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**INDC**

**INTERNATIONAL NUCLEAR DATA COMMITTEE**

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WRENDA 75

World Request List for Nuclear Data Measurements

Fission Reactor Programmes

Fusion Reactor Programmes

Nuclear Safeguards Programmes

June 1975

Published on behalf of

USA National Neutron Cross Section Center, Brookhaven  
NEA Neutron Data Compilation Centre, Saclay  
IAEA Nuclear Data Section, Vienna  
USSR Nuclear Data Center, Obninsk

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**IAEA NUCLEAR DATA SECTION, KÄRNTNER RING 11, A-1010 VIENNA**

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## I. General Introduction to WRENDA

The nuclear data request lists for fission-reactors, fusion-reactors and nuclear-safeguards development appear in Parts II, III and IV, respectively, of this document. Supporting information which is pertinent to only one of the request lists has been collected in sections immediately preceding the relevant request list. Information applicable to all the request lists appears in Part I. Expansions of codes used in the request lists can be found in the appendices at the end of the document.

### I.A. Background and General Information

The use of a "request list" for communication of the data requirements of a developing technology to the producers of the required data is long standing in both the United States and the United Kingdom. In 1968, the Neutron Data Compilation Centre at Saclay initiated publication of a request list for neutron data measurements from a computerized file, known as RENDA, on behalf of the European-American Nuclear Data Committee (EANDC). The list contained requests from the countries represented on that committee. In 1971, the International Nuclear Data Committee (INDC) recommended that the IAEA assume responsibility for publication of an expanded international data request list, which would include neutron data requests from a larger number of countries and international organizations.

The data request file maintained by the Nuclear Data Section of the IAEA is known as WRENDA. The input to this data

request file is provided by officially constituted bodies in the Member States through the four regional Neutron Data Centers<sup>1</sup>. This issue of WRENDA is published by the IAEA on behalf of the four Neutron Data Centers.

Concurrently with the transfer of responsibility for the neutron data request file from the NEA to the IAEA, the Nuclear Data Section (NDS) had developed international nuclear data request lists for technologies related to nuclear safeguards and to controlled fusion. It was expedient to develop the new WRENDA system to accommodate data requests for all applications.

An immediate consequence of the expanded scope was that the new WRENDA system was designed to accommodate requests for data related to other nuclear processes as well as to neutron-induced reactions. Also concurrently with the development of the WRENDA system it was agreed that data requests related to fusion, safeguards and other applications should be handled through the regional data centers.<sup>1</sup>

Upon recommendation of the INDC, the international nuclear data request lists for fission-reactor, fusion-reactor and nuclear safeguards development have been published for the first time as a single document in this issue of WRENDA. The most recently preceding separate publications of the individual lists are identified in the following table:

Fission Reactors	INDC(SEC)-38	April 1974
Fusion Reactors	INDC(NDS)-57	December 1973
Safeguards	INDC(NDS)-50	March 1973

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- 1 NNCSC - National Neutron Cross Section Center, Brookhaven National Laboratory, Upton, L.I., N.Y., USA.  
 NDCC - Neutron Data Compilation Centre, Nuclear Energy Agency, Saclay, France.  
 NDS - Nuclear Data Section of the International Atomic Energy Agency, Vienna, Austria.  
 CJD - Centr po Jadernym Dannym, Obninsk, USSR

WRENDA requests for all applications are maintained in a single computer master-file but are associated with a particular application by an application code. In planning the present publication, it was considered that the users of WRENDA, who consult the publication to plan research programs, to evaluate research proposals and to survey data requirements, generally have in mind a particular application and that, therefore, separation of the requests according to the three applications mentioned above would be the most convenient form of presentation. Collection of the three request lists in a single publication should at the same time make it reasonably convenient to locate all requests related to the same material and data type by individually checking each of the lists. If in the future the predominant interest of the users appears to be in the material and data type regardless of application, then requests for all applications would be published in a single list.

Status comments are maintained in a separate file from the data requests and do not bear application codes. For publication the requests and status comments are merged as described in Section I.B. When requests related to a particular material and data type occur in more-than-one request list, all status comments referring to that combination of material and data type are printed in each request list where the combination appears.

When the same block of status comments appears in several request lists, some of the comments may not be relevant to any request in a given list, for example, because of differing energy ranges for the request and status information. Since only a small number of status blocks appear in more-than-one request list, the duplication and irrelevance of some status information was considered justifiable in view of the convenience of reviewing and maintaining only a single status file rather than a separate one for each application.



The request lists are intended to serve as guides to experimentalists, evaluators and administrators when planning nuclear data measurement and evaluation programs. When measurers and evaluators begin work which will provide data requested in this document, they are asked to inform the requestor(s). Information about such work should also be provided to the Nuclear Data Section or to a regional data center<sup>1</sup> so that status comments can be kept current. The names of the requestors are printed with each request, and their addresses are given in Appendix D.

Future editions of WRENDA will be issued annually in the summer. Before each publication the national data committees will be asked to review their requests so that the lists can be kept current.

Although major updating of the file will usually occur in the spring, the master-files can be updated at any time. Between book-publications computer listings of the current files can be requested from the IAEA Nuclear Data Section. Special sorts and selective retrievals from the files can also be obtained upon request.

Comments from the users of WRENDA are encouraged so that the document and the special services available from the system can meet their needs.

I.B. Editorial Policy

During conversion from the old RENDA system to the new WRENDA system, an effort was made to consolidate similar requests from the same country in order to reduce the length of the WRENDA publication and to make it more easily readable. For example similar requests from the same country but from different requestors and with similar but non-identical comments usually were printed in WRENDA 74 as a single request with multiple requestors and a single identifying number. In general this editorial policy has been continued in the WRENDA 75 publication.

If one of the multiple requestors subsequently changes his specifications so that his request is significantly different from those of the other requestors, a new identification number is assigned to the modified request. It has been tedious to trace the evolution of requests so that they can be correctly modified and so that the consistency of identification numbers can be maintained from one WRENDA publication to the next.

For the future it is anticipated that new requests and modifications will be coded in a common format at the regional data centers. The modifications and identification numbers assigned by the regional data centers will then be entered in the master files exactly as they are submitted to the NDS. It is hoped that any inconsistency in request numbers will be limited to a single year and that the cooperative WRENDA system will serve satisfactorily the needs of the individual requestors, reviewers and national data committees and will facilitate at the same time the production of a conveniently useful publication.

At present there seems to be a lack of consensus among users of WRENDA about purpose and content of the status comments which could be provided for each request. Ideally perhaps the status comments should provide a concise, up-to-date evaluation of the accuracy or uncertainty of the available data. In fact, no organization has been able to accept continuing responsibility of this kind for all requests. Alternatively the status file could provide only references to recently completed work and to work in progress although the CINDA publication provides similar information. An intermediate possibility would be to cite a recent review or evaluation related to each data request and to provide additional references to work completed or in progress after the effective date of the evaluation.

In the present edition of WRENDA most of the status blocks provide only references to recently completed, continuing and planned work. In some status blocks a relevant review or evaluation is identified. For a very few blocks the estimated uncertainty of the available data has been summarized for the energy ranges specified in the associated requests. Comments from users about the value of the status information in the present edition would be particularly helpful in planning future editions.

The status information in the present edition has been drawn from many sources. Special effort has been made to include information provided through national and international data committees. The contributions of individual experts who have offered their personal knowledge of particular types of data in concise form is gratefully acknowledged.

It has been assumed that general reference works such as BNL-325, various versions of the "chart of the nuclides" and CINDA are well known to the users of WRENDA. Therefore references to these works have been deleted from the WRENDA status file even though new versions of some of them may have appeared very recently.

### I.C. Description of Requests

This edition of WRENDA contains three separate data request lists each of which contains only requests related to a particular application. Within each request list the form of presentation of requests is the same.

Each request list is presented in a sort by increasing target charge ( $Z$ ) and mass ( $A$ ) number, then by projectile type starting with the lightest ( $\gamma$ -rays) and sorted by increasing mass, and finally by reaction type. All requests for a single target nuclide, projectile and reaction are blocked together. A sample is shown on the following page.

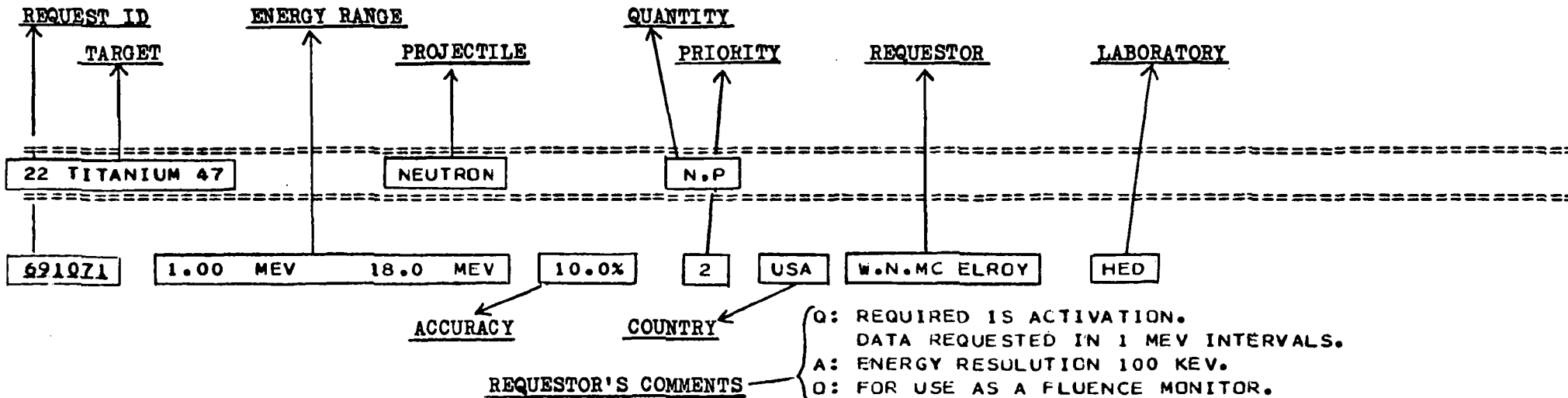
Each request block consists of two parts separated by a single line. The first part contains all the requests for one target-projectile-quantity combination. The second part called "STATUS" contains comments on the present state of knowledge of this data type. Where there are no status comments in the WRENDA file, this second part is omitted.

