Experiments planned 1969, 9 and 11 MeV .	69
[81+]	¹⁰⁶	N DIFF ELASTIC	8. +6 1.4+7	10	2 POA	Zetterstroem, H.O. Energy resolution 0.2MeV. Shielding.	
[1630+]	¹⁰⁷	N DIFF ELASTIC	8.0+6 1.5+7	5.0	1 LAS TMC	Biggers, W. Every 500 keV or as dictated by structure. $\Delta\theta = \pm 2.5^\circ$ (30°) and $\pm 5^\circ$ ($>30^\circ$); include $\theta < 20^\circ$. $D(E_n) = 100$ keV or 10%. More data needed to resolve discrepancies. Experiments planned fall 1969, 9 and 11 MeV .	69
[84]	¹⁰⁸	N EMISS XSECT	4. +6 1.6+7	<20 <1-COS > DESIRED: 10%	2 PAR	Rastoin, J. For air scattering calculation.	
[1632+]	¹⁰⁹	N EMISS XSECT	7.0+6 1.5+7	10	1 AC APW NDL TMC	Greenbow, C.R. Schaefer, R.P. Eccleshall, D. 250-keV intervals or as dictated by structure. Resol: $\Delta E = 100$ keV or 10%. Resol: $\Delta\theta = \pm 2.5^\circ$ ($0-30^\circ$) $\pm 5^\circ$ ($30-180^\circ$) or as dictated by the anisotropy. Low- E (<1 MeV) neutrons must be included. Experiments planned fall 1969, 9 and 11 MeV .	69
[83+]	¹¹⁰	N EMISS XSECT	8. +6 1.4+7	10	2 POA	Zetterstroem, H.O. Energy resolution 0.2MeV. Shielding.	
[1633+]	¹¹¹	N EMISS XSECT	8.0+6 1.5+7	10	1 LAS TMC	Biggers, W. 250-keV intervals or as dictated by structure. Resol: $\Delta E = 100$ keV or 10%. Resol: $\Delta\theta = \pm 2.5^\circ$ ($0-30^\circ$) $\pm 5^\circ$ ($30-180^\circ$) or as dictated by the anisotropy. Low- E (<1 MeV) neutrons must be included. Experiments planned fall 1969, 9 and 11 MeV .	69

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY	P	LAB	REQUESTER	COMMENTS	YEAR
			BIN	MAX	(S)				
112 [1636+]	N	MONEL GAMMAS	8.0+6	1.5+7	10	1	AC APW	Greenhow, C.R. Schaefer, R.B.	69
		energy,angle					---	Must include contributions of continuum γ . Resol: $DE(n) \leq 250\text{keV}$, $DE(\gamma) \leq 250\text{ keV}$. $D\theta=5^\circ$ ($5-30^\circ$) and 10° ($>30^\circ$) or as dictated by anisotropy.	
							GA	Broad energy spread , $\gamma(125^\circ)$, 2-18 MeV GA 8106.	
							TNC	9 And 11 MeV planned for Fall, 1969	
							TNC	14.8MeV, 20% data in ORO -2791-28.	
113 [1637+]	N	MONEL GAMMAS	8.0+6	2.0+7	10	1	LAS	Riggers, W.	69
		energy,angle					---	Must include contributions of continuum γ . Resol: $DE(n) \leq 250\text{keV}$, $DE(\gamma) \leq 250\text{ keV}$. $D\theta=5^\circ$ ($5-30^\circ$) and 10° ($>30^\circ$) or as dictated by anisotropy.	
							GA	Broad energy spread , $\gamma(125^\circ)$, 2-18 MeV GA 8106.	
							TNC	9 And 11 MeV planned for Fall, 1969	
							TNC	14.8MeV, 20% data in ORO -2791-28.	
114 [1638+]	N	MONEL GAMMAS	9.0+6	2.0+7	10	1	LRL	Howerton, P.J.	69
		energy,angle					---	Must include contributions of continuum γ . Resol: $DE(n) \leq 250\text{keV}$, $DE(\gamma) \leq 250\text{ keV}$. $D\theta=5^\circ$ ($5-30^\circ$) and 10° ($>30^\circ$) or as dictated by anisotropy.	
							GA	Broad energy spread , $\gamma(125^\circ)$, 2-18 MeV GA 8106.	
							TNC	9 And 11 MeV planned for Fall, 1969	
							TNC	14.8MeV, 20% data in ORO -2791-28.	
115 Withdrawn	N	DIPP INELAST	+ 1.4+7	5	3	BAR	Butler, J.	Spot values up to 14MeV. Air scattering calculations. See WASH 1356 XI-C (3/65), also Bucher: WASH 1068, 129 (3/66).	69
[1639+]		energy,angle				---			
116 [1640+]	N	ABSORPTION	1.0+6	1.5+7	-5.0	1	APW AC	Schaefer, R.B. Greenhow, C.R.	69
							---	Large discrepancies must be resolved <7.5MeV. No data available above 7.5MeV. Data on (n,α) , (n,p) and (n,d) to ground state may suffice.	
117 [1635+]	N	ABSORPTION	2.0+6	1.6+7	5.0	1	LAS	Biggers, W.	66
							---	Large discrepancies must be resolved <7.5MeV. No data available above 7.5MeV. Data on (n,α) , (n,p) and (n,d) to ground state may suffice.	
118 [1535+]	N	n, PROTON	1.0+2	1.5+7	10	1	VNV	Vidal, J.C.	69
							---	No measurements exist from 4.25 to 15MeV.	
119 [1640+]	O	DIPP ELASTIC	1.0+4	1.0+6	5.0	2	GA	Preskitt, C.P.	69
							---	Needed for fast reactor reflector worths. $D\theta = \pm 1^\circ$ every 5° ($<20^\circ$), $\pm 1.5^\circ$ every 10° ($>20^\circ$)).	
							TNC	9 And 11 MeV planned 1969.	
							TEX	Measurements planned below 12 MeV.	
							ORL	Perry plans up to 8.5MeV.	
120 [1641+]	O	DIPP ELASTIC	1.0+6	8.0+6	9	1	KAP	Ehrlich, R.	69
				4-9%			---	Needed for fast reactor reflector worths. $D\theta = \pm 1^\circ$ every 5° ($<20^\circ$), $\pm 1.5^\circ$ every 10° ($>20^\circ$)).	
							TNC	9 And 11 MeV planned 1969.	
							TEX	Measurements planned below 12 MeV.	
							ORL	Perry plans up to 8.5MeV.	
121 [960+]	O	DIPP ELASTIC	1.7+6	2.2+6	10	2	KPK	Schmidt, J.J.	
							---	Experimental data available in this range not sufficiently detailed to account for resonance structure. Check of theoretical work of Joanou, Fenech (Reactor Sci.Techn. 17, 425 (1963)) on diff. elastic cross section in this range desirable.	
122 [1642+]	O	DIPP ELASTIC	4.0+6	1.5+7	5	1	ANL ORL	Butler, D.K. Clifford, C.E.	66
				3-5%			---	Needed for fast reactor reflector worths. $D\theta = \pm 1^\circ$ every 5° ($<20^\circ$), $\pm 1.5^\circ$ every 10° ($>20^\circ$)).	
							TNC	9 And 11 MeV planned 1969.	
							TEX	Measurements planned below 12 MeV.	
							ORL	Perry plans up to 8.5MeV.	

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REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB REQUESTER , COMMENTS	YEAR
			MIN MAX	(%)		
123 [99]	O	DIFF ELASTIC	4.7+6 1.6+7	10	2 EFR Schmidt, J.J. Only few measurement points available. Measurements desired in energy steps increasing from 30 keV to 100 keV and angular resol.between 50° and 100°.	69
124 [1644+]	O	DIFF ELASTIC	7.0+6 1.5+7	5.0	1 NDL Eccleshall, D. DE = ±2.5° (<30°), ±5° (>30°). DE = 100 keV or 10% (every 500 keV). TBC 9 And 11 MeV planned 1969. TRX Measurements planned below 12 MeV. ORL Perey plans up to 8.5MeV.	69
125 [1660]	O	DIFF ELASTIC	8. +6 1.4+7	10	2 FOA Zetterstroem, H.O. Energy resolution 0.2MeV. Shielding.	69
126 [1683+]	O	DIFF ELASTIC	8.0+6 1.5+7	5.0	1 APW Schaefer, R.R. DE = ±2.5° (<30°), ±5° (>30°). DE = 100 keV or 10% (every 500 keV). TBC 9 And 11 MeV planned 1969. TRX Measurements planned below 12 MeV. ORL Perey plans up to 8.5MeV.	69
127 [1947+]	O	DIFF ELASTIC	8.0+6 1.6+7	5.0	1 LAS Biggers, W. DE = ±1 every 5° (<20°), ±1.5° every 10° (>20°). TBC 9 And 11 MeV planned 1969. TRX Measurements planned below 12 MeV. ORL Perey plans up to 8.5MeV.	62
128 [1666+]	O	EMISS XSECT	+ 1.4+7	5.0	3 GA Preskitt, C.A. Needed for fast reactor reflector worths.	69
129 [1638]	O	EMISS XSECT	6. +6 1.5+7	<20 <1-COS >	2 PAR Pastoian, J. Resolution for En, En': 0.5MeV. Angular resolution <1° if significant anisotropy. For dosimetry calc. in tissue and shielding calc.	69
130 [1647+]	O	EMISS XSECT	7.0+6 1.5+7	10	1 NDL Eccleshall, D. 250-keV intervals or as dictated by structure. Resol: DE=100 keV or 10%. Low-energy (<1 MeV) neutrons must be included. TBC 9 And 11 MeV planned 1969. TRX <12 MeV, perhaps some data, planned.	69
131 [1628]	O	EMISS XSECT	H. +6 1.4+7	10	2 FOA Zetterstroem, H.O. Energy resolution 0.2MeV. Shielding.	69
132 [1645+]	O	EMISS XSECT	8. +6 1.5+7	10	1 APW Schaefer, R.R. 250-keV intervals or as dictated by structure. Resol: DE=100 keV or 10%. Low-energy (<1 MeV) neutrons must be included. TBC 9 And 11 MeV planned 1969. TRX <12 MeV, perhaps some data, planned.	69
133 [1648]	O	EMISS XSECT	1. +7 1.6+7	<20 <1-COS > DESTEP: 10%	1 PAR Pastoian, J. Resolution for En, En': 0.5MeV. Angular resolution <10° if significant anisotropy. For dosimetry calc. in tissue and shielding calc.	69
134 [166]	O	NONEI GAMMAS	H. +6 1.6+7	<20 energy,angle	2 PAR Pastoian, J. Resolution for En: 1MeV, for Eg: 0.5MeV. Angular distribution only if significant anisotropy. For dosimetry calc. in tissue and shielding calc.	69
135 [1656+]	O	NONEI GAMMAS	1.0+7 1.5+7	10	1 LAS Biggers, W. Absolute cross sections required. 14.5MeV data in OPO -2791-28. 9 And 11 MeV planned 1969.	62
136 [1649+]	O	ABSORPTION	H.0+6 1.5+7	5.0	1 LAS Biggers, W. DE (n)= 150keV at 250-keV intervals. Filling the P gap and supporting evidence for (n, alpha) to ground state likely to suffice; if so, integral of inverse will satisfy.	66

DEP	NUCLIDE	QUANTITY	ENERGY(RV)	ACCURACY P	LAB	REQUESTER	COMMENTS	REF	
			MIN	MAX	(%)				
137 [1640+]	0	ABSORPTION	1.0+7	1.5+7	5.0	1	AER	Schaefer, R.B. DE (n)= 250 keV at 250-keV intervals. Filling the E gap and supporting evidence for (n, alpha) to ground state likely to suffice; if so, integral of inverse will satisfy.	66
138 [1138]	0	N,ALPHA	8.8+6	1.1+7	20	1	EAR	Rastoin, J. For damage calc. and dosimetry calc. in tissue. Note modified accuracy and priority.	
139 [1140+]	0	DEUTERON,N	TR	1.0+7	16	2	BNB	Brunner, J. Production of π^+ in D2O reactors. Measurements planned in Sweden.	
140 [1314]	¹⁶⁰	N,ALPHA	TR	1.0+7	3	1	JAP	Japanese Nuclear Data Committee (JENDL). Precise standardization of emission rate of neutron source. No available data.	68
141 [115]	¹⁷⁰	N,GAMMA	THR		0.2 b.	2	CRC	Hanna, G.C. For understanding absorption in D2O.	
142 [1651+]	¹⁷⁰	N,PROTON angular dist	8.5+6	1.6+7	5.0	1	LAS	Keepin, G.R. Quantity : $(n,p) \pi^+$. (Beta = 0.7% - n) accuracy should be 5% or a few tenths mb. Absolute delayed neutron yield required. Development of nondestructive assay techniques. None which gives energy dependence.	69
143 [1652+]	¹⁷⁰	ALPHA,N	THR	7.0+6	20	2	KRP	Ehrlich, R. Alpha E-resolution 0.1 MeV. For calculation of neutron source strengths.	66
144 [1653+]	¹⁸⁰	ALPHA,N	THR	7.0+6	10	3	MET	Bayard, R.T. Alpha E-resol 0.2 MeV. To resolve discrepancies between cross section and neutron yield data.	66
145 [1521+]	¹⁸⁰	ALPHA,N energy dist	8.0+7	7.5+7	30	2	FAR	Rastoin, J. Resolution for E and E': 1 MeV. For shielding of alpha emitting samples.	69
146 [1654+]	F	DIFF ELASTIC	3.0+6	2.0+7	10	1	LRL	Hoverton, R.J. Energy dependence of σ_{el} should be well defined.	69
147 [1655+]	F	EMISS XSECT energy dist	5.0+5	2.0+7	10	1	LRL	Hoverton, R.J. Absolute $\sigma(E_n)$ at a few angles may suffice.	69
148 [1656+]	F	N,GAMMA	1.0+3	1.3+6	10	2	OPL	Craven, C.W. To calculate neutron loss in Molten Salt Breeder.	66
149 [1657+]	F	N,ALPHA	9.0+6	1.4+7	10	1	LRL	Hoverton, R.J. Absolute values at a few energies.	69
150 [124]	¹⁹⁰ P	RESON PARAMS	1.5+0		10	1	KPR	Kuechle, R. Reson.params. for resonance at 15.3 keV. Total and gamma width; L and J.	
151 [1658+]	Na	TOTAL XSECT	1.0+4	5.0+6	1.0	1	ORNL	Clifford, C.P. Fast reactor deep penetration; 1% in valley.	69
152 [1468+]	Na	RESON PARAMS	2.9+3		10	2	CAD	Barre, J-Y. For resonance at 2.95 keV. For activation detectors and fast reactor calculations. RPI Capture cross-section measurements done.	69
153 [1663+]	Na	RESON PARAMS gamma width neutron width	3.0+3		10	1	ANL	Avery, R. Butler, D.K. Fn and Fy desired for 3 keV resonance.	62
154 [129]	Na	DIFF ELASTIC	2.2+6	1.0+7	<10	2	KPK	Schmidt, J.J. Toulou and Gilhoey (Nucl. Phys. 32, 610, 1962) measured at 6 energies between 1 and 5 MeV. Pasoli et al. (PANDC(5)-80NUCL, page 117) measured at 2.5, 4.2 and 6.5 MeV. Because of resonance fluct., in total xsect, fluctuations in DEL expected. Therefore, more experimental data needed. Separation of elastic and inelastic angular dependences desired. Primary neutron resolution 100 keV, measurements in steps of several 10's keV, angular resolution 50'-10'.	

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR
			BIN	MAX (%)			
155 [1669]	Na	DIFF ELASTIC	8. +6	1.0+7	10	2 CAD Barre, J-Y. Energy resolution: 100keV, angular resolution: 10°. For fast reactor calculations.	
156 [1659+]	Na	DIFF ELASTIC	8.0+6	1.5+7	5.0	2 NDL Eccleshall, D. E-resol: 0.25MeV, angular-resol: 3°. E-intervals: 0.5MeV, angular intervals: 10° ORL perey's data should satisfy, 8-8.6MeV .	69
157 [1661+]	Na	EMISS XSECT	8.0+6	1.5+7	10	2 NDL Eccleshall, D. Energy, resolution : 250keV . $\Delta\theta(n^\circ) = 3^\circ$. Energy increments 500keV, every 10°. Perey's data should satisfy 8 to 8.6MeV . Perey's data at 2 angles to 12 MeV ,in progress.	69
158 [1660+]	Na	DIFF INELAST	2.0+6	1.3+7	10	2 AI Alter, H. ANL Avery, R. ANL Butler, D.K. Total integral over 8 Pi required.Spectra at several angles if significantly anisotropic. DE (n) and DE(n') < 10%. ORL Perey has data to 8.6MeV .	62
159 [138]	Na	DIFF INELAST	8. +6	1.3+7	10	2 BOL Pierantoni, F. Towle and Gilboy have measured at 7 MeV (EANDC(DK) 34-LN, 1968). Padua will measure some points between 4 and 6 MeV.	
160 [132]	Na	DIFF INELAST	8. +6	1.5+7	10	2 KPK Schmidt, J.J. No measurements available.	
161 [1662+]	Na	ABSORPTION	1.0+3	1.1+5	20	2 GE Snyder, T. ANL Butler, D.K. Intermediate accuracy useful.	69
162 [137]	Na	N,GAMMA	TRP		1	3 AMS Aten, A.H.W. For calibration of neutron sources; cf. P.W.F. Louvier, thesis, univ. of Amsterdam, 1966.	
163 [1481+]	Na	N,GAMMA	1.0+2	5.0+8	10	1 JAE Japanese Nuclear Data Committee (JNDC). For fast reactors. Resonance parameters needed. Discrepancies in resonance parameters exist. WASH 1070,97,1967.	69
164 [1470]	Na	N,GAMMA	1. +3	8. +5	8	2 CAD Barre, J-Y. For fast reactor calculations.	
165 Withdrawn	²³ Na	TOTAL XSECT	8.0+6	1. +6		2 WIN Campbell, C.G. With high resolution resonance structure. For fast reactors. HAR Langsford: AERE-PR/NP12,37 (8/67). Whalen: WASH-1071,5(B/66) ;also Bibon: 66PARIS I,119 and Moxon: 66PARIS I,129 (7/66).	
166 [1308]	²³ Na	DIFF ELASTIC	8. +6	1. +7	10	3 HAR Butler, J. WIN Campbell, C.G. Fast reactor shielding. Note reduced priority.	
167 [1358]	²³ Na	DIFF INELAST	8. +6	1. +7	5	3 HAR Butler, J. For reactor shielding. Note reduced priority.	
168 Withdrawn	²³ Na	DIFF INELAST	8. +6	1.0+7	10	2 WIN Campbell, C.G. Spot values. For fast reactors. HAR Yawie: in progress--wen Sunischuh: NP 72,54 (7/65)-- also Towle: NP A122,257 (7/67).	
169 [140]	²³ Na	N,GAMMA (res.param)	1. +2	1. +4	10	1 KPK Kuechle, M. Reson. parameters;neutron-and gamma-width, J at 2.8 keV. Needed for intermediate and fast reactors and for activation detectors. Measurements between 10 and 140 keV at CEA Cadarache (EANDC(E)57 II, pp. 123), Block et al. (IAEA Paris conf., 1966, Paper C4-23/126) measured in the range 100 eV- 200 keV with 10-20% accuracy. Also measurements available from Moxon (IAEA Paris conf. 66), Moxon, Pattenden; Nucl.Dats for Reactors, IAEA, Vienna 1967;for 2.85keV resonance,area analysis yields $\Gamma_y=0.6eV$, but background trouble. Hockenbury	

REF NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAR	PEDESTAL , COMMENTS	YR/P
(REG)		MIN MAX	(%)			
170 [1388]	^{238}U , γ ,GAMMA	1. +2 1. +8	10	2	WIN Campbell, C.G. For fast reactors. --- Note reduced priority. MAP Discrepancy in Γ_γ data at 3keV resonance. New work in progress by Moron.	
171 [1664+]	A1 DIFF ELASTIC	8.0 ± 6 1.5+7	5.0	1	LAS Biggers, W. $\Delta E(n) = 250$ keV ,250-keV intervals or as dictated by structure. $\Delta\theta = \pm 2.5^\circ (<3^\circ) \& \pm 5^\circ (>3^\circ)$. Orbit 18 MeV point.	66
172 [1665+]	A1 DIFF ELASTIC	8.0 ± 6 1.5+7	5.0	2	NOL Eccleshall, D. $\Delta E(n) = 250$ keV ,250-keV intervals or as dictated by structure. $\Delta\theta = \pm 2.5^\circ (<3^\circ) \& \pm 5^\circ (>3^\circ)$. Orbit 18 MeV point.	69
173 [144]	A1 EMISS ISECT	9.0 ± 5 1.6+7	<20	2	PAP Pastoain, J. Resolution for E and $E' < 0.5$ MeV. Angular distribution only if significant anisotropy. For shielding calculation.	
174 [1666+]	A1 EMISS ISECT	8.0 ± 6 1.5+7	10	1	AFW Schaefer, R.R. $\Delta E(n) = 250$ keV at 250keV intervals,or as dictated by structure anisotropy	60
176 [1667+]	A1 EMISS ISECT	8.0 ± 6 1.5+7	10	2	NOL Eccleshall, D. $\Delta E(n) = 250$ keV at 250keV intervals,or as dictated by structure anisotropy	69
177 [1669+]	A1 NONEL GAMMAS	5.0 ± 3 2.0+5	15	2	SNP Pleishman, M.R. Absolute $\sigma(\Gamma_\gamma)$ required for all $E_\gamma > 200$ keV . Neutron E-intervals required: res.region:reproduce major variations in $\sigma(\Gamma_\gamma) > 1$ MeV :5% -keV intervals Gamma E-resol required:< 2.5MeV, 10%; > 2.5MeV, 25% keV . --- None which satisfy criteris.	69
178 [1670+]	A1 NONEL GAMMAS	1.0 ± 6 1.5+7	15	1	SNP Pleishman, M.R. Absolute $\sigma(\Gamma_\gamma)$ required for all $E_\gamma > 200$ keV . Neutron E-intervals required: res.region:reproduce major variations in $\sigma(\Gamma_\gamma) > 1$ MeV :5% -keV intervals Gamma E-resol required:< 2.5MeV, 10%; > 2.5MeV, 25% keV . --- None which satisfy criteris.	69
179 [1678]	A1 NONEL GAMMAS	4.0 ± 6 1.6+7	<20	1	PAP Pastoain, J. Resolution for E: 1MeV, for $E_\gamma < 0.5$ MeV. Angular distribution only if significant anisotropy. For shielding calculation. Note priority changed to 1.	
180 [1668+]	A1 SPECT NGAMMA THR		10	1	SNP Pleishman, M.R. For shielding calculations. Both line and continuum spectra are required. Bartholomew's spectrum does not give correct R.P.	69
181 [1671+]	A1 N,PROTON	5.0 ± 6 1.2+7	10	3	NOL Eccleshall, D. Required is activation. E-resol 5%, 50% -keV intervals.	69
182 [153]	^{27}Al RESON PARAMS	5.9 ± 3 3.5+4	10	1	KPK Kuechle, W. Γ_γ and J at 5.9keV, Γ_γ at 75keV. --- Measurements have been reported (WASH-1093, 115).	

REF [REG]	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY %	LAB	REQUESTER , COMMENTS		YEAR
						RIN	TUR	
183 Withdrawn	^{27}Al	DIFF INELAST energy, angle	$4.0 \pm 1.0 \times 10^7$	10	2 HAR	Campbell, C.G. Spot values. For fast reactors. Currie: data at 6MeV ABEP/P5619, also PRNDL(UR) 9CAL, see Perey: PAP12, 512DR12 (8/67), also Toulou: RD A10, 257 (8/67).		
184 Withdrawn	^{27}Al	N,GAMMA	$1.0 \pm 1.0 \times 10^6$	20	2 HAR	Campbell, C.G. For fast reactors. Hoxon: measurements complete, analysis in progress--see Block: RAP 12, 512 DR18 (8/67), and Rockenbury: WASH 1F74, 97 (8/67).		
185 [154]	^{27}Al	N,PROTON	TR	9.0 ± 6	4.0 2 GEL	Neutron Dosimetry Group EURATCH. Threshold detector. Bass et al. (University of Frankfurt) have measured between 6 and 9 MeV with 5% relative and 15% absolute accuracy (unpublished, see compilation EUR 119.e).		
186 [155*]	^{27}Al	N,PROTON	TR	1.5 ± 7	10 2 BDP	Behringer, K. Fast flux measurements. Mitra and Rose (Rose Inst., Calcutta) have remeasured this cross-section at 14.7 to 1 MeV, with special attention to the involved uncertainties, (97±15mb., Nucl.Phys.83 (1966) 157).		
187 [156]	^{27}Al	N,PROTON	8.0 ± 6	1.5 ± 7	8.0 2 GEL	Neutron Dosimetry Group EURATOM. Threshold detector. Cuzzocrea et al. (Nuovo Cimento LIVB 53 1968) have measured between 13.7 and 18.7 MeV with ±7% accuracy.		
188 [1315]	^{27}Al	N,ALPHA	8.0 ± 6	1.2 ± 7	8 1 JAE	Japanese Nuclear Data Committee (JNDC). For neutron yield monitor. Data available 7.8		68
189 [159*]	Si	DIFF ELASTIC	2.0 ± 6	1.6 ± 7	<20 2 PAR	Pastoin, J. $\langle 1-\cos \theta \rangle$ and σ needed. Energy resolution: 10eV. For shielding calculation.		
190 [1672*]	Si	DIFF ELASTIC	8.0 ± 6	1.5 ± 7	10 2 NOL	Eccleshall, D. Resolution: energy, 0.25MeV; angular, 30°. Increments: energy, 0.5MeV; angular, 10°. Wisconsin excitation function at one angle available. Some data near 14 MeV.		69
191 [1522*]	Si	EMISS XSECT	5.0 ± 6	1.6 ± 7	<20 2 PAR	Pastoin, J. Resolution on F and P^2 : 0.5% eV. Angular distribution only if significant anisotropy. For shielding calculation.		69
192 [1673*]	Si	EMISS XSECT	8.0 ± 6	1.5 ± 7	10 2 NOL	Eccleshall, D. $D_F(n)=25^\circ$ keV, 500 keV intervals or as dictated. $DA = \pm 2.5^\circ$ ($<30^\circ$) and $\pm 5^\circ$ ($>30^\circ$). Perey's data to 12 MeV may suffice.		69
193 [160]	Si	NONEL GAMMAS	1.0 ± 6	3.0 ± 6	<20 2 PAR	Pastoin, J. Resolution on F and E_F : 0.5% eV. Angular distribution only if significant anisotropy. For shielding calculation.		
194 Withdrawn	Si	NONEL GAMMAS	5.0 ± 6	1.6 ± 7	<20 2 PAR	Pastoin, J. 10% Accuracy desired. 0.5 MeV energy resol. Angular distribution needed if significant anisotropy.		
195 Withdrawn	Si	DIFF INELAST	4.0 ± 6	1.0 ± 7	5 2 HAR	Butler, J. Shielding. Currie: data at 6MeV ABEP/P5619. Toulou is progress at 7MeV. See Hopkins: WASH1074, 72 (8/67), also Coppola: PRNDL(F) 76 (1/67) and Biggerstaff: WASH1171, 154 (8/67).		
196 [168]	Si	N,PROTON	TR	1.5 ± 7	10 2 BDP	Behringer, K. Surface barrier counters. Bass et al. (Frankfurt University) have measured between 6 and 9 MeV in steps of 25keV with ±15% accuracy. Pasquarelli (Politecnico di Torino) has measured at 14.7±1.0MeV by absolute methods 222±12mb (Nucl.Phys.93, 218 (1967)). Mitra and Ghose (Rose Institute, Calcutta) have measured this cross-section at 14.8±0.1MeV with special attention to the involved uncertainties.		

REF	NUCLIDE	QUANTITY	ENERGY (EV)			ACCURACY (%)	P	LAB	REQUESTER	COMMENTS	YEAR
			MIN	MAX	(%)						
197 [169]	Si	\bar{n} ,ALPHA	TR	1.5+7	10	2	WJR			(722+12mb, Nucl.Phys. <u>83</u> ,157 (1966)).	
198 [1674+]	^{30}Si	\bar{n} ,GAMMA	2.5-2	1.5+7	30	3	LRL	Howerton, R.J.		Required is cross section for activation of ^{30}Si , is naturally occurring element. Accuracy 30% if $\sigma > 10^6 \text{ mb}$, 50% if $25\text{mb} < \sigma < 10^6 \text{ mb}$. Accuracy to a factor of 2 if $1\text{mb} < \sigma < 25\text{mb}$; to a factor of 10 if $\sigma < 1\text{mb}$.	69
199 [170]	^{31}P	\bar{n} ,PROTON	TR	1.4+7	5.0	1	GEL	Neutron Dosimetry Group EURATOM. Threshold detector.		Disagreement between different measurements of insufficient accuracy. No data between 10 and 14 MeV.	
200 [171]	^{31}P	\bar{n} ,PROTON	TR	6. +6	5	2	WUP	Brunner, J.		Past flux measurements.	
201 [173]	^{31}P	\bar{n} ,PROTON	6. +6	1.5+7	10	2	WUP	Brunner, J.		Past flux measurements in shields.	
202 [175]	^{32}S	\bar{n} ,PROTON	TR	6.4+6	2.0	1	GEL	Neutron Dosimetry Group EURATOM. Threshold detector.		Disagreement between different measurements of insufficient accuracy. No data between 10 and 14 MeV.	
203 [177]	^{32}S	\bar{n} ,PROTON	TR	6. +6	5	1	WUP	Brunner, J.		Existing data are far from requested accuracy. Most recent measurement: Rago+ HP <u>18</u> (1968) 595.	
204 [178]	^{32}S	\bar{n} ,PROTON	6. +6	1.5+7	10	2	WUP	Brunner, J.		Standard for flux measurements. BCAR is measuring between threshold and 2.24eV.	
						---				Relative values see contribution CN 23/90 to IAEA conference Paris 1966.	
205 [1675+]	^{33}S	\bar{n} ,GAMMA	2.5-2	1.5+7	30	1	LRL	Howerton, P.J.		Required is cross section for activation of ^{33}S in naturally occurring element. Accuracy 30% if $\sigma > 10^6 \text{ mb}$, 50% if $25\text{mb} < \sigma < 10^6 \text{ mb}$. Accuracy to a factor of 2 if $1\text{mb} < \sigma < 25\text{mb}$; to a factor of 10 if $\sigma < 1\text{mb}$.	69
206 [1676+]	^{36}S	\bar{n} ,N XSECTION THR	1.5+7	30	1	LRL	Howerton, P.J.			Required is cross section for activation of ^{36}S in naturally occurring element. Accuracy 30% if $\sigma > 10^6 \text{ mb}$, 50% if $25\text{mb} < \sigma < 10^6 \text{ mb}$. Accuracy to a factor of 2 if $1\text{mb} < \sigma < 25\text{mb}$; to a factor of 10 if $\sigma < 1\text{mb}$.	69
207 [182]	C1	\bar{n} ,PROTON	1. +0	2. +6	10	3	WJR	Campbell, C.G.		For fast reactors.	
						---				No work planned.	
208 [183]	K	\bar{n} ,GAMMA	1. +3	2. +6	20	2	BN	Tavernier, G.		Activation in fast reactors.	
						---				No activity known.	
209 [184]	K	\bar{n} ,GAMMA	3. +4	2. +6	25	3	BN	Tavernier, G.		Activation in fast reactors. Accuracy 10mb.	
						---				No activity known.	
210 [1677+]	^{41}K	\bar{n} ,GAMMA	2.5-2	1.5+7	30	2	LRL	Howerton, R.J.		Required is cross section for activation of ^{41}K in naturally occurring element. Accuracy 30% if $\sigma > 10^6 \text{ mb}$, 50% if $25\text{mb} < \sigma < 10^6 \text{ mb}$. Accuracy to a factor of 2 if $1\text{mb} < \sigma < 25\text{mb}$; to a factor of 10 if $\sigma < 1\text{mb}$.	69

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER	COMMENTS	YEAR
			RIB	%				
211 [185]	^{41}K	N,GAMMA	1. +3	1. +6	2 ^r	2 BN	Tavernier, G. Accuracy 2% or 2 mb, act xsect for the 12.5 h period. 25% energy resol. D.C. Stupenja et al. (D.C. Stupenja et al., CW 23/51, IAEA Paris Conf. 1966) Measured between 150 keV and 2.5 MeV. No activity known.	
212 [1678+]	Ca	TOTAL XSECT	6.0+5	3.0+6	3.0	2 ORNL	Wilenzick, P.C. Energy resolution : 10%. For shielding calculations. Wilenzick DUKP WASH -1024 up to 1 MeV.	62
213 [188]	Ca	DIFF ELASTIC	1. +6	1.5+7	10	2 PAR	Rastoin, J. For shielding calculation.	
214 [1679+]	Ca	DIFF ELASTIC	8.0+6	1.5+7	10	2 NDL	Eccleshall, D. Resol: energy 0.25MeV ; angular 3°. Intervals:energy 0.5MeV ; angular 10°. Some data near 14 MeV.	69
215 [1680+]	Ca	MISS XSECT energy,angle	8.0+6	1.5+7	10	2 NDL	Eccleshall, D. Resol:energy 0.25MeV ; angular 3°. Increments: energy 0.5MeV ; angular 10°. Some data available near 18 MeV.	69
216 [192]	Ca	NONEL GAMMAS	3. +6	1.6+7	10 DESIRED: 10%	2 PAR	Rastoin, J. For Eγ>3.3MeV. Resolution for En and Eγ=0.54eV. Angular distribution only if significant anisotropy. For shielding calculation.	
217 [1681+]	Ca	NONEL GAMMAS	5.0+6	1.5+7	10	2 NDL	Eccleshall, D. Need energy spectrum of all gammas. Resol: 5% in Eγ 5° in θ. Increments of 0.5 Mev, 10°. J.Nucl.Energ. 21, #87 discrete e's (14 MeV).	69
218 Withdrawn	Ca	DIFF INELAST energy dist	4. +6	1.0+7	5	2 HAR	Butler, J. Spot values in energy range. For shielding. See Biggerstaff WASHC71, 150(N/66).	
219 [13678]	Ca	DIFF INELAST energy dist	6. +6	1.6+7	<2 ^r DESIRED: 10%	2 PAR	Rastoin, J. (1-cosθ) and e needed. Energy resolution: 1MeV. For shielding calculation.	
220 [1682+]	^{40}Ca	N,ALPHA	TR	1.5+7	30	3 LRL	Rowerton, R.J. Required is activation of Ar^{37} , 35.1 day.	69
221 [1683+]	^{40}Ca	N,GAMMA	2.5-2	1.5+7	30	1 LRL	Rowerton, R.J. Required is cross section for activation of Ca's in naturally occurring element. Accuracy 30% if e > 100mb 50% if 25mb < e < 100mb. Accuracy to a factor of 2 if 1mb < e < 25mb; to a factor of 10 if e < 1mb.	69
222 [1684+]	^{40}Ca	M2N XSECTION TR	1.5+7	30	1 LRL	Rowerton, R.J. Required is cross section for activation of Ca's in naturally occurring element. Accuracy 30% if e > 100mb 50% if 25mb < e < 100mb. Accuracy to a factor of 2 if 1mb < e < 25mb; to a factor of 10 if e < 1mb.	69	
223 [1685+]	Sc	N,GAMMA	1.0+3	1.9+7	10	2 BN	Mc Elroy, W.W. For use as fluence monitor.	69
224 [1512+]	^{43}Sc	M2N XSECTION TR	1.5+7	5	1 BRC	Philis, C. Dosimetry. ($\text{Sc}^{43}(2.44d)$, $\text{Sc}^{43}(3.92h)$).	69	
225 [1515+]	^{43}Sc	N,GAMMA	1.0+2	1.5+7	10	1 BRC	Philis, C. Dosimetry. ($\text{Sc}^{43}(84d)$).	69
226 [1514+]	^{43}Sc	N,PROTON	TR	1.5+7	10	2 BRC	Philis, C. Dosimetry. ($\text{Ca}^{43}(165d)$).	69
227 [1513+]	^{43}Sc	N,ALPHA	TR	1.5+7	10	2 BRC	Philis, C. Dosimetry. ($\text{K}^{42}(12.4h)$).	69

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR	
			MIN MAX	(%)				
228 [1687+]	Ti	NONEL GAMMAS	1.0+3 1.0+5	15	2 SNP	Pleishman, M.B. Absolute $\epsilon(E_\gamma)$ required for all $E_\gamma > 250\text{keV}$. Neutron E intervals required: res. region: reproduce major variations in $(E_\gamma) > 1\text{ MeV}$: 500-keV intervals. Gamma-energy resolution required: $< 2.5\text{MeV}$, 1% : 2.5MeV ,250keV. None which satisfy criteria.	69	
229 [1686+]	Ti	NONEL GAMMAS	1.0+4 1.0+7	20	1 OPL	Clifford, C.E. Needed for space reactor shielding.	69	
230 [1686+]	Ti	NONEL GAMMAS	1.0+6 1.0+7	15	1 SNP	Pleishman, M.B. Absolute $\epsilon(E_\gamma)$ required for all $E_\gamma > 200\text{ keV}$. Neutron energy intervals required: res. region: reproduce major variations in $(E_\gamma) > 1\text{ MeV}$: 50-keV intervals. Gamma P-resol required : $< 2.5\text{MeV}$,10%: 2.5MeV ,250keV none which satisfy criteria.	69	
231 [1689+]	Ti	NONEL GAMMAS	4.0+6 1.4+7	20	3 GDT	Western, G.T. $\Delta E = \pm 250\text{keV}$ at 50-keV intervals. $\Delta\theta = \pm 5^\circ$: $\epsilon(\theta)$ only if significantly anisotropic.	63	
232 [1577+]	Ti	N,GAMMA	1. +2 1. +5	20	1 WIN	Campbell, C.G. --- For fast reactors. Evaluation needed, but uncertain whether requirement met.	69	
233 Withdrawn	Ti	N,GAMMA	1. +3 2. +5	20	3 PAR	Rastoin, J. Energy resol. 10%.		
			OR 3 MB.		OPL	$\epsilon(r,\gamma) < 6\text{mb}$ above 60keV, known by measurements of R.L. Macklin et al. (PR 129, 2695(1963)) and B.C. Diven et al. (PR 129, 556(1963)).		
					LAS	High resolution measurements on ^{47}Ti ($E=2.0\text{--}200\text{keV}$) are in progress.		
234 [201]	^{46}Ti	N,PROTON	TR	9.0+6	5.0	1 GEL	Neutron Dosimetry Group EURATOM. Threshold detector. No data available no action in EURATOM community	
235 [1159+]	^{46}Ti	N,PROTON	TR		20	3 AP	Weitsman, J. Materials dosimetry.	68
236 [1536+]	^{46}Ti	N,PROTON	TR	1.5+7	10	1 VNV	Vidal, J.C. Activation detector. Production of $^{46}\text{Sc}(85\%)$.	69
237 [1690+]	^{46}Ti	N,PROTON	1.0+6 1.0+7	10	2 BNW	Mc Elroy, W.N. Required is activation. Resolution in energy 100 keV ,500-keV intervals. For use as a fluence monitor.	69	
238 [1691+]	^{46}Ti	N,PROTON	1.0+6 1.3+7	10	3 NDC	Pecleshall, D. Required is activation. Resolution in energy 100 keV ,500-keV intervals. For use as a fluence monitor.	69	
239 [203]	^{46}Ti	N,PROTON	9.0+6 1.4+7	10.0	1 GEL	Neutron Dosimetry Group EURATOM. Threshold detector. Data available only above 12 MeV.		
240 [204]	^{47}Ti	N, PROTON	TR	7.0+6	5.0	1 GEL	Neutron Dosimetry Group EURATOM. Threshold detector. Data available only between 2 and 4 MeV with insufficient accuracy	
241 [1537+]	^{47}Ti	N,PROTON	TR	1.5+7	10	1 VNV	Vidal, J.C. Activation detector. Production of $^{47}\text{Sc}(3,43\%)$.	69
242 [1692+]	^{47}Ti	N,PROTON	1.0+6		10	2 BNW	Mc Elroy, W.N. Required is activation. energies over 1 MeV. resolution in energy 100keV ,1- MeV intervals. FOR USE AS fluence monitor.	69

REF [REG]	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P MIN MAX (%)	LAB	REQUESTER , COMMENTS	YEAR	
243 [1693+]	$\text{^{48}Ti}$	N,PROTON	1.0+6 1.5+7 SPE CORRENT	3	NDL	Eccleshall, D. Required is activation. For $\epsilon > 1\text{mb}$, $D=2.5\text{mb}$. Resolution in energy 100keV ,1- MeV intervals. For use as fluence monitor.	69	
244 [206]	$\text{^{48}Ti}$	N,PROTON	TR	1.4+7	10.0	1 GRL	Neutron Dosimetry Group ENDATOM. Threshold detector. Data available only above 12 MeV.	
245 [1538+]	$\text{^{48}Ti}$	N,PROTON	TR	1.5+7	10	1 VNV	Vidal, J.C. Activation detector. Production of $\text{^{48}Sc}(1.83\text{d})$.	69
246 [1695+]	$\text{^{48}Ti}$	N,PROTON	1.0+6	10	2 BMW	Mc Elroy, W.W. Required is activation. Energies over 1 MeV . Resolution in energy 100 keV ,500-keV intervals. For use as fluence monitor, activation analysis.	69	
247 [1696+]	$\text{^{48}Ti}$	N,PROTON	3.0+6 1.3+7	10	3 NDL	Eccleshall, D. Required is activation. Resolution in energy 100 keV ,500-keV intervals. For use as fluence monitor, activation analysis.	69	
248 [1694+]	$\text{^{48}Ti}$	N,PROTON	3.2+6 1.0+7	20	2 KAP	Ehrlich, R. Required is activation. Resolution in energy 100 keV ,500-keV intervals. For use as fluence monitor, activation analysis.	69	
249 [1697+]	V	DIFF ELASTIC	1.0+6 1.0+7	10	3 ANL ANL --- ANL	Avery, R. Butler, D.K. Resolution $\Delta E(n)=500\text{keV}$, $\Delta\theta=10^\circ$. Smith EANDC(US) 106 II.	62	
250 [1698+]	V	DIPP INELAST energy dist	1.5+6 1.3+7	15	3 ANL GR ANL --- ANL	Avery, R. Snyder, T. Butler, D.K. Total integral over 4π required. Spectra at several angles f significantly anisotropic. Smith has reviewed, EANDC(US) 106 II.	62	
251 [1700+]	V	ABSORPTION	1.0+3 1.5+5	10	3 ANL GE ANL --- ---	Avery, R. Snyder, T. Butler, D.K. Energy resolution : 10% . Available data inconsistent.	62	
252 [1699+]	V	N,GAMMA	THR	5.0	2 APT	Dooley, J.A. Activation cross section desired at 0.025eV.	62	
253 [213]	V	N,GAMMA	1. +2 1. +5	10	1 WIN --- HAP	Campbell, C.G. For fast reactors. Note increased priority,relaxed accuracy requirement and changed energy range. Evaluation needed,but accuracy requirement not met. New measurements planned by Moxon.		
254 [211]	V	N,GAMMA	1. +3 2. +6	10	3 JUL ORT CCP	Gervin, H. Rev.Mod.Phys. 37,166(1965) (8-140KeV). P.L.Backson and J.H.Gibbons: Phys.Rev. 150(1967) 1007, (100-200KeV with < 10% accuracy. Strong disagreements between different measurements exist in this energy range,(see J.P.Stehn et al., BNL 325+supplements.) VS: data given for 0.18...2MeV by Zaikin et al., At.Energiya 23(1967),67.		
255 Withdrawn	V	N,GAMMA	0.3+4 5. +6	2	3 WTN ---	Smith, P.D. For fast reactors. Accuracy at present unobtainable.May be met by inter- gral measurements.		