Block-heading

The first line of each request block gives, from left to right, the target nuclide, the incident particle, and the quantity. This line of text is enclosed by a double line to make the beginning of each block stand out visually. The meaning of a quantity generally conforms to CINDA<sup>2</sup> usage with the addition of some quantities to describe nuclear structure data and complex reactions. A list of the allowed quantities appears as part of the next section. The target nuclide description consists of the charge number, the element name, and the mass number of the isotope. No mass number is given when the natural element is meant, except in the case where the natural element is monoisotopic. Mixtures and compounds appear at the end of the list.

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<sup>2</sup> CINDA - An Index to the Literature on Microscopic Neutron Data  
published annually by the International Atomic Energy Agency



692070

15.0 MEV 10.0% 2 FR A.MICHAUDON BRC

Q: PRODUCTION OF SC-47 (3.43 DAY).  
 O: ACTIVATION DETECTOR.  
 M: SUBSTANTIAL MODIFICATIONS.

STATUS-----STATUS

ANL MEADOWS+ - USNDC-3 16(1972), DATA TO 6. MEV.

AUB GHORAI+ - JNE 25 319(1971), DATA TO 6.1 MEV.

STATUS COMMENTS

Identification number

The individual requests then follow in order of increasing identification number. This number appears on the first line of each request at the far left and is underlined. The number assigned is unique and remains associated with a request. When a request is withdrawn, this number is not assigned to another request. The first two digits of the identification number are the last two digits of the year in which the request was originated. The third digit represents the responsible neutron data center (1-NNCSC, 2-NDCC, 3-NDS, 4-CJD) and the final three digits are a sequence number. The neutron data centers are responsible for assigning the identification number.

Energy

The next two entries on the first line of each request give the range of energy of the incident particle over which data are desired. The energy unit is given after each number. Because no lower case is used, we have adopted the symbol, MV, for milli-electron volts, thus preventing confusion with MEV for million electron volts.

If an energy appears in the first field with the second field blank, then the requested information is required at only a single energy. In the case of a resonance integral, the single entry gives the lower energy limit for the integral. A lone entry in the second energy field with the first field blank indicates that measurement is desired for energies up to the specified value. This format appears most frequently for threshold reactions. No alphabetic energies are allowed. Thus thermal is given as 25.3 MV. All spectrum averages and non-standard energy specifications must be explained in the requestor's comments.

Accuracy

The fourth field on the first line gives the accuracy required of the requested data stated in percent. Any accuracy requirements which cannot be stated simply must be given in the requestor's comments. All accuracies are assumed to be one standard deviation. Any other meaning must be explained in the comments.

Priority

The fifth field on the second line gives the priority of the requested information. Each of the three request lists in this publication employs a different set of priority criteria, which are presented in separate sections preceding each of the respective lists.

Requestor

The right hand side of the second line is used to identify the requestor. The first piece of information is a three letter code for the country originating the request. The codes and their explanations are given in Appendix A. The country code is followed by the name of the requestor. Mailing addresses for the requestors are given in Appendix D. The last piece of information is a three character code for the requestor's organization. These codes conform to the CINDA codes and are listed along with the organization name in Appendix B. In the case where there is more than one requestor for a request, then their names and organization codes are given on successive lines. However all requestors so combined must come from the same country.



Requestor's comments

Comments by requestors follow below the requestors' names on the right hand side of the page. The comments are grouped into four types denoted by the characters Q, A, O and M. The group of comments designated by Q refers to further experimental specifications such as details of the quantity to be measured and the energy range of incident or secondary particles. Those denoted by an A refer to further details concerning accuracy or energy resolution required. The category O includes all other comments such as use of or justification for requested data. The last group of comments, designated by an M, contains statements about modifications which have been made since the previous version of WRENDA, such as "new request" etc.

Status comments

The status comments for a block of requests generally consist of an organization code (see Appendix B for explanations) followed by a name and a comment. In the present edition of WRENDA and for the foreseeable future a majority of these comments will be references to related, recently completed experiments or to experiments underway. In some cases, general status comments as to various discrepancies or attained accuracies will appear. It is hoped that more comments of this type will appear in the future.

All references to publications use CINDA-type codes. These codes and their expanded forms are given in Appendix C. The name given at the beginning of a comment is either the author or first author of a publication or the source of the general comment.

I.D. How to find a request in WRENDA

In this publication WRENDA requests have been collected in three separate lists according to application. The request list for fission-reactor development appears in Part II, the list for fusion research and reactor development in Part III, and the list for nuclear safeguards development in Part IV.

As is discussed in the previous section, within each list all data requests for a single target nucleus, projectile, and reaction quantity are blocked together. These blocks are sorted by target - projectile - reaction in that order.

The target nuclei are in increasing order of  $Z$  and, within  $Z$ ,  $A$ . Elements which are isotopic mixtures appear before individual isotopes. Monoisotopic elements appear at their natural position in order of increasing  $A$ . Following the request blocks of highest  $Z$  are requests in which the target is lumped fission products and, finally, requests in which the target is an alloy or chemical compound.

Immediately preceding each of the request lists is an index printed on coloured paper. The index gives the number of the page in the following request list on which the first block for any target nucleus ( $Z$ ,  $A$ ) appears.

In this section are two additional tables for assistance in locating requests. The first table gives the projectile-particle sort order, and the second table gives the reaction quantity sort order.

Table I

Incident Particle Sorting Order

- 1 No incident particle (e.g. level structure)
- 2 Photon
- 3 Neutron
- 4 Proton
- 5 Deuteron
- 6 Triton
- 7 Helium-3
- 8 Alpha
- 9 *Lithium-6*

Table II (page 1)QUANTITY SORT ORDER  
-----

LEVEL DENSITY PARAMETERS  
 DISCRETE LEVEL STRUCTURE (ENERGY, SPIN, PARITY)  
 HALF LIFE  
 FISSION HALF LIFE  
 TOTAL CROSS SECTION  
 ELASTIC CROSS SECTION  
 DIFFERENTIAL ELASTIC CROSS SECTION  
 INELASTIC CROSS SECTION  
 ANGULAR DIFFERENTIAL INELASTIC CROSS SECTION  
 ENERGY DIFFERENTIAL INELASTIC CROSS SECTION  
 DOUBLE DIFFERENTIAL INELASTIC CROSS SECTION  
 THERMAL SCATTERING LAW  
 TOTAL SCATTERING CROSS SECTION  
 DIFFERENTIAL TOTAL SCATTERING CROSS SECTION  
 NON-ELASTIC CROSS SECTION  
 ABSORPTION CROSS SECTION  
 CAPTURE CROSS SECTION  
 ENERGY DIFFERENTIAL CAPTURE CROSS SECTION  
 CAPTURE GAMMA RAY SPECTRUM  
 DELAYED CAPTURE GAMMA RAY SPECTRUM  
 PHOTON PRODUCTION CROSS SECTION IN INELASTIC SCAT.  
 TOTAL PHOTON PRODUCTION CROSS SECTION  
 TOTAL GAMMA RAY YIELD  
 X,N  
 X,N NEUTRON SPECTRA  
 X,2N  
 X,2N NEUTRON SPECTRA  
 X,3N  
 NEUTRON EMISSION CROSS SECTION  
 TOTAL NEUTRON YIELD  
 DELAYED NEUTRON YIELD  
 ENERGY DIFFERENTIAL NEUTRON-EMISSION CROSS SECTION  
 DOUBLE DIFFERENTIAL NEUTRON-EMISSION CROSS SECTION  
 X,P  
 X,P DELAYED NEUTRON YIELD  
 X,NP  
 X,2P  
 TOTAL PROTON PRODUCTION CROSS SECTION  
 X,D  
 X,ND  
 X,T  
 X,NT  
 X,HELIUM-3  
 X,ALPHA  
 X,NALPHA  
 X,N3ALPHA

Table II (page 2)

TOTAL ALPHA PRODUCTION CROSS SECTION  
FISSION CROSS SECTION  
SECOND CHANCE FISSIION CROSS SECTION  
CAPTURE TO FISSIION RATIO (ALPHA)  
NEUTRONS EMITTED PER NEUTRON ABSORPTION (ETA)  
NEUTRONS EMITTED PER NON-ELASTIC PROCESS  
NEUTRONS EMITTED PER FISSIION (NU BAR)  
DELAYED NEUTRONS EMITTED PER FISSIION  
PROMPT NEUTRONS EMITTED PER FISSIION  
INFORMATION ON NEUTRONS FROM A FISSIION FRAGMENT  
ENERGY SPECTRUM OF FISSIION NEUTRONS  
ENERGY SPECTRUM OF DELAYED FISSIION NEUTRONS  
SPECTRUM OF PROMPT GAMMA RAYS EMITTED IN FISSIION  
SPECTRUM OF GAMMA RAYS EMITTED IN FISSIION  
DELAYED GAMMA SPECTRUM FROM FISSIION PRODUCTS  
FISSION PRODUCT MASS YIELD SPECTRUM  
INFORMATION ON KINETICS OF FISSIION FRAGMENTS  
RESONANCE PARAMETERS  
ABSORPTION RESONANCE INTEGRAL  
CAPTURE RESONANCE INTEGRAL  
FISSION RESONANCE INTEGRAL

## II. Fission Reactor Development

### II.A. Introduction

The fission list contains over 1200 requests for improved nuclear data needed in support of the fission-reactor development programs of 21 Member States of the IAEA and one International Organization. The requests from Belgium, Canada, France, India, Italy, Japan, the Soviet Union, Sweden, Switzerland, Turkey, the United Kingdom and the United States have been reviewed and updated since the last publication of the WRENDA fission list (INDC(SEC)-38, April 1974).

In WRENDA 74 it was implied that the next edition of the data request list for fission reactors would contain both a list of satisfied requests and a list of withdrawn requests. While many requests which appeared in WRENDA 74 have been withdrawn from the present edition, only a very few were explicitly marked "satisfied". From examination of the other withdrawn requests it was concluded that some of them may have been withdrawn because they were, in fact, partially or totally satisfied. Because of apparently inconsistent distinction between withdrawn and satisfied requests, the present edition of the data request list for fission-reactor applications is accompanied only by a list of withdrawn requests, which should be considered to include also satisfied requests.

## II. B. Supplementary information from contributors

[ Requestors and national data committees sometimes supply supplementary information about the requests for which they are responsible. The remarks which follow were received from the USSR.]

### General comments to the Soviet Requests

#### L.N. Usachev's requests

Together all the requests make a unique system of requirements for the accuracy of evaluated nuclear data which would assure calculation of  $K_{eff}$  and breeding ratio (BR) of a fast plutonium breeder with accuracies of 1% and 2% respectively.

### Priorities

Accuracy requirements designated 2nd priority would assure the necessary calculational accuracy on the basis only of microscopic data without the use of data from integral experiments.

Accuracy requirements of designated 1st priority are less stringent because use would be made of evaluated results from integral experiments, which are available at the Nuclear Data Centre in Obninsk.

### Meaning of uncertainty

Uncertainty (or accuracy) is characterized by one standard deviation.

Uncertainty of a point is supposed to be represented as a sum of components with different correlative properties. Accuracy specifications are for those components of the uncertainty which determine the accuracy of the integral under the curve in the partial energy interval mentioned in each request.

In requests for measurements the use of standards -  $\bar{v}$  of  $^{252}\text{Cf}$ , the  $^{10}\text{B}$  (n,  $\alpha$ ) cross section (below 100 keV) and the  $^{235}\text{U}$  (n,f) cross section (above 100 keV) - is assumed. In all requests except those for standards, the accuracy specifications refer to measurements relative to standards, and the accuracies required of the standards are specified separately.

The algorithm used to derive these requirements is described in the following papers:

1. L.N. Usachev and Yu.G. Bobkov, "Planning of an optimum set of microscopic experiments and evaluations to obtain a given accuracy in reactor parameter calculations" Evaluation of Nuclear Data, (Proc. Panel, Vienna, 1971), Report IAEA-153, IAEA, Vienna, 1973 (in Russian). English translation: INDC(CCP)-19 (1972).
2. L.N. Usachev, V.N. Manokhin and Yu. G. Bobkov, "The accuracy of nuclear data and its influence on fast reactor development", Nuclear Data in Science and Technology, (Proc. Symp., Paris, 1973), IAEA, Vienna, 1973, Vol. 1, p. 129 (in Russian).



3. Yu.G. Bobkov, L.T. Pyatnitskaya and L.N. Usachev, "Planning of experiments and evaluations on neutron data for reactors " The Metrology of Neutron Radiation in Reactors and Accelerators, (Proc. Conf., Moscow, 1974), Report FEI-527 (1974) (in Russian). English translation to be published as INDC(CCP) document.
4. L.N. Usachev, "Unique definition of nuclear data accuracy" 7th INDC Meeting, Lucas Heights, 1974, Proceedings in preparation (in English). Report FEI-537 (1974) (in Russian).

#### M.N. Nikolaev's requests

Basic demands for accuracy of  $K_{\text{eff}}$  and BR prediction are 1 and 1.6 percent, respectively.

The requests are formulated for the totality of microscopic data without taking into account the results of integral experiments. Therefore, these requests are, as a rule, of the second priority.

The comparatively less demanding accuracies specified in this set of requests are stipulated by an assumption about the sense of uncertainties which differs from the assumption used in Usachev's requests. In this set of requests complete correlation of uncertainties within each group in the ABBN 26-group set and full statistical independence of uncertainties of neighbouring groups is supposed.

Correlation of uncertainties for different isotopes, cross sections and  $\bar{\nu}$  values is taken into account by assuming as standards the U-235 fission cross section and  $\bar{\nu}$  of Cf-252.

The author of the requests considers that these conditions would exist for instance, when on each adjacent lethargy interval 0.5 - 1 there would fall, on the average, one experiment carried out by an independent method with the requested, guaranteed accuracy.

The algorithm of request formulation and substantiation of basic requirements for  $K_{eff}$  and BR are described in paper by S.M. Zaritsky, M.N. Nikolaev, M.F. Troyanov, "Nuclear Data Requirements for Calculation of Fast Reactors", Report INDC(CCP)-17, IAEA, Vienna, 1972.

#### Conclusion

The two sets of requirements presented here emphasize the importance of precise understanding of accuracy specifications.

II.C. Priority Criteria

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.

II.D. LIST OF WITHDRAWN REQUESTS

691004	USA	2 HELIUM 3	NEUTRON	N,P
691006	USA	3 LITHIUM	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691007	USA	3 LITHIUM	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
701001	USA	3 LITHIUM 6	NEUTRON	N,ALPHA
621001	USA	4 BERYLLIUM 9	NEUTRON	DIFFERENTIAL ELASTIC CROSS SECTION
691014	USA	4 BERYLLIUM 9	NEUTRON	CAPTURE CROSS SECTION
682002	JAP	4 BERYLLIUM 9	NEUTRON	N,2N
682003	JAP	5 BORON 10	NEUTRON	ABSORPTION CROSS SECTION
701003	USA	5 BORON 10	NEUTRON	N,ALPHA
621003	USA	6 CARBON	NEUTRON	DIFFERENTIAL ELASTIC CROSS SECTION
621004	USA	6 CARBON	NEUTRON	DIFFERENTIAL ELASTIC CROSS SECTION
661002	USA	6 CARBON	NEUTRON	DIFFERENTIAL ELASTIC CROSS SECTION
742025	FR	6 CARBON	NEUTRON	DIFFERENTIAL ELASTIC CROSS SECTION
742026	FR	6 CARBON	NEUTRON	DOUBLE DIFFERENTIAL INELASTIC CROSS SECTION
692014	FR	6 CARBON	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691115	USA	8 OXYGEN	NEUTRON	DIFFERENTIAL ELASTIC CROSS SECTION
691116	USA	8 OXYGEN	NEUTRON	DIFFERENTIAL ELASTIC CROSS SECTION
691120	USA	8 OXYGEN	NEUTRON	NEUTRON EMISSION CROSS SECTION
721029	USA	8 OXYGEN	ALPHA	ALPHA,N
682006	JAP	8 OXYGEN 16	NEUTRON	N,ALPHA
691040	USA	9 FLUORINE 19	NEUTRON	DIFFERENTIAL ELASTIC CROSS SECTION
691041	USA	9 FLUORINE 19	NEUTRON	NEUTRON EMISSION CROSS SECTION
691042	USA	9 FLUORINE 19	NEUTRON	N,ALPHA
691043	USA	11 SODIUM 23	NEUTRON	TOTAL CROSS SECTION
691047	USA	11 SODIUM 23	NEUTRON	ABSORPTION CROSS SECTION
693007	SAF	13 ALUMINUM 27	NEUTRON	DOUBLE DIFFERENTIAL INELASTIC CROSS SECTION
691052	USA	13 ALUMINUM 27	NEUTRON	CAPTURE GAMMA RAY SPECTRUM
691053	USA	13 ALUMINUM 27	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691054	USA	13 ALUMINUM 27	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
693006	SAF	13 ALUMINUM 27	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691058	USA	14 SILICON	NEUTRON	CAPTURE CROSS SECTION
691059	USA	16 SULFUR	NEUTRON	CAPTURE CROSS SECTION
691060	USA	19 POTASSIUM	NEUTRON	CAPTURE CROSS SECTION
691064	USA	20 CALCIUM	NEUTRON	CAPTURE CROSS SECTION
691066	USA	22 TITANIUM	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691067	USA	22 TITANIUM	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691078	USA	24 CHROMIUM	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691079	USA	24 CHROMIUM	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691080	USA	24 CHROMIUM	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
661014	USA	25 MANGANESE 55	NEUTRON	CAPTURE CROSS SECTION
682009	JAP	25 MANGANESE 55	NEUTRON	CAPTURE CROSS SECTION
691082	USA	25 MANGANESE 55	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691083	USA	25 MANGANESE 55	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
721038	USA	26 IRON	NEUTRON	TOTAL CROSS SECTION
691090	USA	26 IRON	NEUTRON	ABSORPTION CROSS SECTION
691103	USA	26 IRON	NEUTRON	CAPTURE CROSS SECTION
721043	USA	26 IRON	NEUTRON	CAPTURE CROSS SECTION
691093	USA	26 IRON	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691094	USA	26 IRON	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691101	USA	26 IRON	NEUTRON	N,2N
742031	FR	26 IRON	NEUTRON	N,2N
701008	USA	26 IRON	NEUTRON	NEUTRON EMISSION CROSS SECTION
721041	USA	26 IRON	NEUTRON	RESONANCE PARAMETERS