REF [REG]	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P MIN MAX (%)	LAR	REQUESTER , COMMENTS	YEAR
256 [1539+]	SIV	N,ALPHA	TR	1.5+7	5	1 WKE	Vidal, J.C. Activation.(α Sc, 1.83d).
257 [218]	Cr	DIFF ELASTIC	1.5+6	3. +6	15	2 KPK	Schmidt, J.J. About 100 kev energy resol and about 10° ang. resol required. See Simpson NSE 28 (1967) 133 probably meeting the request.
258 [15]	Cr	DIFF ELASTIC	2. +6	1.6+7 DESIRED: 10%	<20	2 PAR	Rastoin, J. Resolution for E:0.5MeV., for theta:5° to 10°.
259 [1701+]	Cr	DIFF ELASTIC	2.0+6	1.4+7 4 TO 9%	9.0	2 KAP	Ehrlich, R. Resolution: 100keV , Dθ=5°.
260 [219]	Cr	DIFF ELASTIC	8. +6	1.6+7	20	2 KPK ---	Schmidt, J.J. Energy Resol.=0.5MeV, angular resol.=5-10°. Holmqvist et al. (PANDC(OR)-73"U") measured at nine energies between 2.5 and 8.0 MeV.
261 [2318]	Cr	EMISS XSECT energy dist	2. +6	1.4+7	10	2 FAP	Rastoin, J. Energy resolution:10%. For fast reactor shielding calculations.
262 [1707+]	Cr	BONEL GAMMAS energy dist	+ 1.0+7	10	2 BRT	Bayard, R.T. The above accuracy(10%) is requested in 0.5MeV gamma ray resolution intervals. For shielding calculations.	
263 [1705+]	Cr	BONEL GAMMAS	5.u+2	2.0+8 OR 5MB	15	1 SNP	Fleishman, M.P. Absolute $\sigma(E_\gamma)$ required for all $E_\gamma > 200$ keV. Neutron energy intervals required: res-region:reproduce major variations in $(E_\gamma) > 1$ MeV ;500-keV intervals. Gamma-energy resolution required: < 2.5MeV ,10%; 2.5MeV , 250keV. None which satisfy criteria.
264 [1706+]	Cr	BONEL GAMMAS	1.0+6	1.0+7 OR 5MB	15	1 SNP	Fleishman, M.R. Absolute $\sigma(E_\gamma)$ required for all $E_\gamma > 200$ keV. Neutron energy intervals required: res-region:reproduce major variations in $(E_\gamma) > 1$ MeV ;500-keV intervals. Gamma-energy resolution required: < 2.5MeV ,10%; 2.5MeV , 250keV. None which satisfy criteria.
265 [232]	Cr	BONEL GAMMAS	2. +6	1.4+7	10	2 PAR	Rastoin, J. $E_\gamma > .5$ MeV. Resolution for En and E_γ :0.5MeV (or 10%). For fast reactor shielding calculations.
266 [1702+]	Cr	DIFF INELAST	5.0+5	1.0+7	10	2 GE ANL	Snyder, T. Butler, D.K. Total integral over 4 Pi required. Spectra at several angles if significantly anisotropic. Required energy resolution has not been determined.
267 [1704+]	Cr	RES INT CAPT	0.5+0	10-15%	15	1 KAP	Ehrlich, R. Energies over 0.5EV . Remove or correct for (n,p) contribution.
268 [1578+]	Cr	N,GAMMA	1. +2	1. +5	20	1 WIN ---	Campbell, C.G. For fast reactors. Evaluation needed but accuracy requirement probably not met.
269 [224]	Cr	N,GAMMA (resonance)	1. +3	2.0+5	10	1 KPK --- RPI	Schmidt, J.J. Isotopes,particularly Cr ⁴⁷ , Cr ⁵¹ . E_γ Also wanted in view of large discrepancies between directly measured infinite gamma Res.Int. and those calculated from differential $\sigma(n,\gamma)$ measurements, and for confirmation of Kapchigashov's, Popov's (SAE 16,306(1964)) rather inaccurate results. Additional $\sigma(n,\gamma)$ measurements and E_γ determinations for individual res. desired. KPK High resol.(resonance) meas. planned(0.01...100keV .) High resol.(resonance) meas. planned(20...200keV .)

REF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR	
			MIN	MAX	(%)			
270 [1471]	Ce	N,GAMMA	1. +3	2. +5	20	2 CAD	Barre, J-Y. Fast reactor calculations. Recent measurements by Spitz give values much greater than previous ones (increased by a factor of 5 to 10 at some energies).	
271 [1703+]	Cr	N,GAMMA	1.0+3	6.0+5	20	2 GE ANL ORNL PPI	Snyder, T. Butler, D.R. Clifford, C.E. Incident resolution 25%. Resonance parameters needed, especially gamma widths. Hockenbury, WASH-1124, has data to 400keV.	65
272 [1524]	Cr	N,GAMMA	3. +8	1.5+5	25 OR 10 MB	1 PAR	Pastoin, J. For heating and circuit activation calculation.	
273 [227]	Cr	N,PROTON	PISS		30	3 WIN	Campbell, C.G. For fast reactors. Available estimates differ by factor 5. Main uncertainty due to $^{52}\text{Cr}(n,p)$.	
274 Withdrawn	Ce	N,ALPHA	PISS		25	2 CAD	Ravier, J. He in structural materials.	
275 Withdrawn	Cr	N,ALPHA <energy>	PISS		30	3 WIN --- ALD	Campbell, C.G. For fast reactors. Freeman:preliminary data.	
276 [1368]	Cr	N,ALPHA	3. +6	1.5+7	20	1 PAR CAD	Rastoin, J. Barre, J-Y. He in structural materials.	68
277 [233]	^{52}Cr	N,PROTON	TR	1.4+7	<20	2 KPK	Schmidt, J.J. Accuracy 10-20% desired. Main absorption process in MeV range. Only WP xsect data of Kern (WP 16,226,1959) available between 12.3 and 18.3 MeV. Experimental verification of evaporation theory estimates of Ring (UCRL-10732, 1963) and Buttner (WP 63,615,1965) desired. See also Eriksson RANDC(OR)-73"EN page 14f.	
278 [1708+]	^{53}Cr	RESON PARAMS gamma width	1.0+3	6.0+5	9.0 4 TO 9%	2 KAP	Phrlich, R.	69
279 [1710+]	Rn	NONEL GAMMAS energy dist	3.0+2	1.2+5	15 OR 5MB	1 SNP	Pleishman, H.P. Absolute $\sigma(E)$ required for all $E > 200\text{keV}$. Neutron energy intervals required: res-region: reproduce major variations in $\sigma(E) > 1 \text{ MeV}$: 500-keV intervals. Gamma energy resolution required: resolution: 100keV, $\theta = 5^\circ$. ORNL AE ANL Plwyn.Nucl.Phys.A123,33 reports data to 1 MeV.	69
280 [1316]	Rn	N,GAMMA	THP		< 0.3	1 JAP	Japanese Nuclear Data Committee (JNDC). Precise standardization of emission rate of neutron source. Data available 0.8 %	68
281 [239]	Rn	N,GAMMA	1. +2	3.0+4	5	2 AE SCT	Andersson, T.L. Spectrum measurements in fast critical assemblies. $\sigma(n,\gamma), 0...50\text{keV}$ by Spitz et al., Nucl.Phys.A121,655 (Dec. 1968). Only graphs given; error on graphs seem much larger than the requested 5% accuracy. ANL COL $\sigma(n,\gamma), 0...500\text{keV}$ by Stupegia et al., J.Nucl.Ph. 22, 267 (May 1968). Accuracy varies between 6.8 and 10%. $\sigma(n,\gamma), \text{low keV region}$: measurements planned at Nevis Cyclotron for summer 1969. See WASH-1124 p.32 and WASH-1127 p.37(paragr. 3).	
282 [240]	Rn	N,GAMMA	1. +3	2.5+4	20	2 PAR ---	Rastoin, J. Accuracy 2% or 5 mb energy resol. for resolving resonance levels. No activity known.	

REF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P	LAR	REQUESTER , COMMENTS	YEAR	
			MIN MAX	(%)				
283 [242]	^{55}Mn	ν, GAMMA	$5. +5$ $5. +0$	5	1	Rastoin, J. Activation detectors. LOK Activation cross section for $^{55}\text{Mn}(\nu, \gamma)$ (2.6MeV): Menlove et al. Phys.Rev <u>163</u> (1967)1299 (1...23 MeV). ANL Stupejia et al., J.Nucl.Phys. <u>22</u> (1968)267 (5keV ...3MeV).		
284 [245]	^{54}Mn	ν, GAMMA	THR		5	2	MOL Motte, F. For burn-up calculation of $^{54}\text{Fe}(\nu, p)$ ^{54}Mn reaction product. Hogg and Weber (IDO 16977, 41, 1964) found upper limit of 10 b. --- No activity known.	
285 [246]	^{55}Mn	B2B XSECTION TR	$1.3 +7$	5.0	1	GEL Neutron Dosimetry Group EURATCH. --- Threshold detector. HAM Data available only above 12.6 MeV. Most recent measurements: Bormann MP <u>A13C</u> (1969)195.		
286 [1709+]	^{55}Mn	ν, GAMMA	THR	$1.0 +3$	10	2	LRL Howerton, R.J. Energy dependence of $\sigma(\nu, \gamma)$ should be well defined.	66
287 Withdrawn	^{55}Mn	ν, GAMMA	$1.0 +2$ $4.0 +4$	2	3	WIN Smith, R.D. Fast spectral indicator. Accuracy at present unobtainable. May be set by integral measurements.		
288 Withdrawn	^{55}Mn	ν, GAMMA	$1.3 +2$ $5. +6$	5	3	WIN Campbell, C.G. Accuracy: 5% ($E-E$). For detector applications. See Menlove: WASH107a, 63(8/67) to 10%.		
289 [1135+]	^{55}Mn	ν, GAMMA	$1. +2$ $1. +5$	20	1	WIN Campbell, C.G. For fast reactors. Note increased priority, reduced energy range and relaxed accuracy requirement. --- Evaluation needed but accuracy requirement probably not met. HAR New measurements planned by Coates and Roxon.	68	
290 Withdrawn	^{55}Mn	ν, GAMMA	$4.3 +4$ $5. +6$	2	3	WIN Smith, R.D. Detector applications. Accuracy at present unobtainable. May be set by integral measurements.		
291 Withdrawn	Fe	TOTAL XSECT	$5.0 +8$ $3.0 +5$	3	2	WIN Campbell, C.G. For fast reactors. --- See Roehr: 66PARIS I 137(0/56), also RAPS <u>11,471</u> EC1 (6/66) and 66ROSSTON MSP (2/66).		
292 [1714+]	Fe	DIFF ELASTIC	$1.0 +3$ $1.0 +7$	10	1	ANL Avery, R. ANL Butler, D.K. --- Resolution to at least resolve intermediate struct. ORL Perey, WASH 1124, 5.5-6.6 MeV. AE Holmqvist AE-337 reviews 3-6 MeV. ANL Elwyn, Nucl.Phys. <u>A123</u> , 33 reports data to 1 MeV.	69	
293 Withdrawn	Fe	DIFF ELASTIC	$5.0 +8$ $3.0 +5$	20	2	WIN Campbell, C.G. For fast reactors. See Smith: RAP <u>12,107GD17</u> (1/67).		
294 Withdrawn	Fe	DIFF ELASTIC	$1.0 +5$ $4.0 +5$	10	2	CAD Rivier, J. 10-100 keV energy resolution. 5° -10° angular resolution.		
295 [1713+]	Fe	DIFF ELASTIC	$5.0 +5$ $3.0 +6$	5.0	1	OPL Clifford, C.P. Resolution: 1% energy at several peaks and valleys: $\sigma(\nu n)$ required in valleys for shielding. --- Perey, WASH 1124, 5.5-6.6 MeV. AE Holmqvist AE-337 reviews 3-6 MeV. ANL Elwyn, Nucl.Phys. <u>A123</u> , 33 reports data to 1 MeV.	69	
296 [253]	Fe	DIFF ELASTIC	$8. +6$ $1.4 +7$	10	3	KPK Schmidt, J.J. Existing measurements cover energies below 8 MeV. Measurements desired in energy steps of 1 MeV, and angular steps of 10°.		

REF [REG]	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P MIN MAX (%)	LAB	REQUESTER , COMMENTS	YEAR
297 [1715+]	Fe	DIFF ELASTIC	4.0+6	1.6+7	5.C 1	LAS Biggers, W. DE(n)=250keV , intervals dictated by structure. --- DE = ±2.5° (<30°), ±5° (> 30°). None exist in this energy region.	66
298 [254]	Fe	EMISS XSECT energy,angle	3. +6	1.6+7 <20 DESIR ED: 10%	2 PAR	Rastoin, J. Resolution for E and E': 14eV. For shielding calculations.	64
299 [1718+]	Fe	EMISS XSECT energy,angle	7.0+6	1.5+7	1C	1 APN Schaefer, P.B. DE = 50keV , 500keV intervals or as dictated by structure. DE=±5° ;±(0), as dictated by anisotropy. --- ANL Perey's data may satisfy to 12 MeV .	64
300 [1721+]	Fe	EMISS XSECT energy,angle	7.0+6	1.5+7	1C	2 NDL Eccleshall, D. DE = 50keV , 500keV intervals or as dictated by structure. DE=±5° ;±(0), as dictated by anisotropy. --- ANL Perey's data may satisfy to 12 MeV .	64
301 [1719+]	Fe	EMISS XSECT energy,angle	8.0+6	1.6+7	1C	3 GDT Western, G.T. DE = 50keV , 500keV intervals or as dictated by structure. DE=±5° ;±(0), as dictated by anisotropy. --- ANL Perey's data may satisfy to 12 MeV .	66
302 [1720+]	Fe	EMISS XSECT energy,angle	8.0+6	1.6+7	1C	1 LAS Biggers, W. DE = 50keV , 500keV intervals or as dictated by structure. DE=±5° ;±(0), as dictated by anisotropy. --- ANL Perey's data may satisfy to 12 MeV .	66
303 [1725+]	Fe	NONEL GAMMAS TBR energy,angle		1.0+7	20	1 BPT Bayard, R.T. KAP Ehrlich, R. OPL Clifford, C.E. All Eγ of interest for fast reactor shielding. --- TNC Buchanan, WASH 1093, 3.5-5MeV . RPI Kaushal, WASH 1124, 2 to 4 MeV .	66
304 [1723+]	Fe	NONEL GAMMAS energy dist	1.0+3	6.5+5	15 OR SAB	2 SNP Pleishman, M.R. Absolute σ(Eγ) required for all Eγ> 200keV . Neutron E intervals required: res.region:reproduce major variations in (Eγ)> 1 MeV :500-keV intervals. Gamma-energy resolution required: < 2.5 MeV , 1%; 2.5MeV , 250keV . --- None which satisfy criteria.	69
305 [1724+]	Fe	NONEL GAMMAS energy dist	1.0+6	1.0+7	15 OR SAR	1 SNP Pleishman, M.R. Absolute σ(Eγ) required for all Eγ> 200keV . Neutron E intervals required: res.region:reproduce major variations in (Eγ)> 1 MeV :500-keV intervals. Gamma-energy resolution required: < 2.5 MeV , 1%; 2.5MeV , 250keV . --- None which satisfy criteria.	69
306 [258]	Fe	NONEL GAMMAS energy,angle	4. +6	1.6+7 <20 DESIR ED: 10%	2 PAR	Rastoin, J. Resolution for Fn and Eγ:0.5MeV. For shielding calculations. Angular distribution needed if significant anisotropy	64
307 [1728+]	Fe	NONEL GAMMAS energy,angle	7.0+6	1.5+7	1C	2 NDL Eccleshall, D. DE = 250keV at 50°-keV intervals. DE=±5° (<30°), ±10° (>30°).±(55°) only unless significantly anisotropic. --- TNC 14.8MeV data ORNL -2791-28.	69
308 [1726+]	Fe	NONEL GAMMAS energy,angle	8.0+6	1.5+7	1C	2 GDT Western, G.T. DE = 250keV at 50°-keV intervals. DE=±5° (<30°), ±10° (>30°).±(55°) only unless significantly anisotropic. --- TNC 14.8MeV data ORNL -2791-28.	69
309 [1727+]	Fe	NONEL GAMMAS energy,angle	8.0+6	1.6+7	1C	1 LAS Biggers, W. DE = 250keV at 50°-keV intervals. DE=±5° (<30°), ±10° (>30°).±(55°) only unless significantly anisotropic. --- TNC 14.8MeV data ORNL -2791-28.	69

REF	SUBLIDE	QUANTITY	ENERGY (EV)	ACCURACY	P	CAR	REQUESTER , COMMENTS	YEAR
			MIN	MAX	(%)			
310 [2650]	Fe	DIFF INELAST T3 energy,angle	4. +6	2.5	3	WIN HAR ---	Campbell, C.G. Butler, J. For fast reactors and shielding. Note reduced priority. Evaluation needed but accuracy requirement probably not met.	
311 [1716+]	Fe	DIFF INELAST R.5+5 2.7+6 energy dist	5.0	1	GE ANL	Snyder, T. Butler, D.K. Required resolution has not been determined. Total integral over 4 Pi required. Spectra at several angles if significantly anisotropic. Smith, WASH 1093, to 1.5 MeV. Perey, WASH 1124, 4-12 MeV.	66	
312 [1717+]	Fe	DIPP INELAST 2.0+5 1.0+7 energy dist	10	2	GP ANL ORL ANL	Snyder, T. Butler, D.K. Required resolution has not been determined. Total integral over 8 Pi required. Spectra at several angles if significantly anisotropic. Perey, WASH 1124, 4-12 MeV. Smith, WASH 1093, to 1.5 MeV.	66	
313 Withdrawn	Fe	DIPP INELAST 4. +6 7. +6 <10 energy,angle	2	WIN HAR	Campbell, C.G. Accuracy 3-10% for fast reactors. Martin: preliminary data available at 64 MeV. See Towle: NP A171, 257(7/67), also Wileszick: NP 62, 511(2/65), and Biggerstaff WASH1071, 152(W/66), and Malishev: NP 76, 232(2/66).			
314 [2688]	Fe	DIPP INELAST 4. +6 1. +7 <10 energy,angle	3 TO 10%	3	WIN HAR ---	Campbell, C.G. Butler, J. For fast reactors and shielding. Note reduced priority. Evaluation needed but accuracy requirement probably not met.		
315 [263]	Fe	DIPP INELAST 8. +6 1.4+7 energy dist	2.0	2	KPK ORL	Schmidt, J.J. Energy resol. 50 keV (primary) and 200 keV (secondary) Energies below 8 MeV covered by measurements discussed extensively in KPK 120/part I, 1966, section V3F, and by recent investigations of Kinney (ORNL-TM-2652, 1968).		
316 [1722+]	Fe	ABSORPTION 1.0+3 1.5+6 5-25%	1	ANL GP ANL RPT	Avery, P. Snyder, T. Butler, D.K. Capture in 1-5 keV range of particular interest. Accuracy 5% below 175 keV, 20% above. Hockenbury, WASH -1124, has data from 45-400 keV. Hockenbury, TID -24621, 0.1-200 keV.	69		
317 [1729+]	Fe	RPS INT CAPT 5.3-1 10-153	15	1	KAP	Ehrlich, R. Energies over 1.5 keV. Remove or correct for n,p contribution.	69	
318 [2698]	Fe	, GAMMA 1. +2 1. +6 <21 103 TO . 14 keV	1	WIN ---	Campbell, C.G. For fast reactors. Note relaxed accuracy requirement. Evaluation in progress indicates 20% uncertainty below 100 keV. HAR Further measurements planned by Coates.			
319 [1442+]	Fe	N, GAMMA 1.0+3 2.0+5 10	10	1	JAP	Japanese Nuclear Data Committee (JNDC). For fast reactors. Discrepancies exist among experimental data. Hacklin et.al., Phys. Rev. 159, 1007 (1967) and 122, 192, 1962, Noyon ANTWERP P/88 1965.	69	
320 [270]	Fe	N, GAMMA 1. +3 1. +5 10	10	1	KPK RPT ORL HAR RPI	Schmidt, J.J. Existing data incoherent up to 200%. Strong disagreement between 10-100 keV. Block et al. (Paris conf. 1966, CN- 23/126 and Wash. Conf. 1968, 27) measured in the 1.1-20 keV range with 20% accuracy and analysed resonances in individual isotopes. Hacklin and Gibbons measured between 125-192 keV with 25% accuracy (private comm.). Noyon (Antwerp conf. 1965) measured in the 1-10 keV range. Accuracy should be improved. RPI Hockenbury et al. Phys. Rev. 178(1969) 1746, give high		

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR	
				MIN	MAX	(%)		
						resolution data(1...200keV), e.γ for many res., (separ.isotopes).		
					KPK	High resol. n,γ data(5...200keV .) combined with transmission data are being analyzed to find J,Tn and γ seperately,(separ. isotopes).		
321 [1472]	Fe	N, γ AMMA	1. +3	2. +5	15	1 CAD	Barre, J-Y. Past reactor calculations. Recent measurements by Spitz give values much greater than previous ones (increased by a factor of 5 to 10 at some energies).	
322 [273]	Fe	N, α LPHA	THR	1.4+7	20	1 KPK	Schmidt, J.J. No data available. For the thermal value only an upper-limit of 0.41 mb is available: JPR19, 162 (1959)	
323 [277]	Fe	N, α LPHA angular dist	PISS		20	2 AE	Weitsman, J. Calculation of He production in fuel cladding. Note that 'averaged value' is no more requested, (results available, see report AP-PFA-830 (1968)).	
					---	LOK	No measurements known to exist for natural element. Data for Fe ⁵⁴ (n,α) (Phys. Rev. 140B 305 (Oct. 1965) measured from 2.2 to 6MeV and 13 to 17MeV have an uncertainty everywhere far greater than 20%. For the accuracy requested it seems sufficient to combine data for Fe ⁵⁴ , Fe ⁵⁶ , Fe ⁵⁷ .	
324 Withdrawn	Fe	N, α LPHA	PISS		25.0	2 CAD	Ravier, J. ^He in structural materials.	68
325 Withdrawn	Fe	N, α LPHA <energy>	PISS		30	1 BNW	Campbell, C.G. For fast reactors.	
					---	NLD	Freeman: preliminary data.	
326 [1526+]	Fe	N, α LPHA	3. +6	1.5+7	20	1 PAR CAD	Rastoin, J. Barre, J-Y. ^He in structural materials.	69
327 [1730+]	⁵⁴ Fe	N, γ AMMA	2.5-2	1.5+7	30	2 LRL	Howerton, R.J. Required is cross section for activation of Fe ⁵⁷ in naturally occurring element. Accuracy 30% if > 100mb, 50% if 25mb < < 100mb; accuracy to a factor of 2 if 1 mb < < 25mb; to a factor of 10 if < 1 mb.	69
328 [279]	⁵⁴ Fe	N,PROTON	TR	1.0+7	4.0	1 GRL	Neutron Dosimetry Group EURATOM. Threshold detector. No data available between 6 and 10 MeV.	
329 [1525]	⁵⁴ Fe	N,PROTON	TR	4. +6	10	1 PAR	Pastoin, J. For activation of reactor coolant. Long-lived threshold detector. Discrepancies between 1.5 and 3MeV.	
330 [1731+]	⁵⁴ Fe	N,PROTON	1.0+6	1.8+7	10	2 BNW	Mc Elroy, W.W. Required is activation. E-resol 250keV ,50f-keV interv. For use as fluence monitor.	69
331 [158(+)]	⁵⁴ Fe	N,PROTON	2. +6	1.6+7	10	1 VNV	Vidal, J.C. Activation detector. Production of ⁵⁴ Mn(30Cd).	69
332 [1732+]	⁵⁴ Fe	N,PROTON	6.2+6	1.3+7	10	3 NDL	Eccleshall, D. Required is activation. E-resol 250keV ,50f-keV interv. For use as fluence monitor.	69
333 [137C]	⁵⁴ Fe	N, α LPHA	TR	1.5+7	20	3 VNV	Vidal, J.C. Activation detector. Production of ⁵⁴ Cr(27.8d).	68
334 [1733+]	⁵⁴ Fe	N2N XSECTION THR		1.5+7	30	2 LPL	Howerton, R.J. Required is cross section for activation of Fe ⁵⁷ in naturally occurring element. Accuracy 30% if > 100mb, 50% if 25mb < < 100mb. Accuracy to a factor of 2 if 1 mb < < 25mb; to a factor of 10 if < 1 mb.	69

REF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P MIN MAX (%)	LAB	REQUESTER , COMMENTS	YEAR
[335]	⁵⁶ Fe	\bar{n} ,PROTON	TR	1.3+7	4.0	3 GEL	Neutron Dosimetry Group EURATOM. Threshold detector. Accuracy reached amounts to ±8%. (See compilation EUR 119.e.)
[336]	⁵⁶ Fe	\bar{n} ,PROTON	6. +6	1.5+7	5	2 VEN	Vidal, J.C. Activation. (⁵⁶ Mn, 2.58keV).
[337]	⁵⁶ Fe	\bar{n} ,PROTON	6.0+6	1.2+7	4	1 JAE	Japanese Nuclear Data Committee (JNDC). For neutron yield monitor. Data available 5% or 7% : NSR 30,32,1967, Can.J.Phys. 42,1030,1968.
[338]	⁵⁷ Fe	BESON PARAMS neutronwidth	1.0+3	6.0+5	9.0 8 TO 9%	1 KAP ORL	Ehrlich, S. Needed for evaluations. Good. Phys.Rev. 151, 912, 4 to 46keV.
[339]	⁵⁹ Fe	\bar{n} ,GAMMA	2.5-2	1.5+7	30	2 LRL	Hoverton, R.J. Required is cross section for activation of ⁵⁹ Fe in naturally occurring element. Accuracy 30% if $\sigma > 100\text{mb}$, 50% if $25\text{mb} < \sigma < 100\text{mb}$. Accuracy to a factor of 2 if $1\text{mb} < \sigma < 25\text{mb}$; to a factor 10 if $\sigma < 1\text{mb}$.
[340]	⁵⁹ Fe	\bar{n} ,GAMMA	1.0+3	1.8+7	10	2 BNW	Mc Elroy, W.W. Required is activation. For use as fluence monitor.
[341]	Co	BESON PARAMS	1.3+2		1.0	2 NTR	Brugger, R.N. 1% In parameters of this resonance. Needed as flux monitor. Available information too inaccurate.
[342]	Co	BONEL GAMMAS energy dist	1.0+2	1.0+5	15 OR 5MB	1 SNP	Pleishman, R.P. Absolute $\sigma(E_\gamma)$ required for all $E_\gamma > 200$ keV. Neutron energy intervals required: Res-region: reproduce major variations in $(E_\gamma) > 1$ MeV : 500-keV intervals. Gamma E-resolution required: < 2.5MeV, 10%; 2.5MeV, 250 keV. None which satisfy criteria.
[343]	Co	BONEL GAMMAS energy dist	1.0+6	1.0+7	15 OR 5MB	1 SNP	Pleishman, R.R. Absolute $\sigma(E_\gamma)$ required for all $E_\gamma > 200$ keV. Neutron energy intervals required: Res-region: reproduce major variations in $(E_\gamma) > 1$ MeV : 500-keV intervals. Gamma E-resolution required: < 2.5MeV, 10%; 2.5MeV, 250 keV. None which satisfy criteria.
[344]	Co	\bar{n} ,GAMMA	2.5-2	1.5+7	30	1 LRL	Hoverton, R.J. Required is cross section for activation of Co to ground plus isomeric states. Accuracy 30% if $\sigma > 100\text{mb}$ 50% if $25\text{mb} < \sigma < 100\text{mb}$. Accuracy to a factor of 2 if $1\text{mb} < \sigma < 25\text{mb}$; to a factor of 10 if $\sigma < 1\text{mb}$.
[345]	Co	\bar{n} ,GAMMA	1.3+2		1.0	2 NTR	Brugger, R.N. 1% In Γ_γ for this resonance. Needed as flux-monitor.
[346]	Co	\bar{n} ,GAMMA	1.0+3	1.8+7	10	2 BNW	Mc Elroy, W.W. Required is activation. For use as fluence monitor.
[347]	⁵⁸ Co	\bar{n} ,GAMMA (res.integ) SEE COMMENT	THR		10	2 AE	Weitman, J. For dosimetry. Need for a $\text{Co}^{58}(n,\gamma)$ precise thermal value and measurements for Co^{58}q ; also for effective Res.Int. --- New meas. of $\text{Co}^{58}(n,\gamma)$ for TBR and corresp. Eff.Res. Int. reported in At.Energia 29 533 (June 1968)-translation BNL-TR-224 (1968), but relative to $\text{Co}^{58}(n,\gamma)$ TBR which is known with an uncertainty of about 20%. ORL The Halperin meas. of $\text{Co}^{58}(n,\gamma)$ TBR:ORNL-3679 (Sept. 1964) were said to be preliminary. See perhaps later progress reports of the ORNL Chemistry Division.

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER , / MENTS	YEAR
			RIB	RAX	(S)		
348 [1465+]	^{58}Co	\bar{n} ,ALPHA	TBB	20	2	RP For dosimetry. Needed for ground, isomeric states.	69
349 [1743+]	^{58}Co	NUCL.LEVELS	2.5 ± 8	3.3 ± 6	3	KAP Ehrlich, R. Need spins and parities of excited states for calculation of threshold reaction $\bar{n}^{58}\text{Co}$ (n,p). RWA Decowski, Nuclear Physics <u>112</u> 513, reviews states.	66
350 [1582+]	^{58}Co	E2B XSECT	TR	1.5 ± 7	10	1 VNV Vidal, J.C. Activation. (^{58}Co , 72d).	69
351 [2958]	^{58}Co	\bar{n} ,GAMMA	1.3 ± 2		5	PAR Rastoin, J. Energy resonance at 132eV . Activation for Co^{60} and Co^{60m} needed. RPI Resonance $\sigma(n,\gamma)$ being measured(Hockenbury et al.).	
352 [1474+]	^{58}Co	\bar{n} ,GAMMA	$1. \pm 3$	$2. \pm 5$	15	2 CAD Barre, J-Y. For fast reactor calculations.	69
353 [293]	^{58}Co	\bar{n} ,GAMMA	$1. \pm 4$	$1. \pm 6$	20	2 RRI Tavernier, G. Steel activation. RPI Resonance $\sigma(n,\gamma)$ is being measured(Hockenbury et al.)	
354 [296]	^{58}Co	\bar{n} ,PROTON	TB	1.3 ± 7	5.0	3 GEL Neutron Dosimetry Group EURATOM. Threshold detector. No data available	
355 [1543+]	^{58}Co	\bar{n} ,PROTON	TB	1.5 ± 7	10	1 VNV Vidal, J.C. Activation. (^{58}Fe , 45.1d). Measurements differ by factor 10.	69
356 Withdrawn	Mi	TOTAL XSECT	$2. \pm 5$	$5. \pm 5$	5.0	3 CAD Ravier, J. Reson params wanted. Garg experim. not yet analysed.	68
357 [1744+]	Mi	TOTAL XSECT	3.5 ± 5	3.2 ± 6	1.0	2 ORL Clifford, C.F. 1% in minima for fast reactor shielding.	69
358 [1745+]	Mi	DIFF ELASTIC	1.0 ± 4	1.0 ± 6	10 5 TO 10%	2 ANL Avery, R. Butler, D.K. Energy resolution not determined. Resolution of intermediate structure probably adequate. 10-100keV , accuracy 5%; 100keV -3 MeV , accuracy 10%. AE Holmqvist, NBS -299, 3-8 MeV . ANL Cox, WASH 1079, 0.4-15MeV , θ angles.	65
359 [300]	Mi	DIFF ELASTIC	1.5 ± 6	$3. \pm 6$	15	2 KPK Schmidt, J.J. About 100 keV energy resolution and about 5° ang. resolution. 10% on $\langle\cos\rangle$	
360 [1475]	Mi	DIFF ELASTIC	1.5 ± 6	$3. \pm 6$	15 10% ON $\langle\cos\rangle$	2 CAD Barre, J-Y. Energy resolution:100keV, angular resolution: 5°. For fast reactor calculations.	
361 [1746+]	Mi	DIFF ELASTIC	1.5 ± 6	1.4 ± 7	9.0 4 TO 9%	1 KAP Ehrlich, R. Resolution 100keV , $\Delta\theta = 5^{\circ}$. AE Holmqvist, NBS -299, 3-8 MeV . ANL Cox, WASH 1079, 0.4-15MeV , θ angles.	69
362 [1326]	Mi	DIFF PLASTIC	$8. \pm 6$	1.5 ± 7	20	3 KPK Schmidt, J.J. Holmqvist et al. (FANDC(ORI) -73"LM") measured at ener- gies between 3 and 9 MeV. Measurements desired in energy steps of 1MeV and angular steps of 15°.	
363 [1476]	Mi	DIFF PLASTIC	$8. \pm 6$	1.4 ± 7	<20 DESIRED: 10% 10% ON $\langle\cos\rangle$	2 CAD PAR Barre, J-Y. Rastoin, J. Energy resolution:500keV, angular resolution: 1°. For fast reactor calculations. For fast reactor shielding calculations.	
364 [303]	Mi	EMISS XSECT	$2. \pm 6$	1.4 ± 7	10	2 PAR Rastoin, J. Resolution on F and F'. For fast reactor shielding calculations.	

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAR	REQUESTER , COMMENTS	YEAR
			MIN	MAX	(%)		
365 [1752+]	Mi	MONEL GAMMAS TMR energy dist	1.0+7	10	2	BET Rayard, R.T. All gammas are of interest. For shielding and gamma heating calculations. E _y -resol 0.5MeV.	66
366 [1753+]	Mi	MONEL GAMMAS TMR energy dist	3.0+5	20	1	OPL Clifford, C.E. All gammas are of interest. For shielding and gamma heating calculations. E _y -resol 0.5MeV.	62
367 [1756+]	Mi	MONEL GAMMAS energy dist	1.2+8 3.4+5 OR 548	15	2	SMP Fleishman, M.P. Absolute $\epsilon(E_y)$ required for all E _y > 200keV. Neutron energy intervals required: res-region: reproduce major variations in $\epsilon(E_y) > 1$ MeV : 500keV intervals. Gamma-energy resolution required:< 2.5MeV, 10%; 2.5MeV ,250 keV . None which satisfy criteria.	69
368 [1751+]	Mi	MONEL GAMMAS energy dist	1.0+6 1.0+7 OR 548	15	1	SMP Fleishman, M.P. Absolute $\epsilon(E_y)$ required for all E _y > 200keV. Neutron energy intervals required: res-region: reproduce major variations in $\epsilon(E_y) > 1$ MeV : 500keV intervals. Gamma-energy resolution required:< 2.5MeV, 10%; 2.5MeV ,250 keV . None which satisfy criteria.	69
369 [1754+]	Mi	MONEL GAMMAS energy dist	2.0+6 1.4+7	20	2	ORL Clifford, C.E. All gammas are of interest. For shielding and gamma heating calculations. E _y -resol 0.5MeV.	63
370 [308]	Mi	MONEL GAMMAS DESIRIED: 10%	3.0+6 1.6+7	<20	2	PAR Rastoin, J. For fast reactor shielding calculations.	
371 [3108]	Mi	DIPP INELAST TR energy,angle	4.0+6	5	3	WIN Campbell, C.G. For fast reactors. Note reduced priority. Evaluation needed, but uncertain whether requirements met.	
372 [1747+]	Mi	DIPP INELAST energy dist	1.0+6 1.0+7	10	2	GE ANL Snyder, T. Butler, D.K. Energy resolution : 10% for n and n'. Total integral over θ Pi required. Spectra at several angles if significantly anisotropic.	66
373 [3128]	Mi	DIPP INELAST energy,angle	4.0+6 7.0+6	<10	3	WIN Campbell, C.G. For fast reactors. Note reduced priority. Evaluation needed, but uncertain whether requirements met.	
374 [1748+]	Mi	ABSORPTION	1.0+3 1.5+5	10	2	ANL Avery, R. Butler, D.K. Energy resolution : 10% .	66
375 [1749+]	Mi	PES INT CAPT 5.0-1	10-15%	15	1	KAP Shtrlich, R. Energies over 0.5GeV . Remove or correct for n,p contribution.	69
376 [3148]	Mi	N,GAMMA	1.0+2 1.0+7 1EV-1KEV .5-10EV .15%	5	2	RPI Haeggblom, H. Needed for fast reactor calculations. Linac data of Hockenbury, Diss. Abstr. 288, 471C (May 68) could be sufficient 1keV to 10keV. SCT Graphs shown from 7 to 120keV : Spitz, Nucl.Phys.A121 655 (Dec. 1968) do not seem to have required accuracy. RPI Capture and transmission meas. on Ni ⁶⁰ from a few eV to 1MeV (see WASH-1127 p.171) are being analysed.	
377 [315]	Mi	N,GAMMA	1.0+2 2.0+5	<10	1	KPK Schmidt, J.J. RPI Resonance parameters desired. See extensive discussion in KPK 120/part 1, 1966, section III 4 . Block et al. (Paris conf. 1966, CN-23/126 and Wash conf. 1968, P7) measured between 0.1 and 300 keV and analysed resonances in individual isotopes. RPI Hockenbury et al. Phys. Rev. 178 (1969) 1746, give capture areas(σ, E_y) for resolved res. below 5keV , (separated isotopes). KPK High resolution capture + transmission work (20... 200keV.) on separated isotopes is in progress in view of obtaining J,Fn,fy values.	

REF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR	
			MIN	MAX	(S)			
378 [3198]	Ni	N,GAMMA	1. +2	1. +6	<20 0.9 2.78 108 TO -1REV	1 WIN --- HAR	Campbell, C.G. For fast reactors. Note increased priority and increased accuracy requirement. Requirement probably not met. Measurement and evaluation in progress by Moron.	
379 [1526]	Ni	N,GAMMA (res.param)	1. +2	1. +5	1C OR 5 4B.	1 PAR RPI KPK	Rastoin, J. For heating and circuit activation calculation. Hockenbury et al. Phys.Rev. <u>178</u> (1969) 1746, give capture areas(σ, Γ_y) for resolved res. below 50keV, (separated isotopes). High resolution capture + transmission work (20... 200keV.) On separated isotopes is in progress in view of obtaining J, Γ_n, Γ_y values.	
380 [1443+]	Ni	N,GAMMA	1.0+3	2.0+5	10	1 JAP	Japanese Nuclear Data Committee (JNDC). For fast reactors. Data are not sufficient above 10 KeV KPK 120/I .	69
381 [318]	Ni	N,GAMMA	1. +4	3. +5	20	2 KPK RPI RPI KPK	Schmidt, J.J. Resonance parameters desired. See extensive discussion in KPK 120/part I, 1966, section III a. Block et al. (Paris conf. 1966, CN-23/126 and Wash conf. 1968, 87) measured between 1.1 and 390 keV and analysed resonances in individual isotopes. Hockenbury et al. Phys.Rev. <u>178</u> (1969) 1746, give capture areas(σ, Γ_y) for resolved res. below 50keV, (separated isotopes). High resolution capture + transmission work (20... 200keV.) On separated isotopes is in progress in view of obtaining J, Γ_n, Γ_y values.	
382 [1473]	Ni	N,GAMMA	1. +4	3. +5	20	2 CAD --- RPI KPK	Barre, J-Y. Fast reactor calculations. Recent measurements by Spitz give values much greater than previous ones (increased by a factor of 5 to 10 at some energies). Hockenbury et al. Phys.Rev. <u>178</u> (1969) 1746, give capture areas(σ, Γ_y) for resolved res. below 50keV, (separated isotopes). High resolution capture + transmission work (20... 200keV.) On separated isotopes is in progress in view of obtaining J, Γ_n, Γ_y values.	
383 [321]	Ni	N,ALPHA	PISS		20	2 AP ---	Weitman, J. Calculation of He production in fuel cladding. No measurements known to exist for natural element. For the accuracy requested it seems sufficient to combine data for Ni ⁵⁸ and Ni ⁶⁰ . A measurement on Ni ⁵⁸ has been reported by P.Bass et al.: Nuovo Cimento Suppl. <u>2</u> , <u>3</u> , 1167 (1965, abstract), but no other reference was found for this work.	
384 Withdrawn	Ni	N,ALPHA	PISS		30	2 WIN ---	Campbell, C.G. For fast reactors. Freeman: in progress. GDS See Rochlin: Nucl <u>17</u> 1,54 (1/59), also EANDC(08) 19L (1/63).	
385 [13738]	Ni	N,ALPHA	3. +6	1.5+7	20	1 PAR CAD	Rastoin, J. Barre, J-Y. *He in structural materials.	68
386 [1544+]	⁵⁹ Ni	N2N XSECTION TR	1.5+7	10	2 VNV	Vidal, J.C. Activation. (⁵⁹ Ni, 36.4h). Disagreement between measurements of Jeronimo et al. (Saclay) and others.	69	
387 [322]	⁵⁹ Ni	N,PROTON	TR	1.0+7	4.0	1 GEL ---	Neutron Dosimetry Group PURATON. Threshold detector. Requested accuracy not fulfilled, see compilation EUP 119.e.	

REF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P MIN MAX (%)	LAB	REQUESTER , COMMENTS	YEAR
388 [14238]	⁵⁹ Mn	π ,PROTON	TR	1.5+7	10	1 PAP	Pastein, J. Threshold about 1MeV. Production of ⁵⁸ Co(72d). Discrepancies at 14MeV between Jeronymo:80mb, Barry:30mb and Storey:70mb. Circuit activation; detector activation.
389 [1755+]	⁵⁹ Mn	π ,PROTON	9.8+6	1.4+7	10	3 NDL	Eccleshall, D. Required is activation. E-resolution 5%, 500 keV intervals.
390 [3248]	⁵⁹ Mn	π ,ALPHA	6. +0	1.4+7	<20	2 KPK	Schmidt, J.J. No data available. Verification of evaporation theory calculations of Buttner et al., Nucl. Phys. <u>63</u> , (1965) 615, desired. See also Eriksson EANDC (OR) 73L page 14f.
391 [1545+]	⁵⁹ Mn	π , n PROTON	TR	1.5+7	10	2 VNV	Vidal, J.C. Activation (⁵⁷ Co, 270d) through $\pi(n,np)+\pi(n,\bar{n})$. At 14MeV, disagreement between Jeronymo (60mb) and others, (Glover:120mb).
392 [1546+]	⁶⁰ Mn	π ,PROTON	TR	1.5+7	10	2 VNV	Vidal, J.C. Activation. (⁶⁰ Co, 5.3y).
393 [1756+]	⁶⁰ Mn	π ,PROTON	2.3+6	1.3+7	10	3 NDL	Eccleshall, D. Required is activation. E-resolution 5%, 500 keV intervals.
394 [3250]	⁶⁰ Mn	π ,ALPHA	6. +0	1.4+7	<20	2 KPK	Schmidt, J.J. No data available. Verification of evaporation theory calculations of Buttner et al., Nucl. Phys. <u>63</u> , (1965) 615, desired. See also Eriksson EANDC (OR) 73L page 14f.
395 [1757+]	⁶¹ Mn	RESON PARAMS neutronwidth	1.0+3	6.0+5	9.0 4 TO 9%	1 KAP --- OBL	Ehrlich, R. Good, Phys.Rev. <u>151</u> , 912, 7 to 48 keV.
396 [1374]	⁶² Mn	π ,GAMMA	1. +3	1. +6	20	2 VNV RPI KPK	Vidal, J.C. Activation detector. Production of ⁶³ Mn(92y). Hockenbury et al. Phys.Rev. <u>178</u> (1969) 1746, give capture areas(σ, γ) for resolved res. below 50keV, (separated isotopes). High resolution capture + transmission work (20...200keV) on separated isotopes is in progress in view of obtaining J, Γ_n, γ values.
397 [1547+]	⁶³ Mn	π , n XSECTION	TR	1.5+7	10	2 VNV	Vidal, J.C. Activation. (⁶³ Mn, 92y).
398 [1375+]	⁶⁴ Mn	π ,GAMMA	1. +3	1. +6	20	3 VNV RPI KPK	Vidal, J.C. Activation detector. Production of ⁶⁵ Mn(2.56h). Hockenbury et al. Phys.Rev. <u>178</u> (1969) 1746, give capture areas(σ, γ) for resolved res. below 50keV, (separated isotopes). High resolution capture + transmission work (20...200keV) on separated isotopes is in progress in view of obtaining J, Γ_n, γ values.
399 [1758+]	Cu	NONEL GAMMAS energy,angle	2.0+2	5.0+4	15 OR SMR	1 SNP ---	Pleishman, W.R. Absolute $\sigma(E_\gamma)$ required for all $E_\gamma > 200$ keV. Neutron energy intervals required: resonance region: reproduce major variations in $(E_\gamma) > 1$ MeV : 500-keV intervals. Gamma energy resolution required:<2.5MeV, 10%; 2.5MeV, 250 keV. None which satisfy criteria.
400 [1759+]	Cu	NONEL GAMMAS energy,angle	1.0+6	1.0+7	15 OR SMR	1 SNP ---	Pleishman, W.R. Absolute $\sigma(E_\gamma)$ required for all $E_\gamma > 200$ keV. Neutron energy intervals required: resonance region: reproduce major variations in $(E_\gamma) > 1$ MeV : 500-keV intervals. Gamma energy resolution required:<2.5MeV, 10%; 2.5MeV, 250 keV. None which satisfy criteria.