II.D.	LIST OF WITHDRAWN REQUESTS		(continued)	
721042	USA	26 IRON	NEUTRON	RESONANCE PARAMETERS
742034	FR	26 IRON 56	NEUTRON	N,2N
661023	USA	27 COBALT 58		DISCRETE LEVEL STRUCTURE (ENERGY, SPIN, PARITY)
691105	USA	27 COBALT 59	NEUTRON	CAPTURE CROSS SECTION
691107	USA	27 COBALT 59	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691108	USA	27 COBALT 59	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
692114	FR	27 COBALT 59	NEUTRON	N,2N
621018	USA	27 COBALT 59	NEUTRON	RESONANCE PARAMETERS
721050	USA	28 NICKEL	NEUTRON	ABSORPTION CROSS SECTION
661027	USA	28 NICKEL	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691124	USA	28 NICKEL	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691125	USA	28 NICKEL	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
702011	JAP	28 NICKEL 58	NEUTRON	CAPTURE CROSS SECTION
693017	IND	28 NICKEL 58	NEUTRON	N,ALPHA
702012	JAP	28 NICKEL 60	NEUTRON	CAPTURE CROSS SECTION
691131	USA	29 COPPER	NEUTRON	CAPTURE CROSS SECTION
691129	USA	29 COPPER	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691130	USA	29 COPPER	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691134	USA	29 COPPER	NEUTRON	N,2N
691138	USA	30 ZINC	NEUTRON	CAPTURE CROSS SECTION
691135	USA	30 ZINC	NEUTRON	CAPTURE GAMMA RAY SPECTRUM
691136	USA	30 ZINC	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691137	USA	30 ZINC	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
721057	USA	30 ZINC	NEUTRON	N,2N
742036	FR	31 GALLIUM	NEUTRON	DIFFERENTIAL ELASTIC CROSS SECTION
742037	FR	31 GALLIUM	NEUTRON	DOUBLE DIFFERENTIAL INELASTIC CROSS SECTION
742039	FR	31 GALLIUM	NEUTRON	CAPTURE CROSS SECTION
692148	FR	37 RUBIDIUM 85	NEUTRON	CAPTURE CROSS SECTION
692149	FR	39 YTTRIUM 89	NEUTRON	N,2N
691144	USA	40 ZIRCONIUM	NEUTRON	CAPTURE GAMMA RAY SPECTRUM
691145	USA	40 ZIRCONIUM	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691146	USA	40 ZIRCONIUM	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691141	USA	40 ZIRCONIUM	NEUTRON	NEUTRON EMISSION CROSS SECTION
671007	USA	40 ZIRCONIUM 90	NEUTRON	NEUTRON EMISSION CROSS SECTION
721069	USA	40 ZIRCONIUM 96	NEUTRON	DIFFERENTIAL ELASTIC CROSS SECTION
691164	USA	40 ZIRCONIUM 96	NEUTRON	CAPTURE CROSS SECTION
691165	USA	41 NIOBIUM 93	NEUTRON	INELASTIC CROSS SECTION
691297	USA	41 NIOBIUM 93	NEUTRON	CAPTURE GAMMA RAY SPECTRUM
691167	USA	41 NIOBIUM 93	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691168	USA	41 NIOBIUM 93	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
701037	USA	41 NIOBIUM 93	NEUTRON	N,2N
691166	USA	41 NIOBIUM 93	NEUTRON	NEUTRON EMISSION CROSS SECTION
691172	USA	42 MOLYBDENUM	NEUTRON	CAPTURE GAMMA RAY SPECTRUM
691173	USA	42 MOLYBDENUM	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691174	USA	42 MOLYBDENUM	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691224	USA	42 MOLYBDENUM	NEUTRON	NEUTRON EMISSION CROSS SECTION
692161	FR	42 MOLYBDENUM 92	NEUTRON	N,ALPHA
682024	UK	43 TECHNETIUM 99	NEUTRON	CAPTURE CROSS SECTION
692168	JAP	43 TECHNETIUM 99	NEUTRON	CAPTURE CROSS SECTION
692171	JAP	44 RUTHENIUM 100	NEUTRON	CAPTURE CROSS SECTION
682026	UK	44 RUTHENIUM 101	NEUTRON	CAPTURE CROSS SECTION
692179	SWT	45 RHODIUM 103	NEUTRON	PHOTON PRODUCTION CROSS SECTION IN INELASTIC SCAT.
742041	FR	45 RHODIUM 103	NEUTRON	N,2N
692181	JAP	45 RHODIUM 105	NEUTRON	CAPTURE CROSS SECTION

II.D. LIST OF WITHDRAWN REQUESTS (continued)

692478	ITY	46	PALLADIUM 109	NEUTRON	RESONANCE PARAMETERS
692191	SWT	48	CADMILM	NEUTRON	ABSORPTION CROSS SECTION
692198	UK	54	XENON 131	NEUTRON	ABSORPTION CROSS SECTION
682032	UK	54	XENON 131	NEUTRON	ABSORPTION RESONANCE INTEGRAL
692202	JAP	54	XENON 133	NEUTRON	CAPTURE CROSS SECTION
692206	JAP	55	CESIUM 134	NEUTRON	CAPTURE CROSS SECTION
692217	JAP	59	PRASEODYMIUM 143	NEUTRON	CAPTURE CROSS SECTION
702018	JAP	60	NEODYMIUM 143	NEUTRON	CAPTURE CROSS SECTION
682033	UK	61	PRCMEIUM 147	NEUTRON	ABSORPTION CROSS SECTION
682034	UK	61	PRCMEIUM 147	NEUTRON	CAPTURE CROSS SECTION
702019	JAP	61	PRCMEIUM 147	NEUTRON	CAPTURE CROSS SECTION
692226	UK	61	PRCMEIUM 147	NEUTRON	ABSORPTION RESONANCE INTEGRAL
692229	JAP	61	PRCMEIUM 148	NEUTRON	CAPTURE CROSS SECTION
692245	JAP	62	SAMARIUM 150	NEUTRON	CAPTURE CROSS SECTION
682035	UK	62	SAMARIUM 151	NEUTRON	CAPTURE CROSS SECTION
692250	JAP	62	SAMARIUM 152	NEUTRON	CAPTURE CROSS SECTION
702020	JAP	62	SAMARIUM 152	NEUTRON	N,P
661060	USA	63	EUROPIUM	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
671063	USA	63	EUROPIUM 151	NEUTRON	CAPTURE CROSS SECTION
691179	USA	63	EUROPIUM 151	NEUTRON	CAPTURE CROSS SECTION
691178	USA	63	EUROPIUM 151	NEUTRON	N,2N
692267	JAP	63	EUROPIUM 154	NEUTRON	CAPTURE CROSS SECTION
742044	FR	64	GADOLINIUM	NEUTRON	CAPTURE CROSS SECTION
692270	ITY	64	GADOLINIUM	NEUTRON	RESONANCE PARAMETERS
702021	JAP	64	GADOLINIUM 156	NEUTRON	N,P
692284	SWT	66	DYSPROSIUM 164	NEUTRON	CAPTURE CROSS SECTION
692285	ITY	67	HOLMIUM 165	NEUTRON	RESONANCE PARAMETERS
702022	JAP	68	ERBIUM 166	NEUTRON	N,P
702023	JAP	68	ERBIUM 168	NEUTRON	N,P
671075	USA	69	THULIUM 169	NEUTRON	CAPTURE CROSS SECTION
692288	FR	69	THULIUM 169	NEUTRON	N,2N
692287	ITY	69	THULIUM 169	NEUTRON	RESONANCE PARAMETERS
671076	USA	69	THULIUM 170	NEUTRON	CAPTURE CROSS SECTION
671078	USA	69	THULIUM 171	NEUTRON	CAPTURE CROSS SECTION
702024	JAP	70	YTTERBIUM 174	NEUTRON	N,P
621023	USA	72	HAFNIUM	NEUTRON	CAPTURE CROSS SECTION
691393	USA	73	TANTALUM 181	NEUTRON	CAPTURE CROSS SECTION
691395	USA	73	TANTALUM 181	NEUTRON	CAPTURE CROSS SECTION
691209	USA	73	TANTALUM 181	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691210	USA	73	TANTALUM 181	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691191	USA	73	TANTALUM 181	NEUTRON	NEUTRON EMISSION CROSS SECTION
691198	USA	74	TUNGSTEN	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691199	USA	74	TUNGSTEN	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
742048	FR	74	TUNGSTEN	NEUTRON	N,2N
691196	USA	74	TUNGSTEN	NEUTRON	NEUTRON EMISSION CROSS SECTION
682040	JAP	79	GOLD 197	NEUTRON	CAPTURE CROSS SECTION
701025	USA	79	GOLD 197	NEUTRON	CAPTURE CROSS SECTION
692315	FR	79	GOLD 197	NEUTRON	N,2N
682047	JAP	82	LEAD	NEUTRON	TOTAL CROSS SECTION
691212	USA	82	LEAD	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
691213	USA	82	LEAD	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
682048	JAP	88	RADIUM 226	NEUTRON	CAPTURE CROSS SECTION
682049	JAP	90	THORIUM 232	NEUTRON	ENERGY DIFFERENTIAL INELASTIC CROSS SECTION
691398	USA	90	THORIUM 232	NEUTRON	ABSORPTION CROSS SECTION

II.D. LIST OF WITHDRAWN REQUESTS (continued)

671084	USA	90	THORIUM 232	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION
742065	FR	92	URANIUM 232	NEUTRON	CAPTURE CROSS SECTION
742064	FR	92	URANIUM 232	NEUTRON	FISSION CROSS SECTION
692351	FR	92	URANIUM 233	NEUTRON	CAPTURE CROSS SECTION
671094	USA	92	URANIUM 233	NEUTRON	CAPTURE GAMMA RAY SPECTRUM
671087	USA	92	URANIUM 233	NEUTRON	N,2N
693046	IND	92	URANIUM 233	NEUTRON	FISSION CROSS SECTION
742066	FR	92	URANIUM 233	NEUTRON	FISSION CROSS SECTION
621046	USA	92	URANIUM 233	NEUTRON	PROMPT NEUTRONS EMITTED PER FISSION
693048	IND	92	URANIUM 233	NEUTRON	INFORMATION ON NEUTRONS FROM A FISSION FRAGMENT
692357	FR	92	URANIUM 234	NEUTRON	CAPTURE CROSS SECTION
692354	FR	92	URANIUM 234	NEUTRON	FISSION CROSS SECTION
621047	USA	92	URANIUM 234	NEUTRON	PROMPT NEUTRONS EMITTED PER FISSION
661042	USA	92	URANIUM 235	NEUTRON	DIFFERENTIAL ELASTIC CROSS SECTION
691240	USA	92	URANIUM 235	NEUTRON	ENERGY DIFFERENTIAL INELASTIC CROSS SECTION
691242	USA	92	URANIUM 235	NEUTRON	FISSION CROSS SECTION
693055	SAF	92	URANIUM 235	NEUTRON	FISSION CROSS SECTION
693056	IND	92	URANIUM 235	NEUTRON	FISSION CROSS SECTION
702027	JAP	92	URANIUM 235	NEUTRON	FISSION CROSS SECTION
712056	JAP	92	URANIUM 235	NEUTRON	FISSION CROSS SECTION
691252	USA	92	URANIUM 235	NEUTRON	CAPTURE TO FISSION RATIO (ALPHA)
714010	CCP	92	URANIUM 235	NEUTRON	NEUTRONS EMITTED PER FISSION (NU BAR)
691259	USA	92	URANIUM 235	NEUTRON	DELAYED NEUTRONS EMITTED PER FISSION
712061	JAP	92	URANIUM 235	NEUTRON	DELAYED NEUTRONS EMITTED PER FISSION
693058	IND	92	URANIUM 235	NEUTRON	INFORMATION ON NEUTRONS FROM A FISSION FRAGMENT
621048	USA	92	URANIUM 236	NEUTRON	PROMPT NEUTRONS EMITTED PER FISSION
702030	JAP	92	URANIUM 238	NEUTRON	ENERGY DIFFERENTIAL INELASTIC CROSS SECTION
691472	USA	92	URANIUM 238	NEUTRON	CAPTURE CROSS SECTION
691816	CAN	92	URANIUM 238	NEUTRON	CAPTURE CROSS SECTION
692396	FR	92	URANIUM 238	NEUTRON	N,2N
742085	FR	92	URANIUM 238	NEUTRON	N,3N
693064	SAF	92	URANIUM 238	NEUTRON	FISSION CROSS SECTION
712068	JAP	92	URANIUM 238	NEUTRON	FISSION CROSS SECTION
712070	JAP	92	URANIUM 238	NEUTRON	DELAYED NEUTRONS EMITTED PER FISSION
742091	FR	92	URANIUM 239	NEUTRON	CAPTURE CROSS SECTION
671114	USA	93	NEPTUNIUM 237	NEUTRON	CAPTURE CROSS SECTION
671116	USA	93	NEPTUNIUM 237	NEUTRON	CAPTURE CROSS SECTION
701036	USA	93	NEPTUNIUM 237	NEUTRON	N,2N
671113	USA	93	NEPTUNIUM 237	NEUTRON	FISSION CROSS SECTION
712072	JAP	93	NEPTUNIUM 237	NEUTRON	FISSION CROSS SECTION
671117	USA	93	NEPTUNIUM 238	NEUTRON	CAPTURE CROSS SECTION
671120	USA	94	PLUTONIUM 238	NEUTRON	CAPTURE CROSS SECTION
691301	USA	94	PLUTONIUM 238	NEUTRON	CAPTURE CROSS SECTION
721083	USA	94	PLUTONIUM 238	NEUTRON	FISSION CROSS SECTION
621052	USA	94	PLUTONIUM 238	NEUTRON	PROMPT NEUTRONS EMITTED PER FISSION
671121	USA	94	PLUTONIUM 239	NEUTRON	DIFFERENTIAL ELASTIC CROSS SECTION
691817	CAN	94	PLUTONIUM 239	NEUTRON	CAPTURE CROSS SECTION
691818	CAN	94	PLUTONIUM 239	NEUTRON	CAPTURE CROSS SECTION
693079	IND	94	PLUTONIUM 239	NEUTRON	CAPTURE CROSS SECTION
701039	USA	94	PLUTONIUM 239	NEUTRON	NEUTRON EMISSION CROSS SECTION
682069	JAP	94	PLUTONIUM 239	NEUTRON	FISSION CROSS SECTION
691819	CAN	94	PLUTONIUM 239	NEUTRON	FISSION CROSS SECTION
693071	IND	94	PLUTONIUM 239	NEUTRON	FISSION CROSS SECTION
693073	SAF	94	PLUTONIUM 239	NEUTRON	CAPTURE TO FISSION RATIO (ALPHA)



II.D. LIST OF WITHDRAWN REQUESTS (continued)

691820	CAN	94	PLUTONIUM 239	NEUTRON	NEUTRONS EMITTED PER NEUTRON ABSORPTION (ETA)
714027	CCP	94	PLUTONIUM 239	NEUTRON	NEUTRONS EMITTED PER FISSION (NU BAR)
712084	JAP	94	PLUTONIUM 239	NEUTRON	DELAYED NEUTRONS EMITTED PER FISSION
693075	IND	94	PLUTONIUM 239	NEUTRON	INFORMATION ON NEUTRONS FROM A FISSION FRAGMENT
712085	JAP	94	PLUTONIUM 240	NEUTRON	TOTAL CROSS SECTION
682070	JAP	94	PLUTONIUM 240	NEUTRON	ENERGY DIFFERENTIAL INELASTIC CROSS SECTION
712088	JAP	94	PLUTONIUM 240	NEUTRON	CAPTURE CROSS SECTION
712089	JAP	94	PLUTONIUM 240	NEUTRON	CAPTURE CROSS SECTION
712086	JAP	94	PLUTONIUM 240	NEUTRON	FISSION CROSS SECTION
712090	JAP	94	PLUTONIUM 240	NEUTRON	DELAYED NEUTRONS EMITTED PER FISSION
712091	JAP	94	PLUTONIUM 241	NEUTRON	TOTAL CROSS SECTION
712098	JAP	94	PLUTONIUM 241	NEUTRON	CAPTURE CROSS SECTION
691821	CAN	94	PLUTONIUM 241	NEUTRON	FISSION CROSS SECTION
691822	CAN	94	PLUTONIUM 241	NEUTRON	NEUTRONS EMITTED PER NEUTRON ABSORPTION (ETA)
691823	CAN	94	PLUTONIUM 241	NEUTRON	NEUTRONS EMITTED PER NEUTRON ABSORPTION (ETA)
671199	USA	94	PLUTONIUM 242	NEUTRON	CAPTURE CROSS SECTION
671134	USA	94	PLUTONIUM 242	NEUTRON	N,P
621055	USA	94	PLUTONIUM 242	NEUTRON	PROMPT NEUTRONS EMITTED PER FISSION
682073	JAP	95	AMERICIUM 241	NEUTRON	CAPTURE CROSS SECTION
671138	USA	95	AMERICIUM 243	NEUTRON	TOTAL CROSS SECTION
671140	USA	96	CURIUM 243	NEUTRON	TOTAL CROSS SECTION
691343	USA	96	CURIUM 243	NEUTRON	CAPTURE CROSS SECTION
671141	USA	96	CURIUM 243	NEUTRON	FISSION CROSS SECTION
691342	USA	96	CURIUM 243	NEUTRON	FISSION CROSS SECTION
691345	USA	96	CURIUM 244	NEUTRON	FISSION CROSS SECTION
691347	USA	96	CURIUM 245	NEUTRON	FISSION CROSS SECTION
691349	USA	96	CURIUM 246	NEUTRON	FISSION CROSS SECTION
691351	USA	96	CURIUM 247	NEUTRON	FISSION CROSS SECTION
671150	USA	96	CURIUM 248	NEUTRON	TOTAL CROSS SECTION
691353	USA	96	CURIUM 248	NEUTRON	CAPTURE CROSS SECTION
691352	USA	96	CURIUM 248	NEUTRON	FISSION CROSS SECTION
691355	USA	98	CALIFORNIUM 249	NEUTRON	FISSION CROSS SECTION
691356	USA	98	CALIFORNIUM 250	NEUTRON	FISSION CROSS SECTION
691824	CAN	98	CALIFORNIUM 252	SPONTANECUS	NEUTRONS EMITTED PER FISSION (NU BAR)
714034	CCP	98	CALIFORNIUM 252	SPONTANECUS	NEUTRONS EMITTED PER FISSION (NU BAR)
721104	USA	98	CALIFORNIUM 252	SPONTANECUS	ENERGY SPECTRUM OF FISSION NEUTRONS
691358	USA	98	CALIFORNIUM 252	NEUTRON	FISSION CROSS SECTION
671156	USA	98	CALIFORNIUM 253	NEUTRON	CAPTURE CROSS SECTION
691360	USA	99	EINSTEINIUM 253	NEUTRON	FISSION CROSS SECTION
671157	USA	99	EINSTEINIUM 254	NEUTRON	CAPTURE TO FISSION RATIO (ALPHA)
691361	USA	100	FERMIUM 255	NEUTRON	FISSION CROSS SECTION
691362	USA	100	FERMIUM 257	NEUTRON	FISSION CROSS SECTION

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37 RUBIDIUM 85	o o o o o o o o o o o o o o o o	IIc 29
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41 NIOBIUM 95	o o o o o o o o o o o o o o o o	IIo 35
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II. F. DATA REQUEST LIST FOR FISSION REACTOR DEVELOPMENT

=====

1 HYDROGEN 1 NEUTRON DIFFERENTIAL ELASTIC CROSS SECTION

=====

721001 7.00 MEV 20.0 MEV 2.0% 1 USA F.C.S: CASWELL NBS 72004

Q: MEASUREMENTS AT 3 ENERGIES - 7, 10, AND 20 MEV  
SUGGESTED:  
O: FOR USE AS STANDARD.