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P MIN MAX (%)	LAB	REQUESTER	COMMENTS	TYPE	
461 [3298]	Cu	N,GAMMA	1. +2 2. +5	5 2	AE	Haeggblom, H.			
					GRL	Energy resolution 10% or better. Needed for fast reactor calculations.			
					HAR	Note change in requested energy interval. (Previous request partially fulfilled by data of Zaikin et al., At. Energ. 25, 526 (Dec. 1968). Meas. from 200ev to 17kev by Weigmann: Z.fur.Phys. 213, 411 (Nov. 1968) leads to error on Σ y of about 10%. A meas. by Moroz from 5ev to 100kev is being analysed (see KERF-PR/RP13).			
462 [1318]	^{63}Cu	N2N XSECTION TR	1.2+7	5	1	JAE	Japanese Nuclear Data Committee (JNDC). For neutron yield monitor. A few data available.	68	
463 [330*]	^{63}Cu	N2N XSECTION TR	2.1+7	10.0	3	GEL	Neutron Dosimetry Group EURATOM. Threshold detector.		
					HAR	Hermann have measured between 13 and 18 MeV : NP A132 (1969) 195. Request fulfilled.			
464 [1319]	^{63}Cu	N2N XSECTION	1.4+7 2.0+7	5	1	JAE	Japanese Nuclear Data Committee (JNDC). For neutron yield monitor. Large discrepancies among data.	68	
465 [1760*]	^{63}Cu	N,GAMMA	THR	1.0+3 2 TO 5%	5.0	2	RDT	Rannum, W.H. Accuracy 28 near thermal. Accuracy 5% above thermal For detector applications.	
466 [1761*]	^{63}Cu	N,GAMMA	2.5-2 1.5+7	30	3	LPL	Howerton, P.J. Required is cross section for activation of Cu ⁶⁴ in naturally occurring element. Accuracy 30% if $\epsilon > 10\text{mb}$, 50% if $25\text{mb} < \epsilon < 100\text{mb}$. Accuracy to a factor of 2 if $1\text{mb} < \epsilon < 25\text{mb}$; to a factor 10 if $\epsilon < 1\text{mb}$.	69	
467 [1762*]	^{63}Cu	N,GAMMA	1.0+3 1.8+7	10	2	BHW	Mc Elroy, W.N. Required is activation. For use as fluence monitor.	69	
468 [1160*]	^{63}Cu	N,ALPHA	PISS	<10	3	AE	Weitsman, J. Materials dosimetry.	68	
469 [332]	^{63}Cu	N,ALPHA	TR	1.4+7	4.0	1	GEL	Neutron Dosimetry Group EURATOM. Threshold detector. Requested accuracy not reached.	
470 [1527*]	^{63}Cu	N,ALPHA	TR	R. +6	5	1	PAP	Rastoin, J. Production of $^{60}\text{Co}(5.26\gamma)$. Irradiation monitor. Threshold detector.	69
471 Withdrawn	^{63}Cu	N,ALPHA	TR	1.0+7	10	2	HAR	Wright, S.R. Threshold detector. See Paulsen: Nukleonik 12, 91(7/67).	68
472 [1763*]	^{63}Cu	N,ALPHA	6.0+6	10	2	BHW	Mc Elroy, W.N. Required is activation. Energies over 6 MeV. For use as fluence monitor.	69	
473 [1528*]	^{63}Cu	N,ALPHA	8. +6 1.5+7	10	2	PAP	Rastoin, J. Production of $^{60}\text{Co}(5.26\gamma)$. Irradiation monitor. Threshold detector.	69	
474 [1766*]	^{65}Cu	N2N XSECTION THR	1.5+7	30	3	LPL	Howerton, R.J. Required is cross section for activation of Cu ⁶⁴ in naturally occurring element. Accuracy of 30% if $\epsilon > 10\text{mb}$, 50% if $25\text{mb} < \epsilon < 100\text{mb}$. Accuracy to a factor of 2 if $1\text{mb} < \epsilon < 25\text{mb}$; to a factor of 10 if $\epsilon < 1\text{mb}$.	69	
475 [1326]	^{65}Cu	N2N XSECTION TR	1.2+7	5	1	JAR	Japanese Nuclear Data Committee (JNDC). For neutron yield monitor. Data available as : Can. J. Phys. 44, 1183, 1966.	69	

PER [REG]	NUCLIDES	QUANTITY	ENERGY (EV) MIN MAX	ACCURACY (%)	P	LAB	REQUESTER , COMMENTS		YEAR
							MIN	MAX	
416 [1321]	⁶⁵ Cu	N2N XSECTION	1.5+7 2.0+7	5	1	JAE	Japanese Nuclear Data Committee (JNDC).		68
							For neutron yield monitor. Large discrepancies among data.		
417 [1764+]	⁶⁵ Cu	N,GAMMA	THR 2 TO 5%	1.0+3	5	PDT	Hannum, R.H.		67
							Accuracy 2% near thermal. Accuracy 5% near above thermal. For detector applications.		
418 [1767+]	Zn	NONEL GAMMAS	2.0+2 5.0+4	15	1	SNP	Pleishman, R.R.		69
		energy dist					Absolute $\sigma(E_\gamma)$ required for all $E_\gamma > 200\text{keV}$. Neutron E-intervals required: res.region: reproduce major variations in $(E_\gamma) > 1\text{ MeV}$: 500-keV intervals. Gamma E-resol required: < 2.5MeV, 10% ; 2.5MeV, 250keV.		
							---	None which satisfy criteria.	
419 [1768+]	Zn	NONEL GAMMAS	1.0+6 1.0+7	15	SNP	Pleishman, R.R.			69
		energy dist					Absolute $\sigma(E_\gamma)$ required for all $E_\gamma > 200\text{keV}$. Neutron E intervals required: res.region: reproduce major variations in $(E_\gamma) > 1\text{ MeV}$: 500-keV intervals gamma E-resol required: < 2.5MeV, 10% ; 2.5MeV, 250keV.		
							---	None which satisfy criteria.	
420 [1765+]	Zn	SPECT NGAMMA THR		10	1	SNP	Pleishman, R.R.		69
							Quantity: $P(E_\gamma)$.		
							For shielding calculations. Both line and continuous spectra are required. Bartholomew's spectrum does not give correct .B.E.		
421 [1769+]	⁶⁶ Zn	N,GAMMA	2.5-2 1.5+7	30	1	LRL	Hoverton, R.J.		69
							Required is cross section for activation of Zn ⁶⁵ in naturally occurring element.		
							Accuracy of 30% if $\sigma > 100\text{mb}$, 50% if $25\text{mb} < \sigma < 100\text{mb}$.		
							Accuracy to a factor of 2 if $1\text{mb} < \sigma < 25\text{mb}$; to a factor of 10 if $\sigma < 1\text{mb}$.		
422 [1770+]	⁶⁶ Zn	N2N XSECTION THR	1.5+7	30	1	LRL	Hoverton, R.J.		69
							Required is cross section for activation of Zn ⁶⁵ in naturally occurring element.		
							Accuracy of 30% if $\sigma > 100\text{mb}$, 50% if $25\text{mb} < \sigma < 100\text{mb}$.		
							Accuracy to a factor of 2 if $1\text{mb} < \sigma < 25\text{mb}$; to a factor of 10 if $\sigma < 1\text{mb}$.		
423 [336]	⁷¹ Ga	RESON PARAMS	9.5+1	10	2	KPK	Kuechle, M.		
							Reson params: neutron and gamma width J and L.		
424 [1771+]	Ge	EMISS XSECT	1.0+6 1.5+7	10	2	NDL	Eccleshall, D.		69
		energy,angle					Resolution: 0.25MeV in energy, 5° in angle.		
							Energy intervals 2 MeV ; angular intervals 21°.		
425 [1772+]	Ge	NONEL GAMMA	1.0+6 1.5+7	10	2	NDL	Eccleshall, D.		69
		energy,angle					Need energy spectrum of gammas.		
							Resolution: 5% in energy; 5° in angle.		
							Energy intervals 2 MeV ; angular intervals 20°.		
426 [1773+]	As	DIPP PLASTIC THR	1.4+7	15	2	GA	Pussell, J.		69
							For radiation effects.		
427 [1774+]	As	EMISS XSECT	TR angular dist	1.4+7	15	2	GA	Pussell, J.	
							For radiation effects.		69
428 [1548+]	⁷⁵ As	N2N XSECTION	TR	1.5+7	10	VNW	Vidal, J.C.		69
							Activation.(⁷⁴ As, 17.9d).		
429 [1549+]	⁷⁵ As	N,ALPHA	TR	1.5+7	10	VNW	Vidal, J.C.		69
							Activation.(⁷⁴ As, 14.2h).		
430 [1775+]	⁸³ Kr	TOTAL XSECT	1.0+5 .0+3	10	2	BET KAP	Bayard, R.T. Ehrlich, R.		67
							Accuracy 10% thermal. Accuracy 10% in res.integral above 1eV. For fission product absorption calculation		

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REF	NUCLEIDE	QUANTITY	ENERGY (EV)	ACCURACY	P	LAB	REQUESTER , COMMENTS	TPAP	
			MIN	MAX	(%)				
431 [1776+]	⁸³ Rb	N, γ AMMA	1.1-3	1.0+3	10	2	BRT KAP	Ehrlich, R.T. Accuracy 10% thermal. Accuracy 10% in res.integral above 1eV. For fission product absorption calculation	67
432 [1551+]	⁸⁵ Rb	N2N XSECTION	1.0+7	1.5+7	5	2	VNV	Vidal, J.C. Activation. (⁸⁵ Rb, 33d).	69
433 [1556+]	⁸⁵ Rb	N, γ AMMA	1. +3	3. +6	10	3	VNV	Vidal, J.C. Activation. (⁸⁵ Rb, 18.6d).	69
434 [1552+]	⁹⁰ T	N2N XSECTION	1.2+7	1.5+7	10	1	VNV	Vidal, J.C. Activation. (⁹⁰ T, 104d).	69
435 [13768]	⁹⁰ T	N, γ AMMA	1. +3	1.5+6	10	2	VNV RPI RPK	Vidal, J.C. Activation detector. Production of ⁹⁰ T(6h.2h). Hockenbury et al. Phys.Rev. <u>178</u> (1969) 1786, give capture areas($\sigma_{\gamma\gamma}$) for resolved r-s. below 50keV, (separated isotopes). High resolution capture + transmission work (20... 200keV) on separated isotopes is in progress in view of obtaining J,Γ_n,γ values.	69
436 [1777+]	Zr	DIFP PLASTIC	2.0+5	1.5+6	10	2	KAP ANL	Ehrlich, R. Resolution ±5%; systematic difference exist in available data. Smith is having samples fabricated.	69
437 [1778+]	Zr	DIFP PLASTIC	7.0+6	1.4+7	20	2	KAP ANL	Ehrlich, R. Resolution ±2.5%; No data. Smith is having samples fabricated.	69
438 [1780+]	Zr	EMISS XSECT energy,angle	1.5+6	1.5+7	10	1	LAS ANL ORL ORL	Streetman, J.P. For design of pressurized water reactors using Zr. Incident and exit energy resolution 10%. Low energy neutrons must be included. Absolute spectra at 30° & 70° may suffice. Time scale not yet established for requiring associated gamma-production data. Smith is having samples fabricated. Perey, 0-8.6MeV in progress. Perey, 2 angles at 9.5, 11, 12 MeV planned.	69
439 [1779+]	Zr	EMISS XSECT energy,angle	2.0+6	1.4+7	10	1	KAP ANL ORL OPL	Ehrlich, R. Avery, R. For design of pressurized water reactors using Zr. Incident and exit energy resolution 10%. Time scale not yet established for requiring associated gamma-production data. Smith is having samples fabricated. Perey, 0-8.6MeV in progress. Perey, 2 angles at 9.5, 11, 12 MeV planned.	67
440 [1785+]	Zr	NONEL GAMMAS energy dist	1.0+2	2.0+4	15	2	SNP OR SMR	Fleishman, M.R. Absolute $\sigma(E_\gamma)$ required for all $E_\gamma > 200$ keV. Neutron energy intervals required: res-region: reproduce major variations in $(E_\gamma) > 1$ MeV :500keV intervals. Gamma-energy resolution required: <2.5MeV, 10%; 2.5MeV, 250 keV. None which satisfy criteria.	69
441 [1786+]	Zr	NONEL GAMMAS energy dist	1.0+6	1.0+7	10	1	SNP OR SMR	Fleishman, M.R. Absolute $\sigma(E_\gamma)$ required for all $E_\gamma > 200$ keV. Neutron energy intervals required: res-region: reproduce major variations in $(E_\gamma) > 1$ MeV :500keV intervals. Gamma-energy resolution required: <2.5MeV, 10%; 2.5MeV, 250 keV. None which satisfy criteria.	69
442	Zr	RES INT CAPT	0.5+0		5.0	1	KAP VNV	Ehrlich, R. Discrepancies in existing measurements. See Vidal, Carré papers 56 Paris Conf.	69

REF [REG]	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P			LAB REQUESTER , COMMENTS	YEAR
				MIN	MAX	(%)		
443 [1781+]	Zr	N,GAMMA	THR	1.0+3	5.0	2	RMW For reactor modernization and reactivity effects	67
444 Withdrawn	Zr	N,GAMMA (res.param)	1.0+0 3.0+4 OR 5.0+	20	20	2	PAR Bastoin, J. ly Desired. LPR S.P.Kapchigashev (At.Energiya 19 29a (1965)) measured in this range with a slowing down spectrometer. GA Lopez et al., Proc.Conf.Neut.Cross.Sections and Techn. Washington D.C., Vol.II, p.857, 1...400keV. Resonance parameters are listed. RPI Z.M.Bartolome et al., Nucl.Sci.Eng. 37 (1969) 137:Reso- nance parameters are listed 150eV ...17keV.	
445 [1782+]	Zr	N,GAMMA	3.0+3 1.0+7	15	2	KAP	Ehrlich, R. Need verification for energies <25keV . Discrepancies exist 25keV - 1 MeV . No data > 1 MeV available.	69
446 [1784+]	Zr	SPECT N GAMMA THR		10	1	SNP	Fleishman, M.R. For shielding calculations. Both line and continuum spectra are required. Bartholomew's spectrum does not give correct E.F.	69
447 [1787+]	⁹⁰ Zr	TOTAL XSECT (res.param)	0.5+0 1.0+8	10	1	GR RET RPI	Snyder, T. Bayard, R.T. Accuracy 10% in parameters. Design of pressurized water reactors. Individual and average resonance parameters wanted. Bartolome, WASH 1124, has resonance parameters from capture data.	67
448 [1793+]	⁹⁰ Zr	RESON PARMS gamma width neutronwidth	+ 1.5+0	10	2	KAP	Ehrlich, R. Needed to verify existing measurements. Min.energy to include lowest resolved resonance. Bartolome WASH 1124 has resonance parameters.	69
449 [1788+]	⁹⁰ Zr	DIFF ELASTIC	0.5+0 1.0+7	10	1	BET	Bayard, R.T. Scattering from the separated isotopes 90-91 ,92-94 and 96 is desired to check the shell effect on the optical potential and derive useful parameters	67
450 [1790+]	⁹⁰ Zr	DISS XSECT energy,angle	1.0+6 1.5+7	10	1	BET ANL	Smith has ordered samples.	67
451 [1789+]	⁹⁰ Zr	DIFF INELAST angular dist	1.0+7	15	2	KAP	Bayard, R.T. Resolve discrete levels up to 3 MeV excitation. To compute direct inelastic scattering & investigate isotopic spin dependent coupling between ground and excited states. Smith has ordered samples.	69
452 [1792+]	⁹⁰ Zr	RES INT CAPT	0.5+0	20	2	KAP	Ehrlich, R. Needed for evaluating measurements,resonance parameters. No active work.	69
453 [1791+]	⁹⁰ Zr	N,GAMMA	0.5+0 1.0+8	10	1	GR RET RPI	Snyder, T. Bayard, R.T. Accuracy 10% in parameters. Design of pressurized water reactors. Individual and average resonance parameters wanted. Is it same for S and P waves. Bartolome WASH 1124 has data.	67
454 [1794+]	⁹⁰ Zr	NUCL.LEVELS	1.0+6 5.0+6	2	2	KAP	Ehrlich, R. J, Pi of all ⁹⁰ Zr levels < 5 MeV desired for calculating compound elastic and inelastic and n,p.	69

BEP [REG]	NUCLIDE	QUANTITY	ENERGY(eV)	ACCURACY (%)	P	LAB	REQUESTER , COMMENTS		YEAR
							MIN	MAX	
455 [1795+]	⁹¹ Zr	TOTAL XSECT	0.5+0	1.0+4	10	1	BET	Bayard, R.T.	67
								Accuracy 10% in parameters. Design of pressurized water reactors. Attention to resonances at 180, 291, 675, 1518 eV. Individual and average parameters of interest. T _Y results disagree by 10%.	
						PPI		Bartolome WASH 1124 has resonance parameters from capture data.	
						GA		Lopez, NBS - 299 has resonance parameters.	
456 [1802+]	⁹¹ Zr	RESON PARAMS gamma width neutronwidth	+ 1.0+4	10	1	KAP	Ehrlich, R.	Needed to resolve serious discrepancies 4keV and extend resolved resonance data to 10 keV. Min.energy to include lowest resolved resonance.	69
						---		Lopez, NBS - Spec.Pub. 299	
						RPI		bartolome WASH 1124 has resonance parameters.	
457 [1801+]	⁹¹ Zr	RESON PARAMS see comment	0.5+0	2.0+3	10	1	BET	Bayard, P.T.	69
								Accuracy 10% in resonance parameters. T _Y and T _M wanted for resonances at 180, 291, 675 and 1518 eV.	
						---		Needed for pressurized water reactors to remove discrepancies in measured values.	
						GA		Lopez, NBS - Spec.Pub. 299	
						RPI		bartolome WASH 1124 has resonance parameters.	
458 [1796+]	⁹¹ Zr	DIPP PLASTIC	0.5+	1.0+7	10	1	BET	Bayard, P.T.	67
								Scattering from the separated isotopes 90-91, 92-94 and 96 is desired to check the shell effect on the optical potential and derive useful parameters.	
						ANL		Smith has ordered samples.	
459 [1757+]	⁹¹ Zr	DIPP INELAST angular dist	1.0+7	15	2	KAP	Ehrlich, R.	69	
								Resolve discrete levels up to 2 MeV excitation. To compute direct inelastic scattering & investigate isotopic spin dependent coupling between ground and excited states.	
						ANL		Smith has ordered samples.	
460 [1560+]	⁹¹ Zr	RES INT CAPT	0.5+0	5.0	1	KAP	Ehrlich, R.	69	
						---		Verification of existing data required. No active work.	
461 [1798+]	⁹¹ Zr	N,GAMMA	0.5+0	1.0+4	10	1	BET	Bayard, P.T.	67
								Accuracy 10% in parameters. Design of pressurized water reactors.	
								Attention to resonances at 180, 291, 675, 1514 eV. Individual and average resonances of interest.	
						RPI		T _S is same for S and P waves.	
						GA		Bartolome WASH 1124 has data to 10keV.	
								Lopez, NBS - 299, to 4keV.	
462 [1799+]	⁹¹ Zr	N,ALPHA	1.0+7	30	3	KAP	Ehrlich, R.	69	
						---		No data available.	
463 [1803+]	⁹¹ Zr	NUCL.LEVELS	1.0+6	4.0+6	2	KAP	Ehrlich, R.	69	
								J, Pi of all Zr ⁹¹ levels < 4 MeV desired for calculating compound elastic and inelastic.	
464 [1804+]	⁹² Zr	TOTAL XSECT	0.5+0	1.0+4	10	1	BET	Bayard, R.T.	67
								Accuracy 10% in parameters. Design of pressurized water reactors.	
						PPI		Individual and average resonances needed.	
								Bartolome, WASH 1124, has resonance parameters from capture data.	
465 [1809+]	⁹² Zr	RESON PARAMS gamma width neutronwidth	+ 1.0+4	10	1	KAP	Ehrlich, R.	69	
								Verification of existing data required. Min.energy to include lowest resolved resonance.	
						RPI		Bartolome, WASH 1124, has some results.	

REF [REG]	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P MIN MAX (%)	LAB	REQUESTER , COMMENTS	YEAR	
466 [1805+]	^{92}Zr	DIFF ELASTIC	$0.5+6$	$1.0+7$	1C	1 RET --- ANL	Bayard, P.T. Scattering from the separated isotopes 90-91, 92-94 and 96 is desired to check the shell effect on optical potential and derive useful parameters. Smith has ordered samples.	67
467 [1806+]	^{92}Zr	DIFF INELAST angular dist			15	2 KAP --- ANL	Ehrlich, R. Resolve discrete levels to 2 MeV excitation. To compute direct inelastic scattering & investigate isotopic spin-dependent coupling between ground and excited states. Smith has ordered samples.	69
468 [1808+]	^{92}Zr	RES INT CAPT	$0.5+3$		20	2 KAP ---	Ehrlich, R. Needed for evaluating measurements,res-parameters. No active work.	69
469 [1807+]	^{92}Zr	ν, GAMMA	$0.5+7$	$1.0+4$	10	1 RET --- RPI	Bayard, P.T. Accuracy 10% in parameters design of pressurized water reactors. Individual and average resonances needed. Is capture width the same for S and P waves. Bartolome has data WASH 1124.	67
470 [1810+]	^{92}Zr	NUCL.LEVELS	$1.0+6$	$0.2+6$		2 KPK	Ehrlich, R. J, Π of all ^{92}Zr levels < 8 MeV desired for calculating compound elastic and inelastic.	69
471 [358]	^{93}Zr	RESON PARAMS gamma width neutronwidth	$1.0+2$	$5. +3$	10	2 KPK	Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available.	
472 [359]	^{93}Zr	ν, GAMMA	$5. +3$	$2. +6$	1C	2 KPK ---	Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available. No activity known.	
473 [1811+]	^{94}Zr	TOTAL XSECT	$0.5+0$	$1.0+4$	1C	1 RET --- RPI	Bayard, P.T. Accuracy 10% in parameters. Design of pressurized water reactors. Individual and average resonances wanted. Bartolome, WASH 1124, has resonance parameters from capture data.	67
474 [1816+]	^{94}Zr	BESON PARAMS gamma width neutronwidth	$+ 1.5+4$	10	2 KAP --- RPI	Ehrlich, R. Verification of existing data required. Min.energy to include lowest resolved resonance. Bartolome, WASH -1124, has res-parameters.	69	
475 [361]	^{94}Zr	RESON PARAMS	$2.3+3$		10	2 KPK	Kuechle, M. Resonance at 2.265 keV. Reson params: neutron and gamma width J and L.	
476 [1812+]	^{94}Zr	DIFF ELASTIC	$0.5+0$	$1.0+7$	10	1 RET --- ANL	Bayard, P.T. Scattering from the separated isotopes 90-91, 92-94 & 96 is desired to check the shell effect on the optical potential and derive useful parameters. Smith has ordered samples.	67
477 [1813+]	^{94}Zr	DIFF INELAST angular dist			15	2 KAP --- ANL	Ehrlich, R. Resolve discrete levels up to 2 MeV excitation. To compute direct inelastic scattering and investigate isotopic spin-dependent coupling between ground and excited states. Smith has ordered samples.	69
478 [1815+]	^{94}Zr	RES INT CAPT	$0.5+0$		20	2 KAP ---	Ehrlich, R. Needed for evaluating measurements,res-parameters. No active work.	69
479 [1814+]	^{94}Zr	ν, GAMMA	$0.5+0$	$1.0+4$	10	1 RET --- RPI	Bayard, P.T. Accuracy 10% in parameters. Design of pressurized water reactors. Individual and average resonances wanted. Is capture width the same for S and P wave . Bartolome has data.	67

REF [REG]	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P MIN MAX (%)	LAB REQUESTER , COMMENTS	YEAR	
						LAR	REQUESTER
484 [1817+]	^{94}Zr	NUCL.LEVELS	9.5+5 8.0+6	2	KAP	Ehrlich, R.	69
						J, Pi of all Zr^{94} levels < 8 MeV desired for calculating compound elastic and inelastic.	
481 [365]	^{95}Zr	N,GAMMA	THR	15 b.	2 CRC	Walter, W.H.	
						Fission product, unknown cross section.	
482 [1818+]	^{95}Zr	N,GAMMA	C.5+5 1.0+4	20 10-20%	2 BET KAP	Bayard, R.T. Ehrlich, R.	67
						Radioactive target, 65 day.	
						Accuracy: 10% in σ (ABS), if $\sigma > 100$ barns; 20% in σ (ABS), if from 10-100 barns.	
						Above lev:	
						10% in resonance integral if $\sigma > 1000$ barns;	
						20% in resonance integral if from 100-1000 barns.	
						The decay is to an important fission product.	
483 [1819+]	^{96}Zr	TOTAL XSECT	0.5+0 1.0+4	10	1 RET	Bayard, R.T.	67
						Accuracy 10% in parameters.	
						Design of pressurized water reactors.	
						Individual and average parameters wanted.	
						Good.Phys.Rev. 165, 1329, has data, 2.5-7 keV	
484 [1824+]	^{96}Zr	BESON PARAMS	3.0+2	10	1 BET	Bayard, R.T.	67
		gamma width				Accuracy 10% in Γ_n and Γ_γ for 300-eV resonance.	
		neutronwidth				Needed to verify previous measurements and remove discrepancies.	
485 [1825+]	^{96}Zr	BESON PARAMS	3.0+2	10	1 KAP	Ehrlich, R.	69
		gamma width				Needed to verify measurements on 300 eV resonance.	
		neutronwidth					
486 [1821+]	^{96}Zr	DIFF ELASTIC	0.5+0 1.0+7	10	1 BET	Bayard, R.T.	67
						Scattering from the separated isotopes 92-91, 92-93 and 96 is desired to check the shell effect on optical potential and derive useful parameters.	
						Smith has ordered samples.	
487 [1823+]	^{96}Zr	RES INT CAPT	0.5+0	15	1 KAP	Ehrlich, R.	69
						Needed for evaluating measurements res.parameters.	
488 [1822+]	^{96}Zr	N,GAMMA	THR	5.0	2 KAP	Ehrlich, R.	69
						Need to resolve discrepancies in σ 's and res-params.	
						Preferably measurements with natural target or other isotopes. Note: Zr^{97} half-life is 16.8 hours.	
489 [1820+]	^{96}Zr	N,GAMMA	0.5+0 1.0+8	10	1 BET	Bayard, R.T.	67
						Accuracy 10% in parameters.	
						Design of pressurized water reactors.	
						Individual and average parameters wanted.	
						Is capture width the same for S and P waves.	
490 [1826+]	Nb	DIFF ELASTIC	1.0+6 5.0+6	10	2 BET LAS	Bayard, R.T. Error is in average of $(1-\cos\theta)$ hopkins and Drake,6 and 7.5MET , WASH 1093.	67
491 Withdrawn	Nb	NONELASTIC	+/- 1.0+7		AE	Weitlan, J.	
						For feasibility studies of thermonuclear reactors.	
492 [1827+]	Nb	EMISS XSECT	1.0+6 1.0+7	10	2 BPT	Bayard, R.T.	67
		energy,angle				Incident and exit energy resolution 10% .	
						Low-energy neutrons must be included.	
						Absolute spectra at 30° & 75° may suffice.	
						Time scale requiring associated γ -production data not yet established.	
						None which satisfy criteris.	
493 [2188+]	Nb	EMISS XSECT	1.5+6 1.0+7	10	1 LAS	Streetman, C.P.	69
		energy,angle				Incident and exit energy resolution 10% .	
						Low-energy neutrons must be included.	
						Absolute spectra at 30° & 75° may suffice.	
						Time scale requiring associated γ -production data not yet established.	
						None which satisfy criteris.	

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR
			MIN	MAX	(%)		
494 [1832+]	Nb	BONEL GAMMAS	3.0+1 7.5+4	15	1	SMP Fleishman, M.P. energy dist OR SFR Absolute $\sigma(E_\gamma)$ required for all $E_\gamma > 200$ keV. Neutron energy intervals required: Res-region: reproduce major variations in $\sigma(E_\gamma)$ > 1 MeV : 500-keV intervals. Gamma-energy resolution required: < 2.5 MeV, 1% ; 2.5 MeV, 250 keV. None which satisfy criteria.	69
495 [1833+]	Nb	BONEL GAMMAS	1.0+6 1.0+7	15	1	SMP Fleishman, M.P. energy dist OR SFR Absolute $\sigma(E_\gamma)$ required for all $E_\gamma > 200$ keV. Neutron energy intervals required: Res-region: reproduce major variations in $\sigma(E_\gamma)$ > 1 MeV : 500-keV intervals. Gamma-energy resolution required: < 2.5 MeV, 1% ; 2.5 MeV, 250 keV. None which satisfy criteria.	69
496 [1829+]	Nb	N,GAMMA	COLD	1.0+0	5.0	2 BET Bayard, P.T. Look for non-1/v below 1 eV. For fast reactor calculations, to resolve discrepancies in thermionic reactor worths. Accuracy: 5% in calculated dilute and self-shielded resonance integral. LAS Glass, Physics-8 event, 3" eV WASH 1136.	69
497 [1830+]	Nb	N,GAMMA	1.0+0 1.0+0	5.0	2 BET Bayard, P.T. For fast reactor calculations, to resolve discrepancies in thermionic reactor worths. Accuracy: 5% in calculated dilute and self-shielded resonance integral. LAS Glass, Physics-8 event, 30 eV WASH 1136.	69	
498 [1828+]	Nb	N,GAMMA	1.0+3 1.0+5	10	2 AI Alter, H. ANL Avery, R. BET Bayard, P.T. GA Preskitt, C.A. For fast reactor calculations, to resolve discrepancies in thermionic reactor worths. Accuracy: 5% in calculated dilute and self-shielded resonance integral. LAS Glass, Physics-8 event, 30 eV WASH 1136.	62	
499 [1831+]	Nb	SPECT NGAMMA TR see comment		10	1 SMP Fleishman, M.P. Quantity: $\sigma(E_\gamma)$. For shielding calculations. Both line and continuum spectra are required. Bartolomev's spectrum does not give correct N.P.	69	
500 Withdrawn	⁹³ Nb	DIFF ELASTIC	4.0+4 2.0+5	25	2 WIN Campbell, C.G. --- For fast reactors. Some data available ANL5567 (revised).		
501 [3H2]	⁹³ Nb	TOTINELASTIC TR see comment	8.0+6	10.0	1 GEL Neutron Dosimetry Group EURATOM. Threshold detector. Xsection leading to isomeric state after gamma de-excitation is wanted.		
502 [381]	⁹³ Nb	DIFF INELAST TR energy dist	1.5+7	10	2 WUP Brunner, J. $E' = 29$ keV. Formation of the 3.7 yr isomer, for fast flux measurements.		
503 Withdrawn	⁹³ Nb	DIFF INELAST	1.5+6 5.0+6	25	2 WIN Campbell, C.G. For fast reactors. See Reitmann: NR 48,593 (1963) and Conde: 66PARIS I, 419 (O/66).		
504 [383]	⁹³ Nb	N2N XSECTION TR	1.5+7	5.0	2 GEL Neutron Dosimetry Group EURATOM. Threshold detector. Requested accuracy not reached.		

REF [REG]	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P MIN MAX (%)	LAB REQUESTER , COMMENTS	YEAR
515 [1137+]	93Nb	N, GAMMA	1.0 +2 1. +5	20	1 WIN Campbell, C.G. For fast reactors. Note increased priority, revised accuracy requirement and reduced energy range. --- Evaluation needed but accuracy requirement probably not met. HAR New measurements planned by Coates and Roxon.	68
516 [384+]	93Nb	NUCL.LEVELS	TH	8.0+6	1 GEL Neutron Dosimetry Group EURATOM. Threshold detector. Needed for Hauser- Feshbach calculation of xsection for $^{90}\text{Nb}(n,n')$ leading to isomeric state after gamma de-excitation.	
517 [1834+]	94Nb	N, GAMMA	1.0 -3 1.2+4	10	2 BPT Bayard, R.T. Radioactive target (2.1" x 10" cm). For thermal reactor calculations. Want resonance integral to 10%.	67
518 [1836+]	95Nb	BES INT CAPT J. S+J	C20 10-20%	1 BPT	Bayard, R.T. Desire resonance integral to: 20% if 100-1000 barns 10% if > 1000 barns. Radioactive target -35d.	69
519 [1835+]	95Nb	N, GAMMA	THR	C20 10-20% SEE CURRENT.	2 BPT Bayard, R.T. Radioactive target -35d. Thermal average will be useful. Want 2% accuracy if absorption cross section is 10- 100 barns, 10% if greater. Decays to an important fission product poison.	67
520 [1838+]	No	EMISS XSECT energy,angle	1.5+6 1.5+7	10	2 LAS Streetman, J.P. Low energy neutrons must be included. Absolute spectra at 30° & 75° may suffice. Time scale requiring associated γ -production data not yet established. --- None which satisfy criteria.	69
521 [1841+]	No	NONEL GAMMAS energy dist	1.0+1 9.0+3	15	1 SNP Fleishman, M.P. Absolute $\sigma(E_\gamma)$ required for all $E_\gamma > 22^\circ\text{keV}$. Neutron energy intervals required: resonance-region: reproduce major variations in $\sigma(E_\gamma) > 1 \text{ MeV}$: 5% key intervals. Gamma energy resolution required: < 2.5MeV, 10%; 2.5MeV, 25% keV. --- None which satisfy criteria.	69
522 [1842+]	No	NONEL GAMMAS energy dist	1.0+6 1.0+7	15	1 SNP Fleishman, M.P. Absolute $\sigma(E_\gamma)$ required for all $E_\gamma > 200\text{keV}$. Neutron energy intervals required: resonance-region: reproduce major variations in $\sigma(E_\gamma) > 1 \text{ MeV}$: 500 key intervals. Gamma energy resolution required: < 2.5MeV, 10%; 2.5MeV, 25% keV. --- None which satisfy criteria.	69
523 [1837+]	No	DIPP INELAST energy dist	1.0+6 3.0+6	20	3 AND Avery, R. AND Butler, D.K. DEN and DEN' = 2%. Total integral over 4 pi required. Spectra at several angles if significantly anisotropic. --- No active work above 1.5MeV.	62
524 [391+]	No	DIPP INELAST energy,angle	1.5+6 5. +6	10	1 WIN Campbell, C.G. For fast reactors. Note increased priority. --- HAR In progress: Porter. Requirement probably met. Evaluation needed.	
515 [1839+]	No	N,GAMMA	1.0+0 1.1+5	10	3 RDT Hannum, W.H. To resolve discrepancy in thermionic reactor worth. GEL Weigmann, Nuclear Physics 109 A 513, 1-2: keV.	69

PEF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P	LAB	REQUESTER	COMMENTS	YEAR
			MIN	MAX	(%)			
516 [1579+]	No	N, GAMMA	1. +2	1. +6	<2%	1 WIN --- RAP	Campbell, C.G. For fast reactors. Data available on 100% and measurements planned on natural Mo by Coates and Monzon. Evaluation needed.	69
517 [394]	No	N, GAMMA	1. +6	1. +7	10	3 BN ---	Tavernier, G. No values available no activity known.	
518 [1886+]	No	SPECT N, GAMMA TRB See comment			10	2 SNP	Pleishman, P.P. Quantity: P(EV). For shielding calculations. Both line and continuum spectra are required. Partholomew's spectrum does not give correct P.P.	69
519 Withdrawn	No	N, PROTON	PISS		25	3 WIN ---	Campbell, C.G. For fast reactors. See Fabry and Rau: PNNDC(B) 660 (2/66). Also Boldeman: JNS AB18, 417 (8/64).	
520 [395]	No	N, PROTON	TR	1.4+7	10	2 KPK	Schmidt, J.J. No data available.	
521 Withdrawn	No	N, ALPHA	PISS		25	3 WIN --- ALD GES MUN	Campbell, C.G. For fast reactors. Freemann: in progress. See Rochlin: Nucl 17, 1, 54 (1/59), also Rau: PNNDC(B) 660 (2/66).	
522 [1553]	⁹² Mo	N, PROTON	TR	1.5+7	10	2 VNV	Vidal, J.C. Threshold detector. (Production of ⁹² Nb(10, 1d)).	
523 [1554+]	⁹² Mo	N, ALPHA	TR	1.5+7	10	2 VNV	Vidal, J.C. Activation. (⁹⁰ Zr, 79h).	69
524 [1338]	⁹³ Mo	N, GAMMA	1. +0	1. +7	10	2 AP	Hakansson, R. The requested accuracy is especially important in the resonance region. Energy resolution 10% or better. Needed for fast reactor calculations. Measurements above 1.5keV of primary interest. Fast chopper meas. below 1.5keV (WASH-1127 p. 12) lead to precision on < $\Gamma\gamma$ > better than 10%. Meas. on natural Mo have been made from 10eV to 25keV (Nucl.Phys.A104, 513 (1967)), resonances assigned to different isotopes and $\Gamma\gamma$ determined for large res. Meas. on separated isotopes were planned (1967) to ascertain isotopic assignments.	68
525 [801]	⁹⁵ Mo	N, GAMMA	1. +4	2. +6	10	2 KPK --- KPK GEL	Schmidt, J.J. Pission product important in fast reactor burnup calculations. No measurements available. Average measurements planned. High resolution (resonance) measurements planned.	
526 [402]	⁹⁵ Mo	N, PROTON	TR	1.4+7	10.0	2 KPK GEL	Schmidt, J.J. Neutron Dosimetry Group EURATOM. Threshold detector.	
527 [1555+]	⁹⁵ Mo	N, PROTON	TR	1.5+7	10	3 VNV	Vidal, J.C. Activation detector. Production of ⁹⁵ Nb(35d).	69
528 [1335]	⁹⁷ Mo	N, GAMMA	1. +6	1. +7	10	2 AP	Hakansson, R. The requested accuracy is especially important in the resonance region. Energy resolution 10% or better. Needed for fast reactor calculations. Measurements above 1.5keV of primary interest. Fast chopper meas. below 1.5keV (WASH-1127 p. 12) lead to precision on < $\Gamma\gamma$ > better than 10%. Meas. on natural Mo have been made from 10eV to 25keV (Nucl.Phys.A104, 513 (1967)), resonances assigned to different isotopes and $\Gamma\gamma$ determined for large res. Meas. on separated isotopes were planned (1967) to ascertain isotopic assignments.	68

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY ?	LAB	REQUESTER , COMMENTS	YR/PAP	
			MIN	%X	(X)			
529 [403]	^{97}Mo	N,GAMMA	1. +4	2. +6	10	2 KPK --- KPK GRL	Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available. Average measurements planned. High resolution measurements planned.	
530 [405]	^{99}Mo	N,GAMMA	THR	8.0 b.	2 CRC	Walker, W.H. Fission product, unknown cross section.		
531 [1843+]	^{99}Mo	N,GAMMA	1.0-3	1.0+3	<20 10-20% SEE COMMENT.	2 BPT KAP	Mayard, R.T. Phrlich, R. Radioactive target -67h. Want 2% accuracy if absorption cross section is 10-100 barns, 1% if greater. Above 1 eV want 2% in resonance if in range 100 to 1000 barns 10% if larger. Decays to important fission product.	67
532 [407]	^{99}Tc	RESON PARAMS gamma width neutronwidth	4.0+2	5. +3	10	2 KPK	Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available.	
533 [1444+]	^{99}Tc	N,GAMMA	1.0-3	1.0+1	5.0	1 JAE	Japanese Nuclear Data Committee (JNDC). Fission product in burnup calculation. No active work.	69
534 [1445+]	^{99}Tc	N,GAMMA	1.0+1	5. +4	20.0	1 JAE	Japanese Nuclear Data Committee (JNDC). Fission product in burnup calculation. No active work.	69
535 [1336+]	^{99}Tc	N,GAMMA	1. +1	1. +7	10	2 AE	Hakansson, R. The requested accuracy is especially important in the resonance region. Energy resolution 1% or better. Needed for fast reactor calculations. MTR A transmission meas.up to 280eV (WASH1124 p.51) lead to values of Γ_n and Γ_T for 13 res.but sufficient accuracy is certainly not reached in area analysis.	68
536 [1138]	^{99}Tc	N,GAMMA	1. +2	1. +6	20 (E-2E)	3 WIN ---	Campbell, C.G. For fast reactors. No work planned.	68
537 [408]	^{99}Tc	N,GAMMA	5. +3	2. +6	10	2 KPK	Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available. --- No activity known.	
538 [1446+]	^{100}Ru	N,GAMMA	1.0-3	1.0+1	10.0	2 JAE	Japanese Nuclear Data Committee (JNDC). Fission product in burnup calculation. No active work.	69
539 [1447+]	^{100}Ru	N,GAMMA	1.0+1	5.0+4	25.0	2 JAE	Japanese Nuclear Data Committee (JNDC). Fission product in burnup calculation. No active work.	69
540 [409]	^{101}Ru	RESON PARAMS gamma width neutronwidth	2.0+2	5. +3	10	2 KPK	Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available.	
541 [1337]	^{101}Ru	N,GAMMA	1. +2	1. +7	10	2 AE	Hakansson, R. The requested accuracy is especially important in the resonance region. Energy resolution 1% or better. Needed for fast reactor calculations. KIL Total cross sect. meas. and res. param. analysis will be undertaken between 1eV and 1keV (fast chopper), also on separated isotopes (JNDC(R) f15 U p.70).	68
542 [1139]	^{101}Ru	N,GAMMA	1. +2	1. +6	20 (E-2E)	3 WIN ---	Campbell, C.G. For fast reactors. No work planned.	68

REF [REC]	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P MIN MAX (%)	LAB	REQUESTER , COMMENTS	YEAR	
543 [410]	^{101}Ru	N,GAMMA	5. +3	2. +6	10	2 KPK	Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available. No activity known.	
546 [411]	^{102}Ru	RESON PARAMS gamma width neutronwidth	0. +3	1.0+4	10	2 KPK	Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available.	
545 [1330]	^{102}Ru	N,GAMMA	1. +0	1. +7	10	2 AE	Hakansson, P. The requested accuracy is especially important in the resonance region. Energy resolution 10% or better. Needed for fast reactor calculations.	
					KIL	Total cross sect. meas. and res. param. analysis will be undertaken between 1eV and 1keV (fast chopper), also on separated isotopes (PANDC(B) 115 3 p.70).	68	
546 [412]	^{102}Ru	N,GAMMA	1. +4	2. +6	10	2 KPK	Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available. No activity known.	
547 [413]	^{103}Ru	N,GAMMA	THR	60 b.	2 CPC	Walker, W.H. Fission product, unknown cross section.		
548 [1004+]	^{103}Ru	N,GAMMA	1.0-3	1.0+3	<20 10-20%	2 BET KAP	Bayard, R.T. Ehrlich, R.T. Radioactive target -40d. 20% Accuracy desired if cross section in range 10-100 Barns, 10% if larger. Above 1eV want 20% in resonance integral if in range 100-1000 Barns, 10% if larger. Wanted for fission product poison calculations in thermal reactors.	67
549 [415]	^{104}Ru	RESON PARAMS gamma width neutronwidth	0. +3	1.0+4	10	2 KPK	Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available.	
550 [416]	^{104}Ru	N,GAMMA	1. +4	2. +6	10.0	2 KPK	Schmidt, J.J. Fission product important in fast reactor burnup calculations. Chaubey (PR 152, 1055, 1966) measured at 24 keV. No activity known.	
551 [1006+]	Rb	N,GAMMA	1.0-3	1.0+0	10	2 GE	Snyder, T. Accuracy 10% in resonance integral. Energies above 1 eV of interest. Want to calculate fission product poisons.	67
552 [1005+]	Rb	N,GAMMA	0.5+0	1.0+3	10	2 KAP	Ehrlich, R. Accuracy 10% in resonance integral. Energies above 1 eV of interest. Want to calculate fission product poisons.	67
553 [410]	^{105}Ru	TOTINELASTIC TR see comment	1.0+7	5.0	1 GEL KPK	Neutron Dosimetry Group EURATOM. Kuechle, R. Threshold detector. Insection leading to isomeric state after gamma de-excitation is wanted.		
554 [0209]	^{105}Ru	DIFF INELAST TR energy dist	1.5+7	10	2 WUR	Brunner, J. $\theta=80\text{keV}$. Formation of the 57min isomer. For fast flux measurements. Measurements in progress in Canada.		
555 [021]	^{105}Ru	N2N XSECTION TR	1.4+7	10.0	2 GEL	Neutron Dosimetry Group EURATOM. Threshold detector. CBNM EURATOM is planning meas.		
556 [1339]	^{105}Ru	N,GAMMA	1. +3	1. +7	10	2 AE	Hakansson, P. The requested accuracy is especially important in the resonance region. Energy resolution 10% or better. Needed for fast reactor calculations.	
					RPT	Scattering meas. (WASH-1127 p.176) lead to values of f, f_n, J for 7 res. between 154.4 and 555eV.	68	
					ORL	No new capture meas. known since Macklin's (Phys. Rev. 122, 1007(July 1967)).		