STATUS-----STATUS

LAS HOPKINS+ - ND/A 9 137(1971), EVALUATION TO 30 MEV.  
LAS STEWART+ - LA-4874(1971), SUPPLEMENTARY TO ND/A 9. IMPROVED INTERPOLATION CAPABILITIES.  
BRC VOIGNIER. - CEA-R-4632(1974), THEORETICAL REVIEW 1 TO 2 MEV.  
HRV LOMON+ - PR/C 9 1329(1974), THEORETICAL REVIEW COVERING MEV ENERGY RANGE.  
YOK SHIRATO+ - JPJ 36 131(1974), DATA AT 14.1 MEV  
WIS BURROWS+ PR/C 7 1306(1973), DATA 24.0 AND 27.2 MEV  
GEL PAULSEN+ - PL/B 29 562(1969), DATA 1 TO 6 MEV.  
HAR COOKSON+ - NEANDC(UK)-160(1974), IN PROGRESS 14 TO 28 MEV.  
DKL IN PROGRESS E TO 15 MEV.  
WMU SHAMU - WGFK IN PROGRESS.

=====

1 HYDROGEN 2 NEUTRON ELASTIC CROSS SECTION

=====

721002 1.00 EV 1.00 KEV 1 USA N.C: STEEN BET

A: ACCURACY REQUIRED - 0.5 TO 1 PERCENT.  
M: SUBSTANTIAL MODIFICATIONS.

STATUS-----STATUS

RPI STOLER+ - PRL 29 1745(1972), DATA 1 KEV TO 1 MEV.

=====

2 HELIUM 3 NEUTRON N, F

=====

691001 10.0 KEV 3.00 MEV 1.0% 2 USA P.C.B: HEMMIG AEC

Q: ABSOLUTE VALUES REQUIRED.  
A: INTERMEDIATE ACCURACY USEFUL.  
O: FOR USE AS A SECONDARY STANDARD.

691003 1.00 KEV 3.00 MEV 3.0% 2 USA R.C.S: CASWELL NBS

Q: ABSOLUTE VALUES REQUIRED.  
A: INTERMEDIATE ACCURACY USEFUL.  
O: FOR USE AS A SECONDARY STANDARD.

692003 10.0 KEV 1.00 MEV 2.0% 2 UK B.R: ROSE HAR

A: ENERGY DEPENDENCE NEEDED MORE ACCURATELY  
O: USED AS A STANDARD IN CROSS-SECTION MEASUREMENTS.

713001 10.0 KEV 10.0 MEV 3.0% 1 INC M.P.C: NAVALKAR TRM

Q: ENERGY STEPS OF 0.1 MEV.  
O: FOR NEUTRON SPECTRUM MEASUREMENTS WITH SANDWICHED HE-3 SPECTROMETER.

STATUS-----STATUS

GA COSTELLO+ - NSE 39 409(1970), DATA 0.3 TO 1.1 MEV WITH 10 PERCENT ACCURACY.  
GA COSTELLO+ - 70 ANL 74(1970), REVIEW.  
GEL LISKIEN+ - 72VIENNA 135, FROM EVALUATION OF INVERSE REACTION, DATA 0.2 TO 9 MEV.

=====

3 LITHIUM 6 NEUTRON ELASTIC CROSS SECTION

=====

691008 1.00 KEV 300. KEV 5.0% 1 USA R.C.S: CASWELL NBS

Q: DIFFERENTIAL ELASTIC MAY BE REQUIRED AT UPPER END.  
A: ACCURACY TO OBTAIN N, ALPHA TO 2 PERCENT.

STATUS-----STATUS

HAR UTTLEY+ - 70 ANL 80(1970), REVIEW.  
HAR ASAMI+ - EANDC(J)-13 (1969), DATA 1 TO 10 KEV WITH 4 PERCENT ACCURACY.

=====

3 LITHIUM 6 NEUTRON N, ALPHA

=====

691009 1.00 KEV 3.00 MEV 1.0% 1 USA C.E.T: TILL P.C.B: HEMMIG ANL AEC

A: ACCURACY OF 3 PERCENT USEFUL.  
ENERGY RESOLUTION MUST REPRODUCE TRUE SHAPE.  
O: FOR USE AS A STANDARD.

691011 50.0 EV 3.00 MEV 3.0% 1 USA G.E.H: HANSEN LAS

O: FOR USE AS A STANDARD.

692004 5.00 KEV 15.0 MEV 5.0% 1 GER M.K.V: ECHLE KFK

O: STANDARD.

692005 100. KEV 5.00 MEV 5.0% 3 UK C.G.C: CAMPBELL WIN

Q: SECONDARY ANGULAR DISTRIBUTION REQUIRED.  
O: FLUX MONITOR FOR NEUTRON SPECTRUM MEASUREMENTS.

Reference	Energy	Source	Energy	Yield	Order	Country	Author(s)	Institution	Notes
712002	500e KEV	5.00 MEV	5.0%	1	UK	B. ROSE C. G. CAMPBELL	HAR WIN		O: STANDARD FOR CROSS-SECTION MEASUREMENTS AND FOR NEUTRON SPECTRUM MEASUREMENTS.
713002	100e KEV	10.0 MEV	3.0%	1	IND	M. P. NAVALKAR	TRM		O: ENERGY STEPS OF 0.1 MEV. O: FOR NEUTRON SPECTRUM MEASUREMENTS WITH SANDWICHED LI-6 SPECTROMETER.
721008	100e KEV	13.0 MEV	5.0%	1	USA	H. T. MOTZ	LAS		O: ABSOLUTE VALUES REQUIRED BELOW 150 KEV. O: FOR USE AS STANDARD BELOW 3 MEV.
721009	10.0 KEV	14.0 MEV		1	USA	R. S. CASWELL	NBS		A: ACCURACY 1 PERCENT BELOW 100 KEV, 3 PERCENT ABOVE. O: FOR USE AS STANDARD BELOW 3 MEV.
732038	10.0 KEV	3.00 MEV	2.0%	1	FR	A. SCHMIDT	CAD		O: STANDARD.
742024	5.00 KEV	15.0 MEV	5.0%	1	BLG	G. DELEEUW-GIERTS	MOL		O: SECONDARY ANGULAR DISTRIBUTION REQUIRED UP TO 1 MEV WITH EMPHASIS BELOW 100 KEV AND ABOVE 500 KEV. A: ANGULAR RESOLUTION - 10 DEGREES. NEUTRON ENERGY RESOLUTION - 5 KEV UP TO 150 KEV AND 10 KEV UP TO 500 KEV. O: DETERMINATION OF NEUTRON SPECTRA FROM TRITON ENERGY DISTRIBUTIONS.

STATUS-----STATUS

HAR UTLEY+ - AERE-PR/NP 19 S(1972), EVALUATION.  
 HAR UTLEY+ - AERE-PR/NP 20 24(1974), EVALUATION.  
 HAR CLEMENT+ - AERE-R-7075(1972), DATA 150 KEV TO 3.9 MEV. SANDWICH DETECTOR. LOWER THAN OTHER RECENT DATA.  
 HAR COATES+ - 72VIENNA 105, DATA 1 TO 500 KEV.  
 HAR COATES+ - AERE-PR/NP 20 35(1974), DATA 1.5 TO 500 KEV  
 CAD FORT+ - 72VIENNA 113, DATA 20 KEV TO 1700 KEV. DATA REMAIN PRELIMINARY DUE TO UNCERTAINTY IN LI-6 CONTENT OF GLASS SCINTILLATORS.  
 MHG STEPHANY+ - USNDC-9 129(1973), PRELIMINARY VALUE AT 964 KEV.  
 ANL POENITZ+ - ZP 266 359(1974), DATA 90 KEV TO 1.5 MEV  
 IRT FRIESENHAN - INTEL-RT-7011-C01(1974), DATA 1 TO 1500 KEV. HIGHER THAN OTHER RECENT MEASUREMENTS.  
 DRE OVERLEY+ - NP/A 221 573(1974), DATA 0.1 TO 1.8 MEV  
 HAR LYNN - EXPERIMENT PLANNED FOR LATE 1975.  
 NBS LAMAZE+ - IN PROGRESS 200 KEV TO 1.5 MEV RELATIVE TO BLACK DETECTOR.  
 NBS MEIER+ - EXPERIMENT PLANNED NEAR RESONANCE WITH ASSOCIATED PARTICLE TECHNIQUE.

3 LITHIUM 6 NEUTRON TOTAL ALPHA PRODUCTION CROSS SECTION

651012	1.00 KEV	18.0 MEV	10.0%	2	USA	W. N. MC ELROY	HED		O: FOR USE AS A FLUENCE MONITOR. TOTAL HELIUM PRODUCTION FOR MASS SPECTROMETER.
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3 LITHIUM 7 ALPHA ALPHA, N

721146	4.00 MEV	6.00 MEV	2.0%	2	USA	R. S. CASWELL	NBS		A: ACCURACY 2 PERCENT FOR INVERSE REACTION. O: ENERGY CORRESPONDS TO 10 KEV TO 1 MEV FOR INVERSE REACTION B-10(N, ALPHA).
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4 BERYLLIUM 9 NEUTRON NEUTRON EMISSION CROSS SECTION

621002	1.00 MEV	5.00 MEV	15.0%	2	USA	P. B. HEMMIG	AEC		O: SECONDARY ENERGY-ANGLE DISTRIBUTIONS REQUIRED. A: ACCURACY 50 MB AT 2-3 MEV. RESOLUTION, 5 PERCENT INCIDENT ENERGY, 500 KEV IN OUTGOING ENERGY. O: FOR BE MODERATED FAST SPECTRUM REACTORS. FOR THERMAL BREEDERS OR CONVERTORS. NEUTRON ECONOMY CALCULATIONS.
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5 BORON NEUTRON TOTAL CROSS SECTION

741001	100e KEV	15.0 MEV		2	USA	P. B. HEMMIG C. E. CLIFFORD	AEC ORL		A: ACCURACY REQUIRED - 3 TO 4 PERCENT. O: FOR SHIELDING EFFECT OF BORON CARBIDE. M: NEW REQUEST.
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STATUS-----STATUS

DHO HAUSLADEN - CDD-1717, DATA TO 4.5 MEV FOR B-10 AND B-11.

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5 BORON NEUTRON DIFFERENTIAL ELASTIC CROSS SECTION

=====

791003 1000 KEV 1500 MEV 150% 2 USA P0B0HEMMIG AEC  
 C0E0CLIFFORD ORL  
 M: NEW REQUEST0

STATUS-----STATUS

OHO HAUSLADEN0 - COO-1717, DATA TO 405 MEV FOR B-10 AND B-110

=====

5 BORON NEUTRON DOUBLE DIFFERENTIAL INELASTIC CROSS SECTION

=====

791005 1500 MEV 100% 2 USA P0B0HEMMIG AEC  
 C0E0CLIFFORD ORL  
 A: 15 PERCENT IN ENERGY SPECTRA0  
 20 PERCENT IN ANGULAR DISTRIBUTION IF NOT  
 ISOTROPIC0  
 OUTGOING ENERGY RESOLUTION 10 PERCENT0  
 M: NEW REQUEST0

=====

5 BORON NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION

=====

791007 1000 KEV 1500 MEV 150% 2 USA P0B0HEMMIG AEC  
 C0E0CLIFFORD ORL  
 Q: ENERGY AND ANGULAR DISTRIBUTION OF PHOTONS WANTED0  
 A: 20 PERCENT IN ANGULAR DISTRIBUTION IF NOT  
 ISOTROPIC0  
 GAMMA ENERGY RESOLUTION 10 PERCENT0  
 M: NEW REQUEST0

=====

5 BORON 10 NEUTRON TOTAL CROSS SECTION

=====

691016 1000 KEV 1000 MEV 100% 2 USA R0S0CASWELL NBS  
 Q: DESIRED FOR ASSESSING B-10(N,ALPHA) STANDARD0

STATUS-----STATUS

KFK SPENCER+ - KFK-1518(1973), DATA 90 TO 420 KEV0  
 GLS SYME+ - EANDC(UK)-151 (1973), IN PROGRESS 200 KEV TO 9 MEV0

=====

5 BORON 10 NEUTRON DIFFERENTIAL ELASTIC CROSS SECTION

=====

691017 1000 KEV 1000 MEV 2 USA R0S0CASWELL NBS  
 A: ACCURACY 5 PERCENT TO 100 KEV AND 3 PERCENT ABOVE0  
 Q: DESIRED FOR ASSESSING B-10(N,ALPHA) STANDARD0

=====

5 BORON 10 NEUTRON ABSORPTION CROSS SECTION

=====

692010 8000 KEV 1000 MEV 200% 2 FR J0Y0BARRE CAD  
 Q: VALUE RELATIVE TO U-235 FISSION OR U-238 CAPTURE  
 ALSO NEEDED0  
 Q: NEEDED AS A STANDARD FOR MEASUREMENTS0  
 FOR FAST REACTOR CALCULATIONS0

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5 BORON 10 NEUTRON N,ALPHA

=====

642001 1000 KEV 1000 MEV 200% 1 UK B0ROSE HAR  
 Q: ALSO (N,ALPHA GAMMA)0  
 A: ENERGY DEPENDENCE NEEDED MORE ACCURATELY0  
 Q: USED AS A STANDARD IN CROSS SECTION MEASUREMENTS0

682004 1000 KEV 2000 MEV 1 BLG A0FABRY MOL  
 A: ACCURACY 1 PERCENT TO 100 KEV, 3 PERCENT ABOVE0  
 Q: STANDARD CROSS SECTION0  
 CALCULATION OF STANDARD NEUTRON SPECTRUM0  
 M: SUBSTANTIAL MODIFICATIONS0

691022 1000 KEV 1000 MEV 200% 1 USA R0S0CASWELL NBS

691364 1000 KEV 1000 MEV 1 USA C0E0TILL ANL  
 P0B0HEMMIG AEC  
 F0C0MAIENSCHIN ORL  
 Q: ABSOLUTE VALUES REQUIRED0  
 A: 1-100 KEV, ACCURACY 1 PERCENT, 3 PERCENT USEFUL0  
 100-300 KEV, ACCURACY 3 PERCENT, 10 PERCENT USEFUL0  
 00-3-10 MEV, ACCURACY 5 PERCENT, 10 PERCENT USEFUL0  
 Q: FOR USE AS A STANDARD0

691373 1000 KEV 1000 MEV 1 USA C0E0TILL ANL  
 P0B0HEMMIG AEC  
 F0C0MAIENSCHIN ORL  
 Q: ABSOLUTE CROSS SECTION FOR PRODUCTION OF 480 KEV  
 GAMMA IS REQUIRED0  
 A: 1-100 KEV, ACCURACY 1 PERCENT, 3 PERCENT USEFUL0  
 100-300 KEV, ACCURACY 3 PERCENT, 10 PERCENT USEFUL0  
 00-3-10 MEV, ACCURACY 5 PERCENT, 10 PERCENT USEFUL0  
 Q: FOR USE AS A STANDARD0

721028 5000 KEV 1000 MEV 200% 1 USA R0S0CASWELL NBS  
 Q: ABSOLUTE CROSS SECTION FOR PRODUCTION OF 480 KEV  
 GAMMA IS REQUIRED0  
 Q: FOR USE AS A STANDARD0



Z54025 5.00 KEV 10.0 MEV 1 CCF L<sub>0</sub>N<sub>0</sub>USACHEV FE1  
 A: FROM 0.5 - 100 KEV ACCURACY 2.6 PERCENT,  
 PRIORITY 2 ACCURACY 2.6 PERCENT.  
 O: STANDARD CROSS SECTION BELOW 100 KEV.  
 FOR MORE DETAIL SEE INTRODUCTION.  
 M: NEW REQUEST.

-----STATUS-----

HAR SOWERBY+ - JNE 24 323(1970), DATA TO 200 KEV WITH RECOMMENDED CURVE.  
 CAD SZABO+ - EANDC(E)-150(1972), IN PROGRESS 10 TO 100 KEV.  
 HAR COATES+ - 72VIENNA 129, PRELIMINARY DATA 1 TO 300 KEV FOR PARTIAL CROSS SECTION FOR PRODUCTION OF  
 478-KEV GAMMA RAY. FLRTHFR WORK PLANNED FOR LATE 1975.  
 GLS SYME+ - EANDC(LK)-151 59(1973), PRELIMINARY DATA 0.2 TO 9 MEV.  
 IRT FRIESENHAHN+ - INTEL-RT-7011-001(1974), DATA 1 TO 1500 KEV.  
 NBS LAMAZE+ NSE 56 94(1975), BRANCHING RATIO MEASURED AT 790 KEV.  
 NBS SCHRACK+ IN PROGRESS 200 KEV TO 1.5 MEV USING BLACK DETECTOR.

=====

691026 1.00 KEV 18.0 MEV 10.0% 1 USA W<sub>0</sub>N<sub>0</sub>MC ELROY HED  
 O: FOR USE AS A FLUENCE MONITOR.  
 TOTAL HELIUM PRODUCTION FOR MASS SPECTROMETER.

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712003 100. KEV 15.0 MEV 3.0% 2 SWC H<sub>0</sub>HAEGGBLOM AE  
 O: FOR FAST CRITICAL SYSTEM.

-----STATUS-----

PAD FASOLI+ - NF/A 205 305(1973), DATA FOR 29 ENERGIES BETWEEN 2.1 AND 4.6 MEV.  
 KTY GALATI+ - PR/C 5 1508(1972), DATA 3 TO 7 MEV.  
 ABD BUCHER+ - LSND-11 267(1974), SMALL ANGLE DATA, IN PROGRESS.  
 ORL PEREY+ - ORNL-4441 (1969), DATA FOR 13 ENERGIES BETWEEN 4.6 AND 8.6 MEV.  
 ANL MONAHAN+ - PR 188 1618(1969), DATA TC 2 MEV.  
 ANL SMITH+ - LSND-7(1973), DETAILED DATA NOW AVAILABLE TO 4 MEV.  
 ORL MORGAN+ - LSND-7 166(1973), WRK UNDERWAY TO 20 MEV.  
 QHD KNOX+ - COD-1717-6 (1973), DATA AT 2.6 MEV.  
 DKE GLASGOW+ - LSND-11 223(1974), DATA 9 TO 10 MEV, TO BE EXTENDED TO 15 MEV.  
 BRC HAQUAT+ - 73KIEV, DATA 8 TC 11 MEV.

=====

792027 1.00 KEV 15.0 MEV 10.0% 2 FR A<sub>0</sub>MICHAUDON BRC  
 O: FOR CRITICAL ASSEMBLIES.

=====

691031 4.00 MEV 5.50 MEV 15.0% 2 USA R<sub>0</sub>EHRlich KAP  
 Q: POLARIZATION OF SCATTERED NEUTRONS WANTED.  
 A: ENERGY RESOLUTION 50 KEV.  
 O: NEEDED TO RESOLVE DISCREPANCY BETWEEN THEORY AND  
 EXPERIMENT.

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791009 1.00 KEV 1.00 MEV 10.0% 2 USA P<sub>0</sub>B<sub>0</sub>HEMMIG AEC  
 Q: RESONANCE PARAMETERS NEEDED.  
 A: RESOLUTION 20 PERCENT.  
 M: NEW REQUEST.

=====

692015 1.00 MEV 15.0 MEV 20.0% 2 FR A<sub>0</sub>MICHAUDON BRC  
 A: AVERAGE (1-COS) ACCURACY 10 PERCENT.  
 ANGULAR RESOLUTION - 2.5 DEGREES UP TO 20 DEGREES,  
 5 DEGREES FROM 20 TO 180 DEGREES.  
 O: FOR AIR SCATTERING CALCULATION.  
 NEW EVALUATION TO BE DONE IF NEW EXPERIMENTAL  
 DATA.

692016 8.00 MEV 14.0 MEV 10.0% 2 SWD H<sub>0</sub>O<sub>0</sub>ZETTERSTROEM FOA  
 A: ENERGY RESOLUTION 0.2 MEV.  
 O: SHIELDING.