RENDA FEBRUARY 1970

REF (REG)	NUCLIDE	QUANTITY	ENERGY(EV) MIN MAX	ACCURACY P (%)	LAB	REQUESTER , COMMENTS	YEAR
557 105Rh	RES INT CAPT RES Withdrawn		20.0	SAC	Bussac, J.		68
558 105Rh [1377+]	N,GAMMA	THR	10.0	SAC	Bussac, J.		68
				ANL		Glendenin in NSE 29, 147 (1967) gives a total capture cross section of (19.0 ± 1.9) kb. (resonance integral contribution small, Cd-ratio is 47 for Au). The cross section is composed of: $^{35}\text{Rh}^{105}(\text{n},\text{gamma})\text{Rh}^{106}$ (2.2 h); (5.7 ± 1.2) kb and $^{35}\text{Rh}^{105}(\text{n},\text{gamma})\text{Rh}^{106}$ (32sec) ; (13.3 ± 1.5) kb. These data fulfill the request.	
559 105Rh [1848+]	N,GAMMA	1.0-3 1.0+1	5.0	1	JAE	Japanese Nuclear Data Committee (JNDC). Fission product in burnup calculation. TID-11967, 1966, OFNL-3488, 1963, NSE 20 298 1964, 66PAPIS 1966, NSE 29 147 1967.	69
560 105Rh [1847+]	N,GAMMA	1.0-3 1.0+0	10	2	GB	Snyder, T. Radioactive target -36h. Fission product.	67
561 105Rh [428]	N,GAMMA	1. -2 1.0+1	5	2	CPC	Walker, W.H. Available data suggest large resonance near Cadmium cut-off. Additional data needed to determine dependence on neutron temperature and epithermal flux.	
562 105Rh [1849+]	N,GAMMA	1.0+1 5.0+4	20.0	1	JAE	Japanese Nuclear Data Committee (JNDC). Fission product in burnup calculation. No active work.	69
563 105Rh [426]	N,GAMMA	1. +1 5.0+2	20	2	CRC	Walker, W.H. Available data suggest large resonance near Cadmium cut-off. Additional data needed to determine dependence on neutron temperature and epithermal flux.	
564 105Pd [1340]	N,GAMMA	1. +0 1. +7	10	2	AE	Hakansson, P. The requested accuracy is especially important in the resonance region. Energy resolution 10% or better. Needed for fast reactor calculations. ISP Transmission meas. of Coceva et al. (Phys.Let.16 159, May 1965) give σ values for res. between 11.78 and 55.8 eV with 30 to 40% accuracy. In Nucl.Phys.A117, 506 only res. energies and spins are given.	68
565 105Pd [427]	N,GAMMA	2. +3 2. +6	10	2	KPK	Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available. --- No activity known.	
566 107Pd [428]	RESON PARAMS gamma width neutronwidth	0. +3 2. +3	10	2	KPK	Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available.	
567 107Pd [429]	N,GAMMA	THR	20 b.	2	CPC	Walker, W.H. Pu fission product, unknown cross section.	
568 107Pd [1848+]	N,GAMMA	1.0-3 1.0+4	10	2	BPT	Bayard, R.T. Radioactive target- 7.10^6 years. For calculation of fission product poisons. Above 1 eV want resonance integral to 10%.	67
569 107Pd [1341]	N,GAMMA	1. +0 1. +7	10	2	AP	Hakansson, P. The requested accuracy is especially important in the resonance region. Energy resolution 10% or better. Needed for fast reactor calculations. No activity known.	68
570 107Pd [431]	N,GAMMA	2. +3 2. +6	10	2	KPK	Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available. --- No activity known.	

REF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY	P	LAB	REQUESTER , COMMENTS	YEAR
			MIN	MAX	(%)			
571 [432]	^{100}Pd	RESON PARAMS gamma width neutronwidth	J. +3	1. +3	10	2	KPK Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available.	
572 [433]	^{100}Pd	H,GAMMA	6. +5	2. +6	10	3	KPK Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available. No activity known.	
573 [434]	^{100}Pd	RESON PARAMS gamma width neutronwidth	4.0+2	2. +3	10	2	KPK BOL Schmidt, J.J. Benzi, V. Fission product important in fast reactor burnup calculations. No measurements available.	
574 [1869+]	^{100}Ag	H,GAMMA	1.0-3	1.0+0	10	2	GP Snyder, T. Fission product poison.	67
575 [437]	^{100}Ag	H,GAMMA	7. +2	5. +3	10	2	KPK --- Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available. No activity known.	
576 [13420]	^{100}Ag	H,GAMMA	1.5+5	1. +7	10	2	AE Hakansson, R. The requested accuracy is especially important in the resonance region. Energy resolution 10% or better. Needed for fast reactor calculations. --- RAR Antwerp Conf.1965 results give Γ_γ with accuracy often better than 10%. KDR Moradyan has made a capture measurement between 5.2eV and 1keV (Paris Conf.1966, paper 177). PRI Kononov's results (Paris Conf.1966, paper 99) have an accuracy of 10 to 15%.	68
577 [438]	^{100}Ag	H,GAMMA	2. +5	2. +6	10	2	KPK Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available. No activity known.	
578 [1167]	Cd	ABSORPTION	1. -3	5. -1	1	2	WUR --- Brunner, J. Spectrum measurements in poisoned moderators. Measurements in progress in Switzerland, see BANDC(OP)-61.	
579 [440]	In	RESON PARAMS gamma width	+0	5. +2	<15	3	BOL Benzi, V. Single transition.	
580 [441]	^{115}In	TOTINELASTIC TR see comment	1.5+7	3.0	1	GPL KPK	Neutron Dosimetry Group EURATOM. Kuechle, M. Threshold detector. Isection leading to isomeric state after gamma de-excitation is wanted	
581 [442]	^{115}In	DIFF INELAST 5. +6 energy dist	1.5+7	10	2	WUR --- Brunner, J. $E = 0.335 \text{ MeV}$. Formation of the 4.5h isomer, for fast flux measurements. Measurements in progress in Canada.		
582 [444]	^{120}Sn	RESON PARAMS gamma width	6.2+1		10	2	KPK Kuechle, M.	
583 [445]	^{120}Sn	H,GAMMA	THB	300 b.	2	CRC	Walker, W.H. Fission product, unknown cross section.	
584 [446]	^{121}Sb	H,GAMMA	+0	1. +3	20	2	BN --- Tavernier, G. Neutron economy and activation in fast reactors. No activity known.	
585 [447]	^{123}Sb	H,GAMMA	+0	1. +3	20	2	BN --- Tavernier, G. Neutron economy and activation in fast reactors. No activity known.	

REF [REQ]	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P THR MAX (S)	LAB REQUESTER , COMMENTS	YEAR
586 [448]	^{129}Sb	N,GAMMA	THR	1000 b.	3 CRC Walker, W.H. Fission product, unknown cross section.	
587 [449]	^{127}Sb	N,GAMMA	THR	8000 b.	3 CRC Walker, W.H. Fission product, unknown cross section.	
588 [450]	^{127}Te	N,GAMMA	THR	1200 b.	3 CRC Walker, W.H. For the isomeric state (105 4). Fission product; unknown cross section.	
589 [1850+]	^{127}Te	N,GAMMA	1.0-3 1.2+0	20	2 KAP Ehrlich, R. radioactive target -105d isomer. 0.025 eV value or thermal average useful. Request pertains to the metastable state. Needed for calculation of fission product poisons.	67
590 [452]	^{129}Te	N,GAMMA	THR	600 b.	3 CRC Walker, W.H. For the isomeric state (33 4). Fission product; unknown cross section.	
591 [1851+]	^{132}Te	N,GAMMA	1.0-3 1.3+0	20	2 BET Bayard, R.T. Radioactive target -78h. Accuracy 10% if 1-sec larger than 2500 barns. For calculation of fission product poisons. Above 1 eV resonance integral wanted to 20% if in range 2500-25000 barns, 10% if larger.	67
592 [1852+]	^{133}I	N,GAMMA	1.0-3 1.0+3	20	2 BET Bayard, R.T. Radioactive target -21h. Accuracy 10% if 1-sec larger than 9000 barns. Wanted for fission product poison calculations. Above 1eV resonance integral wanted to 20% if in range 9000-90000 barns, 10% if larger.	67
593 [455]	^{134}Xe	RESON PARMS gamma width neutronwidth	5.0+1 5. +3	10	2 KPK Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available.	
594 [4590]	^{134}Xe	ABSORPTION	2.5-2	10	2 WIN Tyror, J.G. --- For thermal reactors. No work planned.	
595 [1140]	^{134}Xe	RES INT ABS	5.5-1 2. +6		2 WIN Tyror, J.G. --- For thermal reactors. No work planned.	68
596 [1853+]	^{134}Xe	N,GAMMA	1.0-3 1.0+3	10	2 BET Bayard, R.T. GE Snyder, T. Fission product. Above 1eV want res.integral to 10%.	67
597 [13430]	^{134}Xe	N,GAMMA	1. +1 1. +7	10	2 AE Nakansson, P. The requested accuracy is especially important in the resonance region. Energy resolution 10% or better. Needed for fast reactor calculations. No capture data known.	
598 [458]	^{134}Xe	N,GAMMA	5. +3 2. +6	10	2 KPK Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available. No activity known.	
599 [1854+]	^{134}Xe	N,GAMMA	THR	10	2 GE Snyder, T. Radioactive target - 5.3d. Thermal average or 0.025eV value wanted. Wanted for fission product poison calculations. No work in progress.	67
600 [1850+]	^{134}Xe	N,GAMMA	1.0-3 1.0+1	5.0	1 JAB Japanese Nuclear Data Committee (JNDC). Fission product in burnup calculation. No active work.	69

REF [REG]	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P MIN MAX (%)	LAB	REQUESTER , COMMENTS	YEAR	
601 [1451+]	^{133}Xe	N,GAMMA	1.0×10^{-3} to 10^4	20.0	1	JAE	Japanese Nuclear Data Committee (JNDC). Fission product in burnup calculation. No active work.	69
602 [1856+]	^{135}Xe	NONREL GAMMAS TBR energy dist		<20 10-20%	2	KAP	Ehrlich, R. Radioactive target -9.2h. Accuracy 10 to 20% in spectrum. Spectra distribution of γ rays is wanted for energies 1-8 MeV. Incident energy of neutron should be thermal needed for γ -shielding and heating calculations γ -resolution 10-20%.	67
603 [1855+]	^{135}Xe	N,GAMMA	1.0×10^{-3} to 10^4	5.0	2	GA	Wortheim, L.W. Radioactive target -9.3h. For design of thorium cycle reactors.	67
604 [1857+]	Cs	N,GAMMA	1.0×10^{-3} to 10^4	10	1	GE BET	Snyder, T. Bayard, R.T. Thermal average, 0.025eV, and interval 0-1eV useful For fission product poison product calculation.	67
605 [1858+]	Cs	N,GAMMA	0.5×10^{-3} to 10^4	10	1	GE BET	Snyder, T. Bayard, R.T. Accuracy 10% in resonance integral. Energies above 1 eV of interest. For fission product poison calculation	67
606 [131CS Withdrawn]	^{131}Cs	N,GAMMA	1.0×10^{-3} to 10^4	10	2	AE	Hakansson, R. The requested accuracy is especially important in the resonance region. Energy resolution 10% or better. Needed for fast reactor calculations.	
607 [1466+]	^{133}Cs	N,GAMMA	1.0×10^{-3} to 10^4	20	2	AE	Hakansson, R. For energies below 1keV. Energy resolution 10% or better. Needed for fast reactor calculations.	69
608 [1467+]	^{133}Cs	N,GAMMA	1.0×10^{-3} to 10^4	20	2	AE	Hakansson, R. For energies above 1MeV. Energy resolution 10% or better. Needed for fast reactor calculations.	69
609 [1452+]	^{134}Cs	N,GAMMA	1.0×10^{-3} to 10^4	10.0	2	JAE	Japanese Nuclear Data Committee (JNDC). Fission product in burnup calculation. TID-22165 1962.	69
610 [1453+]	^{134}Cs	N,GAMMA	1.0×10^{-3} to 10^4	25.0	2	JAE	Japanese Nuclear Data Committee (JNDC). Fission product in burnup calculation. No active work.	69
611 [466]	^{135}Cs	RESON PARAMS gamma width neutronwidth	0.1×10^{-3} to 10^4	10	2	KPK	Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available.	
612 [1345]	^{135}Cs	N,GAMMA	1.0×10^{-3} to 10^4	10	2	AE	Hakansson, R. The requested accuracy is especially important in the resonance region. Energy resolution 10% or better. Needed for fast reactor calculations. No activity known.	
613 [467]	^{135}Cs	N,GAMMA	5.0×10^{-3} to 10^4	10	2	KPK	Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available. No activity known.	
614 [468+]	Ba	DIFF INELAST energy dist	4.0×10^{-6} to 10^7	5	1	PAR	Rastoin, J. For shielding calculation. Note priority changed to 1.	
615 [467]	Ba	DIFF INELAST energy dist	4.0×10^{-6} to 10^7	5	3	HAR	Butler, J. Spot values in energy range. For shielding.	

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P MIN MAX (%)	LAB	REQUESTER , COMMENTS	YEAR	
616 [47(]	Ba	N,GAMMA	1. +4	1.0+5	20	2 BN ---	Tavernier, G. Activation of barite concrete in fast reactors. No data available. No activity known.	
617 [4718]	^{139}La	RESON PARAMS gamma width	7.5+1	1.0+4	10	2 KPK	Schmidt, J.J. Fission product important in fast reactor burnup calculations. Neutron widths sufficiently covered by Morgenstern (CEA-R 3609,1958) and by Shue et al. (Phy.Rev. <u>159</u> ,105n(1967)). No σ available.	
618 [13068]	^{139}La	N,GAMMA	1. +0	1. +4	10	2 AB	Hakansson, R. Energy resolution 10% or better. Needed for fast reactor calculations. Note upper energy limit changed to 10 keV. Data for higher energies: Stupegia, J.Nucl.Eu. <u>22</u> ,267(May1968).	
619 Withdrawn	^{102}La	MISCELLANEOUS THR			10	2 WIP	Kinchin, G.H. Quantity: thermal x-section times fiss.prod.yield from thermal fission of ^{233}U ^{235}U ^{239}Pu and ^{241}Pu . For thermal reactors. Separate measurements of yield and cross-section are acceptable.	68
620 Withdrawn	^{144}Ce	MISCELLANEOUS THR			10	2 WIN	Kinchin, G.H. Quantity: thermal x-section times fiss.prod.yield from thermal fission of ^{233}U ^{235}U ^{239}Pu and ^{241}Pu . For thermal reactors. Separate measurements of yield and cross-section are acceptable.	68
621 [1580+]	^{144}Ce	MISCELLANEOUS see comment	+		0.5	1 WIN	Hicks, D. Quantity: half-life. For thermal reactors. Uncertain whether requirement met, evaluation needed.	69
622 [475]	^{141}Pr	RESON PARAMS gamma width	+6	5. +3	<15	3 BOL	Benzi, V. Single transition.	
623 [13470]	^{141}Pr	N,GAMMA	1. +0	1.0+5	10	2 AB	Hakansson, R. Energy resolution 10% or better. Needed for fast reactor calculations. Note upper energy limit changed to 150keV. Data for higher energies: Stupegia, J.Nucl.Eu. <u>22</u> ,267(May1968). DUB Transmission meas. like in ZPT <u>47</u> ,43 (July1964) (50...90eV) are certainly not accurate to 10%.	
624 [1458+]	^{143}Pr	N,GAMMA	1.0-3	1.0+1	5.0	1 JAP	Japanese Nuclear Data Committee (JNDC). Fission product in burnup calculation. CJP <u>32</u> 977 1959.	69
625 [1455+]	^{143}Pr	N,GAMMA	1.0+1	5.0+4	20.0	1 JAP	Japanese Nuclear Data Committee (JNDC). Fission product in burnup calculation. No active work.	69
626 [476]	^{143}Nd	RESON PARAMS	R. +2	5. +3	10.0	2 KPK	Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available in this range.	
627 [1859+]	^{143}Nd	N,GAMMA	1.0-3	1.0+3	10	1 BET GE	Bayard, R.T. Snyder, T. Accuracy 10% in resonance integral. Energies above 1 ev of interest. Needed for fission product poison calculations. Energy 0-1ev, 10% in cross section.	67
628 [1456+]	^{143}Nd	N,GAMMA	1.0+1	5.0+4	20.0	1 JAP	Japanese Nuclear Data Committee (JNDC). Fission product in burnup calculation. Nucl.Phys. <u>3</u> 553 (1957).	69
629 [13488]	^{143}Nd	N,GAMMA	8.5+2	1. +7	10	2 AB	Hakansson, R. Energy resolution 10% or better. Needed for fast reactor calculations. Note lower energy limit changed to 850 ev. Several res. parameter sets exist which would give $\sigma(n,\gamma)$ below this energy with sufficient accuracy.	

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR	
			MIN	MAX	(%)			
630 [479]	^{143}Nd	N,GAMMA	5. +3	2. +6	16	2 KPK	Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available. No activity known.	
631 [480]	^{145}Nd	RESON PARAMS	1. +3	5. +3	10.0	2 KPK	Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available in this range.	
632 [1860+]	^{145}Nd	N,GAMMA	1.0-3	1.0+3	10	1 BET GP KAP	Bayard, R.T. Snyder, T. Ehrlich, R. Wanted for fission product calculations. Energies above 1eV of interest. Energy <1eV, 10% in cross section. Accuracy 10% in resonance integral.	67
633 [13490]	^{145}Nd	N,GAMMA	8.5+2	1. +7	10	2 AE	Hakansson, R. Energy resolution 10% or better. Needed for fast reactor calculations. Note lower energy limit changed to 850 eV. Several res. parameter sets exist which would give $\sigma(n,\gamma)$ below this energy with sufficient accuracy.	
634 [483]	^{145}Nd	N,GAMMA	5. +3	2. +6	10	2 KPK --- GEL	Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available. Measurements planned. Measurements planned.	
635 [1861+]	^{146}Nd	N,GAMMA	THR	1.0+4	5.0	2 BET	Bayard, R.T. For production of Pm-147 . In interval 6-1 eV X-sec wanted to 5%. Above 1 eV resonance integral wanted to 5%.	67
636 [486]	^{146}Nd	N,GAMMA	5. +3	2. +6	10	2 KPK --- GPL	Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available. Measurements planned. Measurements planned.	
637 [487]	^{147}Nd	N,GAMMA	THR	300 b.	2 CRC	Walker, W.H. Fission product, unknown cross section.		
638 [1862+]	^{147}Nd	N,GAMMA	1.0-3	1.0+3	5-20%	1 KAP BET GE	Ehrlich, R. Bayard, R.T. Snyder, T. Radioactive target, 11 days. Thermal average or 0.025eV value wanted. Accuracy 20% if absorption X-sec in range 10-100 barns; 10% if in range 100-1000 barns 5% if larger. Above 1eV want resonance integral to 20% if in range 100-1000 barns; 10% if in range 1000-10000 barns 5% if larger. Decays to important fission product.	67
639 [489]	^{147}Pm	RESON PARAMS gamma width neutronwidth	5.0+1	1. +3	10	2 KPK	Schmidt, J.J. Fission product important in fast reactor burnup calculations. Petrel data between 20 eV and 100 keV in stage of analysis.	
640 [1143]	^{147}Pm	ABSORPTION	2.5-2		10	2 WIN HAR	Tyror, J.G. For thermal reactors. In progress, Cabell.	68
641 [1144]	^{147}Pm	RES INT ABS	5.5-1	2. +6	10	2 WIN HAR	Tyror, J.G. For thermal reactors. In progress, Cabell.	
642 Withdrawn	^{147}Pm	RES INT CAPT RES			20.0	SAC	Bussac, J.	68
643 [1379+]	^{147}Pm	N,GAMMA	THR		10.0	SAC	Bussac, J. ALD Data available from JIN 29, 2147 (1967) Penner, $\text{Pm}^{147}(\text{n},\text{gamma}) \text{Pm}^{148}(5.4d)$; (82±8)b and $\text{Pm}^{147}(\text{n},\text{qan-m})$ $\text{Pm}^{148m}(41.5d)$; (72±7)b. FCM See also Tomlinson et al., EANDC-CAN32L.	68

REF [REG]	NUCLIDE	QUANTITY	ENERGY (EV)			ACCURACY (%)	P	LAB	PROPOSER*, COMMENTS	YEAR
			MIN	MAX	(%)					
688 [1863+]	^{147}Pm	N, GAMMA	1.0-3	1.0+3	10	1	BRT GE	Bayard, R.T. Snyder, T.	Radioactive target -2.6 year. Needed for calculation of fission product poisons. Want interval 1-1 eV to 10%. Above 1eV to 10% in resonance integral. Want total and n, γ for formation of Pu-149 and Pu-148 .	67
						---	KAP INC LAS	Eiland, WASH 1079, has res. parameters. Coding WASH 1124 has res. parameters. Beery has data above 30 eV.		
685 [1457+]	^{147}Pm	N, GAMMA	1.0+1	5.0+6	20.0	1	JAP	Japanese Nuclear Data Committee (JNDC). Fission product in burnup calculation. WASH 1064 1965, LADC7864 1966, WASH1078 68 1967, WASH 1079 98 1967	69	
686 [1457+]	^{147}Pm	N, GAMMA Withdrawn	1.0+2	1. +6	20	3	WIN	Campbell, C.G. Accuracy: 20% (E-2E). For fast reactors. See Persimmon WASH 1078, 68 (4/67).	68	
687 [1350+]	^{147}Pm	N, GAMMA	1. +4	1. +7	10	2	AB	Rakansson, R. Energy resolution 10% or better. Needed for fast reactor calculations. Note lower energy limit changed to 10 keV. Data below this energy will be given by bomb capture (Feb. 1967) results (WASH-1124 p. 110). KAP Washington Conf. 1968 meas. gives F_T up to 7 eV with 10% accuracy. MTA Res. parameters are given between 5 and 65eV but not with 10% accuracy however.	68	
688 [1863+]	^{148}Pm	RES INT CAPT RES Withdrawn			20.0		SAC	Russac, J. For isomeric state	68	
689 [1863+]	^{148}Pm	RES INT CAPT RES Withdrawn			20.0		SAC	Russac, J.	68	
690 [1863+]	^{148}Pm	N, GAMMA Withdrawn			THR		SAC	Russac, J.	68	
							ALD MCN	Being measured by Penner et al. EANDC(UK)-755 and Tolinson et al., EANDC-CAN 32L .		
691 [1383+]	^{148}Pm	N, GAMMA			THR		SAC	Russac, J. For isomeric state.	68	
							ALD KAP	Data available from JIN 29, 2147 (1967) Penner. (41.5days) Pu^{148} (n,gamma) $\text{Pu}^{149} = 22500 \pm 2500$. Note that resonance data is being analysed by Kirouac and Conrad. (See RPI-32A-147)		
692 [1458+]	^{148}Pm	N, GAMMA	1.0-3	1.0+1	5.0	1	JAP	Japanese Nuclear Data Committee (JNDC). Fission product in burnup calculation. EANDC(UK)-755 1966	69	
693 [1864+]	^{148}Pm	N, GAMMA	1.0-3	1.0+3	10	1	BRT GE	Bayard, R.T. Snyder, T.	Calculation of fission product poisons Cross section is wanted for the 41 day isomer. <1eV 10% in σ ; > 10 eV, 10% in res.integral. Eiland, WASH 1071 st to 2keV.	67
694 [1865+]	^{148}Pm	N, GAMMA	1.0-3	1.0+0	10	1	BRT GE KAP	Bayard, R.T. Snyder, T. Ehrlich, R.	Cross section is wanted for the 5.4 Day isomer. Value at 0.025 Or thermal wanted. Interval 0.001-1eV of interest. For fission product poison calculations. $\sigma = 1/\text{sec}^{-1}/\text{v}$, above 1eV	67
695 [495]	^{148}Pm	N, GAMMA	1. -2	5. +0	10	3	CRC	Walker, W.H. For the isomeric state (424). Effective cross section about 25 kb. Additional data needed to determine dependence on neutron temperature and epithermal flux.		

REF [REG]	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P MIN MAX (%)	LAB	REQUESTER , COMMENTS	TEAR	
656 [499]	^{149}Pm	N,GAMMA	5. +0	5.0+2	20	3 CBC	Walker, W.H. For the isomeric state (42 d). Additional data needed to determine dependence on neutron temperature and epithermal flux.	
657 [1459+]	^{149}Pm	N,GAMMA	1.0+1	5.0+8	20.0	1 JAE	Japanese Nuclear Data Committee (JNDC). Fission product in burnup calculation. LADC7864 1966	69
658 [1866+]	^{149}Pm	N,GAMMA	1.0-3	1.0+3	20	1 BET GE KAP	Bayard, R.T. Snyder, T. Ehrlich, R. Radioactive target -53 hours. 0.025 eV value or thermal average wanted. For 0-1 eV want 20% if 1-sec in range 10-1000 barns 1% if larger. Above 1eV want resonance integral to 20% if in range 1000-10000 barns, 1% if larger.	67
659 [1867+]	^{151}Pm	N,GAMMA	1.0-3	1.0+3	10	2 BET GE	Bayard, R.T. Snyder, T. Radioactive target 28 hr. Needed for calculation of fission product poisons 0.025 eV or thermal average wanted. Interval 0-1eV of interest. Above 1eV want resonance integral to 10%.	67
660 Withdrawn	Sb	TOTAL XSECT	2. +6	1.0+7	10	3 KPK	Schmidt, J.J.	
661 [505]	Sb	RESON PARAMS gamma width	+ 2.	+2 <15	3	BOL	Benzi, V. Accuracy 10% wanted. Single transition.	
662 [506+]	Sb	DIFF PLASTIC	1.5+6	1.0+7	10	3 KPK	Schmidt, J.J. No measurements available.	
663 [507]	Sb	TOTINELASTIC TR	2. +6	20.0	3 KPK --- ANL	Schmidt, J.J. Measurements of A.B.Smith between .3 MeV and 1.5 MeV (WASH-1093, p.1) in progress		
664 [508+]	Sb	TOTINELASTIC	2.0+6	1.0+7	20	3 KPK --- ALD	Schmidt, J.J. Owens and Towle: Nucl.Phys. <u>112</u> (1968)337 measured at 5.6 and 7 MeV at 90°.	
665 [509]	Sb	. FF INELAST TR energy dist	2. +6	20.0	3 KPK --- ANL	Schmidt, J.J. Measurement of A.B.Smith between .3 Mev and 1.5 MeV (WASH-1093,p.1) in progress.		
666 [510+]	Sb	DIFF INELAST	2.0+6	1.0+7	20	3 KPK --- ALD	Schmidt, J.J. Owens and Towle: Nucl.Phys. <u>112</u> (1968)337 measured at 5.6 and 7 MeV at 90°.	
667 [1168]	Sb	ABSORPTION	1. -3	2. -1	1	2 WDR ---	Brunner, J. Spectrum measurements in poisoned moderators. Measurements in progress in Switzerland.	
668 [511]	Sb	N,GAMMA	2. +5	2. +6	10.0	2 KPK	Schmidt, J.J. Only measurements of n-gamma cross section for ^{150}Sb by Johnsrud et al. (Phys.Rev. <u>J16</u> (1959) 927); Between 0.15 and 6.2 MeV available. No activity known.	
669 [512]	^{107}Sb	RESON PARAMS gamma width neutronwidth	1.0+2	5.0+2	10	2 KPK	Schmidt, J.J. No measurements available.	
670 [1368+]	^{107}Sb	N,GAMMA	1.0-3	1.0+3	10	2 BET GE KAP ---	Bayard, R.T. Snyder, T. Ehrlich, R. 0.025 eV and thermal average of interest. Interval 0.001-1eV of interest. for calculation of fission product poisons. Above 1eV want resonance integral to 10%. No work in progress.	67

REF [REG]	NUCLIDE	QUANTITY	ENERGY(keV)	ACCURACY P	LAS	REQUESTER , COMMENTS	YEAR
			MIN MAX	(%)			
671 [514]	^{140}Sm	RESON PARAMS gamma width neutronwidth	1.0+2 5. +3	10	2	KPK Schmidt, J.J. No measurements available.	
672 [515]	^{140}Sm	RESON PARAMS gamma width neutronwidth	1.0+2 5.0+2	10	2	KPK Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available.	
673 [1351]	^{140}Sm	N,GAMMA	1. +0 1. +7	10	2	AE Hakansson, R. The requested accuracy is especially important in the resonance region. Energy resolution 10% or better. Needed for fast reactor calculations. No measurement known above 10eV except Macklin's point at 30keV.	
674 [516]	^{140}Sm	N,GAMMA	5. +2 2. +6	10	2	KPK Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available. Measurements planned (20...200keV.)	
675 [517]	^{150}Sm	RESON PARAMS gamma width neutronwidth	1.0+2 5. +3	10	2	KPK Schmidt, J.J. No measurements available.	
676 [1460+]	^{150}Sm	N,GAMMA	1.0-3 1.0+1	5.0	1	JAE Japanese Nuclear Data Committee (JNDC). Fission product in burnup calculation. No active work.	69
677 [1869+]	^{150}Sm	N,GAMMA	1.0-3 1.0+3 2 TO 5%	5.0	1	BET Bayard, R.T. Snyder, T. For calculation of fission product poisons. Above 1eV want resonance integral to 2-5%.	67
678 [1461+]	^{150}Sm	N,GAMMA	1.0+1 5.0+4	20.0	1	JAE Japanese Nuclear Data Committee (JNDC). Fission product in burnup calculation. <u>NAT 197 370 1963</u> , INDC 1972.	69
679 [1571+]	^{151}Sm	TOTAL XSECT	1.0-3 1.0+3	5.0	1	BET Bayard, R.T. GP Snyder, T. RAP Ehrlich, R. Radioactive target 90 year. Need resonance integral to 10%, et to 10% below 2eV. Wanted for calculation of fission product poisons. Energies above 2eV of interest.	67
680 [520]	^{151}Sm	RESON PARAMS gamma width neutronwidth	5. +0 2.0+2	10	2	KPK Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available.	
681 [1870+]	^{151}Sm	N,GAMMA	1.0-3 1.0+3	5.0	1	BET Bayard, R.T. GP Snyder, T. RAP Ehrlich, R. Radioactive target 90 year. Desired energy resolution 5%. Wanted for calculation of fission product poisons. Energies above 2eV of interest. Want resonance integral to 10%.	67
682 [1352]	^{151}Sm	N,GAMMA	1. +0 1. +7	10	2	AE Hakansson, R. The requested accuracy is especially important in the resonance region. Energy resolution 10% or better. Needed for fast reactor calculations. No measurement known.	
683 [1146]	^{151}Sm	N,GAMMA	1. +2 1. +6 (2-2E)	20	3	WIB Campbell, C.G. For fast reactors. No work planned.	68
684 [522]	^{151}Sm	N,GAMMA	2. +2 2. +6	10	2	KPK Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available. No activity known.	

REF	NUCLIDE	QUANTITY	ENERGY(eV)	ACCURACY P	LAB	REQUESTER	COMMENTS	YRFR
			MIN	MAX	(%)			
685 [523]	^{152}Sm	RESON PARMS	1.0 ± 2	5. +3	10	2	KPK Schmidt, J.J. Fission product important in fast reactor burnup calculations.	
686 [1462+]	^{152}Sm	$\bar{\nu},\text{GAMMA}$	1.0 ± 3	1.0 ± 1	5.0	1	JN2 Japanese Nuclear Data Committee (JNDC). Fission product in burnup calculation. No active work.	69
687 [1872+]	^{152}Sm	$\bar{\nu},\text{GAMMA}$	1.0 ± 3	1.0 ± 3	10	2	BET GP Bayard, R.T. Snyder, T. Fission product poison. Above 1 eV want resonance integral to 10%. Below 1 eV want ϵ to 10%.	67
688 [525]	^{152}Sm	$\bar{\nu},\text{GAMMA}$	5. +3	2. +6	10.0	2	KPK Schmidt, J.J. Fission product important in fast reactor burnup calculations. Chaudhury (PR 152, J55, 1966; measured at 24 keV). --- Measurements planned 20...200 keV.	
689 [526]	^{153}Sm	$\bar{\nu},\text{GAMMA}$	THR	10000 b.		3	CPC Walker, W.H. Fission product, unknown cross section.	
690 [1873+]	^{153}Sm	$\bar{\nu},\text{GAMMA}$	1.0 ± 3	1.0 ± 3	20	2	BET GP Bayard, R.T. Ehrlich, R. Radioactive target -47 h. For calculation of fission product poison, 10% error if τ -sec is above 30.000 barns. Above 1 eV want resonance integral to 20% if in range 30-300 barns, 10% if larger.	67
691 [528]	^{154}Sm	RESON PARMS	1.0 ± 2	5. +3	10	2	KPK Schmidt, J.J. Measurements of Karzhavina (INDC-260E; YFI-6, 135 (1968)) cover only resonance energies below 1.9 keV.	
692 [529]	Eu	TOTAL XSECT	1. +3	2. +6	5	2	KPK Schmidt, J.J. No measurements available.	
693 Withdrawn	Eu	TOTAL XSECT	1. +6	1.0 +7	5	3	KPK Schmidt, J.J.	
694 Withdrawn	Eu	TOTAL XSECT	2. +6	1.0 +7	20	3	KPK Schmidt, J.J.	
695 [532]	Eu	DIFF ELASTIC	1. +5	1.0 +7	10	3	KPK Schmidt, J.J. No measurements available.	
696 [534]	Eu	TOTINELASTIC	3.0 ± 8	2. +6	20	3	KPK Schmidt, J.J. No measurements available.	
697 [535]	Eu	TOTINELASTIC	2. +6	1.0 +7	20	3	KPK Schmidt, J.J. No measurements available.	
698 [536]	Eu	DIFF INELAS1	3.0 ± 8	2. +6	20	3	KPK Schmidt, J.J. No measurements available. Measurement of inelastic scattering to groups of levels desired.	
699 [537]	Eu	DIFF INELAST	2.0 ± 6	1.0 +7	20	3	KPK Schmidt, J.J. No measurements available.	
700 [539]	Eu	$\bar{\nu},\text{GAMMA}$	$2. \pm 5$	2. +6	1.0	2	KPK Schmidt, J.J. Only measurements of activation cross-section for Eu-152 by Johnsrud et al. (Phys. Rev. 116 (1959) 927) Between 0.15 and 2.5 MeV available. --- No activity known.	
701 [540]	^{151}Eu	RESON PARMS	2.0 ± 1	2.0 ± 2	10	2	KPK Schmidt, J.J. No measurements available.	

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR
			MIN	MAX	(%)		
702	^{151}Eu	ACTIVATION	5. - 3	1. +1 < 5	1	MOL Motte, P. Accuracy 2% (thermal), 5% above. --- MOL New measurements by Poortmans, Mol: Expected accuracy of shape better than 3%; absolute accuracy of 5% in the energy range from 20 meV to 0.6 eV. Isomeric ratio of bound-level (and parameters) and of the two first resonances are determined. (ZANDC(B) 1150, 188). When the analysis is complete, the request will probably be fulfilled.	56
[581]							
703	^{154}Eu	ACTIVATION	5. - 3	1. +1 < 5	2	SAC Bussac, J. Accuracy 2% (thermal), 5% above. --- MOL New measurements by Poortmans, Mol: Expected accuracy of shape better than 3%; absolute accuracy of 5% in the energy range from 20 meV to 0.6 eV. Isomeric ratio of bound-level (and parameters) and of the two first resonances are determined. (ZANDC(B) 1150, 188). When the analysis is complete, the request will probably be fulfilled.	
[1563]							
704	^{151}Eu	N,GAMMA	1.0-3	1.0+3 < 5.0	2	SRL Dessaer, G. Accuracy 2% near thermal. Accuracy 5% in resonance region. For calculation of fission product poison. Energies greater than 1eV of interest to give resonance integral to 10%. --- LAS Glass has data above 40 eV WASH -1124.	67
[1874+]				2-5%			
705	^{151}Eu	N,GAMMA	1. - 1	1. +3	1	2 SAC Bussac, J. --- KPK KPK-352 gives graphs from 1eV to 50keV, and values at discrete energies from THR to 30keV (J.J.Schmidt) The experimental data are from Shapiro et.al., Bulletin des Informations, Zentrum für Kerndaten, 1.Auflage, 1964 p 61. (No accuracy is given). --- LAS M.V.Harlov et.al. (68WASH,II,837) give graphs from 25eV to 10keV .(no accuracy given).	
[582]							
706	^{151}Eu	N,GAMMA	1. +2	3. +5	20	1 ERL Hoverton, R.J. --- LAS Needed for evaluation. Glass has data above 40eV, WASH-1124.	69
[2195+]							
707	^{153}Eu	RESL PARAMS gamma width neutronwidth	2.5+1	2.0+2	10	2 KPK Schmidt, J.J. Fission product important in fast reactor burnup calculations. No measurements available.	
[585]							
708	^{153}Eu	N,GAMMA	1.0-3	1.0+3 < 5.0	2	GP Snyder, T. SRL Dessaer, G. 2% Near thermal, 5% accuracy in resonance region. For calculation of fission product poison. Energies above 1eV of interest to give resonance integral to 10%. --- LAS Glass has data above 40eV WASH -1124.	67
[1875+]				2-5%			
710	^{153}Eu	N,GAMMA	1. - 1	1. +3	1	2 SAC Bussac, J. --- KPK KPK-352 gives graphs from 1eV to 50keV and values at discrete energies from THR to 30keV (J.J.Schmidt) The experimental data are from Shapiro et.al., Bulletin des Informations, Zentrum für Kerndaten, 1.Auflage, 1964 p 61. (No accuracy is given). --- LAS M.V.Harlov et.al. (68WASH,II,837) give graphs from 25eV to 10keV .(no accuracy given).	
[586]							

REF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR		
			MIN	MAX	(%)				
724 [1880+]	Gd	DIFP ELASTIC	1.0+6 1.0+7	10	1	BNL GE ANL	Chernick, J. Snyder, T. Desired error in $\langle 1-\cos\theta \rangle$. Sherwood reviews status ANL-7567.	67	
725 [557]	Gd	DIFP ELASTIC	1.5+6 1.0+7	10	3	KPK	Schmidt, J.J. Desired error in $\langle 1-\cos\theta \rangle$. Needed for thermal reactors. Smith (ANL) has data to 1.5 MeV.		
726 [1881+]	Gd	ERISS XSECT	1.0+6 1.0+7	15	1	KAP BNL ANL	Ehrlich, P. Chernick, J. For design of thermal reactors having appreciable quantities of Gd. Incident and exit resolution 15% Sherwood reviews status ANL -7567.	67	
727 [1883+]	Gd	MONEL GAMMAS	1.0+3 1.5+7	SEE COMMENT.	3	LAS	Hotz, H.T. An upper limit on $\epsilon(E)$ spectrum as a function of neutron energy will suffice.	66	
728 [560]	Gd	TOTINELASTIC THR	2. +6	20.0	3	KPK ANL	Schmidt, J.J. Measurements of A.P.Smith between .3 and 1.5 MeV (WASH-1124, p.3): Numerical data will be provided on request.		
729 [561]	Gd	TOTINELASTIC	2. +6 1. +7	20.0	3	KPK	Schmidt, J.J. Measurements available for some energies between 4 and 7 MeV from Hollandsworth and from Owens and Towle (NP A112, 337, 1968) for 5.6 and 7 MeV at 90°		
730 [562]	Gd	DIFP INELAST THR	2. +6		3	KPK ANL	Schmidt, J.J. Measurements of A.P.Smith between .3 and 1.5 MeV (WASH-1124, p.3): Numerical data will be provided on request.		
731 [563]	Gd	DIFP INELAST	2. +6 1. +7	20.0	3	KPK ANL	Schmidt, J.J. Measurements available for some energies between 4 and 7 MeV from Hollandsworth and from Owens and Towle (NP A112, 337, 1968) for 5.6 and 7 MeV at 90°.		
732 [1884+]	Gd	RES INT CAPT	0.5+0		5.0	1	BNL GP	Chernick, J. Snyder, T. For evaluating resonance parameters.	69
733 [1882+]	Gd	N,GAMMA	1.0+2 2.0+5	10	2	LAS	Hotz, H.T. Capture spectrum also desired to 80% accuracy.	66	
734 [566]	Gd	N,GAMMA	1. +5 2. +6	10	2	KPK GA	Schmidt, J.J. Measured 1... ev. by Lopez et al. WASH1124, p.39		
735 [1885+]	¹⁵⁴ Gd	RESON PARAMS	+ 2.0+3	10	1	BNL GE	Chernick, J. Snyder, T. Min.energy to include lowest resolved resonance. Want resolved region extended to higher energy. Required to verify existing measurements.	69	
736 [1888+]	¹⁵⁵ Gd	RESON PARAMS	+ 5.0+2	10	1	BNL GE	Chernick, J. Snyder, T. Required to verify existing measurements. Min.energy to include lowest resolved resonance.	69	
737 Withdrawn	¹⁵⁵ Gd	RESON PARAMS	5.0+1 2.0+2	10	2	KPK	Schmidt, J.J.		
738 [1887+]	¹⁵⁵ Gd	RES INT CAPT	0.5+0		5.0	1	BNL GE	Chernick, J. Snyder, T. For evaluating resonance parameters.	69
739 [1886+]	¹⁵⁵ Gd	N,GAMMA	0.5+0 1.0+3	5.0	1	GE ANL	Snyder, T. Chernick, J. Accuracy 5% in resonance integral. Energies above 1 eV of interest.	67	

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR	
			MIN	MAX	(S)			
758	^{160}Gd	RES INT CAPT C.5+0		5.0	1	RNL GR Chernick, J. Snyder, T. For evaluating resonance parameters.	69	
[1898+]								
755	^{159}Tb	RESON PARAMS gamma width	± 0 2. +2	<15	3	BOL Benzi, V. Partial gamma widths.		
[5760]								
756	^{161}Dy	RESON PARAMS gamma width	± 0 2. +2	<15	3	BOL Benzi, V. Partial gamma widths.		
[5798]								
757	^{160}Dy	N,GAMMA	$2. +0$ 2.5+2	5	2	WNP Brunner, J. Formation of 139 min ^{165}Dy for thermal flux measurements. --- Between thermal and 10 eV measurements are planned in Switzerland.		
[580]								
758	^{165}Ho	RESON PARAMS gamma width	± 0 2. +2	<15	3	BOL Benzi, V. Partial gamma widths.		
[5820]								
759	Er	RESON PARAMS gamma width	± 0 2. +2	<15	3	POL Benzi, V. Partial gamma widths.		
[5830]								
760	^{166}Er	N,GAMMA	COLD	$1.3+0$	10	2	BET Bayard, R.T.	66
[1901+]								
761	^{166}Pr	N,GAMMA	$0.5+0$ 1.1+4	5	1	BET SPE CONVENT. Bayard, R.T. 5% refers to resonance integral error.	66	
[1900+]								
762	^{167}Pr	N,GAMMA	THR	$1.2+4$	5	1	BET SPE CONVENT. Bayard, R.T. 5% refers to resonance integral error.	69
[1902+]								
763	Tb	N,GAMMA	THR	$1.0+3$	5.0	1	RNW Dawson, P.G. For production and burn up of thulium. Julien CPA-R-3385 gives res.param.to 760eV .	67
[1903+]					SAC			
764	^{169}Tm	RESON PARAMS gamma width	$1.3+2$ 2. +2	<15	3	BOL Benzi, V. Partial gamma widths given by Lane et al., Phys.Rev.174 1512(1968) Cover region up to 136eV. More data are needed to improve statistical accuracy.		
[5870]								
765	^{169}Tm	N2N XSECTION TR	$1.5+7$	5	1	BRC Philis, C. Activation detector. ($\text{Tm}^{168}(85d)$).	69	
[1516+]								
766	^{169}Tm	N,GAMMA	$1. +2$ 1.5+7	10	1	BRC Philis, C. Activation detector. ($\text{Tm}^{170}(130d)$).	69	
[1519+]								
767	^{169}Tm	N,PROTON	TR	$1.5+7$	10	2	BRC Philis, C. Activation detector. ($\text{Pr}^{169}(9.8d)$).	69
[1517+]								
768	^{169}Tm	N,ALPHA	TR	$1.5+7$	10	2	BRC Philis, C. Activation detector. ($\text{Ho}^{166}(27h)$).	69
[1518+]								
769	^{170}Tm	N,GAMMA	THR	$1.0+3$	10	1	RNW SRL Dawson, P.G. Dessauer, G. Radioactive target -125 day. For production and burn up of thulium. --- INC RIS Stokes has totals to 1keV ,res.param,to 100eV. Sees four lines from neutron capture on Tm^{170} at thermal. Phys. Rev. 143, 857.	67
[1904+]								
770	^{171}Tm	N,GAMMA	THR	$1.0+3$	10	1	RNW SRL Dawson, P.G. Dessauer, G. Radioactive target -1.3 year. For production and burn up of thulium.	67
[1905+]								
771	^{175}Lu	RESON PARAMS total width gamma width	$4.0+0$ 2.0+1	2	2	MOL Hotted, P. Needed for hard thermal neutron spectra studies by the dilute foil. 2% at 5.2 and 14.1 eV. and 10% elsewhere.		
[5910]								

REF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR
			MIN MAX	(%)			
772 [1385+]	^{175}Lu	N2N XSECTION TR	1.5+7	10	1	VNV Vidal, J.C. Activation detector. Production of $^{176}\text{Lu}(165)$.	68
773 [592]	^{175}Lu	ACTIVATION	5. -3 1.0+1	< 5	1	ORL Rotte, F. Accuracy 2% thermal, 5% above, needed for hard thermal neutron studies by dilute foil activation. ---- ORL Thermal value(16.4±0.9) reported by Fabry: (PAEDC(P) 115U, 195 (1969)).	
774 [593]	^{175}Lu	ACTIVATION	5. -3 2.5+2	< 5	2	WUP Brunner, J. Accuracy 2% thermal; 5% above. Neutron "thermometer" measurement planned in Switzerland between 0.055 and 10eV.	
775 [150+]	^{175}Lu	ACTIVATION	5. -3 1.0+1	< 5	1	SAC Bussac, J. Accuracy 2% thermal, 5% above. ---- ORL Thermal value(16.4±0.9) reported by Fabry: (PAEDC(E) 115U, 195 (1969)).	
776 [1386]	^{175}Lu	N,GAMMA	1. +3 1. +6	20	2	VNV Vidal, J.C. Activation detector. Production of $\text{Lu}^{176}(3.1) 10^-1$ and $\text{Lu}^{176m}(3.7)$. Discrepancy at 10keV (2.5 and 7b). Measured by Macklin and Gibbons from 30 to 200keV. PR 159 (1967) 1207.	68
777 [1387+]	^{176}Lu	N2N XSECTION TR	1.5+7	10	3	VNV Vidal, J.C.	69
778 [594]	^{176}Lu	ACTIVATION	5. -3 2.5+2	< 5	2	WUP Brunner, J. Accuracy 2% thermal; 5% above. Neutron "thermometer" measurement planned in Switzerland between 0.055 and 10eV.	
779 [1388+]	^{176}Lu	N,GAMMA	1. +3 1. +6	20	3	VNV Vidal, J.C. Production of $^{177}\text{Lu}(6.2d)$. ---- ORL Measured by Macklin and Gibbons from 30 to 200keV. (Phys.Rev. 159 (1967) 1C07).	69
780 [595]	Hf	TOTAL XSECT	3. +3 5.0+4	5	2	KPK Schmidt, J.J. No measurements available.	
781 Withdrawn	Hf	TOTAL XSECT	2. +6 1.0+7	20	3	KPK Schmidt, J.J.	
782 [1906+]	Hf	DIFF ELASTIC	1.0+4 1.0+7	10	2	RET Bayard, R.T. E-resolution: 10%. Accuracy 10% in average (1-cosθ). ---- ANL Wanted for thermal reactor design. Smith has data 0.3-1.5MeV . ANL -7567.	66
783 Withdrawn	Hf	DIFF ELASTIC	1. +5 1. +6	10	3	KPK Schmidt, J.J.	
784 [1907+]	Hf	EMISS XSECT energy dist	1.0+4 1.0+7	15	2	RET Bayard, R.T. For design of thermal reactors having appreciable quantities of Hf. ---- ANL Incident and exit energy resolution 15%. Smith has data 0.3-1.5MeV . ANL -7567.	66
785 Withdrawn	Hf	TOTINELASTIC TR	2. +6	20	3	KPK Schmidt, J.J.	
786 [600]	Hf	TOTINELASTIC	2. +6 1.0+7	20	3	KPK Schmidt, J.J. No measurements available.	
787 Withdrawn	Hf	DIFF INELAST TR energy dist	2. +6	20	3	KPK Schmidt, J.J.	
788 [603]	Hf	DIFF INELAST	2. +6 1.0+7	20	3	KPK Schmidt, J.J. No measurements available.	

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR
			MIN MAX	(%)			
789 [1908+]	RF	N,GAMMA	1.0-3 1.0+6	2.0	2 BET KAP	Bayard, P.T. Ehrlich, R. Needed for Monte Carlo calculations of burn up in thermal reactors,<1 eV .S-wave strength functions are wanted to 20%,< 1 eV .For fast reactor calculations including burn up > 200 eV . KPK Kompe has data above 20 keV .	62
790 [605]	RF	N,GAMMA	1. +2 4. +8	10	3 WIN ---	Campbell, C.G. For fast reactors. No work planned.	
791 [2189+]	RF	N,GAMMA	2.0+2 5.0+6	20	2 BET KPK	Bayard, P.T. Needed for Monte Carlo calculations of burn up in thermal reactors,<1 eV .S-wave strength functions are wanted to 20%,< 1 eV .For fast reactor calculations including burn up > 200 eV . Kompe has data above 20 keV .	62
792 [607]	RF	N,GAMMA	2. +5 2. +6	10.0	2 KPK BH ---	Schmidt, J.J. Tavernier, G. Only measurements of ACT xsect of γ -capture by Niskel et al. (NCPL-5454, 1959; NCPL-6690, 1961) between 30 keV and 8MeV available. Tavernier requests 20% accuracy and priority 3 for fast reactor calculations. No activity known.	
793 [1909+]	^{170}RF	N,GAMMA	1.0-3 5.0+3 <20 ALSO SEE COMMENT.	1	KAP	Ehrlich, R. Thermal value wanted to 20%. 10-100 eV , $\Gamma_{\text{tot}}, \Gamma_n$ and Γ_y to 10%. 0.1-5 keV , $\Gamma_{\text{tot}}, \Gamma_n$ and Γ_y to 20%. Needed for Monte Carlo burn up calculations. Need average P-wave capture width to 20%. Kirouac et al., data to 100 eV . WASH -1127.	66
794 [610]	^{170}RF	RESON PARAMS	1. +3 5. +3	10.0	2 KPK	Schmidt, J.J. RPI measurements cover range below 1keV.	
795 [1910+]	^{170}RF	N,GAMMA	1.0-3 5.0+3 20 ALSO SEE COMMENT.	1 BET KAP	Bayard, P.T. Ehrlich, R. Detailed accuracies as stated below: thermal value wanted to 20%. 10-100 eV , $\Gamma_{\text{tot}}, \Gamma_n$ and Γ_y to 10%. 0.1-5 keV , $\Gamma_{\text{tot}}, \Gamma_n$ and Γ_y to 20%. P-wave Γ_y average, to 20%. S-wave strength function to 40%. Needed for Monte Carlo burn up calculations. Kirouac et al., data to 100 eV . WASH -1127.	62	
796 [1911+]	^{170}RF	N,GAMMA	1.0-3 5.0+3 <20 ALSO SEE COMMENT.	1 BET KAP	Bayard, P.T. Ehrlich, R. Detailed accuracies as stated below: less than 1 eV to 4%. 10-100eV , $\Gamma_{\text{tot}}, \Gamma_n$,and Γ_y to 10%. 0.1-5keV , $\Gamma_{\text{tot}}, \Gamma_n$,and Γ_y to 20%. 5.89, 6.57, and 8.87 eV resonance widths to 5% 1.099 and 2.385 eV resonance widths to 3%. S-wave strength function to 20%. Needed for Monte Carlo burn up calculations. Need average P-wave capture width to 20%. Kirouac et al., data to 100 eV . WASH -1127.	62	
797 [6130]	^{170}RF	N,GAMMA	1. -1 1. +3 FOR THK. 5%: RES.INT.	1 2 SAC KAP	Bussac, J. J.T. Reynolds et.al. give graphs and tables of evaluated cross-sections from 0.001eV to 15 MeV (KAPL-3327)		
798 [615]	^{170}RF	RESON PARAMS	1. +3 5. +3	10.0	2 KPK	Schmidt, J.J. RPI measurements cover range below 1keV.	

REF	ISOCIDE	QUANTITY	ENERGY(eV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR		
			MIN	MAX	(%)				
799	^{178}Re	N,GAMMA	1.0-3	5.0+3	1	BET SEE COMMENT.	Bayard, R.T. Ehrlich, R. Detailed accuracies as stated below: less than 1eV to 5% 10-100 eV , Γ_{tot}, Γ_n , and Γ_y to 10% 0.1-5keV , Γ_{tot}, Γ_n , and Γ_y to 20% p-wave $\langle \Gamma_y \rangle$ to 20% 7.78-eV resonance width to 3%. S-wave strength function to 20%. Needed for Monte Carlo burn up calculations. Kirouac et al., data to 100 eV NASH -1127.	62	
[1912+]						RPI			
800	^{178}Re	N,GAMMA	1. -1	1. +3	1	SAC FOR THR. SR: RPS.INT.	Bussac, J. J.T.Reynolds et.al. give graphs and tables of evaluated cross-sections from 0.001eV to 15 MeV (KAPL-3327)		
[616+]						KAP			
801	^{179}Bf	N,GAMMA	1.0-3	5.0+3	1	BET SEE COMMENT.	Bayard, R.T. Ehrlich, R. Detailed accuracies as stated below: less than 1eV to 5% 10-100eV , Γ_{tot}, Γ_n , and Γ_y to 10% 0.1-5keV , Γ_{tot}, Γ_n and Γ_y to 20% p-wave Γ_y wanted to 20% 5.68-eV resonance widths to 5%. S-wave strength function to 20%. Needed for Monte Carlo burn up calculations. Kirouac et al., data to 100eV NASH -1127.	62	
[1913+]						RPI			
802	^{179}Bf	N,GAMMA	1. -1	1. +3	1	SAC FOR THR. SR: RES.INT.	Bussac, J. J.T.Reynolds et.al. give graphs and tables of evaluated cross-sections from 0.001eV to 15 MeV (KAPL-3327)		
[619+]						KAP			
803	^{180}Hf	RESON PARAB	1. +3	5. +3	10.0	2	KPK	Schmidt, J.J. RPI measurements cover range below 1keV.	
[621]									
804	^{180}Hf	N,GAMMA	1.0-3	5.0+3	1	BET SEE COMMENT.	Bayard, R.T. Ehrlich, R. Detailed accuracies as stated below: less than 1eV: to 4% 10-100eV , Γ_{tot}, Γ_n , and Γ_y to 10% 0.1-5keV , Γ_{tot}, Γ_n and Γ_y to 20% p-wave Γ_y wanted to 20%. S-wave strength function to 20%. Needed for Monte Carlo burn up calculations. Kirouac et al., data to 100eV, NASH-1127.	67	
[1914+]						RPI			
805	Ta	EMISS XSECT	1.5+6	1.5+7	10	3	LAS	Streetman, J.P. Low-energy neutrons must be included. Absolute spectra at 30° and 75° may suffice. Time scale requiring associated γ -production data not yet established. None which satisfy criteria.	69
[1915+]		energy,angle				---			
806	Ta	HONEL GAMMAS	4.0+0	1.0+3	15	1	SNP	Pleishman, M.R. Absolute $\sigma(E_\gamma)$ required for all $E_\gamma > 200$ keV . Neutron Energy intervals required: Resonance region: reproduce major variations in $\sigma(E_\gamma) > 1$ MeV ; 500-keV intervals. Gamma energy resolution required:<2.5MeV , 10% ;2.5MeV ,250keV . None which satisfy criteria.	69
[1916+]		energy dist			OR 5MB	---			
807	Ta	HONEL GAMMAS	1.0+6	1.0+7	15	1	SNP	Pleishman, M.R. Absolute $\sigma(E_\gamma)$ required for all $E_\gamma > 200$ keV . Neutron Energy intervals required: Resonance region: reproduce major variations in $\sigma(E_\gamma) > 1$ MeV ; 500-keV intervals. Gamma energy resolution required:<2.5MeV , 10% ;2.5MeV ,250keV . None which satisfy criteria.	69
[1919+]		energy dict			OR 5MB	---			

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR
			MIN MAX	(%)			
808 [1917+]	Ta	N, GAMMA	1.0+7 5.5+5	<10% 5 TO 10% SEE COMMENT.	2 RAP RPI KPK	Ehrlich, R. Butler, D.K. About 1eV -1keV ,accuracy 10%, 20% useful. 1-150keV ,accuracy 5%,10% useful. 150-500keV , accuracy 10%,20% useful. For fast breeder control and burn up calculation. Hockenbury has data and res.parameters NASA -1071. Kompe KPK-635, 1e-150 keV.	69
809 [1917+]	Ta	N, GAMMA	1. +3 5. +5	10	2 CAD	Barre, J-Y. Control rods.	69
810 [1916+]	Ta	N, GAMMA	1.0+3 1.1+7	<10% 5 TO 10% SEE COMMENT.	1 AI RPI KPK	Alter, H. 1-150keV ,accuracy 5%,10% useful. 150-500keV , accuracy 10%,20% useful. For fast breeder control and burn up calculation. Hockenbury has data and res.parameters NASA -1071. Kompe KPK-635, 1e-150 keV.	69
811 [1924+]	W	EMISS XSECT energy,angle	1.5+6 1.5+7	10	3 LAS	Streetman, J.R. $\Delta\theta=10^\circ$; spectra at a few angles may suffice. DE (Incident and Exit)= 50keV .500-KeV increments or as required by structure. Low energy neutrons must be included. Absolute ϵ 's for shielding required. Time scale requiring associated gamma production data not yet established. None which satisfy the above criteria.	69
812 Withdrawn	W	EMISS XSECT energy,angle	2. +6 1.6+7	<20	3 PAP	Rastoin, J. 10% Accuracy wanted. Ave (1 - cos) and xsect needed (1MeV. energy resol).	69
813 [1925+]	W	EMISS XSECT energy,angle	2.0+6 1.5+7	10	2 NDL	Pccleshal, D. $\Delta\theta=10^\circ$; spectra at a few angles may suffice. DE (Incident and Exit)= 50keV .500-KeV increments or as required by structure. Low energy neutrons must be included. Absolute ϵ 's for shielding required. Time scale requiring associated gamma production data not yet established. None which satisfy the above criteria.	69
814 [1922+]	W	EMISS XSECT energy,angle	8.0+6 1.4+7	10	1 APW	Schaefer, R.R. $\Delta\theta=10^\circ$; spectra at a few angles may suffice. DE (Incident and Exit)= 50keV .500-KeV increments or as required by structure. Low energy neutrons must be included. Absolute ϵ 's for shielding required. Time scale requiring associated gamma production data not yet established. None which satisfy the above criteria.	69
815 [1923+]	W	EMISS XSECT energy,angle	4.0+6 1.4+7	10	2 GDT	Western, G.T. $\Delta\theta=10^\circ$; spectra at a few angles may suffice. DE (Incident and Exit)= 50keV .500-KeV increments or as required by structure. Low energy neutrons must be included. Absolute ϵ 's for shielding required. Time scale requiring associated gamma production data not yet established. None which satisfy the above criteria.	66
816 [1926+]	W	EMISS XSECT energy,angle	4.0+6 1.6+7	5.0	1 ORC	Clifford, C.E. $\Delta\theta=10^\circ$; spectra at a few angles may suffice. DE (Incident) < 5%; DE (Exit) < 500 kev. Low energy neutrons must be included. Absolute ϵ 's for shielding required. Time scale requiring associated gamma production data not yet established. None which satisfy the above criteria.	66

REF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P RIN MAX (%)	LAB	REQUESTER, COMMENTS	YEAR	
[REG]								
817 [1920+]	N	NONEL GAMMAS	2.0×10^{-3} - 2.5×10^{-3}	15 OR 5%	1 SNP	Fleishman, H.P. Absolute $\sigma(E_\gamma)$ required for all $E_\gamma > 20$ keV. Neutron Energy intervals required: Resonance region; reproduce major variations in $\sigma(E_\gamma) > 1$ MeV; 50-keV intervals. Gamma energy resolution required: < 2.5 MeV, 1% ; 2.5 MeV, > 25 keV. None which satisfy criteria.	69	
818 [1927+]	N	NONEL GAMMAS	1.0×10^{-5} - 1.5×10^{-7}	20	1 OPL	Clifford, C.P. For space reactor shielding. All gamma energies of interest.	63	
819 [1921+]	N	NONEL GAMMAS	1.0×10^{-6} - 1.0×10^{-7}	15 OR 5%	1 SNP	Fleishman, H.P. Absolute $\sigma(E_\gamma)$ required for all $E_\gamma > 20$ keV. Neutron Energy intervals required: Resonance region; reproduce major variations in $\sigma(E_\gamma) > 1$ MeV; 50-keV intervals. Gamma energy resolution required: < 2.5 MeV, 1% ; 2.5 MeV, > 25 keV. None which satisfy criteria.	69	
820 Withdrawn	N	NONEL GAMMAS	2.0×10^{-6} - 1.0×10^{-7}	<20	3 PAR	Rastoin, J. 1% Accuracy wanted. 2.5 MeV energy resol. for n and gamma. Angular distribution needed if significant anisotropy.		
821 Withdrawn	N	DIFF INELAST	4.0×10^{-6} - 1.0×10^{-7}	5	3 HAR	Butler, J. Pot values in energy range. See DA 24,4252 (4/64), also Buccino: NP 60,17 (N/65). And Bergqvist: 65ANTWERP 28 (7/65), and Malyshev: Nucl.Phys. 76,232(2/66).		
822 1008 [1928+]	N,GAMMA see comment		2.5×10^{-2} - 1.5×10^{-7}	30	1 LPL	Howerton, R.J. Required is cross section for activation of ^{100}Ru , in naturally occurring element. Accuracy of 30% if $\sigma > 100$ mb, 50% if $25\text{mb} < \sigma < 100\text{mb}$. Accuracy to a factor of 2 if $1\text{mb} < \sigma < 25\text{mb}$; to a factor of 1' if $\sigma < 1$ mb.	69	
823 1028 [1956+]	N2N XSECTION TR		1.5×10^{-7}	20	1 VNV	Vidal, J.C. Activation. (1019, 100d).	69	
824 1028 [1929+]	N2N XSECTION TR see comment		1.5×10^{-7}	30	1 LRL	Howerton, R.J. Required is cross section for activation of ^{100}Ru , in naturally occurring element. Accuracy of 30% if $\sigma > 100$ mb, 50% if $25\text{mb} < \sigma < 100\text{mb}$. Accuracy to a factor of 2 if $1\text{mb} < \sigma < 25\text{mb}$; to a factor of 10 if $\sigma < 1$ mb.	69	
825 1028 [1930+]	N,GAMMA		1.0×10^{-3} - 1.0×10^{-7}	10	1 AI RPI	Alter, H. Fast breeder control and burn up calculations. Hockenbury WASH -1093, 1-100keV.	69	
826 1038 [1931+]	N,GAMMA		1.0×10^{-3} - 1.0×10^{-7}	10	1 AI RPI	Alter, H. Fast breeder control and burn up calculations. Hockenbury WASH -1093, 1-100keV.	69	
827 1048 [1933+]	N,GAMMA see comment		2.5×10^{-2} - 1.0×10^{-5}	30	1 LRL RPI	Howerton, R.J. Required is cross section for activation of ^{100}Ru , in naturally occurring element. Hockenbury, WASH -1093, has data 1-100 keV.	69	
828 1048 [1957+]	N,GAMMA		1.0×10^{-3} - 5.0×10^{-6}	10	2 VNV	Vidal, J.C. Activation. (1058, 70d).	69	
829 1048 [1932+]	N,GAMMA		1.0×10^{-4} - 1.0×10^{-7}	10	1 AI RPI	Alter, H. Fast breeder control and burn up calculations. Hockenbury WASH -1093, 1-100keV.	69	
830 1068 [635]	RESOW PARAMS	gamma width	1.9×10^{-1}	6	2 AE LRC	Andersson, T.L. For 18.24eV resonance. Spectrum measurements in fast critical assemblies. Recent eval. by Pierce, Nucl.Sc.Eng. 11,431 (March 68) deduced from an infinite dilute resonance integral: $\Gamma_r = 0.041\text{eV}$. Estimated error 7.3%.		
						RPI	Capture and transmission meas. on separate N iso- topes from 150eV to 100keV may help to better define the sub-thermal part in the capture res.int. and thus give better precision on above mentioned result.	

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	TRN
831 [636]	^{199}Au	BESON PARAMS	1.4 ± 1	2	2	MOL Motte, P. Total and/or gamma width at 18.8 eV resonance. Needed for measurements of hard thermal neutron spectra by dilute foil activation.	
832 [1558+]	^{199}Au	N2N XSECTION TR	1.5 ± 7	20	1	VNV Vidal, J.C. Activation. (^{199}Au , 78d).	69
833 [1938+]	^{199}Au	N2N XSECTION TR See comment	1.5 ± 7	30	1	LRL Hoverton, R.J. Required is cross section for activation of ^{199}Au , in naturally occurring element. Accuracy of 30% if $\epsilon > 1\text{mb}$, 50% if $25\text{mb} < \epsilon < 120\text{mb}$. Accuracy to a factor of 2 if $1\text{mb} < \epsilon < 25\text{mb}$; to a factor of 15 if $\epsilon < 1\text{mb}$.	69
834 [1559+]	^{199}Au	$\bar{\nu},\text{GAMMA}$	$1. \pm 3$ 5. ± 6	10	2	VNV Vidal, J.C. Activation. (^{199}Au , 24h).	69
835 [1935+]	^{199}Au	$\bar{\nu},\text{GAMMA}$	1.0 ± 4 1.0 ± 7	10	1	AI Alter, R. Fast breeder control and burn up calculations. Hockenbury, WASH 1(93), 1-100keV.	69
836 [637]	Au	BESON PARAMS	4.9 ± 2	< 1	2	PAR Vidal, R. Standard for resonance integral measurements. Recent measurements in Saclay give 2% on Γ_T .	
837 [638+]	Au	N2N XSECTION TR	1.5 ± 7	10	1	VNV Vidal, J.C. Activation detector. Production of ^{191}Au (9.7h) and ^{191}Au (6.18d).	
838 [1322+]	Au	$\bar{\nu},\text{GAMMA}$	TRR	0.1	1	JAE Japanese Nuclear Data Committee (JNDC). Precise standardization of thermal neutron flux density. Some data available 1.2 %	68
839 [1936+]	Au	$\bar{\nu},\text{GAMMA}$	0.5 ± 0 1.0 ± 3	1.0	2	RET Rayard, P.T. Energies above 0.5 eV wanted so as to give infinite dilution resonance integral to 1%. Individual and average resonance parameters required as primary standard.	67
840 [1937+]	Au	$\bar{\nu},\text{GAMMA}$	1.0 ± 3 1.0 ± 5	2.0	2	MCS Landon, H.H. Individual and average resonance parameters required as primary standard. GA Lopez, WASH 1124, 1-700 keV.	67
841 Withdrawn	^{197}Au	$\bar{\nu},\text{GAMMA}$	1.0 ± 2 3. ± 6	5	3	WIN Campbell, C.G. For fast reactors. Existing measurements discrepant. See Grench: WASH 1074, 59(4/67), also Knoll :JNP 21,642 (8/67).	
842 [1560+]	^{197}Au	$\bar{\nu},\text{GAMMA}$	$1. \pm 3$ 7. ± 6	10	1	VNV Vidal, J.C. Activation. (^{197}Au , 2.701).	69
843 [643]	^{197}Au	$\bar{\nu},\text{GAMMA}$	$1. \pm 3$ 2. ± 6	<10	2	ISP Ralevski, V. LFR Konks: Sov.Phys. JETP 19,59 (1964). ALD Barry: J. Nucl. Energy 1A,491 (1964). MUN Chauhey: Nucl.Phys.66,267 (1965). LOK Harris: Nucl.Phys.69,37 (1965). KPK Belanova et al.: Atom.Energiya 19,3 (1965). KPK Poenitz et al.: J. Nucl. Energy 22 (1968) 505 (30...300keV). Accuracy 1keV. to 3MeV. about 5-10%. SAC Lives et al., Nucl.Phys. A120 (1969) 450 report Res. Params. up to 2keV. These are used at KPK (Proehner) for reanalysis of Schmitt and Cook's shell transmission data at 24keV. KPK Measurement in progress rel. to $\sigma(n,p)$ (proton recoil detector) .1 to 1MeV. GA New data of Lopez et al., Phys.Letters 298 (1969) 393 up to 700keV.	

REF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR	
			MIN	MAX	(%)			
844	^{197}Au	N, GAMMA	1. +4	2. +5	5	1 ORNL SAC	Rotte, F. Detector applications. Alves et al., Nucl.Phys. <u>1139</u> (1969) 452 report Res. Params. up to 2keV. These are used at KFK (Froehner) for reanalysis of Schmitt and Cook's shell transmission data at 24keV.	
[1421]						KFK	Measurement in progress rel. to $\sigma(n,p)$ (proton recoil detector) .1 to 1MeV.	
						GA	New data of Lopez et al., Phys.Letters <u>298</u> (1969) 393 up to 702keV.	
845	^{197}Au	N, GAMMA	4.0 +8	3. +6	2	3 WIN ---	Smith, R.D. Detector applications. Accuracy at present unobtainable. May be set by integral measurements	
Withdrawn								
846	^{197}Au	N, GAMMA	2. +5	3. +6	2	1 ORNL SAC	Rotte, F. Detector applications. Alves et al., Nucl.Phys. <u>1139</u> (1969) 450 report Res. Params. up to 2keV. These are used at KFK (Froehner) for reanalysis of Schmitt and Cook's shell transmission data at 24keV.	
[1422]						KFK	Measurement in progress rel. to $\sigma(n,p)$ (proton recoil detector) .1 to 1MeV.	
						GA	New data of Lopez et al., Phys.Letters <u>298</u> (1969) 393 up to 700keV.	
847	^{203}Tl	N2N XSECTION TR	1.5 +7	10	1 VNV	Vidal, J.C. Activation detector. Production of $^{202}\text{Tl}(12d)$. Threshold about 8MeV.	68	
[1389+]								
848	^{203}Tl	N, GAMMA	1. +2	5. +6	10	2 VNV KPK	Vidal, J.C. Activation detector. Production of $^{204}\text{Tl}(3y)$. Natural Tl has been measured from 10 to 200keV. No other activity is known.	68
[1390+]								
849	^{204}Tl	RESON PARAMS	1.0 -3	1.0 +3	10	2 BNW INC	Davson, F.G. Radioactive target-3.8y. Accuracy 11% in resonance integral. Test feasibility of Tl ²⁰⁴ production in reactors. Stokes has total and resonance parameters below 1keV WASH 1003.	65
[1939+]								
850	^{204}Tl	N, GAMMA	THR		10	2 BNW INC	Davson, F.G. Radioactive target -3.8y. Wanted to test feasibility of Tl ²⁰⁴ production. Total and res.parameters 0.2-1000eV WASH 1393.	65
[1938+]								
851	^{205}Tl	N2N XSECTION TR	1.5 +7	10	2 VNV	Vidal, J.C. Activation detector. Production of $^{204}\text{Tl}(3y)$.	68	
[1391+]								
852	^{205}Tl	N, GAMMA	1. +2	5. +6	10	2 VNV KPK	Vidal, J.C. Activation detector. Production of $^{206}\text{Tl}(4.2m)$. Natural Tl has been measured from 10 to 200keV. No other activity is known.	68
[1392+]								
853	Pb	TOTAL XSECT	0.0 +	1.0 +4	2.0	1 JAE	Japanese Nuclear Data Committee (JNDC). For standard cross section.	68
[1323]								
854	Pb	MISS XSECT	2. +6	1.6 +7	<20	2 PAR	Bastoin, J. <1-cos> and σ needed. P resolution: 1MeV. For shielding calculation.	68
[646+]		energy,angle			DESIRED: 10%			
855	Pb	MISS XSECT	2.0 +6	1.6 +7	5.0	2 ORNL	Clifford, C.E. Energy intervals 500 keV ; DE (res.)=250 keV. $\sigma(\theta)$ only if significantly anisotropic; then $\sigma(\theta)=\pm 3^\circ$ at 10-degree intervals.	63
[1941+]		energy,angle						
856	Pb	MISS XSECT	3.0 +6	1.5 +7	10	2 NDL	Eccleshall, D. Energy intervals 500 keV ; DE (res.)=250 keV. $\sigma(\theta)$ only if significantly anisotropic; then $\sigma(\theta)=\pm 3^\circ$ at 10-degree intervals.	69
[1940+]		energy,angle						

REF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR
			RIN MAX	(%)			
857 [1943+]	Pb	MONT GARRAS	8.0+1 8.1+5	15 OR 5MB	2 SNP	Fleishman, R.P. Absolute $\sigma(E_\gamma)$ require for all $E_\gamma > 200$ keV. Neutron energy intervals required: Res.region: reproduce major variations in $\sigma(E_\gamma)$: above 1 MeV : 50 keV intervals. Gamma energy resolution required:< 2.5MeV ,1%; 2.5MeV ,250 keV . None which satisfy criteria.	69
858 [1944+]	Pb	MONT GARRAS	1.0+6 1.1+7	15 OR 5MB	1 SNP	Fleishman, R.P. Absolute $\sigma(E_\gamma)$ require for all $E_\gamma > 200$ keV. Neutron energy intervals required: Res.region: reproduce major variations in $\sigma(E_\gamma)$: above 1 MeV : 50 keV intervals. Gamma energy resolution required:< 2.5MeV ,1%; 2.5MeV ,250 keV . None which satisfy criteria.	69
859 [649+]	Pb	MONT GARRAS	6. +6 1.6+7	<20 DESPRED: 10%	2 FAO	Rastoin, J. Resolution for EN and E_γ : 2.5MeV. Angular distribution only if significant anisotropy. For shielding calculation.	
860 [1942+]	Pb	MONT GARRAS	8.0+6 1.5+7	10	2 NDL	Eccleshall, D. Spectra at a few energies would suffice. $D_{EN} = 1$ MeV, $D_{E\gamma} = 50$ keV. Omit 18.84eV point.	69
861 Withdrawn	Pb	DIFF INELAST	6. +6 1.3+7	5	2 HAR	Butler, J. Shielding. See Bergqvist: PNND(CP) 48L (3/66), also PR 142,775 (2/66).	
862 Withdrawn	Pb	N2N XSECTION TR	1.4+7	10	3 HAR ALD	Butler, J. Shielding. Mathert in progress. See Pearlstein: NSR 23,238 (8/65).	
863 [653]	Pb	ABSORPTION	1. +3 1.2+4	20	2 BN	Tavernier, G. Fast reactor calculation Macklin and Gibbons measured between 30 and 160 keV.	
864 [1945+]	^{208}Pb	N,GAMMA see comment	2.5-2 1.5+7	30	2 LRL	Hoverton, R.J. Required is cross section for activation of Pb^{209} in naturally occurring element. Accuracy 30% if $\sigma > 100\text{mb}$, 50% if $25\text{mb} < \sigma < 100\text{mb}$. Accuracy to a factor of 2 if $1\text{mb} < \sigma < 25\text{mb}$; to a factor of 10 if $\sigma < 1\text{mb}$.	69
865 [1324]	^{226}Ra	N,GAMMA	TRR	3	3 JAP	Japanese Nuclear Data Committee (JNDC). Precise standardization of emission rate of neutron source.	68
866 [656]	^{226}Ra	N,GAMMA	TRR	20	2 RLG	De Troyer, A. Production of ^{227}Ac via ^{226}Ra . Absolute thermal value poorly known. Action planned by CEN,MOL. No activity known.	
867 [657]	^{227}Ac	RESON PARAMS gamma width neutronwidth	+ 2.0+1	20	2 RLG MOL	De Troyer, A. Isotope contemplated as power source for satellites. Data needed for evaluation of burn-up during production by reactor irradiation of ^{226}Ra . No data available. Action planned by CEN MOL.	
868 [658+]	^{227}Ac	N,GAMMA	TRR	20	2 RLG MND	De Troyer, A. Isotope contemplated as power source for satellites. Data needed for evaluation of burn-up during production by reactor irradiation of ^{226}Ra . No data available. action planned by CEN MOL. Request should be fulfilled by: Kirby et al., Phys. Rev 102(1956)1140, (pile oscillation): 495±35b.	

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P MIN MAX (%)	LAB	REQUESTER	COMMENTS	YEAR	
[880]	^{232}Th	RESON PARAMS gamma width	+0 4. +3	10	1 JUL	Gerwin, H.	Accuracy of RNL-325 Supp.2 data not high enough.		
[881]	^{232}Th	DIFP PLASTIC	1.0+5 1.0+7	10	2 BOL	Pierantoni, P.	Accuracy 10% on $\langle 1-\cos \theta \rangle$.		
[665]					ALD		Measurements from 2 to 7 MeV by Batchelor et al. (ENDC(OK) 34"LL" (1964), and Nucl.Phys. 65,236 (1965)).		
[882]	^{232}Th	DIFP INELAST TR energy dist	1.0+7	10	3 JUL	Gerwin, H.			
[666]					BOL	Pierantoni, P.			
					ALD		Measurements from 2 to 7 MeV by Batchelor et al. Nucl.Phys. 65,236 (1965)		
[883]	^{232}Th	DIFP INELAST energy dist	1.0+8 1.0+7	10	1 JAE	Japanese Nuclear Data Committee (JNDC).		68	
[1325]							For fast reactor. Isections for excitation of individual levels desired.		
[884]	^{232}Th	N2N ISECTION TRR energy dist	1. +7	20.0	3 JUL	Gerwin, H.			
[670]					BK				
[885]	^{232}Th	N2N ISECTION TR	1.0+7	10	2 JUL	Gerwin, H.			
[671]					BK	Tavernier, G.			
						Neutron economy of Th- ^{233}U breeder reactors.			
[886]	^{232}Th	FISSION	THR	1. +7	5.0	2 JUL	Gerwin, H.		
[673]					ALD	AE 9,339 (1960) spectrum index.			
					BOL	Thermal value of (39 ± 4) microb., Neve de Sevennies, ENDC(B) 1150,191 (1969)			
[887]	^{232}Th	FISSION	TR	5. +6	5	3 WIN	Campbell, C.G.		
[674]					---	For fast reactors.			
						Uncertain whether requirement met, re-evaluation needed.			
[888]	^{232}Th	N,GAMMA	1. +3 1. +6	3	3 WIN	Campbell, C.G.			
[6778]						For fast reactors.			
						Note increased energy range.			
[889]	^{232}Th	N,GAMMA	0. +3 2. +6	5	1 JUL	Gerwin, H.			
[676]					---	Accuracy of existing measurements (WASH-1096, 689, 1964; 4210, 508, 1961; J. Inorg. Nucl. Chem. 25, 627, 1963) insufficient.			
					KPK	Measurements at 30 keV and in the range 30-300 keV, are being prepared by Henlove and Poenitz. Measurement in preparation: 20...200 keV. Relative to Autn.			
[890]	^{232}Th	N,GAMMA	1. +6 1. +7	10	3 WIN	Campbell, C.G.			
Withdrawn					---	For fast reactors.			
[891]	^{232}Th	N,GAMMA	2. +6 1.0+7	10	2 JUL	Gerwin, H.			
[679]					BOL	Pierantoni, P.			
						No activity known.			
[892]	^{231}Pa	FISSION	TR	5. +6	5	3 WIN	Campbell, C.G.		
Withdrawn					---	Detector applications.			
						See Myers: NP A1,1 (6/66), also Dubrovina: SPD 9,759 (1/65), and INDWG-64,268.			
[893]	^{231}Pa	FISSION	5. +6 1. +7	20	3 WIN	Campbell, C.G.			
Withdrawn					---	Detector applications.			
[894]	^{231}Pa	N,GAMMA	THR	1.0+7	10	2 GR	Snyder, T.		69
[1958+]						Needed for control of ^{232}U production.			
[682]	^{233}Pa	RESON PARAMS gamma width neutronwidth	+ 1.0+2	10	2 NED	Went, J.J.			
[684]	^{233}Pa	ABSORPTION	THR	5. +2	5	1 SRP NED	Haackl. Went, J.J.		
						LAS bomb n-gamma measurements in spring 1968 cover energies between 40 eV and 2 keV.			

REF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR
			MIN MAX	(%)			
897 [685]	^{233}Pa	BES INT ACT	5. -1	10	1	SRE Maerkli. Energy range : above 0.5ev.	
898 [1959+]	^{233}Pa	$\bar{\nu},\text{GAMMA}$	1.0-3 2.2+0	5.0	2	GA Preskitt, C.A. Thorium cycle designs. INC Simpson give resonance parameters: Nucl.Sci. and Eng <u>28</u> ,133.	69
899 [1961+]	^{233}Pa	$\bar{\nu},\text{GAMMA}$	1.0-3 1.0+2	10	2	OPL Craven, C.W. Thorium cycle designs. INC Simpson give resonance parameters: Nucl.Sci. and Eng <u>28</u> ,133.	69
900 [1960+]	^{233}Pa	$\bar{\nu},\text{GAMMA}$	2.0+0 1.0+3	10	2	GA Preskitt, C.A. Thorium cycle designs. INC Simpson give resonance parameters: Nucl.Sci. and Eng <u>28</u> ,133.	69
901 [688]	^{233}Pa	$\bar{\nu},\text{GAMMA}$	5. +2 1.0 7	10	2	BOL Pierantoni, P. The experimental effort in this region is very small and restricted in energy range. Psangaree bomb shot data (to be done): 23ev. ... 1MeV WASH 1079, p. 98.	
902 [1961+]	^{232}U	ABSORPTION see comment	1. +3 1.5+7	20	2	VNV Vidal, J.C. Destruction of ^{232}U by all reactions with incident neutrons.	69
903 [1978+]	^{232}U	RESON PARAMS TBR	5.0+3 <30 10-30% SEE COMMENT.	2	ANL BET ANL --- LAS URL	Avery, R. Bayard, R.T. Butler, D.R. For thermal breeder calculations. Multilevel parameters, statistical distribution in ev range. Want 10% accuracy to 100ev, 20-30% to 5 kev. Bergen has new results. See also Phys.Rev. <u>166</u> ,1178. Sauter, Phys.Rev. <u>176</u> ,1013, Analysis of scattering.	67
904 [692]	^{233}U	DIFF ELASTIC TBR		10	3	WIN --- Tyror, J.G. For long-term improvement of σ (abs). No work planned.	
905 [691]	^{233}U	DIFF ELASTIC	5. +2 1.0+7	10	2	BOL Benzi, V.	
906 [1147+]	^{233}U	NONEL GAMMAS	1.2+5 energy dist	20	3	WIN Campbell, C.G. Low resolution for $\bar{\nu}\nu$ adequate. For study of activation and heat release in core. Note changed incident energy.	
907 [693]	^{233}U	DIFF INELAST TR energy dist	1.0+7	10	2	BOL Benzi, V.	
908 [695]	^{233}U	DIFF INELAST TR energy,angle	5. +6	20	3	WIN --- Campbell, C.G. For fast reactors. No experimental data available. Theory may suffice.	
909 [1962+]	^{233}U	DIFF INELAST	4.3+4 7.0+6 <10 5 TO 10%	2	ANL ---	Avery, R. Need energy dependence to 5-10% above 0.5MeV .	67
910 [696]	^{233}U	$\bar{\nu}2\text{N}$ XSECTION TR	1.0+7	10	2	BOL PW Benzi, V. Tavernier, G. Neutron economy in Th- ^{233}U breeder reactors.	
911 [1563+]	^{233}U	$\bar{\nu}2\text{N}$ XSECTION TR	1.5+7	10	2	VNV Vidal, J.C.	69
912 [1963+]	^{233}U	$\bar{\nu}2\text{N}$ XSECTION TR	1.5+7	10	2	LAS --- Barr, D.W. For contamination of ^{233}U by ^{232}U . Barr, activation data at 10 MeV .	67
913 [1964+]	^{233}U	$\bar{\nu}2\text{N}$ XSECTION TR	1.5+7	10	3	RDT Hannum, W.H. For contamination of ^{233}U by ^{232}U . Barr, activation data at 10 MeV .	67

REF	ISOTIDE	QUANTITY	ENERGY(eV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR
			MIN	MAX	(%)		
914	^{233}U	FISSION	THR	5.0+1	2	2 JUL Gerwin, R.	
[698]						ORL Weston et.al.: NSE 38,1(1968) from 0.6eV to 2keV .	
						GRL Migneco et.al. (to be published) from THR to 1.5 keV .	
						ALD Keith et.al.: JNE 22,477 give 530.6±5.3% for THR .	
						IAE IAEA review of thermal values (to be published) .	
915	^{233}U	FISSION	1.0-3	1.0+3 < 5	1	AI Alter, H.	62
[1965+]	see comment			0.5-5%		ANL Avery, R.	
						RET Bayard, P.T.	
						Want eta to 1/4% below 1eV .	
						Want integral eta to 1% below 1keV .	
						ORL Weston, WASH -1124, has data to 2keV .	
916	^{233}U	FISSION	1.0-3	1.0+3	10	1 GA Nordheim, L.W.	62
[1966+]	see comment					ANL Butler, D.K.	
						ORL Craven, C.W.	
						Want eta to 1/4% below 1eV .	
						Want integral eta to 1% below 1keV .	
						ORL Weston, WASH -1124, has data to 2keV .	
917	^{233}U	FISSION	5. +1	1. +7 <10.0	2	2 JUL Gerwin, R.	
[708]						BOL Benzi, V.	
						Spectrum index, At.Energ 15,177(1963); At.Energy 13, 366 (1962). Accuracy of recent LAS bomb results still not sufficient.	
						Final results of measurements of fission ratio $^{233}U / ^{235}U$ by Pfletschinger and Kaeppeler between 5keV. and 1MeV. are shortly to be published in Nucl. Sci.and Eng.	
918	^{233}U	FISSION	1.0+2	1.5+7 <10	2	2 CAD Barre, J-Y.	
[1978]				.1-10KEV		Spectrum index in fast reactors. Accuracy needed concerns the fission ratio $^{233}U / ^{235}U$.	
				:5%		CCP Spectrum index, At.Energ 15,177(1963); At.Energy 13, 366 (1962). Accuracy of recent LAS bomb results still not sufficient.	
				.01-1MEV		Final results of measurements of fission ratio $^{233}U / ^{235}U$ by Pfletschinger and Kaeppeler between 5keV. and 1MeV. are shortly to be published in Nucl. Sci.and Eng.	
				:28.±5%		COMMENT.	
919	^{233}U	FISSION	1.0+3	3.0+4	5.0	2 AI Alter, H.	62
[1967+]						ANL Avery, R.	
						RET Bayard, P.T.	
						GA Nordheim, L.W.	
						ANL Butler, D.K.	
						ORL Craven, C.W.	
						Want 2% in eta and integral eta	
						ORL Weston, WASH -1124, has data to 2keV .	
920	^{233}U	FISSION	1.0+3	1.0+7	1.0	2 ANL Butler, D.K.	69
[1969+]	ratio x-sect					Relative to ^{235}U .	
						Calibration in energy 1%, resolution 3%.	
						Accuracy of 2 to 3% would be useful.	
921	^{233}U	FISSION	1.0+4	1.5+7	1.0	1 LAS Hansen, G.	67
[1968+]	ratio x-sect					Relative to ^{235}U .	
						Calibration in energy 1%, resolution 3%.	
						Accuracy of 2 to 3% would be useful.	
922	^{233}U	ETA	1. -2	2. -1	0.5	3 WIN Tyror, J.G.	69
[1961+]	ratio x-sect			(.02EV STEPS)		Requested: eta(E) /eta (E0), E0=0.0253eV.	
						For thermal reactors.	
						Requirement probably not met, evaluation needed.	
923	^{233}U	ETA	1. +0	1. +2	3	2 WIN Tyror, J.G.	
[717]						For thermal reactors.	
						Note increase in priority	
						uncertain whether requirement met, evaluation needed.	

RPP	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY %	LAB	REFERENCE , COMMENTS	YEAR
			MIN	MAX	(S)		
926	^{233}U	ALPHA	1.0-3	1.0×10^{-3}	< 0.0	1 ANL Avery, R. BET Bayard, R.T. GA Nordheim, L.W. ANL Butler, D.K. ORL Craven, C.W. --- 1/4% in eta below 1eV. 1% useful 1/4% in eta to 1eV. 1% in eta 3keV to 1keV; 5% useful Capture cross section equally useful. --- Weston, WASH -1124, 0.4eV -2 keV. ORL Weston is measuring, 0.501-1 eV to resolve ISC discrepancies with Smith.	62
[1972+]				2 TO 3%			
925	^{233}U	ALPHA	1.	± 3	1. ± 5	5 3 WIN Campbell, C.G. For fast reactors.	
[740]							
926	^{233}U	ALPHA	1.0-3	3.0×10^{-6}	<20	2 ANL Avery, R. BET Bayard, R.T. GA Nordheim, L.W. ANL Butler, D.K. ORL Craven, C.W. Want 2% in eta and integral eta from 1keV to 32keV . Capture cross section equally useful --- Weston, WASH -1124, has data to 2keV .	62
[1973+]				10-20%			
927	^{233}U	NU	1.0-3	3.0×10^{-4}	< 0.3	1 ANL Avery, R. BET Bayard, R.T. GA Nordheim, L.W. ANL Butler, D.K. ORL Craven, C.W. Need 1/4% to 30eV ,1% 30 eV -1 keV . Need 2% 1-30 keV . Intermediate accuracy of 1.5% useful. --- Weinstein, WASH -1693, to 1 keV .	69
[1976+]				0.25%			
928	^{233}U	NU	3.	± 4	1. ± 7	1.0 2 BOL Benzi, V. JUL Gerwin, H. NP 66,149 1965. Experiment planned by Soleilhac.	
[722]							
929	^{233}U	NU	3.0-4	3.0×10^{-6}	< 3.0	2 ANL Avery, R. BET Bayard, R.T. GA Nordheim, L.W. ANL Butler, D.K. ORL Craven, C.W. --- Is there structure below 1 MeV . No work in progress AI fillmore J.Nucl.Ph. 22,79:L.S fit to existing data.	69
[1971+]				1 TO 3%			
930	^{233}U	NU	0.	± 4	5. ± 6	1 3 WIN Campbell, C.G. For fast reactors.	
[723]							
931	^{233}U	NU	7.0-6	2.0×10^{-7}	3.0	1 ORL Howerton, R.J. Inconsistent results obscure energy dependence.	62
[1978+]							
932	^{233}U	P NEUT DELAY THR	1.4-7	10	2 ANL Kouts, H.J. Incident energy:thermal, 2.2, 14MeV. Quantity: P(En'). Need spectrum of neutrons in different groups characterized by different decay constants. Older measurements not altogether consistent. Shorter-lived groups still not known. LAS experiments planned. BNL Experiments planned.	69	
[1975+]							
933	^{233}U	P NEUT DELAY THR	1.5-7	5.0	1 LAS Keppin, G.R. Quantity: P(En'). Need spectrum of neutrons in different groups characterized by different decay constants. Absolute number of delayed neutrons required. --- Isotopic signatures for nondestructive assay. Older measurements not altogether consistent. Shorter-lived groups still not known. LAS experiments planned. BNL Experiments planned.	69	
[1977+]							

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REF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P	LAB REQUESTER	COMMENTS	YEAR
			MIN	MAX	(%)		
934	^{233}U	F NEUT DELAY FISSION		10	2	BNL Kouts, H.J. Quantity: $P(E_n')$. Need spectrum of neutrons in different groups characterized by different decay constants. Older measurements not altogether consistent. Shorter-lived groups still not known. LAS experiments planned. BNL Experiments planned.	69
[1976+]						---	
935	^{233}U	FISSION YIELD THR	see comment	3.0	2	BET Rayard, R.T. Yield of K^{139} . For calculation of fission product poisons. Cumulative and direct yields required, inclusive of 15 minute isomer.	67
[1983+]							
936	^{233}U	FISSION YIELD THR	see comment	1.0	2	BET Rayard, R.T. Yield of Cs^{137} . For burn up indicator standards.	67
[1984+]							
937	^{233}U	FISSION YIELD THR	see comment	3.0	2	BET Rayard, R.T. Yield of Mg^{47} . For calculation of fission product poisons.	67
[1985+]							
938	^{233}U	FISSION YIELD THR	see comment	3.0	2	BET Rayard, R.T. Yield of Sm^{149} . For calculation of fission product poisons.	67
[1986+]							
939	^{233}U	FISSION YIELD THR	1.5+7	15	3	LAS Keepin, G.R. Absolute yields of fission isomers versus times (> 10ns) required. Isotopic signatures for nondestructive assay techniques. None which gives the necessary energy dependence.	69
[1987+]						---	
940	^{233}U	FISSION PROD GS THR	1.5+7	5.0	2	LAS Keepin, G.R. High resolution absolute γ -ray yields required. Ultimately, assign discrete γ 's to specific fission products. Isotopic signatures for nondestructive assay techniques. Half-life and energy distributions required for $E\gamma < 2 \text{ MeV}$.	69
[1988+]							
941	^{233}U	FISSION PROD GS THR	1.4+7	35	1	BNL Kouts, H.J. Incident energy: thermal, 2.2, 10MeV. High resolution absolute γ -ray yields required. Ultimately, assign discrete γ 's to specific fission products. Isotopic signatures for nondestructive assay techniques. Half-life and energy distributions required for $E\gamma < 2 \text{ MeV}$.	69
[1989+]							
942	^{233}U	FISSION PROD GS FISSION		35	1	BNL Kouts, H.J. High resolution absolute γ -ray yields required. Ultimately, assign discrete γ 's to specific fission products. Isotopic signatures for nondestructive assay techniques. Need delayed gamma yields within factors of two from neutron induced fission products. Half-life and energy distributions required for $E\gamma < 2 \text{ MeV}$.	69
[1990+]							
943	^{233}U	ABSORPTION	1.5+1 6. +1 (E-2E)	5	2	WIN Tyror, J.G. For thermal reactors. Note increased priority. Uncertain whether requirement set, evaluation needed. GRL Data to be published.	
[731#]						---	
944	^{233}U	ABSORPTION	6. +1 2. +2 (E-2E)	7	2	WIN Tyror, J.G. For thermal reactors. Note increased priority. Uncertain whether requirement set, evaluation needed. GRL Data to be published.	
[732#]							

REF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P MIN MAX	LAB	REQUESTER , COMMENTS	YEAR	
[REG]				(S)				
945 [7338]	^{233}U	ABSORPTION	1. +3 2. +3	13 (E-2E)	2 WIN --- GEL	Tyror, J.G. For thermal reactors. Note increased priority. Data to be published.		
946 [1562+]	^{233}U	ABSORPTION see comment	1. +3 1.5+7	10	2 VNV	Vidal, J.C. Destruction of ^{233}U by all reactions with incident neutrons.	69	
947 [738]	^{233}U	N,GAMMA (alpha)	THR	1. +6	20.0	1 JUL NED BOL --- ORL LAS	Gerwin, H. Went, J.J. Benzi, V. Accuracy insufficient. JNE 5, 186 (1957) ; NSE 9, 105 1961; NSE 12, 169 (1962). Weston et al., Nucl.Sci.Eng. 38 (1968) 1: .4...2000eV. $\sigma(n,f), \sigma(n,\gamma)$ obtained simultaneously using fission chamber and scint.tank. Psangaree bomb shot data (to be done): 20eV ... 1MeV. (WASH 1079 p.98) Gunn et al.: measurement in progress from THR to 1eV. (WASH 1093, 106)	
948 [1564+]	^{233}U	N,GAMMA	1. +3 2. +6	20	2 VNV	Vidal, J.C.	69	
949 [783]	^{233}U	N,GAMMA	1. +6 1.0+7	20	2 JUL BOL --- ORL	Gerwin, H. Benzi, V. Accuracy insufficient. The experimental effort in this region is very small and restricted in energy range. Measurements planned.		
950 [1979+]	^{233}U	SPECT N GAMMA see comment	1.0-2 1.5+1	15	2 BET	Bayard, R.T. Quantity: $P(E_\gamma)$. $d\sigma(E)/d\Omega(D)$ needed to 15% every 50 keV in E_γ . Gammas of 100 keV and above desired, for shielding. Is thermal and resonance spectrum the same.	67	
951 [1988+]	^{234}U	TOTAL XSECT	THR	1.3+3 <10 5 TO 10%	2 BNL --- BAR	Chernick, J. Accuracy to 10% in F_2 , 5% in F_n . For isotope build up in thermal reactors. James, Nucl.Phys. (to be publ.) has res.params.	62	
952 [1393]	^{234}U	N2N XSECTION	THR	1.5+7	10	2 VNV	Vidal, J.C.	68
953 [1394]	^{234}U	N3N XSECTION	THR	1.5+7	15	1 VNV	Vidal, J.C.	68
954 [748]	^{234}U	FISSION	4. +6 1.3+7	15	2 JUL	Gerwin, H. Spectrum index. BNL-732.2 (above 13 MeV). Nucl. Phys. 38 (1962), 561 (50 KeV - 4 MeV). P.H. White, Aldermaston (40 keV - 500 keV).		
955 [1566]	^{234}U	FISSION	4. +6 1.5+7	15	2 VNV	Vidal, J.C.		
956 [1991+]	^{234}U	NU	3.0+5	10	2 ANL	Aver, R. One point above threshold wanted for fast breeder calculations.	67	
957 [1992+]	^{234}U	NU	5.0+5 2.0+7	3.0	1 LRL	Hoverton, P.J. Prompt.	62	
958 [1565+]	^{234}U	ABSORPTION see comment	1. +3 1.5+7	15	2 VNV	Vidal, J.C. Destruction of ^{234}U by all reactions with incident neutrons.	69	
959 [1990+]	^{234}U	N,GAMMA	THR	2.0+6	10	2 GA	Russell, J. Needed for comparison with $^{233}\text{U}(\gamma,n)$.	69

REG	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR
			MIN MAX	(%)			
960 [1989+]	^{234}U	N, GAMMA	1.0-3 1.0+7	<10 3 TO 10%	2 AI ANL BNL GA ANL	Alter, R. Avery, R. Chernick, J. Preskitt, C.A. Butler, D.K. To evaluate isotope buildup in thermal reactors. Accuracy 3% below 2eV, 6% below 10keV .	69
961 [754]	^{234}U	N,GAMMA	1. +0 1.0+7	15	2 JUL SOL ---	Gerwin, H. Benzi, V. The experimental effort in this region is very small and restricted in energy range. No activity known.	69
962 [1567+]	^{234}U	N,GAMMA	1. +3 3. +6	26	2 VNV	Vidal, J.C.	69
963 [2017+]	^{235}U	RESON PARAMS THR	2.0+2	10	1 ANL RET GE ANL	Avery, R. Bayard, R.T. Snyder, T. Butler, D.K. Needed for extrapolation to unresolved resonance region. Multilevel fit wanted where feasible. Need 10% accuracy below 10 ² eV. Needed to as high an energy as possible. Can. J. Nucl. Energ. 22, 211, 6 to 15eV. LAS Cramer, LA-3917 , 17-71 eV . WAL Gibson, WANL-TME-1586 , to 62 eV . DUB Wang, Sov.Jour.At.En.19 907, to 72 eV . KAP Lubitz derived res.parameters for ENDF/B . ORL De Saussure has preliminary results. BNL Adler to 37eV, BNL-50045 .	69
964 [1479]	^{235}U	RESON PARAMS fissionwidth gamma width neutronwidth	1. +2 2. +2	10 SEE ALSO COMMENT.	2 CAD	Barre, J-Y. Fast reactor calculations (Doppler effect and reso- nance self shielding.). 5% on qfn, 10% on f and on the product qfnfy for great resonances. New fission experiment done in Saclay.	69
965 [758]	^{235}U	RESON PARAMS	1.5+2 2. +2	10.0	2 KPK	Schmidt, J.J. Available res.parameters analyzed cover energies up to 150eV.	69
966 [763]	^{235}U	DIFF ELASTIC THR		10	3 WIN ---	Tyror, J.G. For long-term improvement of s(ahs). No work planned.	69
967 [1993+]	^{235}U	DIFF ELASTIC	1.0+6 5.0+6	20	2 ANL ANL	Avery, R. Butler, D.K. Needed for analysing fast critical experiments. Energy resolution at least 0.5MeV . Smith, WASH 1C6B, 400-600keV, and further work in progress.	69
968 [1994+]	^{235}U	DIFF ELASTIC	1.0+6 7.0+6	10	2 LNS ANL	Diven, B.C. Needed for analysing fast critical experiments. Energy resolution at least 0.5MeV . Smith, WASH 1C6B, 400-600keV, and further work in progress.	66
969 [764]	^{235}U	NONELASTIC	TR	1.5+7 <20	2 KPK	Schmidt, J.J. Accuracy 10% for threshold - 1.5 MeV. 20% for 1.5 - 15 MeV. Energy resol about 100 keV. Ferguson's data have to be completed.	66
970 [1999+]	^{235}U	EMISS XSECT energy,angle	6.0+6 2.0+7	5.0	1 LRL	Hoverton, R.J. Low energy neutrons must be included (300 KeV). Absolute spectra at 30° and 75° may suffice.	62
971 [8160]	^{235}U	NONEL GAMMAS energy dist		20	3 WIN HAR	Campbell, C.G. Low resolution for En adequate. For study of activation and heat releas . in core. Note relaxed accuracy requirement. In progress, Ferguson.	66

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR	
			MIN	MAX	(%)			
972 [769]	^{235}U	TOTINELASTIC TR	<10	2	AP	Haugblom, H. Needed for fast reactor calculations. From TR up, $\sigma(n,n')$ values deduced from Drake et al. (n, n') meas. at 4.6 and 7.5MeV (see WASH-1127 p.144) are uncertain by 20% to 40%.		
					ALD	Data at 2.3 and 4MeV by Batchelor (ANPPE-055/69) have 15-20% accuracy. However measurements of $\sigma(n,n')$ have been attempted from observations on total nonel- astic spectra which could give values accurate to 5%.		
973 Withdrawn	^{235}U	TOTINELASTIC 2. +4 1. +7		3	SAC	Pibon, P.	68	
974 [771]	^{235}U	DIFF INELAST TR energy dist	1.5+7 <20 10% TO1.5MeV	2	KPK	Schmidt, J.J. Energy resolution about 100 keV. Ferguson's data have to be completed.		
975 [771]	^{235}U	DIFF INELAST TR energy dist	1.5+7 <20 10% TO1.5MeV	3	CAD	Barre, J-Y. Resolution for E and E' about 100keV. For fast reactor calculations. Ferguson's data have to be completed.		
976 Withdrawn	^{235}U	DIFF INELAST TR energy,angle	6. +6 20	1	WIN	Campbell, C.G. For fast reactors.		
					HAR	Ferguson: data available to 1.5MeV (CN 23/22). Also		
					ALD	Batchelor: in progress. See Braud: PL 18,149 (8/65).		
977 [1995+]	^{235}U	DIFF INELAST 1.0+5 6.0+6 energy dist	10	2	ANL	Avery, P. Butler, D.K. Incident and exit energy resolutions 10%. Low energy neutrons must be included (300 KeV). Absolute spectra at 30° and 75° may suffice.	69	
978 [1326]	^{235}U	DIFF INELAST 3.0+5 1.0+7 energy dist	10	1	JAE	Japanese Nuclear Data Committee (JNDC). For fast reactor. Available data insufficient. Sections for excitation of individual levels desired.	68	
979 [1998+]	^{235}U	DIFF INELAST 1.5+6 6.0+6 energy dist	5.0	1	LRL	Hooverton, R.J. Discrimination between inelastic and fission neutrons required. Low energy neutrons must be included (300 KeV). Absolute spectra at 30° and 75° may suffice.	69	
980 [1400]	^{235}U	N2N XSECTION TR	1.5+7	10	VNV	Vidal, J.C. No experimental result.	68	
981 [15C5+]	^{235}U	FISSION	0. +0 5. +0	0.5	1	SAC	Bussac, J. For calcu's. ion of temperature coefficient and deter- mination of k eff. for ^{235}U and of ETA for ^{239}Pu from critical experiments.	69
982 [2000+]	^{235}U	FISSION	1.0+0 1.0+3	3.0	2	GZ KAP AEL --- HAR	Snyder, T. Ehrlich, R. Butler, D.K. Used as standard at higher energies. James AERE-R 2157 reviews status.	69
983 [781]	^{235}U	FISSION	1. +2 1. +7 < 5.0	1	JUL	Gerwin, R. Accuracy 5% for 100eV -10keV, 2% for 10keV -1 MeV and 5% for 1-10 MeV. Spectrum index, standard xsect.		
984 [7810]	^{235}U	FISSION	1. +2 1.5+7 < 5 .01-142EV :2%	1	CAD	Barre, J-Y. Spectrum index. Standard cross section. Fast reactor calculations and fast critical experiments. New fission experiment done in Sacley. Experiment in progress in Cadarache in the energy range 30-500keV. Accuracy 3% expected.		
985 [7870]	^{235}U	FISSION	1. +2 5. +6 (Z-2Z)	3	2	WIN	Campbell, C.G. For fast reactors. Note increased energy range. Requirement probably not met, evaluation needed.	

REF ID	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P	LAB	REQUESTER	COMMENTS	YEAR	
			MIN	MAX	(%)				
986	^{235}U	FISSION [2001+]	1.0+3	1.4+7	< 2.0 1 TO 2%	1	GR KAP ASL	Snyder, T. Ehrlich, R. Butler, D.K. Of highest priority for fast reactor calculations and as standard. From 1-20 keV, accuracy 2%, 5% useful. From 20 keV - 3 MeV, accuracy 1%, 3% useful. From 3-14 MeV, accuracy 2%, 5% useful resolution needed below 20 keV not yet determined. Absolute values required. HAR James, AERE - H 2157 reviews status to 20keV. ANL Poenitz, WASH 1093, 30keV - 1.5MeV. LAS Hunter, LAS - 3527, gives evaluation to 14 MeV.	69
987	^{235}U	FISSION ratio x-sect [2002+]	1.0+3	1.4+7	1.0	1	ANL OPL	Avery, R. Relative to H, B10. Butler, D.K. Maienschein, P.C. Required is ratio of U^{235} (n,f) to R^{10} (n,f) and to $\text{H}^1(\text{n},\text{p})$ to 1%. Intermediate accuracy of 3% would be useful. Needed to compare standards.	69
988	^{235}U	FISSION Withdrawn	5. +3	4. +4	3	2	WIN	Kinchin, G.H. Campbell, C.G. Accuracy: 3% (E-2E). For thermal and fast reactors. HAR James: data available (ANL 7320), also GEEL(PANDC(E)82 AL), see Knoll: JPF 21, 683(8/67), also Hansen: WASH 1074, 75(4/67), and Diven: LA-3586 p3 WA (D/66) and Conde: 66PARIS I, 419(J/66).	69
989	^{235}U	FISSION [1996+]	1.0+4	1.5+7	1.0	1	LAS	Hansen, G. Excitation cross sections at many energies required. Absolute calibration at several different energies. Energy resolution 3%, energy calibration 1%. None which satisfy requirements.	66
990	^{235}U	FISSION [1997+]	1.0+4	1.4+7	1.0	1	NCS	Landon, H.H. Excitation cross sections at many energies required. Absolute calibration at several different energies. Energy resolution 3%, energy calibration 1%. None which satisfy requirements.	69
991	^{235}U	FISSION [1355]	4. +4	5. +5	3	2	AE ANL CAD	Haeggblom, H. Needed for fast reactor calculations. The work of Poenitz which is nearing completion (see WASH-1127 p.4) will probably reach 3% accuracy. Measurements from 120 to 370keV will be published in a SMNP report. The graph in PANDC(E)115 II seems to show an accuracy of the order of White's, i.e. 2.5-3%.	69
992	^{235}U	FISSION Withdrawn	4.0+4	1. +6	0.5	3	WIN	Smith, R.D. For fast reactors. --- Accuracy at present unobtainable. May be set by integral measurements.	69
993	^{235}U	FISSION Withdrawn	1. +5	1.5+6	2.0	1	SAC	Ribon, P.	68
994	^{235}U	ETA [2003+]	THR	5.0+8	0.5	1	ANL ORNL RPI	Avery, R. Snyder, T. Butler, D.K. Accuracy 0.5% at thermal, 2% elsewhere. De Saussure, ORNL-TM- 1804, gives alpha. Weinstein, Vienna fission conference gives NN.	67
995	^{235}U	ETA ratio x-sect [792]	1. -2	2. -1	0.5 (.02EV STEPS)	2	WIN	Tyror, J.G. Requested: eta(E) /eta (Po), Po=0.0253eV. For temperature coefficient work.	69
996	^{235}U	ETA [1574+]	2.5-2		0.1	1	SAC	Bussac, J. For thermal reactor calculations.	69

REF NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR
		MIN MAX	(%)			
997 [235U]	ETA ratio x-sect	2. -1 4. -1	0.5 (.05EV STEPS)	3 WIN	Tyror, J.G. Requested: eta(E) /eta (Eo), Eo=0.0253eV. For temperature coefficient work.	
998 [235U]	ALPHA	THR	1.0+3 < 5.0 3 TO 5%	2 SNP	Pleishman, M.P. Required are simultaneous measurements of capture and fission cross sections at low temperature, 77°K , to validate Doppler broadening calculations.	69
999 [235U]	ALPHA	1.0-3 7.0+6	<10 3 TO 10%	2 ANL	Avery, R. Bayard, R.T. GE Snyder, T. ANL Capture cross section equally useful. Accuracy 3% to 30kev, 4% to 150 keV, 5 to 10% to 7 MeV .	69
				ORNL	De Saussure, ORNL-TR-1804 , to 3 keV.	
1000 Withdrawn	ALPHA	1.0+2 1.0+5	5	2 WIN	Campbell, C.G. Accuracy: 5% (E-2E). For fast reactors.	
				ORNL	De Saussure: data available CH-23/n8 and ORNL/TR 1804 see Van Shi Di 65SALSZB I,287 (3/65), also Diven WASH 1C56VIIIR1 (3/65), and Bell: LADC 8513 (1/67).	
1001 Withdrawn	ALPHA	1. +3 4.0+4	2	3 WIN	Smith, B.D. Accuracy 2% (E-2E). Better accuracy than 5% would be acceptable. Accuracy at present unobtainable. May be met by integral measurements.	

1002 [235U]	NU	THR	3.0+6	1.0 1	ANL Avery, R. GE Snyder, T. ANL Butler, D.K. Needed as a cross check with other isotopes. Accuracy of 1.5 to 2% would be useful. RPI Weinstein Vienna fission conference to 40eV .	69
1003 Withdrawn	NU	1.0+4	1. +6	1 3	WIN Campbell, C.G. For fast reactors. See Prokhorova: INPC-1872 (5/67), and Kuznetcov: YFI-4 18 (5/67), also Meadows: JNP 21,157(2/67), and Colvin: 65SALSZB II p25(3/65), and Conde: 65SALSZB II p57(3/65) and Fillmore: JNP 22,73 (2/68).	68
1004 [235U]	NU	5. +8	3. +6	1 1 CAD	Batte, J-Y. For fast reactor calculations.	68
1005 Withdrawn	NU	3. +6	1.5+7	2.0 1 SAC	Ribon, P. To resolve discrepancies	68
1006 [235U]	F NEUT DELAY THR spectrum	5.0+6	5.0 2	KAP ANL	Ehrlich, R. Butler, D.K. Needed for analysis of fast criticals and to check existing data. Yield, half-life, and energy needed. Cox and Whiting, 0.15, 0.6, 1.3MeV R.A.S. Phys. Soc 11, 536.	69
1007 [2009+]	F NEUT DELAY THR spectrum	1.5+7	5.0 1 LAS	Keepin, G.R. Absolute numbers of delayed neutrons required. Isotopic signatures for nondestructive assay. Cox and Whiting, 0.15, 0.6, 1.3MeV R.A.S. Phys. Soc 11, 536.	69	
1008 [2010+]	F NEUT DELAY THR spectrum	1.0+7	10 2 BNL	Routs, H.J. Incident energy: thermal, 2.2, 10MeV. Need spectra of neutrons in different groups characterized by differing decay constants. Cox and Whiting, 0.15, 0.6, 1.3MeV R.A.S. Phys. Soc 11, 536.	69	
1009 [2011+]	F NEUT DELAY FISSION spectrum		10	2 BNL	Routs, H.J. Need spectra of neutrons in different groups characterized by differing decay constants. Cox and Whiting, 0.15, 0.6, 1.3MeV BAPS 11 536.	69

REF	EUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY %	LAB	REQUESTER	COMMENTS	YEAR
			MIN MAX	(%)				
1010	²³⁵ U	SPECT FISSION THR	3.0+6	5.0	2	ANL KAP ANL	Avery, R. Ehrlich, R. Butler, D.K. Quantity: P(E _n '). Verification of fission spectrum needed. LAS	69
[2007+]		see comment					Crandl, Nucl. Sc. Eng. 31, 191, disagrees with Cranberg, Phys. Rev. 13, 662.	
						MOL	Fabry, EANDC 1150, disagrees with Cranberg: Phys. Rev. 163, 662.	
						HAR	Barnard, Nucl. Phys. 71, 228, agrees with Cranberg: Phys. Rev. 103, 662.	
1011	²³⁵ U	SPECT FISSION TH. +0	1.5+7	5	1	CAD	Barre, J-Y. Past reactor calculations. Percent measurements by Fabry and Crandl showed that the averaged energy of the fission spectrum is increased by 20%.	69
[148G+]								
1012	²³⁵ U	SPECT FISSION TH. +0	1. +5	10.0	2	VNV	Vidal, J.C. Low energy fission spectrum.	68
[139G#]						LAS	At thermal energy meas. by Crandl (NSE 31, 191) and by Fabry (in progress)	
1013	²³⁵ U	SPECT FISSION TH. +5			2	WIN	Campbell, C.G. For fast reactors.	
[799#]			ON <E _n '>.			UKW	Whittaker, A.	
			10%			HAB	Wright, S.B.	
			ON			DN1, DN2,	For reaction rate analysis. DN1 = no. of neutrons above 5 MeV, DN2 = no. of neutrons below .25 MeV.	
						ECW	In progress, Besant. Also work in progress at Borough Polytechnic.	
1014	²³⁵ U	FISSION YIELD THR		3.0	2	BET	Bayard, R.T. Yield of K ¹³⁷ .	67
[2018+]							For calculation of fission product poisons. Cumulative and direct (inclusive of 15 M isomer) yields wanted.	
1015	²³⁵ U	FISSION YIELD THR		1.0	2	BET	Bayard, R.T. Yield of Cs ¹³⁷ .	67
[2019+]							For burn up indicator standards.	
1016	²³⁵ U	FISSION YIELD THR		3.0	2	BET	Bayard, R.T. Yield of Sm ¹⁴⁷ .	67
[2020+]							For calculation of fission product poisons	
1017	²³⁵ U	FISSION YIELD THR		3.0	2	BET	Bayard, R.T. Yield of Nd ¹⁴⁷ .	67
[2021+]							For calculation of fission product poisons	
1018	²³⁵ U	FISSION YIELD THR	1.5+7	15	2	LAS	Keepin, G.R. Absolute yields of fission isomers versus times (>10ms) required. Isotopic signatures for nondestructive assay techniques.	69
[2022+]		see comment				---	None which gives the necessary energy dependence.	
1019	²³⁵ U	FISSION PROD GS THR	1.5+7	5.0	1	LAS	Keepin, G.R. Delayed γ yields. High-resolution absolute γ -ray yields required. Ultimately, assign discrete γ 's to specific fission product. Isotopic signatures for nondestructive assay techniques.	69
[2014+]		see comment						
1020	²³⁵ U	FISSION PROD GS THR	1.4+7	35	1	RNL	Kouts, H.J. Incident energy: thermal, 2, 2, 10 MeV, Delayed γ yields within factors of two from neutron-induced fission products. For $E\gamma > 2$ MeV, energy distributions and half-lives required.	69
[2015+]		see comment						
1021	²³⁵ U	FISSION PROD GS FISSION		35	1	RNL	Kouts, H.J. Delayed γ yields within factors of two from neutron-induced fission products. For $E\gamma > 2$ MeV, energy distributions and half-lives required. High-resolution absolute γ -ray yields required.	69
[2016+]		see comment						

REF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P	LAB REQUESTER , COMMENTS	YEAR	
			MIN MAX	(%)			
1022	^{235}U	N, γGAMMA	C. +J S. +0	6.5	1 SAC [1506+]	Bussac, J. For calculation of temperature coefficient and determination of I_{eff} . for ^{235}U and of ETA for ^{235}Pu from critical experiments.	
1023	^{235}U	N, γGAMMA (alpha)	1. +1 1. +8	5	2 CAD Withdrawn	Bavier, J. Analysis of critical experiments. Riabov et al., At. Energya. 28 (1968) 351: high resolution measurement; ALPRA measured with 360 l. scint.tank, $\sigma(n,f)$ with fission chamber, 1.8ev ... 30kev.	
1024	^{235}U	N, γGAMMA (alpha)	1.0+3 1.0+5	10	1 JAE [1327]	Japanese Nuclear Data Committee (JNDC). For fast reactor. Large discrepancies exist among measurements by Desaussure Wang Shidi Ryabov.	
1025	^{235}U	N, γGAMMA (alpha)	1. +3 5. +5	<10	2 CAD [1481+]	Barre, J-Y. For fast reactor calculations.	
1026	^{235}U	N, γGAMMA	1. +3 1. +5	5	2 PR Withdrawn	Dosimetry. Important discrepancies 10...50keV. Riabov et al., At. Energya. 22 (1968) 351: high resolution measurement; ALPRA measured with 360 l. scint.tank, $\sigma(n,f)$ with fission chamber, 1.8ev ... 30kev.	
1027	^{235}U	N, γGAMMA	1. +8 1.0+7	1%	2 JUL [810]	Gerwin, H. Analysis of critical experiments. The experimental effort in this region is very small and restricted in energy range. Zaitsev et al. TPI-4 , p. 34 (report, t.b.publ. At. Energya) give table for .19...2.6MeV.	
1028	^{235}U	SPECT γGAMMA THR	1.5+1	10	2 RPT [2012+]	Bayard, R.T. In 0.001 to 15ev, $d\sigma(E)/n(E) = 10\%$ at 50keV intervals for E above 100keV. --- Does spectrum change for thermal and resonances. Weizmann ENDC(E) 115 0, 5-80ev .	
1029	^{235}U	SPECT γGAMMA THR		20	2 KAP [2013+]	Ehrlich, R. In thermal,gamma resolution $d\sigma(E)/n(E) = 20\%$. --- Does spectrum change for thermal and resonances. Weizmann ENDC(E) 115 0, 5-80ev .	
1030	^{235}U	NUCL.LEVELS	5.0+5 1. +6		2 KPK [818]	Schmidt, J.J. Quantity E, J, I, P. Almost no data available.	
1031	^{236}U	TOTAL XSECT THR	1.0+3	10	1 BNL [2023+]	Chernick, J. Snyder, T. Ehrlich, R. Accuracy 5% in neutron width. For isotope build up in thermal reactors and production of Pu-237 . Want 10% in capture width. Carlson, WASH 1124 , has complete data and resonance parameters to 820ev .	
1032	^{236}U	N2N XSECTION TR	1.5+7	20	2 VNV [1404+]	Vidal, J.C.	
1033	^{236}U	N3N XSECTION TR	1.5+7	20	2 VNV [1405]	Vidal, J.C.	
1034	^{236}U	FISSION	TR	5. +6	2	3 WIN Withdrawn	Smith, R.D. Detector applications. --- Accuracy at present unobtainable. May be set by integral measurements.
1035	^{236}U	FISSION	TR	1. +6	5	3 WIN Withdrawn	Campbell, C.G. Detector applications. ALD White: partially set SR 60/14 and JNG 21,671 (1967). See WP A101,460 (9/67), also Myers: WP 81,1 (6/66).

REF	NUCLIDE	QUANTITY	ENERGY(eV)	ACCURACY	P	LAB	REQUESTER	COMMENTS	YEAR
			MIN	MAX	(S)				
1036 [1403]	^{236}U	FISSION	1. +3	1.5+7	10	2	VNV	Vidal, J.C.	68
1037 [823]	^{236}U	FISSION	4. +6	1.3+7	5	2	JUL	Gerwin, R.	
						---		Proc. Phys. Soc. <u>78</u> (1961), 801 (0.3-8 MeV).	
						ALD		White, (0.1-0.5MeV.)	
						ALD		White, Warner: JHE <u>21</u> ,671 (1967). (1;2.25;5.8MeV.)	
1038 [2024+]	^{236}U	NU	5.0+5	1.4+7	3.0	1	LRL	Hoverton, R.J.	62
1039 [14068]	^{236}U	ABSORPTION see comment	1. +3	1.5+7	10	1	VNV	Vidal, J.C. Destruction of ^{236}U by all reactions with incident neutrons.	68
1040 [2025+]	^{236}U	RES INT CAPT 0.5+2			10	2	GR	Snyder, T.	69
						GA		Needed for control of ^{232}U production.	
						Carlson, WASH 1124, has microscopic s's to 20 keV, calculates resonance integral.			
						SRL		Baumann B.Sci.Eng. <u>32</u> 265 gets 417,419b by 2 methods.	
1041 [2026+]	^{236}U	$\bar{\nu},\text{GAMMA}$	THR	1.1+3	10	1	BNL GR KAP	Chernick, J. Snyder, T. Ehrlich, R. Needed for control of ^{232}U production GE.	69
						GA		Needed for isotope build up in thermal and fast reactors and for ^{233}Np production.	
						GA		Required 10% accuracy in capture widths.	
						GA		Carlson, WASH 1124, has data to 20 keV.	
1042 [1407]	^{236}U	$\bar{\nu},\text{GAMMA}$	1. +0	5.3+1	5	2	CBC	Walker, W.H.	68
								Disagreement between integral and differential measurements. See Paumann NSE <u>32</u> ,265 (1968) also Carlson BANDC(US) 105, page 58.	
1043 [829]	^{236}U	$\bar{\nu},\text{GAMMA}$	1. +0	1.0+7	20	2	JNL BOL	Gerwin, R. Pierantoni, P.	
						GA		The experimental effort in this region is very small and restricted in energy range.	
						GA		Carlson, WASH 1124 p. 82 (1958) measured 0 to 20keV.	
								Data analysis in progress.	
1044 [1402]	^{236}U	$\bar{\nu},\text{GAMMA}$	1. +3	1. +6	10	1	VNV	Vidal, J.C.	68
						GA		Carlson, WASH 1124 p. 82 (1958) measured 0 to 20keV.	
								Data analysis in progress.	
1045 [2027+]	^{236}U	$\bar{\nu},\text{GAMMA}$	1.6+3	1.0+7	20	2	ANL	Avery, R.	69
								Needed for isotope build up in thermal and fast reactors and for ^{233}Np production.	
						GA		Required 10% accuracy in capture widths.	
						GA		Carlson, WASH 1124, has data to 20keV.	
1046 [1568+]	^{237}U	ABSORPTION see comment	1. +3	1.5+7	10	2	VNV	Vidal, J.C. Destruction of ^{237}U by all reactions with incident neutrons.	69
1047 [830]	^{236}U	TOTAL XSECT	1. +6	2.5+6	8	1	CAD	Barre, J-Y. For fast reactor calculations.	
1048 [2044+]	^{236}U	RESON PARMS see comment	+		10	1	AI ANL GR ANL	Alter, R. Avery, R. Snyder, T. Burier, D.K.	69
								Needed for Doppler effect on fast reactors, to as high energy as can be measured. Need answers to questions of missing P-wave levels and uncertainty of gass-widths. Accuracy of 20% would be useful.	
						LAS		Glass, NBS Spec.Pub. 299, 30 eV to 2 keV .	
						ANL		Bollinger, Phys.Rev. <u>171</u> 1293, 4-170 eV .	
						NAR		Asqhar, Nucl.Phys. <u>85</u> 305, 6-820 eV .	
						WAL		Gibson, WANL-TME-1228, evaluates 6-2000 eV.	

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAP	REQUESTER , COMMENTS	YEAR
			MIN	MAX	(%)		
1049 [8368]	^{238}U	RESON PARAMS 1.	$+3$	-3	10	2 CAD Barre, J-Y. SEE ALSO COMMENT.	
						fast reactor calculations (Doppler effect and resonance self shielding). 5% on $\sigma_{f,n}$, 10% on Γ and on the product $\sigma_{f,n}\Gamma$ for great resonances.	
1050 [1356]	^{238}U	RESON PARAMS 2.	$+3$	-3	3	2 AE Haeggblom, R. fissionwidth gamma width neutronwidth COL	
						Needed for fast reactor calculations. Accurate determination of Γ from capture meas. made summer 1969 (F.Bahn et al. WASH-1127 p.37). No other activity known.	
1051 [2028+]	^{238}U	DIFF ELASTIC	1.0 ± 3	1.0 ± 7	10 5 TO 10%	1 ANL Avery, R. GE Snyder, T. ANL Butler, D.X. ORNL Craven, C.W. --- Accuracy 10% in energy region 1-300keV . accuracy 5% in energy region 300keV to 2 MeV . Accuracy 10% in energy region 2-10 MeV . Factors of 2 lower accuracy would be useful on short term. ANL Smith, Nucl.Phys. <u>57</u> , 633, to 1.6MeV . RAB Barnard, Nucl.Phys. <u>8C</u> , 86, to 1.54eV . ALD Cookson, AERE CE ² /PR/10 , 9.7MeV .	69
1052 [11498]	^{238}U	DIFF ELASTIC	$4. \pm 4$	$5. \pm 6$	5	1 WIN Campbell, C.G. For fast reactors. BAR Note relaxed accuracy. In progress, Kratige; will probably meet requirement. Evaluation needed	68
1053 [8370]	^{238}U	DIFF ELASTIC	$1. \pm 5$	2.5 ± 6	5 ON <COS>	1 CAD Barre, J-Y. For fast reactor calculations.	
1054 [2038+]	^{238}U	NONEL GAMMAS	$1.0-3$	1.0 ± 7	10	2 BET Bayard, R.T. energy,angle --- Accuracy 10% in spectrum. Gamma ray spectrum desired at intervals of 2.5MeV in gamma energy. Gammas of all energies wanted. For shielding and γ heating calculations. Some spectra at thermal and above: ANL Price Nucl.Phys. A <u>121</u> , 639. PSU Sheline, Phys. Rev. <u>151</u> , 1011. BAR Thomas AERE PR/HP-14 . ANL Bollinger WASH-1124 .	67
1055 Withdrawn	^{238}U	NONEL GAMMAS	$2.5-2$	1.4 ± 7	20	3 WIN Campbell, C.G. For activation and heat release in core. See Chrien, Phys. Lett. <u>25B</u> , 195(8/67), also Phys. Rev. <u>151</u> , 1011(B/66), and Hessner: KPK-540 (B/66) and Bergqvist: Nucl.Phys. <u>74</u> , 15 (D/65).	
1056 [842]	^{238}U	TOTINELASTIC TR see comment	$4. \pm 6$	5	1 CAD Barre, J-Y. Or ϵ (nonelastic). For fast reactor calculations.		
1057 [1569+]	^{238}U	TOTINELASTIC TR see comment	1.5 ± 7	5	2 VNV Vidal, J.C. Or ϵ (nonelastic). For fast reactor calculations.	69	
1058 [843]	^{238}U	TOTINELASTIC	$7. \pm 6$	$2. \pm 5$	10	2 AE Haeggblom, R. Needed for fast reactor calculations. Reas, published in Nucl.Phys. <u>80</u> 46 (1966) has requested accuracy only above 180keV. Work mentioned in WASH-1127 p.2 concerns primarily excited states above 800keV.	
1059 [845]	^{238}U	DIFF INELAST TR	$2. \pm 6$	10	2 KPK Schmidt, J.J. Available data insufficient. See extensive discussion in KPK-120 Part I. For 1.2MeV < E' < 2 Mev.		
1060 [844]	^{238}U	DIFF INELAST TR	1.0 ± 7	10	1 CAD Barre, J-Y. Separation of levels up to 2 MeV, accuracy on nuclear temperature over 2MeV. ALD For fast reactor calculations. Measurements of Batchelor et al. from 2 to 7 MeV (Nucl.Phys. <u>65</u> , 236(1965)).		

REF [REG]	ISOTIDE QUANTITY	ENERGY(EV)	ACCURACY %	LAB	REQUESTER	COMMENTS	YEAR
1061 [1328]	^{238}U energy dist	DIPP INELAST 1.0±4	1.0±7	10	1 JAE	Japanese Nuclear Data Committee (JNDC). For fast reactor. Sections for excitation of individual levels desired. Available data insufficient.	68
1062 [2190+]	^{238}U energy dist	DIPP INELAST 1.0±5	1.0±7	5.0	1 ABL GE ANL ---	Avery, R. Snyder, T. Butler, D.K. Energy resolution should be 5%. Fission cross sections instead of inelastic and ν_{2n} might be useful. Accuracy of 20% would be useful. --- Smith: Nucl. Phys. 87, 633, to 1.6 MeV. Barnard: Nucl. Phys. 82, 46, to 1.5 MeV. Cookson: AERE-CNR/PP/10, 9.7 MeV.	69
1063 [856#]	^{238}U energy,angle	DIPP INELAST 1. +6	2.5±6	5	1 WIN	Campbell, C.G. For fast reactors. Note reduced energy range and relaxed accuracy. --- HAR In progress, Armitage. Uncertain whether requirement met. Evaluation needed.	
1064 [847]	^{238}U	DIPP INELAST 1.2±6	2. +6	10	2 KPK	Schmidt, J.J. $E' = 0.045\text{MeV}$, $\nu' = 0.148\text{MeV}$. No data available. See extensive discussion in KPK-120 Part I.	
1065 [849]	^{238}U energy dist	DIPP INELAST 7. +6	1.0±7	5.0	2 KPK	Schröder, J.J. Porker et al. xsect measurements at 2.5;4;6 and 7 MeV (Hughes, Geneva Conf. 1958, P/2483, Beyster, LA -2099, 1957), diff inelas xsect measurements and T assignments at 2.45 MeV (Cranberg et al., Phys. Rev. 163, 343, 1956) and at 2.5 and 3.5 MeV (see Mandeville, Kavanagh, CND-8028, 1958). New measurements of total and diff inelast xsect and T available from Hatchelor et al. (EANDC (UK) 48 "S", 1964) at 2;3;4 and 7 MeV and from Buccino et al. (EANDC (US) 39, 1963) at 4;5;6 and 6.5 MeV. Diff inelast xsect measurements at 3 and 18 MeV at Studsvik in progress (During, Jansson). EANDC (OR) 33 "L". Spectra measurements of Cookson (AERE-CNR/PP/10 p.15) at 9.8 MeV and various angles in progress.	
1066 [852]	^{238}U N2N XSECTION TR	1.0±7	10	2 BN	Tavernier, G.	Neutron economy of fast reactors.	
1067 [1576]	^{238}U N2N XSECTION TR	1.5±7	10	1 VNV	Vidal, J.C.		
1068 [2029+]	^{238}U N2N XSECTION TR	1.0±7	10	2 GE ---	Snyder, T. ALD Rutherford has data. Sakanoue, Nucl.Sci.Tech.Japan 5265, reports $\sigma_{eff}=2.8b$.		69
1069 [1407]	^{238}U FISSION	TR	1.5±7	5	1 CAD	Barre, J-Y. For spectrum index analysis it is necessary to obtain 10% accuracy on the fission ratio $^{238}\text{U} / ^{235}\text{U}$. For fast reactor calculations.	68
1070 [Withdrawn]	PISSION	TR	5. +6	5	3 WIN	Campbell, C.G. For fast reactors. ALD White: say be met, JNE 21, 671. See also WASH 1074 (1967) see Hansen: WASH 1074, 75 (4/67), also Stein :WASH 1071 129 (4/66), and Dunford: 66PARIS I, 429 (4/66).	
1071 [2030+]	PISSION ratio x-sect	5.0±5	1.5±7	5.0 1 TO 5%	1 LAS ANL	Hansen, G. Butler, D.K. Relative to ^{235}U . Accuracy 5% below 1.3 MeV, 1% above. Energy resolution 3% energy calibration 1%. --- Intermediate accuracy would be useful. Status reviewed in EANDC(B) 1150	67
					LAS	Stein NBS Spec.Pub. 299, 1-5 MeV .	

REF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR	
			MIN	MAX	(%)			
1072 [2031+]	^{239}U	FISSION ratio x-sect	5.2+5 1 TO 3%	1.4+7	3.0	1 ANL Barre, J-Y. Relative to Pu^{239} . Accuracy 3% below 1.3MeV, 1% above. Energy resolution 3%, energy calibration 1%. Intermediate accuracy would be useful.	69	
1073 [1083+]	^{239}U	NU	TR	4. +6	2	2 CAD Barre, J-Y. For fast reactor calculations. Measurements by Soleilhac are 1% lower than other's.	69	
1074 Withdrawn	^{239}U	NU	TR	5. +6	2	1 WIN Campbell, C.G. For fast reactors. Atom: may do. See Pillmore: JNP <u>22</u> , 79 (2/68) and Mather: Nucl.Phys. <u>65</u> , 149 (1965) Asplund-Nilsson: Nucl.Sci.Bug. <u>20</u> , 527 (1964) Experiments planned by Soleilhac et al. (1.4-14MeV). More work required.	69	
1075 [2032+]	^{239}U	NU	1.0+6 ANL ORNL	1.4+7	2.0	1 ANL Avery, R. Butler, D.K. Craven, C.W. AI Pillmore, J.Nucl.Energ. <u>22</u> , 79, fits existing data. Cabe, RANDC(E) 1150, 1.5-15 MeV.	69	
1076 [2033+]	^{239}U	P NEUT DELAY THR	1.5+7	5.0	1 LAS	Keepin, G.R. Absolute numbers of delayed neutrons required. High resolution. Time and energy spectra also of interest. Isotopic signatures for nondestructive assay techniques. Need to confirm ANL results using smaller samples. Needed are spectra of neutrons in different groups characterized by different decay constants. ANL Cox and Whiting BAPS <u>11</u> , 536, 1.4, 1.5, 1.7MeV.	69	
1077 [2035+]	^{239}U	P NEUT DELAY FISSION	10	2	BNL	Kouts, H.J. Absolute numbers of delayed neutrons required. High resolution. Time and energy spectra also of interest. Isotopic signatures for nondestructive assay techniques. Need to confirm ANL results using smaller samples. Needed are spectra of neutrons in different groups characterized by different decay constants. ANL Cox and Whiting BAPS <u>11</u> , 536, 1.4, 1.5, 1.7MeV.	69	
1078 [1583+]	^{239}U	P NEUT DELAY 2. +6	5	2	WIN WIN ALD	Campbell, C.G. Tyror, J.G. For fast and thermal reactors. En approximate. Planned in a known degraded fission spectrum by Mc Taggart and Clifford.	69	
1079 [2036+]	^{239}U	P NEUT DELAY 2. 2+6	1.4+7	10	2 BNL	Kouts, H.J. Incident energy: 2.2, 10MeV. Absolute numbers of delayed neutrons required. High resolution. Time and energy spectra also of interest. Isotopic signatures for nondestructive assay techniques. Need to confirm ANL results using smaller samples. Needed are spectra of neutrons in different groups characterized by different decay constants. ANL Cox and Whiting BAPS <u>11</u> , 536, 1.4, 1.5, 1.7MeV.	69	
1080 [1482+]	^{239}U	SPECT FISSION	N O. +0	1.4+7	5	1 CAD Barre, J-Y.	Fast reactor calculations. Recent measurements by Fabry and Grundl showed that the average energy of the fission spectrum is increased by 20%.	69
1081 [058]	^{239}U	SPECT FISSION	N O. +0	1. +5	10	2 VNV Vidal, J.C.	Fast reactor calculations. Recent measurements by Fabry and Grundl showed that the average energy of the fission spectrum is increased by 20%.	

REF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P	LAB	REQUESTER	COMMENTS	TPRP	
	(REG)		MIN	MAX	(%)				
1082	^{238}U [1582+]	SPECT FISSION B 2. +6		2 ON $\langle E^* \rangle$. 10% ON DN1, DN2.	3 WIN	Campbell, C.G.	For fast reactors. DN1 = no.of neutrons above 5MeV, DN2 = no.of neutrons below .25MeV.	69	
1083	^{238}U [2043+]	FISSION YIELD TR	1.5+7	15	2 LAS	Keepin, G.R.	Absolute yields of fission isomers versus times ($>10\text{ns}$) required. Isotopic signatures nondestructive assay techniques. None which gives the necessary energy dependence.	69	
1084	^{238}U [2042+]	FISSION PROD GS FISSION		35	1 BNL	Kouts, H.J.	Quantity: $P(E\gamma, T1/2)$. High-resolution absolute γ -ray yields required. Time and energy spectra also of interest. Ultimately, assign discrete γ 's to specific fission products. Isotopic signatures for nondestructive assay techniques. Delayed γ yields with factors of two from neutron induced fission products. For $E\gamma > 2$ MeV, energy distributions and half-lives required.	69	
1085	^{238}U [2036+]	FISSION PROD GS TR	1.5+7	5.0	1 LAS	Keepin, G.R.	Quantity: $P(E\gamma, T1/2)$. High-resolution absolute γ -ray yields required. Time and energy spectra also of interest. Ultimately, assign discrete γ 's to specific fission products. Isotopic signatures for nondestructive assay techniques. For $E\gamma > 2$ MeV, energy distributions and half-lives required.	69	
1086	^{238}U [2041+]	FISSION PROD GS 2.2+6	1.4+7	35	1 BNL	Kouts, H.J.	Quantity: $P(E\gamma, T1/2)$. Delayed γ yields with factors of two from neutron induced fission products. High-resolution absolute γ -ray yields required. Time and energy spectra also of interest. Ultimately, assign discrete γ 's to specific fission products. Isotopic signatures for nondestructive assay techniques. For $E\gamma > 2$ MeV, energy distributions and half-lives required.	69	
1087	^{238}U [860]	N, GAMMA	THR	< 1 0.5-1%	2 CRC CRC	Hanna, G.C. Westcott, C.H.	Needed for evaluation. Disagreements and gaps in existing data need to be resolved. Glass WASH -1124, has unpublished data. Moxon AERE-PR/NP-14 has data to 100 keV. Measurements planned.	69	
1088	^{238}U [2037+]	N, GAMMA	THR	1.5+7	10	1 LRL	Hoverton, R.J.	Needed for evaluation. Disagreements and gaps in existing data need to be resolved. Glass WASH -1124, has unpublished data. Moxon AERE-PR/NP-14 has data to 100 keV. Measurements planned.	69
1089	^{238}U [8590]	N, GAMMA	5. -3 6. +0 .03BARNs		2 WIN	Tyrot, J.G.	For thermal reactors. Note changed energy range. In progress, Moxon.		
1090	^{238}U [865]	N, GAMMA	5.0+2 8.0+5	< 5 2% TO 4LOK2V 3ELSE- WHERE	1 JUL	Gerwin, H.	Fast reactor calculations. Incoherence in existing data up to 25%. Moxon (priv.comm.) will measure 1 to 100keV. With 5% accuracy. Henlova+ Poenitz, Nucl.Sci.Eng.13(1968) 24 measured 30...500keV.		
					KPK	GEL	See Weigmann et al., FANDC(E) 115 0 (lin.ac., TOP.) Petrel bomb data to be analysed.		
					LAS				

REF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P	CAR	REQUESTER , COMMENTS	TPAR
			MIN	MAX	(%)		
1091 [1484]	^{238}U	N, γ GAMMA	5.0 ± 2 8.0±5	< 5	1	CAD 2K TO 10 TO 400KEV 38ELSE- WHERE	Barre, J-Y. Fast reactor calculations. Incoherence in existing data up to 25%.
						KPK GRL LAS	Nenloven+ Poenitz, Nucl.Sci.Bug.33(1968)28 measured 30...50KEV. See Weigmann et al., FANDC(2) 115 II (lin.ac., TOP.) Petrel bomb data to be analysed.
1092 [2636+]	^{238}U	N, γ GAMMA	5.0 ± 2 1.0±7	<10	1	AI 2 TO 10% SEE COMMENT.	Alter, H. Avery, P. Snyder, T. Butler, D.K.
						ERS HAB KPK	Highest priority need for fast reactor calculation. Accuracy 3% from 500 ev to 1keV. Accuracy 2% from 1-300 keV. Accuracy 3% from 300-500 keV. Accuracy 10% from 500 keV to 10 MeV. Accuracies of 10% from 1-300 keV and 20% from 0.3 to 10 MeV would be useful. Glass WASH -1124, has unpublished data. Hoxon, AERE-PR/WP-14, has data to 100 keV. Kompe, KPK-635, 25-500 keV.
1093 [8678]	^{238}U	N, γ GAMMA	$2. \pm 3$ 1. ±6	3	1	WIN (E-2E)	Campbell, C.G. For fast reactors. --- Note changed energy range. Data available below 100keV. HAB HPL HAB Requirement probably not set, evaluation needed.
1094 [866]	^{238}U	N, γ GAMMA	$1. \pm 4$ 1. ±6	< 3	2	AE HAB HAB HAB	Haeggblom, H. Needed for fast reactor calculations. Autumn 1969 measurement from 0.5 to 100keV is uncer- tain by 4 to 10% (see Malskog:report AE-PPN-97 April 9, 1969 and Hoxon:report AERE-R6C78). Preliminary reported values (AHL-7548 p.86) by Poenitz of ratio $U^{238}(\text{n},\gamma) / U^{235}(\text{n},f)$ (see also WASH-1127 p.3; also mentions $U^{238}(\text{n},\gamma) / Pu^{239}(\text{n},f)$) from 130 to 1400keV does not lead to requested accuracy when combined with 3% accuracy of $U^{238}(\text{n},f)$.
1095 [2039+]	^{238}U	N, γ GAMMA ratio x-sect	1.0 ± 4 1.0±7	< 7	1	ANL GP ANL ORL	Avery, R. Snyder, T. Butler, D.K. Craven, C.W. Needed is ratio of capture cross section of U^{238} to fission cross section of Pu^{239} . Direct ratio needed to supplement separate measure. Accuracy 1.5% below 300 keV, 7% above. Intermediate accuracy would be useful on near term.
1096 Withdrawn	^{238}U	N, γ GAMMA	4.0 ± 4 1. ±6	1	3	WIN ---	Smith, R.D. For fast reactors. Accuracy at present unobtainable. May be set by inte- gral measurements.
1097 Withdrawn	^{238}U	N, γ GAMMA	$6. \pm 5$ 5. ±6	SEE COMMENT	1	WIN HPC	Campbell, C.G. Accuracy: 0.005E (MeV) barns. For fast reactors. Aston: may do. See Barr: JNP AB18, 881(9/64), and Marchuk: JNP 20, 77 (1966), and Dunford: 66PARIS I, 429 (0/66).
1098 [1571+]	^{238}U	ABSORPTION see comment	$1. \pm 3$ 1.5±7	10	2	TWY	Tidal, J.C. Destruction of ^{238}U by all reactions with incident neutrons.
1099 [2045+]	^{237}Np	N2N XSECTION TB	1.5 ± 7	10	2	SRL ---	Dessauer, G. To evaluate contamination of Pu^{239} by Pu^{238} . Also needed for control of U^{232} production. ALD Perkins: J.Nucl.Ph. AB15 69, 0.39±0.07 barns by activation.

REF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P MIN MAX (%)	LAR	REQUESTER , COMMENTS	YEAR	
1100	^{237}Np	M2N XSECTION TB	1.0+7	10	2	GE ---	Snyder, T. To evaluate contamination of Pu^{238} by Pu^{239} . Also needed for control of U^{232} production. No active work. ALD Perkin: J.Nucl.En. AB14 69, 0.39± 0.07 barns by activation.	69
[2046+]								
1101	^{237}Np	FISSION	TR	1.0+7	2	CAD SEE COMMENT.	Barre, J-Y. For spectrum index analysis it is necessary to obtain 2% accuracy on the fission ratio $^{237}\text{Np} / ^{235}\text{U}$.	
[8778]								
1102	^{237}Np	FISSION	TR	5. +6	5	WIN Withdrawn	Campbell, C.G. Detector applications. ALD White: may be set, SM 60/14 and JNP 21,671 (1967). See Conde: 66PARIS I, 419 (7/66), and Myers: NP 81,1 (6/66), and SNP 2, 173 (2/66).	
[2047+]								
1103	^{237}Np	FISSION ratio x-sect	2.0+1	5.0+8	10	3 LAS	Hansen, G. < 50 KeV: En(res)= 30%; En(calib)= 10% none which satisfy accuracy requirements.	66
[2048+]								
1104	^{237}Np	FISSION	1.0+3	5.0+6	10	7 SRL	Dessauer, G. Subthreshold to several MeV, for Pu^{238} production. SAC Paya, to f, smT, smf, resonance parameters to 2keV.	67
[2047+]								
1105	^{237}Np	FISSION ratio x-sect	5.0+4	1.0+6	5.0	1 LAS	Hansen, G. > 50 KeV: En(res)= 3%; En(calib) = 1%. None which satisfy accuracy requirements.	66
[2049+]								
1106	^{237}Np	FISSION ratio x-sect	1.0+6	1.5+7	1.0	2 LAS	Hansen, G. > 50 KeV: En(res)= 3%; En(calib) = 1%. None which satisfy accuracy requirements.	66
[2050+]								
1107	^{237}Np	FISSION	5. +6	1. +7	5	3 Withdrawn	Smith, R.D. Detector applications. Accuracy at present unobtainable. May be set by integral measurements.	
[1585+]								
1108	^{237}Np	ACTIVATION see comment	FISS	10	1 UKW	Whittaker, A. To ^{238}Pu . For isotope production.	69	
[1585+]								
1109	^{237}Np	M,GAMMA	1.0-3	1.0+3	<10 3 TO 10% SEE COMMENT.	1 BKW GE	Dawson, F.G. Snyder, T. Accuracy 3% interval Thermal-10 eV. Accuracy 5% γ-n. Accuracy 10% γ-γ interval Thermal-1 keV. For thermal reactor calculation and Pu^{238} production. Paya has smT, smf, and resonance parameters to 2keV.	67
[2051+]								
1110	^{237}Np	M,GAMMA	1.0+3	5.0+6	<10 3 TO 10% SEE COMMENT.	2 SRL	Dessauer, G. Accuracy 3% interval Thermal-10 eV. Accuracy 5% γ-n. Accuracy 10% γ-γ interval Thermal-1 keV. For thermal reactor calculation and Pu^{238} production. Paya has smT, smf, and resonance parameters to 2keV.	67
[2052+]								
1111	^{237}Np	MISCELLANEOUS see comment	+	20	2 UKW	Whittaker, A. Quantity: prod.of ^{236}Pu via the 22h ^{237}Np isomer. For isotope production.	69	
[1586+]								
1112	^{238}Np	M,GAMMA	THR	100 b.	2 CRC	Walker, W.H. Unknown cross section.	68	
[1428]								
1113	^{238}Np	M,GAMMA	THR	1.0+3	10	2 BKW	Dawson, F.G. Needed to evaluate Pu^{238} production. Radioactive sample-2. 1days.	67
[2053+]								
1114	^{237}Pu	M2N XSECTION TB	1.5+7	20	2 VNV	Vidal, J.C.	69	
[1572+]								
1115	^{237}Pu	FISSION	1. +3	1.5+7	20	2 VNV	Vidal, J.C.	69
[1573+]								

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P RIN MAX (%)	LAB REQUESTER , COMMENTS	YEAR	
[1116]	^{239}Pu	N2M XSECTION TR	1.5+7	10	2 VNV Vidal, J.C.	68	
[1117]	^{239}Pu	N3M XSECTION TR	1.5+7	20	2 VNV Vidal, J.C.	68	
[1118]	^{239}Pu	PISSION	TR	1.5+7	20	2 VNV Vidal, J.C. Measurements done at Los Alamos may satisfy this request up to 1MeV. Data still unknown.	
[1410]					LAS Preliminary 'Persimmon' bomb shot data of Silbert et al. (WASH-1124 p.99 f.) cover energies between 18eV and 3MeV ($\pm 6\%$ systematic error).		
					LAS Available data by Barton, Koontz: Phys. Rev. <u>162</u> 1373 (1967) (1.0; 1.5; 3.0; 14.9MeV. $\pm 5\%$ on $\sigma(n,f)$), also by CCP Prmagambetov, Smirenkin: Atom. Energiya <u>25</u> 527 (1968) (0.5 to 5.6, 13.08 to 16.90MeV, $\pm 5\%$ on $\sigma(n,f)$).		
[1119]	^{239}Pu	FISION ratio x-sect	1.0+4 5.0+6	3.0	1 LAS Hansen, G. Relative to ^{235}U . --- Appropriate calibration and resolution on Pa. None which satisfy accuracy requirements.	66	
[2055+]					---		
[1120]	^{239}Pu	PISSION	1.0+6 1.0+7	10	1 AI Alter, H. --- Needed to determine criticality of isotopic heat sources. LAS Silbert, WASH-1124, has fission data.	69	
[2056+]	^{239}Pu	NU	1.0+4 1.0+7	5.0	2 AI Alter, H. Needed to determine criticality of isotopic heat sources.	67	
[1122]	^{239}Pu	NU	1.0+4 1.5+7	3.0	1 LRL Hoverton, R.J.	62	
[1411]	^{239}Pu	ABSORPTION see comment	1. +3 1.5+7	10	1 VNV Vidal, J.C. Destruction of ^{239}Pu by all reactions with incident neutrons.	68	
[1429]	^{239}Pu	N,GAMMA	THR	5	2 CRC Walker, W.H. Disagreement between integral (approx 850 b) and differential (approx 530 b) measurements.	68	
[2058+]	^{239}Pu	N,GAMMA	THR	1.0 3 +10	1 BNW Dawson, F.G. Pu ²³⁹ production and to determine criticality of isotopic heat sources. LAS Silbert, WASH-1124, has capture-fission data. INC Young, Nucl. Sci. Eng. <u>30</u> , 365; res. params. to 190eV.	67	
[2059+]	^{239}Pu	N,GAMMA	THR	2.0+6	10	2 GA Russell, J. Needed for comparison with $^{239}\text{Pu}(\gamma,n)$. LAS Silbert, WASH-1124, has data to be analyzed.	69
[2191+]	^{239}Pu	N,GAMMA	1.0+3 1.0+7	10	2 AI Alter, H. Pu ²³⁹ production and to determine criticality of isotopic heat sources. LAS Silbert, WASH-1124, has capture-fission data. INC Young, Nucl. Sci. Eng. <u>30</u> , 365; res. params. to 190eV.	69	
[1128]	^{239}Pu	TOTAL XSECT	1. +5 1. +6	10	2 CAD Barre, J-Y. For fast reactor calculations. Measurements planned at BNC.		
[898]							
[1129]	^{239}Pu	RESON PARAMS TRR	5.0+2	10	1 ANL Avery, R. BET Bayard, R.T. GE Snyder, T. ANL Butler, D.K. For thermal reactors, and to determine statistical parameters for extrapolation to higher energy for fast reactor calculations. Exact requirements on accuracy not yet established. BWL Stephenson is fitting by Ailer formula. ANL Lambropoulos, WASH-1136, L.S. Ailer fit. MTR Simpson, WASH-1124, from scattering data. RPI King, WASH-1124, from scattering data. HAR James, J. Nucl. Energ. <u>22</u> , 78 to 88 eV. NI Adler, NBS Spec. Pub. 299, to 35 eV.	69	
[2081+]							

REF [REG]	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR	
			MIN MAX	(%)				
1130	^{239}Pu	BESON PARAMS	4.0+1 4.5+2	10	1	WIN Campbell, C.G. High resolution. HAR Patrick: measurements complete, analysis proceeding. See also Derrien et al CN 23/76, see Asqhar NP 198, 33 (5/67), also Farrell: WASH 1070, 67(4/67), EANDC(US) 95L, and Rjabov: YF 5.925 (5/67).		
		Withdrawn						
1131	^{239}Pu	BESON PARAMS	2. +2 1. +3	10.6	1	KPK Schmidt, J.J. BN Tavernier, G. fissionwidth neutronwidth gamma width KPK Reviews of available resonance parameters to be found in KPK 120/part I, sect. IV 3, and in BNLL-325, 2nd ed. supplement 2, vol. III, 1965. Also resonance spin assignments desired. SAC Experiments of Derrien et al. (1966 Paris Conf. Vol II p. 195) cover values of total and neutron width for resonances up to 446 eV.		
[9029]								
1132	^{239}Pu	BESON PARAMS	2. +2 1. +3	10	1	CAD Barre, J-Y. Fast reactor calculations, (Doppler effect and reso- nance self shielding). σ_{n} and σ_f up to 660eV obtained at Saclay, σ_t up to 800eV.		
[1485]		fissionwidth gamma width neutronwidth see comment						
1133	^{239}Pu	BESON PARAMS	2.5+2 1. +3	5	2	AZ Haeqqblom, R. Needed for fast reactor calculations. --- σ_n and J for 8 res. between 41.7 and 117.9eV (see WASH-1127 p. 176: no error given). LAS Bomb experiment planned. 'Complete experiment' will be made on Pu^{239} including fission, capture, scattering, and transmission up to 1keV (WASH-1127 p. 131). HAR Meas. of $\sigma(n, f)$ from 100eV to 30keV by Patrick and from 50eV to 30keV by James are probably more oriented towards deduction of $\sigma(n, f)$.		
[1357]		fissionwidth gamma width neutronwidth						
1134	^{239}Pu	DIFF ELASTIC TRR		10	3	WIN Tyror, J.G. --- For long-term improvement of $\sigma(\text{abs})$. No work planned.		
[908]								
1135	^{239}Pu	DIFF ELASTIC	5.0+4	1. +6	10	1	WIN Campbell, C.G. For fast reactors. HAR Cavanagh: in progress to 1.5MeV. ANL Smith: WASH 1071 (1966) above 300keV.	
		Withdrawn						
1136	^{239}Pu	DIFF ELASTIC	1. +5	1. +6	5	CAD Barre, J-Y. For fast reactor calculations. ON $\langle \cos \rangle$	69	
[1486+]								
1137	^{239}Pu	DIFF ELASTIC	1.0+6	3.0+6	10	1	ANL Avery, R. ANL Butler, D.K. --- Energy resolution 500 keV or better. ANL Smith, WASH 1124, to 1.5MeV.	69
[2060+]								
1138	^{239}Pu	DIFF ELASTIC	1.0+6	7.0+6	10	2	LAS Diven, B.C. Energy resolution 500 keV or better. --- ANL Smith, WASH 1124, to 1.5MeV.	67
[2061+]								
1139	^{239}Pu	NONEL GAMMAS	1.2+5		20	3	WIN Campbell, C.G. Low resolution for EN adequate. For study of activation and heat release in core. Note changed incident energy.	
[9780]		energy dist						
1140	^{239}Pu	TOTINELASTIC TR	1.0+7	25	1	KPK Schmidt, J.J. --- Total inelastic or nonelastic cross section. ANL Measurements by A.B. Smith and Hayes (WASH-1071 p.2) between 0.3 and 1.5 MeV.		
[903]								
1141	^{239}Pu	TOTINELASTIC	1.4+6	1.0+7	25	1	CAD Barre, J-Y. Total inelastic or nonelastic cross section. For fast reactor calculations. [1487] see comment	

REF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P	LAB	REQUESTER	CURRENTS	YEAR	
			MIN	MAX	(%)				
1142 [1488]	^{239}Pu	DIFF INELAST TR energy dist	1.0+7	<20	1	CAD	Barré, J-Y. Accuracy 20% for threshold to 1.4 MeV, 10% for 1-10 MeV. Nuclear temp. 10%. Separation of levels up to 1 MeV. Above 1 MeV $\delta(E) = \delta(E') = 100$ keV. For fast reactor calculations.		
			SEE COMMENT.			ANL	Measurements by A.B.Smith and Hayes (WASH-1C71 p.2)		
						GRL	between 0.3 and 1.5 MeV and by Coppola and Knitter		
						HAR	between 1.5 and 5.5 MeV in progress. Measurements		
							of Cavanagh et al. (AERE-R 5972, ENDAC(UK) 1C1) cover		
							level excitation cross section for energies between		
							150 and 1550 keV.		
1143 Withdrawn	^{239}Pu	DIFF INELAST TR energy,angle	8. +6	20	1	WIN	Campbell, C.G. For fast reactors.		
						HAR	Cavanagh: in progress to 1.5 MeV.		
						ALD	Batchelor: planned above 1.5 MeV. See Smith: WASH-1C71,2(9/66), Coppola: ENDAC(P) 660		
							(2/66), and SJA 13,931 (/63).		
1144 [9148]	^{239}Pu	DIFF INELAST TR energy dist	1.0+7	<20	2	KPK	Schmidt, J.J. Accuracy 20% for threshold to 1.4 MeV, 10% for 1-10 MeV. Nuclear temp. 10%. Separation of levels up to 1 MeV. Above 1 MeV $\delta(E) = \delta(E') = 100$ keV. Measurements by A.B.Smith and Hayes (WASH-1C71 p.2)		
						ANL	between 0.3 and 1.5 MeV and by Coppola and Knitter		
						GRL	between 1.5 and 5.5 MeV in progress. Measurements		
						HAR	of Cavanagh et al. (AERE-R 5972, ENDAC(UK) 1C1) cover		
							level excitation cross sections for energies between		
							150 and 1550 keV.		
1145 [915]	^{239}Pu	DIFF INELAST energy dist	1.0+4	1.0+7	10	1	JAP	Japanese Nuclear Data Committee (JNDC). For fast reactor. Xsections for excitation of individual levels desired. Available data insufficient.	68
1146 [2062+]	^{239}Pu	DIFF INELAST energy dist	1.0+5	1.0+7	20	1	KAP	Ehrlich, R. ANL Butler, D.K.	67
						ANL	Smith, WASH 1124 , to 1.5MeV.		
1147 [1412]	^{239}Pu	M2N XSECTION TR	1.5+7	10	1	VNV	Vidal, J.C. ---	68	
						---	Experiment by Mather (Aldermaston) AERE-CVR/PR10 . (April 1968) .		
1148 [2063+]	^{239}Pu	M2N XSECTION TR	1.5+7	10	1	LAS	Barr, D.W. ---	67	
						LAS	Barr, activation data at 18 MeV.		
1149 [2064+]	^{239}Pu	M2N XSECTION	6.0+6	1.0+7	10	2	ANL	Butler, D.K. Needed to predict buildup of Pu^{239} . ---	69
						LAS	Barr, activation data at 18 MeV.		
1150 [1413]	^{239}Pu	M3N XSECTION TR	1.5+7	20	1	VNV	Vidal, J.C. ---	68	
						---	Experiment in progress in BRC		
1151 [922]	^{239}Pu	FISSION	THR		1	2	CRC	Westcott, C.H. CRC Hanna, G.C. Serious discrepancies between available direct measurements.	
1152 [920]	^{239}Pu	FISSION	THR	0.5	1	SAC	Bussac, J. The latest evaluation by Hanna and Westcott may satisfy this request when the discrepancies on the half-life of ^{239}Pu will be resolved. ---		
						ALD	Keith et.al.: JNP 22,477 give a value of (742.0±6.7)b.		
						GRL	Measurements to the required precision are under way by direct comparison to $\sigma_{\text{n},\alpha}$ of standard boron layers.		
						IAE	Review of thermal data to be published.		

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR	
			FWK	%	(%)			
1153	^{239}Pu	FISSION	THR	1.0±0	1.0	RET GE RNL	Bayard, R.T. Snyder, T. Chernick, J. Standard parameter for Pu-fueled reactor. Direct measurements disagree. Improved precision needed for thermal reactors. Gwin, WASH 1093, has data Thermal-30 keV. Westcott Atomic Energy Review.	67
[2665+]						OBL IAE		
1154	^{239}Pu	FISSION	3. ±2 5. ±0	1.0	1	SAC --- GRL	Russac, J. For calculation of temperature coeff. Measurements to this accuracy are planned at CRNL by direct normalization to 2200m/s value.	68
[14140]								
1155	^{239}Pu	FISSION	1.0±0 1.0±7	5.0	1	ANL RET GE ANL	Avery, R. Bayard, R.T. Snyder, T. Butler, D.K. Highest priority for fast reactor calculations. Accuracy 3% below 20 keV, 2% 20 keV to 3 MeV. Accuracy 5% in energy range 3-6 MeV. Verification of current accuracy or intermediate improvement would be useful. Even higher accuracy may be needed, long term. RAP James AERE-M 2157 reviews 1 to 20 keV. See Cabe, Pfletschinger, Decaytter EANDC(E) 1150 .	69
[2066+]			2 TO 5%			LRL ORL	Poenitz, WASH 1124, 30keV to 1.5MeV. Czirr, WASH 1124, 100 eV to 15 keV. Gwin, WASH 1093, Thermal to 30keV.	
1156	^{239}Pu	FISSION	1. ±2 5. ±6	3	2	WIN ---	Campbell, C.G. For fast reactors. Note reduced priority and energy range. Re-evaluation needed but accuracy requirement probab- ly not met by available experimental data.	
[9268+]			(E-2E)					
1157	^{239}Pu	FISSION	4.4±2 8.5±2	16	1	JAE	Japanese Nuclear Data Committee (JNDC). For fast reactor. Discrepancies exist among measurements : "PETREL", UK, Ryabov.	68
[1331]								
1158	^{239}Pu	FISSION	5. ±2 1.5±7	< 5	1	CAD	Barre, J-Y. For spectrum index analysis it is necessary to obtain 1% accuracy on the fission ratio $^{239}\text{Pu} / ^{235}\text{U}$. For fast reactor calculations. Measurements done by Blons at Saclay up to 25keV.	
[9280]			.5-50KEV :4% 50KEV -2.5MEV :2%					
1159	^{239}Pu	FISSION	1. ±3 4.1±8	< 3	3	WIN ---	Smith, P.D. Accuracy 3% at 1 keV to 1/2% at 40 keV (E-2E). For fast reactors. Accuracy at present unobtainable. May be met by inte- gral measurements.	
Withdrawn								
1160	^{239}Pu	FISSION ratio x-sect	1.0±3 1.4±7	1.0	1	ANL ---	Butler, D.K. Relative to ^{235}U . As an alternative to measuring $\sigma(n,f)$ for Pu^{239} or a verification thereof. Energy resolution 3%, energy calibration 1%. Intermediate accuracy would be useful. See Cabe, Pfletschinger EANDC(E) 1150 . Smith WASH 1124 to be published. James AERE-M 2065 gives least squares fit.	69
[2069+]						LAS HAR		
1161	^{239}Pu	FISSION ratio x-sect	1.0±4 1.5±7	3.0	1	LAS ---	Hansen, G. Relative to ^{235}U . As an alternative to measuring $\sigma(n,f)$ for Pu^{239} or a verification thereof. Energy resolution 3%, energy calibration 1%. Intermediate accuracy would be useful. See Cabe, Pfletschinger EANDC(E) 1150 . Smith WASH 1124 to be published. James AERE-M 2065 gives least squares fit.	67
[2068+]			1 TO 3%			LAS HAR		

REF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR
			MID MAX	(%)			
1162	^{239}Pu	PISSION ratio x-sect	1.0+0 1.5+7	1.0	1	LAS ---	66
[2970+]						Hansen, G. Relative to ^{235}U . Energy resolution 3%, energy calibration 1%. None which satisfy accuracy requirements.	
1163	^{239}Pu	PISSION Withdrawn	4.0+0 1. +6	0.5	3	WIN ---	
						Smith, R.D. Accuracy 0.5% (E-2E). For fast reactors. Accuracy at present unobtainable. May be met by integral measurements.	
1164	^{239}Pu	PISSION [2667+]	5.0+5 8.0+6	1.0	1	NCS ---	69
						Landon, R.H. Highest priority for fast reactor calculations. Accuracy 3% below 20 keV, 2% 20 keV to 3 MeV. Accuracy 5% in energy range 3-6 MeV. Verification of current accuracy or intermediate improvement would be useful. Even higher accuracy may be needed, long term. THR James AERE-H 2157 reviews 1 to 2 ⁿ keV. See Cabe, Pfletschinger, Deruytter ERNDC(B) 115H . ANL Poenitz, WASH 1124, 30 keV to 1.5 MeV. LRL Czirr, WASH 1124, 100 eV to 15 keV. ORL Gwin, WASH 1093, Thermal to 30 keV.	
1165	^{239}Pu	PISSION Withdrawn	1. +6 5. +6 < 5	3	WIN ---	Smith, R.D. Accuracy 0.5-5% (E-2E). For fast reactor. Accuracy at present unobtainable. May be met by integral measurements.	
[937]						SAC ---	
1166	^{239}Pu	ETA [2675+]	THR	0.5	1	Russac, J. ---	
						The latest evaluation by Hanna and Westcott may satisfy this request when the discrepancies on the half-life of ^{239}U will be resolved. ANL De Volpi: measurement in progress. IAE Review of thermal data to be published.	
1167	^{239}Pu	ETA [2675+]	THR	1.0+0	1.0	PNL GE ---	67
						Chernick, J. Snyder, T. For Pu-fueled reactor calculations. Desire accuracy to 0.5%, Thermal to 1eV. Standard parameter, want value at 0.025 eV. IAE Westcott, Atomic Energy Reviews. ANL De Volpi has unpublished data at thermal. ORL Gwin has alpha. RPI Weinstein has nubar.	
1168	^{239}Pu	ETA [940]	1. -2 1. +0	0.5	2	CRC CPC	
						Westcott, C.H. Hanna, G.C. ORNL In bath measurement (Hacklin et al. N.Sci. Eng. 18, 101, 1962) has important uncertainty associated with neutron spectrum, and value is higher than recent monokinetic measurement at MTR (Smith et al. IDO-17083, 1966).	
1169	^{239}Pu	ETA ratio x-sect [9420]	1. -2 2. -1 (.02EV STEPS)	0.8	2	WIN ---	
						Tyrot, J.G. Requested: eta(E) /eta (E0), E0=0.0253eV. For temperature coefficient work. Note increase in priority.	
1170	^{239}Pu	ETA [2676+]	1.0+0 1.0+1	3.0	2	GE ORL ---	67
						Snyder, T. Haienschein, P.C. For Pu-fueled reactor calculations. IAE Westcott, Atomic Energy Reviews. ANL De Volpi has unpublished data at thermal. ORL Gwin has alpha. RPI Weinstein has nubar.	
1171	^{239}Pu	ETA Withdrawn	1. 1+1 3.0+2	4	1	WIN ---	
						Kinchin, G.H. Accuracy: 4% (E-2E). For thermal reactors. Patrick: measurements complete, analysis proceeding. See INDSWG 69 (N/64).	

REF [REG]	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	TPAR
1172	^{239}Pu	ALPHA	1.0×2	1.0 ± 5	5	1 WIN	Campbell, C.G. Accuracy: 5% (E-2E). For fast reactors. IRR Soverby: provisional data available up to 30 keV; SM1C/41.
	Withdrawn						LAS Most underground experiment planned. See de Saussure: 66PARIS II, 233(C/66) and Bell: ALDC8513 (1/67).
1173	^{239}Pu	ALPHA	1.0×2	1.0 ± 7	10 3 TO 10%	1 ANL	Avery, R. BET GE ANL ORL Accuracy 5% in range 100 eV to 1 keV. Accuracy 3% in range 1keV to 50 keV. Accuracy 5% in range 50 to 600 keV. Accuracy 10% in range 600 keV to 10 MeV. Accuracy 20% in range 100 eV to 600keV useful. Energy resolution needed below 20 keV not yet determined. Capture cross section would be equally useful. ORL Gwin WASH 1093, thermal-to 3 keV. LRL Czirr, WASH 1124, 100 eV to 15 keV. See also ZANDC (2) 1150 . GA HAR Priesenhahn, WASH 1124, 0.61 eV to 30 keV. Patrick, Schonberg, AERE PR/SP-14 .
	[2077+]						
1174	^{239}Pu	ALPHA	1.0 ± 3	4.0 ± 8	2	3 WIN	Smith, R.D. Accuracy 2% (E-2E). For fast reactors. --- Accuracy at present unobtainable. May be set by integral measurements.
	Withdrawn						
1175	^{239}Pu	NU	THB	1.0 ± 7	< 1 .5% 1KEV -3KEV. 1.5% US EPUL.	1 AI ANL GE ANL ORL --- ALD PR	Alter, R. Avery, R. Snyder, T. Butler, D.K. Craven, C.W. Highest priority for fast reactor calculations. Rather (priv. comm.) quotes 1-3% 77 keV to 8 MeV. Soleilhac (priv. comm.): <1% 1.3 to 15 MeV.
	[2192]						
1176	^{239}Pu	NU	4.0 ± 8	4.0 ± 6	1	1 WIN	Campbell, C.G. For fast reactors. Existing data are discrepant. See Pillisore: JNP 22, 79(2/68) and Hopkins: Nucl.Phys. 58 (1963) More work required.
	Withdrawn						
1177	^{239}Pu	NU	4.0 ± 8	4.0 ± 6	(E-3E)	1 WIN	Campbell, C.G. For fast reactors. Note relaxed accuracy requirement. --- ACD BEC In progress, Rather. In progress, Soleilhac et al. Requirement probably met, evaluation needed.
	[9498]						
1178	^{239}Pu	NU	5.0 ± 8	2.5 ± 6	1	1 CAD	Batte, J-Y. For fast reactor calculations.
	[1415]						
1179	^{239}Pu	F NEUT DELAY THB	5.0 ± 6	5.0	2 ANL	Avery, R. ANL Butler, D.K. Needed for analysis of fast criticals and fast reactor calculations. Yield, half-life, and energy needed.	
	[2071+]						
1180	^{239}Pu	F NEUT DELAY THB	1.5 ± 7	5.0	1 LAS	Kepin, G.B. Needed for analysis of fast criticals and fast reactor calculations. Absolute numbers of delayed neutrons required. High resolution. Time and energy spectra also of interest. Isotopic signatures for nondestructive assay.	
	[2072+]						
1181	^{239}Pu	F NEUT DELAY THB	1.4 ± 7	10	2 BNL	Kouts, R.J. Incident energy: thermal, 2.2, 18MeV. Needed for analysis of fast criticals and fast reactor calculations. Spectrum of neutrons in different groups characterized by differing decay constants.	
	[2073+]						

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER	COMMENTS	TPAP
			RHS	HAT	(S)			
1182	^{239}Pu	F NEUT DELAY PISS		10	2	BNL	Kouts, H.J. Needed for analysis of fast criticals and fast reactor calculations. Spectrum of neutrons in different groups characterized by differing decay constants.	69
	[2078+]							
1183	^{239}Pu	F NEUT DELAY + energy dist		10 SEE COMMENT	1	PAB	Pastoin, J. Accuracy given for the number of neutrons in 0.7MeV intervals between 1' and 2MeV.	69
	[951]							
1184	^{239}Pu	SPECT PISS N G. +n 1.8+7		5	1	CAD	Barre, J-Y. Fast reactor calculations. Recent measurements by Fabry and Grundl showed that the averaged energy of the fission spectrum is increased by 2%.	69
	[1489+]							
1185	^{239}Pu	SPECT PISS N 1. +3 1.9+5		10	2	CAD	Ravier, J. Withdrawn	
1186	^{239}Pu	SPECT PISS N 1. +5		2 OR $\langle E \rangle$. 10% OR DN1,DN2.	2	WIS	Campbell, C.G. For fast reactors. Whittaker, A. Wright, S.B. For reaction rate analysis. DN1 = no. of neutrons above 5MeV, DN2 = no. of neutrons below .25MeV. --- Integral and differential data are discrepant.	69
	[115C]							
1187	^{239}Pu	PISS YIELD THR		3.0	2	BET	Bayard, R.T. Fission product yield of Xe^{135} . For calculation of fission product poisons. Cumulative and direct (inclusive of 15 K isomer) is wanted.	67
	[2482+]							
1188	^{239}Pu	PISS YIELD THR		1.0	2	BET	Bayard, R.T. SRL Dessauer, G. Fission product yield of Cs^{137} . For burnup indicator standard.	67
	[2083+]							
1189	^{239}Pu	PISS YIELD THR		3.0	2	BET	Bayard, R.T. Fission product yield of U^{147} . For calculation of fission product poisons.	67
	[2084+]							
1190	^{239}Pu	PISS YIELD THR		3.0	2	BET	Bayard, R.T. Fission product yield of Sm^{149} . For calculation of fission product poisons.	67
	[2085+]							
1191	^{239}Pu	PISS YIELD THR	1.5+7	15	2	LAS	Keepin, G.R. Absolute yields of fission isomers versus times (> 10ns) required. Isotopic signatures nondestructive assay technique. None which gives the necessary energy dependence.	69
	[2086+]	see comment						
1192	^{239}Pu	PISS PROD GS THR	1.5+7	5.0	1	LAS	Keepin, G.R. Quantity: $P(E_\gamma, T_1/2)$. High resolution absolute γ -ray yields required. Time and energy spectra also of interest. Ultimately, assign discrete γ 's to specific fission products. Isotopic signatures for nondestructive assay.	69
	[2078+]	see comment						
1193	^{239}Pu	PISS PROD GS THR	1.4+7	35	1	BNL	Kouts, H.J. Quantity: $P(E_\gamma, T_1/2)$. Incident energy: thermal, 2. 2, 18MeV. Delayed γ yields within factors of two from neutron induced fission products. For $E_\gamma > 2$ meV, energy distributions and half-lives required.	69
	[2079+]							
1194	^{239}Pu	PISS PROD GS PISS		35	1	BNL	Kouts, H.J. Quantity: $P(E_\gamma, T_1/2)$. Delayed γ yields within factors of two from neutron induced fission products. For $E_\gamma > 2$ meV, energy distributions and half-lives required.	69
	[2080+]							

REF NUMBER [REG]	NUCLIDE QUANTITY	ENERGY (EV)	ACCURACY P	RIB	RIBESTER , COMMENTS	YEAR	
		MIN MAX	(%)				
1195 ^{239}Pu ABSORPTION Withdrawn	1. -2 8. -1	1	1	RIB HAR	Kinchin, G.R. Accuracy: 1% (P-1.5%). For thermal reactors. Patrick: measurements above 1eV complete, analysis in progress.		
1196 ^{239}Pu ABSORPTION Withdrawn	1.3+3 1.5+1	3	1	RIB --- HAR	Kinchin, G.R. Accuracy: 3% (E-2F). For thermal reactors. Patrick: measurements above 1eV complete, analysis in progress.		
1197 ^{239}Pu ABSORPTION Withdrawn	1.5+1 3.1+2	8	1	RIB HAR	Kinchin, G.R. Accuracy: 4% (E-2E). For thermal reactors. Patrick: measurements above 1eV complete, analysis in progress.		
1198 ^{239}Pu ABSORPTION Withdrawn	3.0+2 2.7+3	10	1	RIB HAR	Kinchin, G.R. Accuracy: 11% (E-2E). For thermal reactors. Patrick: measurements above 1eV complete, analysis in progress.		
1199 ^{239}Pu N,GAMMA [967]	THB		1	2	CBC CRC	Westcott, C.H. Hanna, G.C. Confirmation of existing alpha values desirable.	
1200 ^{239}Pu N,GAMMA [1507+]	2.5-2	0.5	1	SAC	Bussac, J.	69	
						The latest evaluation by Hanna and Westcott may satisfy this request when the discrepancies on the half-life of ^{239}U will be resolved.	
1201 ^{239}Pu N,GAMMA [963+]	N, (alpha)	6. +2 5. +0	< 1	1	SAC	Bussac, J. Accuracy ~5% for thermal, 1% above. Thermal region and resonance integral. For calculation of temperature coeff. R.J. Cabell (NERE-R 5874) gives for the 2203m/s value 277.9 ± 13.7 h. ORL Guin et al.: experiment in progress from thermal to 30 keV (WASH 1093, 106).	
1202 ^{239}Pu N,GAMMA [968]	N,GAMMA (res.integ)	1. +0 5.0+2	5	2	CPC CRC	Westcott, C.H. Hanna, G.C. For capture resonance integral.	
1203 ^{239}Pu N,GAMMA [1490]	N,GAMMA (alpha)	2. +2 5. +2	10	2	CAD	Barre, J-Y. For fast reactor calculations. CCP Piabov et al., At. Energia 25 (1968) 351: high resolution. ALPHA measured with 36°l scint.tank, $\sigma(n,f)$ with fission ch. 5eV ... 25keV. LRL Czirr, G.I... 10keV in progress.	
1204 ^{239}Pu N,GAMMA [969]	N,GAMMA (alpha)	2. +2 1. +5 .2-.5KEV :10%	<10 5% ABOVE	1	KPK	Schmidt, J.J. Large inconsistencies between several measurements still not removed. Schomberg, Sowerby, Evans: EANDC(UK) 100AL; Patrick, Schomberg, Sowerby: EANDC(UK) 96AL : 1...25keV. TOP in progress. CCP Piabov et al., At. Energia 23 (1968) 351: high resolution. ALPHA measured with 36°l scint.tank, $\sigma(n,f)$ with fission ch. 5eV ... 25keV. KPK Weissner, Bandl, in progress. GA Priesenhahn et al. in progress. LRL Czirr, G.I... 10keV. in progress. SAC Blona et al. in progress. ORL Guin et al. (WASH 1093, 106) (lin.ac., TOP) in pro- gress.	
1205 ^{239}Pu N,GAMMA [971]	N,GAMMA (alpha)	5. +2 2. +4	3	1	AE	Haenggblom, H. Alternative quantity alpha(E). HAR Recent results from Guin (EANDC(US) 114'A'), and from Patrick and Schomberg are about 15 and 20% accurate. LRL Meas. by Czirr from 1.eV to 10keV is reported in WASH-1127 p.106; $\langle\sigma(n,s)\rangle/\langle\sigma(n,f)\rangle$ is given but not the accuracy which probably does not reach 3%. LAS Bomb experiment planned. Complete experiment will be made on Pu ²³⁹ including fission, capture, scattering, and transmission up to 1keV (WASH-1127 p.131). GA KPK Alpha meas. to 30keV (Priesenhahn, WASH-1124 p.46), and from 7 to 60keV (Weissner, EANDC(E) 115'N' p.3) are in course.	

REF	NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY ±	LAB	REQUESTER , COMMENTS	YEAR	
			MIN	MAX	(S)			
1206 [1491]	^{239}Pu	μ,GAMMA (alpha)	5. +2.8. +6	<10 50 TO10KEV	1 CAD --- RNR	Barre, J-Y. For fast reactor calculations. Schomberg, Sowerby, Evans: ENDAC(UK) 100NL; Patrick, Schomberg, Sowerby: ENDAC(UK) 96NL : 1...25keV TDF in progress. CCP Ryabov et al., At. Energya 22 (1968) 351: high resolution. ALPHA measured with 360l scint.tank, <(n,f) with fission ch. 5eV ...25keV. LRL Czirr, J. 1...10keV in progress.		
1207 [1330]	^{239}Pu	μ,GAMMA (alpha)	1.0±3	2.7±5	1C	1 JNE	Japanese Nuclear Data Committee (JNDC). For fast reactor. Large discrepancies exist among measurements by Schomberg, Szwir, Ryabov.	68
1208 [981]	^{239}Pu	TOTAL XSECT	1. +4	1.0±6	1C	1 KPK	Schmidt, J. J. Between 1F and 10C kev at 1 ns/u resolution.	
1209 [1492]	^{239}Pu	TOTAL XSECT	1.0±4	2.5±6	1C	2 CAD	Barre, J-Y. For fast reactor calculations.	
1210 [1493+]	^{239}Pu	RESON PARMS	0. +1	2. +3	1D	1 CAD	Barre, J-Y. Fast reactor calculations, (Doppler effect and reso- nance self shielding). Recent experiments at Geel and Harwell.	69
1211 [2096+]	^{239}Pu	RESON PARMS	1.0±2	5.2±3	1C	3 ANL --- ANL GEL GPL GEL	Avery, R. Butler, D.K. Needed for fast calculations including Doppler effect Weigmann J.Nucl.Energ. 22 117, 38 to 82° eV. Kolar J.Nucl.Energ. 22 299, 25eV to 5.7 keV. Migneco Nucl.Phys. A112 527, fission to 3.8keV	69
1212 [986+]	^{239}Pu	NONREL GAMMAS	1.2±5	energy dist	2D	3 WIN	Campbell, C.G. Low resolution for Ra adequate. For study of activation and heat release in core. Note changed incident energy.	
1213 [2193]	^{239}Pu	TOTINELASTIC	0.5±4	1.0±7	20	2 GE --- ANL	Snyder, T. Butler, D.K. Emission cross sections might be equally useful at the higher energies. No data.	66 69
1214 [989]	^{239}Pu	DIFF INELAST TR	4. +6	25	3 CAD	Barre, J-Y. For fast reactor calculations.		
1215 [992]	^{239}Pu	DIFF INELAST TR	4. +6	40	2 WIN ---	Campbell, C.G. For fast reactors. No experimental data available. Theory may suffice. Evaluation needed.		
1216 [993]	^{239}Pu	DIFF INELAST	1.0±4	1.0±7	10	1 JNE	Japanese Nuclear Data Committee (JNDC). For fast reactor. Sections for excitation of individual levels desired.	68
1217 [2084+]	^{239}Pu	FISSION	1.0±2	5.0±8	1 WIN --- GEL	Campbell, C.G. Accuracy: 10mb. For fast reactors. In progress. See Diven: LA-3586 P3WA(D/66), also Gilboy: 66PARIS I, 295(D/66), Perkin: JVE 1012, 023(6/65), and Myers: Nucl.Phys. 81, 1 (6/66).		
1218 [1494+]	^{239}Pu	FISSION	1. +3	1.5±7	5	2 CAD	Barre, J-Y. For spectrum index analysis it is necessary to obtain 2% accuracy on the fission ratio $^{239}\text{Pu} / ^{239}\text{U}$. For fast reactor calculations. Recent fission experiment at Geel.	69
1219 [2087+]	^{239}Pu	FISSION	1.0±3	1.0±5	2.0	3 RDT ---	Hannum, W.H. Relative to ^{235}U , < 10keV ; En(xsec)=6% ; En(calib)=2%. None which satisfy accuracy requirements.	67

BEP [REG]	NUCLIDE	QUANTITY	ENERGY (EV)		ACCURACY (%)	P	LAB	REQUESTER, COMMENTS	YEAR
			MIN	MAX					
1226 [2688+]	^{240}Pu	FISSION ratio x-sect	1.0+3	1.5+7	2.0	2	LAS	Hansen, G. Relative to ^{235}U . < 100 keV : En(res) = 6%; En(calib) = 2% > 100 keV : En(res) = 3%; En(calib) = 2%. None which satisfy accuracy requirements.	67
1221 [2194]	^{240}Pu	FISSION	5. +5	1.0+7	8	1	ANL	Snyder, T. Butler, D.K. --- Important for fast reactor calculations. No data to 8% accuracy.	69
1222 [2095+]	^{240}Pu	ALPHA	1.5+5	7.0+6	10	2	LRL	Rowerton, R.J.	62
1223 [10008]	^{240}Pu	NU	TR	5. +6	2	3	WIN	Campbell, C.G. For fast reactors. Note reduced priority. Evaluation by Fillmore, J.Nucl.Eng 22,79 (Feb. 1968) is up-to-date, but accuracy requirement probably not met.	67
1224 [2689+]	^{240}Pu	NU	TR	1.0+7	5.0	2	ANL	Avery, P. Butler, D.K. --- Accuracy of 2% may ultimately be needed. Fillmore, J.Nucl.Energ. 22 79 reviews status.	69
1225 [1416]	^{240}Pu	NU	5. +8	8. +6	2	2	CAD	Barre, J-Y. For fast reactor calculations.	68
1226 [1495+]	^{240}Pu	NU	5. +4	8. +6	5	1	CAD	Barre, J-Y. For fast reactor calculations.	69
1227 [10028]	^{240}Pu	NU	5. +5	1.5+7	5	1	EPR BN	Schmidt, J.J. Tavernier, G. 6% values at 0.1; 1.0 and 1.6 MeV, see De Vroey, J.Nucl.En. A/R 26 (1966) 191.	69
1228 [2092+]	^{240}Pu	P NEUT DELAY PISS see comment			10	2	BNL	Kouts, H.J. Quantity: P(\bar{n}'). Spectrum of neutrons in the different groups characterized by differing decay constants.	69
1229 [2090+]	^{240}Pu	P NEUT DELAY TR see comment		1.5+7	5.0	2	LAS	Keepin, G.R. Quantity: P(\bar{n}'). Absolute numbers of delayed neutrons required. High resolution. Time and energy spectra also of interest. Isotopic signatures for nondestructive assay.	69
1230 [2091+]	^{240}Pu	P NEUT DELAY	2.2+6	1.5+7	10	2	BNL	Kouts, H.J. Incident energy: 2.2, 10 MeV. Quantity: P(\bar{n}'). Spectrum of neutrons in the different groups characterized by differing decay constants.	69
1231 [2100+]	^{240}Pu	PISS YIELD	TR	1.5+7	15	3	LAS	Keepin, G.R. Absolute yields of fission isomers versus times (> 10ns) required. Isotopic signatures for nondestructive assay technique. None which gives the necessary energy dependence.	69
1232 [2099+]	^{240}Pu	PISS PROD GS PISS see comment			35	1	ANL	Kouts, H.J. Quantity: P($F_I, T^{1/2}$). Delayed gamma yields with factors of two from neutron induced fission products. For $E_\gamma > 2$ MeV, energy distributions and half-lives required.	69
1233 [2097+]	^{240}Pu	PISS PROD GS TR		1.5+7	5.0	2	LAS	Keepin, G.R. Quantity: P($E_\gamma, T^{1/2}$). High-resolution absolute gamma-ray yields required. Time and energy spectra also of interest. Ultimately, assign discrete γ 's to specific products. Isotopic signatures for nondestructive assay.	69

BPF NUCLIDE	QUANTITY	ENERGY (EV)	ACCURACY P	LAB REQUESTED	CURRENTS	YEAR	
(REC)		RIN MAX	(S)				
1234 [2098+]	^{240}Pu FISSION PRODUCTS GS	2.2 ± 6	1.4 ± 7	35	1 BNL see comment	Koots, M.J. Incident energy: 2.2, 14 MeV. Quantity: $P(F_7, T^{\pm 2})$. Delayed gamma yields with factors of two from neutron induced fission products. For $E_F > 2$ MeV, energy distributions and half-lives required.	69
1235 [1014]	^{240}Pu N,GAMMA (res.params)	THR	5.7 ± 3	16	1 JAP	Japanese Nuclear Data Committee (JNDC). For fast reactor. EANDC(UR) 153 "AL" for data from 26 eV to 1.45 keV. Inconsistency exists.	68
1236 [2093+]	^{240}Pu N,GAMMA Withdrawn	THR	$8. \pm 5$	SPE CORRECT	SAC CAD	Russac, J. Pavier, J. Accuracy: thermal: 0.5% -5keV : 1% 20keV -50keV : 15% 50keV -100keV : 25%.	-
1237 [2093+]	^{240}Pu N,GAMMA	THR	1.0 ± 2	3.0	1 GEL RAR	Snyder, T. Improved precision needed for thermal reactors. Weinmann, J. Nucl. Energ. 22 317, 38 to 820 eV. Asghar, Paris conference INDC-156, 20 to 95 eV.	67
1238 [1496]	^{240}Pu N,GAMMA see comment	$6. \pm 5$	$5. \pm 9$	< 1	1 SAC HAR HAR	Russac, J. Thermal region and resonance integral. Several older measurements at thermal energy are available, but do not have the required precision. The latest value by Cabell (AERE R-5874) is 273.7 ± 13.1 b at 2200eV/s. Cabell, Wilkins: J. Jnorg. Nucl. Chem. 28 (1966) 2467 given: thermal value, 5% accuracy.	-
1239 [10078]	^{240}Pu N,GAMMA	$1. \pm 2$	$4. \pm 6$	8 (E-E)	2 WIN HAR	Campbell, C.G. For fast reactors. Note reduced priority. Data available to 50.1b, Hoxon: to be published. Evaluation needed.	-
1240 [1497+]	^{240}Pu N,GAMMA	$2. \pm 2$	$3. \pm 6$	10	2 CAD HAR GEL	Barre, J-Y. For fast reactor calculations. Asghar et al., INDC-156 20...95GeV. Weinmann, Schaid give res.params. up to 820eV. (Proc Neutron Cross Sect. and Techn., Washington DC 1968 vol. I, p. 533).	67
1241 [2098+]	^{240}Pu N,GAMMA	5.0 ± 2	1.5 ± 5	5.0	1 ANL GE ANL GRL RPI	Avery, R. Snyder, T. Butler, D.K. Accuracy of 15% would be useful. High priority for fast reactor calculations. Weinmann, J. Nucl. Energ. 22 317, 38 to 820 eV. Hockenbury, WASH 1136, 60 eV to 90 keV.	69
1242 [1358]	^{240}Pu N,GAMMA	$1. \pm 3$	$5. \pm 5$	20	2 AP RPI LAS	Jitlow, K. Energy dependence within 17%. Needed for fast reactor calculations. Measurements from 20GeV to 80keV (WASH-1127 p. 172) have an expected accuracy of 15-20% from 5 to 80keV. Petrel bomb meas. said to go up to 14MeV but results above 1keV have never been published (66WASH p. 903).	-
1243 [1010]	^{240}Pu N,GAMMA	$5. \pm 3$	$1. \pm 6$	70	1 EPK BN	Schmidt, J.J. Tavernier, G. 1 ns/m resolution needed. Rac plans measurements in resonance region. Presently only available nuclear explosion measurements of Diven et al. between 20 eV and 3 MeV still being analyzed. (Washington, Cross Section Technology Conf., March 1966). No activity known.	-

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REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YEAR	
			MIN	MAX	(%)			
1284	^{240}Pu	Σ ,GAMMA [10110]	$3. \times 10^{-6}$	$1. \times 6$	10	3 WIN	Campbell, C.G. For fast reactors. Note reduced priority. RAR Data available to 10keV (ENDF.B), Maxon:to be publ. Evaluation needed.	
1285	^{240}Pu	Σ ,GAMMA Withdrawn	$1. \times 6$	$5. \times 6$		1 WIN	Campbell, C.G. Accuracy: 0.1% (MeV) barns. For fast reactors. No work planned.	
1286	^{240}Pu	TOTAL XSECT	$1. \times 3$	$1. \times 6$	10.0	2 KPK	Schmidt, J.J. RAR Simpson et al., TRR have completed measurements.	
1287	^{240}Pu	TOTAL XSECT	$1. \times 3$	1.5×7	10	3 CAD	Barre, J-Y. For fast reactor calculations.	
1288	^{240}Pu	TOTAL XSECT	$1. \times 6$	1.5×7	10	3 KPK	Schmidt, J.J. No measurements available.	
1289	^{240}Pu	RESON PARAMS THR	4.1×2	10	2 KAP ANL	Ehrlich, R. Avery, R. Accuracy 5% from thermal to 100 eV. Accuracy 1% from 100 eV to 400 eV. 2% Would be useful for thermal and fast reactor calculations. INC Smith, WASH 1136 ,is evaluating for ENDF/B .	67	
1290	^{240}Pu	RESON PARAMS [1499]	$2. \times 1$	$2. \times 2$	10	2 CAD	Barre, J-Y. Pission experiment in progress in Saclay. RAR Reson params available up to 35 eV from Moore et al. (Phys. Rev. B 135, 945, 1964). Preliminary neutron width between 10 and 50eV from Pattenden, Barisley (BNDC(UK) 35"LR", 1964). CRC Total and neutron width between 17 and 31 eV from Craig and Westcott (AECL-1748, 1964). DAV Sauter et al.(Wash. Conf.1968 D10) derived g- values from scattering measurements for resonances below 35eV. See also IDO-17174. SAC Measurement in progress.	
1291	^{240}Pu	RESON PARAMS [1019]	3.5×1	$2. \times 2$	10.0	2 RPK	Schmidt, J.J. Tavernier, G. RAR Reson params available up to 35 eV from Moore et al. (Phys. Rev. B 135, 945, 1964). Preliminary neutron width between 10 and 50eV from Pattenden, Barisley (BNDC(UK) 35"LR", 1964). CRC Total and neutron width between 17 and 31 eV from Craig and Westcott (AECL-1748, 1964). SAC Measurement in progress. DAV Sauter et al.(Wash. Conf.1968 D10) derived g- values from scattering measurements for resonances below 35eV. See also IDO-17174.	
1292	^{240}Pu	NONEL GAMMAS [10660]	1.2×5		20	1 WIN	Campbell, C.G. Low resolution for En adequate. For study of activation and heat release in core.	
1293	^{240}Pu	FISSION [1332]	THR	1.0×2	10	1 JAE	Japanese Nuclear Data Committee (JNDC). For fast reactor. Above 50eV levels missing.	68
1294	^{240}Pu	FISSION	THR		1	2 SAC	Auxsec, J. For thermal reactor calculations.	69
1295	^{240}Pu	FISSION	THR	3.1×8	10	1 ANL GE ANL	Avery, R. Snyder, T. Butler, D.K. Accuracy to 3% from thermal to 10 eV, 10% from 1keV to 30 keV. Ratio to Σ_{238} or Pu239 would be useful. INC Smith, WASH-1136 , is evaluating for ENDF/B. RAR JARAU, AFNPFR-A 2157 , evaluates to 20 keV.	69

REF NUCLIDE QUANTITY [REG]	ENERGY(EV) ACCURACY P MIN MAX (%)	LAB REQUESTER , COMMENTS	YEAR
1256 ^{241}Pu FISSION Withdrawn	2.5-2	2 3 WIN Kinchin, G.H. For thermal reactors. --- ALD White: data to 3%, CN23/58. See Watanabe: TN-1712 (6/66), and James: RP 65,353 (3/65), and RANDC(P) 570 (2/65).	
1257 ^{241}Pu FISSION [1575+] (eta) (alpha)	+ 2.1-2	1 3 CRC Hanna, G.C. Below .025eV, relative to .025eV value to establish shape of cross section versus energy curve.	
1258 ^{241}Pu FISSION Withdrawn	1. +2 1.5+5	5 2 WIN Campbell, C.G. Accuracy: 5% (P-2E). For fast reactors. --- ALD White: JME 21,671 (1967). HAN James: ANL732C, 16 and further available up to 45keV. GRL Measurement planned. SAC Measurement planned. See Diven: LA-3586 P3W8(D/66), Gilboy: RANDC(E) 660 (2/66), and Perkin: JME AB19, #23 (6/65).	
1259 ^{241}Pu FISSION [1028]	1. +3 1. +6	5 2 CAD Barre, J-Y. For spectrum index analysis it is necessary to obtain 2% accuracy on the fission ratio $^{241}\text{Pu} / ^{239}\text{N}$. For fast reactor calculations.	
1260 ^{241}Pu FISSION ratio x-sect [2102+]	1.0+4 1.5+7	1.0 2 LAS Hansen, G. Relative to ^{235}U . --- Energy resolution 3%, energy calibration 1%. None which satisfy accuracy requirements.	66
1261 ^{241}Pu FISSION [13598]	2. +6 1. +7 <10	2 AE Haeggblom, R. Needed for fast reactor calculations. Note change in requested energy interval. --- LAS Smith's ratio measurements combined to others' define $\epsilon(n,f)$ to about 10%.	
1262 ^{241}Pu ETA [1569+]	THR	1 2 SAC Bussac, J. For thermal reactor calculations.	69
1263 ^{241}Pu ETA [1032]	THR	1.5 2 CRC Hanna, G.C. CPC Westcott, C.R. For thermal reactors.	
1264 ^{241}Pu ETA ratio x-sect [10368]	T. -2 1. +8	2 2 WIN Tyror, J.G. Requested: eta(E) /eta (Eo), Eo=0.0253eV. For thermal reactors. --- Uncertain whether requirement met, evaluation needed.	
1265 ^{241}Pu ETA Withdrawn	2.5-2	2 2 WIN Kinchin, G.H. For thermal reactors. --- MTR Fast, (Idaho) IM/1C60 (/0235) to 0.8%.	
1266 ^{241}Pu ETA Withdrawn	+ 5. -2	6 2 WIN Kinchin, G.H. --- Quantity: eta(E) /eta (Eo). For thermal reactors. MTR Smith, (Idaho): planned 0.02-10eV.	
1267 ^{241}Pu ETA [1038] (alpha)	1. +0 5.0+2	5 2 CRC Westcott, C.R. CRC Hanna, G.C. For thermal reactors.	
1268 ^{241}Pu ETA [1039] ratio x-sect	1. +0 1.5+1	6 2 WIN Tyror, J.G. Requested: eta(E) /eta (Eo), Eo=0.0253eV. For thermal reactors. --- Uncertain whether requirement met, evaluation needed.	
1269 ^{241}Pu ETA [10408] ratio x-sect	1.5+1 3. +2	8 3 WIN Tyror, J.G. Requested: eta(E) /eta (Eo), Eo=0.0253eV. For thermal reactors. Note reduced priority.	

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	TELE
			MIN	MAX	(%)		
1270 [1641+]	^{241}Pu	ETA ratio x-sect	3. +2	2. +3	20	3 WIN	Tyror, J.G. Requested: eta(E) /eta (Po), Eo=0.0253eV. For thermal reactors. Note reduced priority.
1271 [1643+]	^{241}Pu	ALPHA	1. +2	1. +6	20 (E-2E)	3 WIN	Campbell, C.G. For fast reactors. Note reduced priority.
1272 [2106+]	^{241}Pu	ALPHA	1.0+3	2.0+6	20	2 GE ANL	Snyder, T. Butler, D.K. Capture cross section would be equally useful.
1273 [2103+]	^{241}Pu	NU	THR	1.0+7	3.0	2 AI ANL	Alter, H. Avery, R. Butler, D.K. Accuracy of 6% could be useful. POA Conde, J.Nucl.Energ.22 53, 0.52-15 MeV. AUA Boldeman, AAECE 172, thermal value.
1274 [1046]	^{241}Pu	NU	1. +3	1.4+7	5.0	2 KPK BN	Schmidt, J.J. Tavernier, G. POA Conde et al. (JNE 22,79,1968) reported measurement at 0.52; 2.71; 4.19; 5.88 and 14.8MeV. No action in EURATOM community.
1275 [1506]	^{241}Pu	NU	1. +3	1.5+7	5	2 CAD	Barre, J-Y. For fast reactor calculations. POA Conde et al. (JNE 22,79,1968) reported measurement at 0.52; 2.71; 4.19; 5.88 and 14.8MeV. No action in EURATOM community.
1276 [2104+]	^{241}Pu	NU Withdrawn	4.0+4	4. +6	5	2 WIN	Campbell, C.G. For fast reactors. --- See Conde: JNP22,53(1/68), and EANDC(OR) 36L(4/65). And Fillmore: JNP 22,79(2/68). Fulfilled experiments in progress by Boldeman et al.
1277 [2104+]	^{241}Pu	NU	5.0+5	1.4+7	3.0	2 ERL	Howerton, R.J. POA Conde, J.Nucl.Energ.22 53, 0.52-15 MeV.
1278 [2108+]	^{241}Pu	P NEUT DELAY THR see comment	1.5+7	5.0	2 LAS	Keepin, G.R. Quantity: P(E_n'). Absolute numbers of delayed neutrons required. High resolution. Time and energy spectra also of interest. Isotopic signatures for nondestructive assay technique. --- None which meets the accuracy requirements.	
1279 [2110+]	^{241}Pu	FISS YIELD see comment	THR	1.5+7	15	3 LAS	Keepin, G.R. Absolute yields of fission isomers versus times (> 10ns) required. Isotopic signatures for nondestructive assay technique. --- None which gives the necessary energy dependence.
1280 [2109+]	^{241}Pu	FISS PROD GS THR see comment	1.5+7	5.0	2 LAS	Keepin, G.R. Quantity: P($P_\gamma, T_{1/2}$). High resolution absolute gamma-ray yields required. Time and energy spectra also of interest. Ultimately assign discrete γ 's to specific fission products. Isotopic signatures for nondestructive assay technique. --- None which meets the accuracy requirements.	
1281 [2108+]	^{241}Pu	ABSORPTION Withdrawn	1.5+2	3.0+2	8	3 WIN	Kinchin, G.H. Accuracy: 8% (E-2E). For thermal reactors. Almost set by existing data.
1282 [2108+]	^{241}Pu	ABSORPTION Withdrawn	1. +3	2. +3	2.0	3 WIN	Kinchin, G.H. Accuracy: 20% (E-2E). For thermal reactors. Almost set by existing data.

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER , COMMENTS	YFPAP	
			MIN	MAX	(%)			
1283 [1052]	^{241}Pu	$\bar{\nu},\text{GAMMA}$	THR	3	2	BN HAR	Tavernier, G. Thermal reactor calculations. A value of Cabell, JIN <u>28,286</u> (1966) at 22°Cm/s is 359±16 b which approaches the required precision.	
1284 [1510+]	^{241}Pu	$\bar{\nu},\text{GAMMA}$	THR	1	2	SAC	Russac, J. For thermal reactor calculations.	69
1285 [215+]	^{241}Pu	$\bar{\nu},\text{GAMMA}$	THR	3.0±8	3.0	1 INC	Snyder, T. Accuracy to 3% in Eta. Improved precision needed for thermal reactors. Also wanted for fast reactors. K-sec, or Alpha wanted. Smith, WASH 1136 , is evaluating for EYDF/B .	67
1286 [1056]	^{241}Pu	$\bar{\nu},\text{GAMMA}$	1.0±0	1.0±2	5	2 BN GRU	Tavernier, G. Thermal reactor calculations. See Weizmann.	
1287 [1360]	^{241}Pu	$\bar{\nu},\text{GAMMA}$	1. ±1	1. ±7	10	2 AE	Haeqghlom, H. Fast reactor calculations.	
1288 [1057]	^{241}Pu	$\bar{\nu},\text{GAMMA}$ (alpha)	2.0±2	1. ±6	10	2 KPK	Schmidt, J.J. No measurements available. No action in EURATOM community. No activity known.	
1289 [1501]	^{241}Pu	$\bar{\nu},\text{GAMMA}$ (alpha)	1. ±3	1. ±6	10	2 CAD	Barre, J-Y. --- No activity known.	
1290 [1059]	^{241}Pu	$\bar{\nu},\text{GAMMA}$	1. ±6	1. ±7	20	2 BN	Tavernier, G. Thermal reactor calculations. No activity known.	
1291 [1584+]	^{241}Pu	MISCELLANEOUS see comment	*	*	1	WIN WIN UKW HAR	Tyror, J.G. Campbell, C.G. Whittaker, A. Rose, B. --- Quantity: isomer half-lives over 30days. Search for possible long-lived isomers.	69
1292 [2111+]	^{242}Pu	FISSION	THR	2.0	1	SRL	Dessauer, G. To evaluate Cs and Cf production.	67
1293 [2112+]	^{242}Pu	NU	5.0±5	1.0±7	5.0	2 ANL	Butler, D.K.	69
1294 [2113+]	^{242}Pu	NU	5.0±5	1.4±7	3.0	2 LRL	Hoverton, R.J.	62
1295 [2114+]	^{242}Pu	F NEUT DELAY THR see comment	1.5±7	5.0	2 LAS	Keepin, G.R. Quantity: $P(\bar{n}')$. Absolute numbers of delayed neutrons required. High resolution. Time and Energy spectra also of interest. Isotopic signatures for nondestructive assay technique. --- None which meets the accuracy requirements.	69	
1296 [2119+]	^{242}Pu	FISS YIELD see comment	THR	1.5±7	15	3 LAS	Keepin, G.R. Absolute yields of fission isomers versus times (> 10ns) required. Isotopic signatures for nondestructive assay technique. --- None which gives the necessary energy dependence.	69
1297 [2117+]	^{242}Pu	FISS PROD GS THR see comment	1.5±7	5.0	2 LAS	Keepin, G.R. Quantity: $P(E_\gamma, f^{1/2})$. High resolution absolute γ -ray yields required. Time and energy spectra also of interest. Ultimately, assign discrete γ 's to specific fission products. Isotopic signatures for nondestructive assay technique. --- None which meets the accuracy requirements.	69	

REF [REG]	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P MIN MAX (%)	LAB	REQUESTED , COMMENTS		YEAR	
						SEE COMMENT.	ANL		
1298 [2115+]	^{242}Pu	N, GAMMA	THR	7.0×6 <20 3 TO 20%	1	GE BNW SPL COMMENT.	Snyder, T. Dawson, P.G. Dessauer, G. Butler, D.K. Accuracy: 3% to 100 eV ; 10%, 100eV to 1 keV. Accuracy: 15-20% from 1 keV to 7 MeV, priority 2. Accuracy: res.parameters to 10-20% below 10 keV. For fast breeder calculation, Cf production. High purity sample material is available.	67	
1299 [2116+]	^{242}Pu	N, GAMMA see comment		1.0 ± 2 3.0 ± 5	50	1	LRL	Hoverton, R.J. Activation. Needed for evaluation.	69
1300 [2118+]	^{242}Pu	N, PROTON	1.4 ± 7		20	2	LAS	Bell, G.I. For interpretation of heavy element production.	67
1301 [1436]	^{245}Pu	FISSION	THR		200 b.	2	CRC	Walker, W.H. Unknown cross section.	68
1302 [2120+]	^{241}Am	TOTAL KSECT	THR		3.0 2 TO 3%	2	BNW	Dawson, P.G. Accuracy 2-3% in thermal energy range. No active work.	69
1303 [2121+]	^{241}Am	FISSION	2.0 ± 4	2.0 ± 5	10	2	BNW LAS	Dawson, P.G. For criticality studies. Seeger, Nucl.Phys. A96 605, 20 eV to 1 MeV.	69
1304 [1431]	^{241}Am	ABSORPTION	THR		5	2	CRC	Walker, W.H. Wide spread of available values.	68
1305 [1432]	^{241}Am	ABSORPTION	1.0 ± 0	5.0 ± 2	10	2	CRC	Walker, W.H. Desire confirmation of resonance integral measurement. of Bak (A.P. 23(1967)316)	68
1306 [1433]	^{241}Am	ACTIVATION	THR		5	2	CRC	Walker, W.H. To both ^{242}Am isotopes	68
1307 [1434]	^{241}Am	ACTIVATION	1.0 ± 0	5.0 ± 2	10	2	CPC	Walker, W.H. Desire confirmation of resonance integral. Measurement of Bak (A.P. 23(1967)316)	68
1308 [1333]	^{241}Am	N, GAMMA	THR		3	3	JAE	Japanese Nuclear Data Committee (JNDC). Precise standardization of emission rate of neutron source.	68
1309 [2122+]	^{241}Am	N, GAMMA	THR	1.0 ± 3	10	1	SRL BNW	Dessauer, G. Dawson, P.G. Production of both Am^{242} and Am^{243} wanted. BNW needs values at 0.0251 eV, priority 2. Needed for Pu 238 program, and production of Cf 250 .	67
1310 [2123+]	^{241}Am	N, GAMMA	1.0 ± 2	3.0 ± 5	50	1	LRL	Hoverton, R.J. Required is cross section for production of both Am^{242} and Am^{243} .	69
1311 [2124+]	^{242}Am	TOTAL KSECT	THR	1.0 ± 8	10	2	SRL	Dessauer, G. Resonance energies needed to determine Cf 250 production. LRL Bowman, to fission, of to 6 MeV, resonance parameters to 4 MeV. LAS Seeger, Petrel, Nucl.Phys. A96, 605 of above 30 eV.	67
1312 [2125+]	^{242}Am	FISSION	THR	1.0 ± 4	20 10-20%	2	SRL	Dessauer, G. Cross section needed for 150 year isomer. Require accuracy 10% in thermal value and resonance integral. Needed to determine Cf 250 production. LAS Seeger, Nucl.Phys. A96 605, above 30 eV. LRL Bowman, Phys.Rev.166 1219, has data.	69

PEP NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY %	LAB	REQUESTER, COMMENTS	YEAR		
[SEG]		KI8	MAX	(S)				
1313 ^{242}Am	N, GAMMA	THR	5.0+6	<1%	1 LRL	Hoverton, R.J. Needed for evaluation.	69	
[2126+]								
1314 ^{242}Am	N, GAMMA	THR	1.0+4	20	2 SRL	Dessauer, G. Cross section wanted for 152 year isomer. Need resonance integral and thermal value to 1%, to evaluate Cm^{244} production.	69	
[2127+]				10-20%				
1315 ^{243}Am	TOTAL XSECT	THR	1.0+4	10	1 SRL	Dessauer, G. Resonance integral wanted, for Cm^{244} production. Needed for long term reactivity calculations.	67	
[2128+]					INC	Berreth, chopper, emt, res.parameters to 50eV.		
1316 ^{243}Am	TOTAL XSECT	THR	1.0+4	2.0	1 BWB	Dawson, P.G. Resonance integral wanted, for Cm^{244} production. Needed for long term reactivity calculations.	67	
[2129+]					INC	Berreth, chopper, emt, res.parameters to 50eV.		
1317 ^{243}Am	N, GAMMA	THR	1.0+4	10	1 SRL GR	Dessauer, G. Snyder, T. Resonance integral wanted, for Cm^{244} production. Needed for long term reactivity calculations. Require 5-10% in both thermal value and res.integral.	67	
[2130+]					INC	Berreth, chopper, emt, res.parameters to 50eV.		
1318 ^{242}Cm	RESON PARAMS	THR	1.0+3	20	2 BWB	Dawson, P.G. Radioactive capture and neutron widths wanted, Pu^{238} production. Accuracy 20% in widths. Target half-life 163 d.	67	
[2132+]								
1319 ^{242}Cm	N, GAMMA	THR		20	2 SRL	Dessauer, G. Needed to evaluate production of Cm^{244} . Target half-life 163 d.	67	
[2131+]								
1320 ^{243}Cm	TOTAL XSECT	THR	1.0+4	10	2 SRL	Dessauer, G. Resonance energies wanted to evaluate Cm^{244} production. Accuracy 10% in resonance integral. Simpson, WASH 1136, emt, resonance parameters to 6eV.	67	
[2133+]					INC			
1321 ^{243}Cm	FISSION	THR	1.0+4	10	2 SRL	Dessauer, G. Needed to evaluate production of Cm^{244} . Accuracy 10% in resonance integral. Simpson has resonance parameters to 6eV. Fullwood has data from 30 eV up.	67	
[2134+]					INC LAS			
1322 ^{243}Cm	FISSION		1.0+4	1.0+5	10	1 LAS	Cowan, G.A. Needed to evaluate production of Cm^{244} . Accuracy 10% in resonance integral. Simpson has resonance parameters to 6eV. Fullwood has data from 30 eV up.	69
[2135+]					INC LAS			
1323 ^{243}Cm	N, GAMMA	THR		50 b.	2 CRC	Walker, W.H. Unknown cross section.	68	
[1437]								
1324 ^{243}Cm	N, GAMMA	THR	1.0+4	10	2 SRL	Dessauer, G. Require alpha to 1%. Accuracy 5 to 10% in thermal value and resonance integral.	69	
[2136+]				5 TO 10%	INC	Simpson, WASH-1136, has res.parameters to 6eV.		
1325 ^{244}Cm	TOTAL XSECT	THR	1.0+4	5.0	2 SRL	Dessauer, G. Need 5% in resonance integral to evaluate Cm^{244} , Cf^{252} production. Simpson, chopper, emt to 1keV.	67	
[2137+]					INC			
1326 ^{244}Cm	FISSION		1.0+4	1.0+5	10	1 LAS	Cowan, G.A. Needed to evaluate Cf production. Fullwood WASH 1136 has data 30eV up.	69
[2138+]					INC LAS			
1327 ^{244}Cm	NU		1.0+4	1.0+7	10	2 AI	Alter, H. For criticality of isotopic heat sources.	67
[2139+]								

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REF	NUCLIDE	QUANTITY	ENERGY (EV)			P	LAB	REQUESTER , COMMENTS	TEAP [REG]	
			MIN	MAX	(%)					
1328 [2141+]	^{244}Cm	N,GAMMA	THR	1.0×8	10	2	SRL LAS	Dessauer, G. Accuracy 5 to 10% in resonance integral. Needed to evaluate Cf production. Diven, WASH-1136, has data 30eV up.	69	
1329 [2142+]	^{244}Cm	N,GAMMA	THR	1.0×2	3.3×5	5G	1	LPL	Howerton, R.J. Needed for evaluation.	69
1330 [2143+]	^{244}Cm	N,GAMMA	THR	1.0×8	1.0×7	10	1	GR AI INC LAS	Snyder, T. Alter, H. For criticality of isotopic heat sources. Diven, WASH-1136, has data 30eV up.	67
1331 [2144+]	^{244}Cm	TOTAL XSECT	THR	1.0×8	10	1	SRL INC	Dessauer, G. Need 10% in res.integral to evaluate Cf production. Simpson, chopper, smt, res.parameters to 5eV.	67	
1332 [2145+]	^{244}Cm	PISSION	THR	1.0×3	10	1	SRL INC LAS	Dessauer, G. Need 1% in s and res.integral to evaluate Cf production. Need integral alpha to 10% thermal and resonance. Simpson, WASH-1127, has data to 10 eV. Diven, WASH-1136, has data above 20 eV.	67	
1333 [2146+]	^{244}Cm	PISSION	THR	1.0×8	1.0×5	10	1	LAS INC LAS	Cowan, G.A. Need 10% in s and res.integral to evaluate Cf production. Need integral alpha to 10% thermal and resonance. Simpson, WASH-1127, has data to 10 eV. Diven, WASH-1136, has data above 20 eV.	69
1334 [2147+]	^{244}Cm	ALPHA	THR	2.0×8	20	2	LAS	Bell, G.I. Needed to evaluate Cf production.	67	
1335 [2148+]	^{244}Cm	N,GAMMA	THR	1.0×8	10	1	SRL	Dessauer, G. Need 10% in res.integral to evaluate Cf production. Need integral alpha to 10% thermal and resonance.	69	
1336 [2149+]	^{244}Cm	TOTAL XSECT	THR	1.0×4	10	1	SRL INC	Dessauer, G. Resonance structure desired to evaluate Cf production Accuracy 10% in resonance integral. Simpson, chopper, has smt, parameters for 8.3 eV.	67	
1337 [2150+]	^{244}Cm	PISSION	THR	1.0×8	1.0×5	10	1	LAS LAS ---	Cowan, G.A. Diven has data 30 eV up. To evaluate Cf ²⁴² production by R-process.	69
1338 [2151+]	^{244}Cm	N,GAMMA	THR	1.0×4	10	1	SRL LAS	Dessauer, G. Need accuracy 10% in resonance integral. Resonance structure desired to evaluate Cf production Diven, WASH-1136, has some data above 30 eV.	69	
1339 [2152+]	^{244}Cm	TOTAL XSECT	THR	1.0×4	20	1	SRL	Dessauer, G. Need 20% in res.integral to evaluate Cf production.	67	
1340 [2153+]	^{244}Cm	PISSION	THR	1.0×4	10	1	SRL LAS	Dessauer, G. Need 5 to 10% in thermal value and res.integral. SRL diven WASH-1136 has data above 20 eV.	67	
1341 [2154+]	^{244}Cm	PISSION	THR	1.0×4	1.0×5	10	1	LAS ---	Cowan, G.A. Need 10% in s to evaluate Cf production by R-process. Diven WASH-1136 has data above 20 eV.	69
1342 [2155+]	^{244}Cm	ALPHA	THR	2.0×4	20	2	LAS	Bell, G.I. Needed to evaluate Cf production.	67	
1343 [2156+]	^{244}Cm	N,GAMMA	THR	1.0×4	10	1	SRL	Dessauer, G. Need 5 to 10% in resonance integral and thermal value to evaluate Cf production.	69	

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REF	NUCLIDE	QUANTITY	ENERGY(eV)	ACCURACY P	LAS	REQUESTED , COMMENTS	YEAR
			MIN	MAX	(%)		
1344	^{240}Cm	TOTAL XSECT	THR	1.0+8	20	1 SRL Dessauer, G. Need 5% accuracy at thermal. Need 20% in resonance integral to evaluate Cf production.	67
[2156+]							
1345	^{240}Cm	FISSION	1.0+8 1.0+5	10	1 LAS Cowan, G.A. To evaluate Cf production. Diven WASH-1136 has some data.	69	
[2157+]							
1346	^{240}Cm	N, γ HAMA	THR	1.0+8	10	1 SRL Dessauer, G. Need 10% at thermal and resonance integral to evaluate Cf production.	69
[2158+]							
1347	^{240}Bk	TOTAL XSECT	THR	1.0+8	20	1 SRL Dessauer, G. Resonance desired to evaluate Cf production. Need 20% in resonance integral. Silbert WASH-1136 has fission data 30 eV up.	67
[2159+]							
1348	^{240}Bk	N, γ HAMA	THR	1.0+8	10	1 SRL Dessauer, G. For Cf production, 10% thermal and resonance integral.	69
[2160+]							
1349	^{249}Cf	FISSION	1.0+8 1.0+5	10	1 LAS Cowan, G.A. Silbert WASH-1136 has data 30 eV up.	69	
[2161+]							
1350	^{250}Cf	TOTAL XSECT	THR	1.0+8	20	1 SPL Dessauer, G. Resonances desired to evaluate Cf production. Need 20% in resonance, to evaluate Cf^{252} production.	67
[2162+]							
1351	^{250}Cf	FISSION	THR	1.0+8	10	1 SRL Dessauer, G. To evaluate Cf production. Accuracy 10% in resonance integral.	67
[2163+]							
1352	^{250}Cf	FISSION	1.0+8 1.0+5	10	1 LAS Cowan, G.A. To evaluate Cf production. Accuracy 10% in resonance integral.	69	
[2164+]							
1353	^{250}Cf	N, γ HAMA	THR	1.0+8	10	1 SRL Dessauer, G. Need 10% in resonance integral to evaluate Cf^{252} production.	69
[2165+]							
1354	^{251}Cf	N, γ HAMA	THR	1.0+8	10	1 SRL Dessauer, G. To evaluate Cf production. Accuracy 10% in resonance integral.	67
[2166+]							
1355	^{252}Cf	FISSION	1.0+8 1.0+5	10	1 LAS Cowan, G.A. Moore, WASH-1136 has data 30 eV up.	69	
[2167+]							
1356	^{252}Cf	NU	THR	1.0+7	<1	2 AI Alter, H. Needed for isotope heat source work. A few points wanted in range 1 to 10 MeV.	67
[2168+]							
1357	^{252}Cf	NU	SPON	0.5	1 RPK Schmidt, J.J. Standard. Incoherence of 1.7% in existing data.	67	
[1099]							
1358	^{252}Cf	NU	SPON	0.5	1 CAD Barre, J-Y. Standard. Incoherence of 1.7% in existing data.	67	
[1502]							
1359	^{252}Cf	NU	SPON	5	2 CRC CRC Westcott, C.H. Ranna, G.C. Serious discrepancies between available direct measurements.	67	
[1100]							
1360	^{252}Cf	NU	*	0.25%	1 NCS Landon, H.R. Required is nubar for spontaneous fission of Cf^{252} as primary standard. ANL De Volpi, WASH-1124, is doing most recent work.	69	
[2169+]							
1361	^{252}Cf	N, γ HAMA	THR	1.0+8	10	1 SPL Dessauer, G. To evaluate Cf production. Accuracy 10% in resonance integral.	67
[2170+]							

REF	NUCLIDE	QUANTITY	ENERGY(EV)	ACCURACY P	LAB	REQUESTER	COMMENTS	YEAR	
			RIB	MAX	(%)				
1362	^{253}Cf	\bar{n},GAMMA	THR	1.0+8	26	2 SPL	Dessauer, G. To evaluate Cf production. Accuracy 2% in resonance integral. Target half-life 19 d. Want to confirm that thermal cross section < 3 barns.	67	
[2171+]						---			
1363	^{253}Es	FISSION	1.0+4	1.0+5	16	1 LAS	Cowan, G.A. Target half-life 20 d. Silbert WASH-1136 has data 30 eV up.	69	
[2172+]						---			
1364	^{254}Es	ALPHA	THR	2.0+8	20	2 LAS	Bell, G.I. Needed to plan for production of Pm^{257} . Target half-life 88 d.	67	
[2173+]						---			
1365	^{255}Fm	FISSION	1.0+4	1.0+5	16	1 LAS	Cowan, G.A. Measurements in presence of Es^{255} parent. Target half-life 80 d.	69	
[2174+]						---			
1366	^{257}Fm	FISSION	1.0+4	1.0+5	16	1 LAS	Cowan, G.A. Target half-life 94 d.	69	
[2175+]						---			
1367	H2O	THRMSCATLAW THR			3 WIN	Kinchin, G.H.			
Withdrawn					---		Existing accuracy may be sufficient. See Haywood JND 21,289 (/67) and IAEA, Ann Arbor (/67). Also Fedulov IAE-11C9(/66) and Smith BNWL-345(8/67) and Beyster GA-7952(4/67) and Egelstaff PPS-9L,681 (3/67) and Elliot PPS 9L,671 (3/67).		
1368	D2O	DIFF INELAST THR energy,angle		20	2 ROL	Trotte, F. For reactor spectra calculations and for support of theoretical studies on slow neutron scattering by liquids. Haywood and Thorson (BANDC (CAN) 12, 1962) report results for 20°C and 150°C.			
[1118]					---	AZ Dahlberg et al. (PUAE 1964, P/68C) report extensive measurements for frequency spectra of D2O in temperature range 0°C to 200°C for energies up to about 0.1 eV. No action in EURATOM community.			
1369	D2O	THRMSCATLAW THR energy,angle			3 WIN	Kinchin, G.H.			
Withdrawn					---		Existing accuracy may be sufficient. See Haywood IAEA, Ann Arbor (/67) and Thorson PANDC (CAN) 28 L(3/66) and Beyster GA-7952(4/67) and Harling BNWL-436(6/67) and MC Murray, IN-1(2)(8/66)		
1370	B2O	THRMSCATLAW THR	<20.0	3 JAE	Japanese Nuclear Data Committee (JNDC).			68	
[1126]					For determination of frequency distribution. $S(k,$ $\epsilon)$; $1000^\circ\text{K}-1500^\circ\text{K}, 1 \leq k \leq 15/\lambda, \epsilon \leq 2.2\text{eV}$. Lattice dynamical calculation is complicated.				
				---	CRC Sinclair has the data at 22°C.				
				DSM Loh has optical data (Phys. Rev. 166 673, Feb 1968).					
				MTR Ostheimer et al. have dispersion curves at room temperature. (IN-1129) .					
1371	B2O	THRMSCATLAW THR energy,angle			3 WIN	Kinchin, G.H.			
Withdrawn					---		Existing accuracy may be sufficient. See Sinclair IAEA, Chalk River (/62) and WASH 1068,62(3/66), also Parks JAERI 1095(3/65) and Haywood IERE/R4732(9/68).		
1372	UO2	DIFF INELAST THR energy,angle			3 WIN	Kinchin, G.H. Thermal region 150°C - 280°C, thermal scattering law. Theoretical extrapolations to 280°C may be possible.			
Withdrawn					---				
1373	UO2	THRMSCATLAW THR energy,angle			3 WIN	Kinchin, G.H. Temperature range 20°C to 2800°C. Existing accuracy may be sufficient. See Thorson BANDC(CAN) 23'L'(4/65), and Thorson IAEA, Ann Arbor (/67) and ARCL-2915.			
Withdrawn					---				

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REF NUCLIDE QUANTITY [REG]	ENERGY(EV) ACCURACY P LAB REQUESTER , CURRENTS MIN MAX (S)	YEAR
1378 PROD ABSORPTION THB [11308]	5 2 WIN Tytor, J.G. For thermal reactors.	
1375 PROD RES INT ABS 5.5-1 2. +6 [11698]	10 2 WIN Tytor, J.G. For thermal reactors.	