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7 NITROGEN 14 NEUTRON DIFFERENTIAL ELASTIC CROSS SECTION (CONTINUED)

STATUS-----STATUS

NEL BUCHER+ - AD-734877 (1971), SMALL ANGLE SCATTERING 7.5 TO 9.5 MEV.  
 NEL BUCHER+ - LSND-3 211(1972), WGRK IN PROGRESS TO 14 MEV.  
 ORL KINNEY+ - LSND-9 141(1973), IN PROGRESS 4.3 TO 8.6 MEV.

7 NITROGEN 14 NEUTRON N,2N

693002 14.00 MEV 10.00% 3 HUN J.C.SIKAI KOS  
 A: INCIDENT ENERGY RESOLUTION 200 KEV.  
 O: NEEDED FOR NEUTRON ACTIVATION ANALYSIS AND CROSS SECTION SYSTEMATICS.

7 NITROGEN 14 NEUTRON NEUTRON EMISSION CROSS SECTION

692217 4.00 MEV 15.00 MEV 20.00% 2 FR A.C.MICHAUDON BRC  
 Q: SECONDARY ENERGY-ANGLE DISTRIBUTIONS REQUIRED.  
 A: AVERAGE (1-COS) ACCURACY 10 PERCENT.  
 O: FOR AIR SCATTERING CALCULATION.  
 NEW EVALUATION TO BE DONE IF NEW EXPERIMENTAL DATA.

692218 8.00 MEV 14.00 MEV 10.00% 2 SWD H.C.ZETTERSTROEM FOA  
 Q: SECONDARY ENERGY DISTRIBUTION ALSO USEFUL.  
 A: ENERGY RESOLUTION 0.2 MEV.  
 O: SHIELDING.

7 NITROGEN 14 NEUTRON N,F

692220 1.00 KEV 15.00 MEV 10.00% 2 FR A.C.MICHAUDON BRC  
 O: EVALUATION MAY BE SUFFICIENT.  
 NO MEASUREMENTS EXIST FROM 4.25 TO 15 MEV.

STATUS-----STATUS

BRC MICHAUDON - (1969), NO MEASUREMENTS AVAILABLE BETWEEN 4.25 AND 15 MEV.

8 OXYGEN NEUTRON DIFFERENTIAL ELASTIC CROSS SECTION

692228 10.00 KEV 16.00 MEV 5.00% 1 USA F.C.B.FEMMIG AEC  
 C.E.CLIFFORD ORL  
 O: NEEDED FOR FAST REACTOR REFLECTOR WORTH.  
 M: SUBSTANTIAL MODIFICATIONS.

692221 1.70 MEV 2.20 MEV 10.00% 2 GER F.O.WELLER KFK  
 O: EXPERIMENTAL DATA AVAILABLE IN THIS RANGE NOT SUFFICIENTLY DETAILED TO ACCOUNT FOR RESONANCE STRUCTURE.

692222 4.70 MEV 14.00 MEV 10.00% 2 GER F.O.WELLER KFK  
 A: MEASUREMENTS DESIRED IN ENERGY STEPS INCREASING FROM 30 TO 100 KEV.  
 ANGULAR RESOLUTION 5 TO 10 DEGREES.  
 O: ONLY FEW MEASUREMENT POINTS AVAILABLE.

692223 8.00 MEV 14.00 MEV 10.00% 2 SWD H.C.ZETTERSTROEM FOA  
 Q: SECONDARY ENERGY DISTRIBUTION ALSO USEFUL.  
 A: ENERGY RESOLUTION 0.2 MEV.  
 O: SHIELDING.

712004 100.0 KEV 15.00 MEV 5.00% 2 SWD H.C.HAEGGBLOM AE  
 O: FOR FAST REACTOR CALCULATIONS.

STATUS-----STATUS

ORL KINNEY+ - ORNL-4780 (1972), DATA FROM 4.3 TO 8.7 MEV.  
 NEL BUCHER+ - LSND-1 232(1972), SMALL ANGLE DATA FROM 7.4 TO 9.6 MEV.  
 ORL FOWLER+ - PR/C 2 124(1970), DATA 1.8 TO 3.4 MEV.  
 LAS FOSTER+ - LA-DC-13271 (1971), DATA 5 TO 14 MEV.  
 LAS FOSTER+ - LA-4780 (1972), EVALUATION 5 TO 20 MEV.

8 OXYGEN NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION

792028 10.00 KEV 15.00 MEV 10.00% 2 FR A.C.MICHAUDON BRC  
 O: FOR SHIELDING CALCULATION.

8 OXYGEN NEUTRON NEUTRON EMISSION CROSS SECTION

692225 8.00 MEV 14.00 MEV 10.00% 2 SWD H.C.ZETTERSTROEM FOA  
 Q: SECONDARY ENERGY DISTRIBUTION ALSO USEFUL.  
 A: ENERGY RESOLUTION 0.2 MEV.  
 O: SHIELDING.



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11 SODIUM 23 NEUTRON DIFFERENTIAL ELASTIC CROSS SECTION
   
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652032 2.00 MEV 10.0 MEV 2 GER FOWELLER KFK
   
Q: SEPARATION OF ELASTIC AND INELASTIC ANGULAR
   
DEPENDENCES DESIRED.
   
MEASUREMENTS IN STEPS OF SEVERAL 100 KEV.
   
A: ACCURACY REQUIRED TO BETTER THAN 10 PERCENT.
   
INCIDENT NEUTRON RESOLUTION 100 KEV.
   
ANGULAR RESOLUTION 5 - 10 DEGREES.
   
O: BECAUSE OF RESONANCES IN TOTAL CROSS SECTION,
   
FLUCTUATIONS IN ANGULAR DISTRIBUTION EXPECTED.
   
THEREFORE, MORE EXPERIMENTAL DATA NEEDED.

741212 10.0 KEV 15.0 MEV 10.0% 2 USA P.B. HEMMIG AEC
   
C.E. CLIFFORD GRL
   
A: 15 PERCENT IN ANGULAR DISTRIBUTION.
   
M: NEW REQUEST.

-----STATUS-----

FEI POPOV+ - 71 KIEV (1971), DATA AT 4.4 MEV.
   
ALD COLES+ - AWRE/C-3/71, DATA AT 5.0 MEV.
   
PAD FASOLI+ - EANDC(E)-140 (1971), DATA 8 TO 9 MEV.
   
ORL PEREY+ - ORNL-4518 (1970), DATA 5.4 TO 8.5 MEV.
   
PAD FASOLI+ - NP/A 125 227(1969), DATA 1.5 TO 6.4 MEV.
   
USA (1974), USNDC BELIEVES ANGULAR DISTRIBUTIONS ARE KNOWN TO 15 PERCENT UP TO 1 MEV. REQUESTS FOR
   
DATA OF 15-PERCENT ACCURACY MUST BE FOR DATA IN WINDOWS OR FOR FINER RESOLUTION, WHICH SHOULD BE
   
SPECIFIED EXPLICITLY.

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11 SODIUM 23 NEUTRON ANGULAR DIFFERENTIAL INELASTIC CROSS SECTION
   
=====

652035 4.00 MEV 15.0 MEV 10.0% 2 GER FOWELLER KFK

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11 SODIUM 23 NEUTRON ENERGY DIFFERENTIAL INELASTIC CROSS SECTION
   
=====

621006 2.00 MEV 10.0 MEV 10.0% 2 USA C.E. TILL ANL
   
P.B. HEMMIG AEC
   
Q: TOTAL INTEGRAL OVER 4 PI REQUIRED.
   
SPECTRA AT SEVERAL ANGLES IF SIGNIFICANTLY
   
ANISOTROPIC.
   
A: ENERGY RESOLUTION LESS THAN 10 PERCENT INCIDENT
   
AND FINAL ENERGIES.

-----STATUS-----

FEI POPOV+ - 71 KIEV (1971), DATA AT 4.4 MEV.
   
ALD COLES+ - AWRE/D-3/71, DATA AT 5 MEV FOR 7 LEVELS.
   
PAD FASOLI+ - EANDC(E)-140 (1971), DATA 8 TO 9 MEV AND AT 14 MEV.
   
ORL PEREY+ - ORNL-4518 (1970), DATA 5.4 TO 8.5 MEV.
   
PAD FASOLI+ - NP/A 125 227(1969), DATA 1.5 TO 6.4 MEV FOR 3 LEVELS.

=====
   
11 SODIUM 23 NEUTRON DOUBLE DIFFERENTIAL INELASTIC CROSS SECTION
   
=====

712005 15.0 MEV 10.0% 2 SWC H. HAEGGBLOM AE

O: FOR FAST REACTOR CALCULATIONS.

741014 15.0 MEV 2 USA P.B. HEMMIG AEC
   
C.E. CLIFFORD ORL

A: ACCURACY BELOW 2 MEV - 5 PERCENT.
   
ACCURACY ABOVE 2 MEV - 10 PERCENT.
   
15 PERCENT IN ENERGY SPECTRA.
   
OUTGOING ENERGY RESOLUTION 10 PERCENT.
   
M: NEW REQUEST.

-----STATUS-----

FEI POPOV+ - 71 KIEV (1971), DATA AT 4.4 MEV.
   
ALD COLES+ - AWRE/D-3/71, DATA AT 5 MEV FOR 7 LEVELS.
   
PAD FASOLI+ - EANDC(E)-140 (1971), DATA 8 TO 9 MEV AND AT 14 MEV.
   
ORL PEREY+ - ORNL-4518 (1970), DATA 5.4 TO 8.5 MEV.
   
PAD FASOLI+ - NP/A 125 227(1969), DATA 1.5 TO 6.4 MEV FOR 3 LEVELS.

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11 SODIUM 23 NEUTRON CAPTURE CROSS SECTION
   
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692002 100. EV 100. KEV 2 UK C.G. CAMPBELL WIN

A: ACCURACY 10 PERCENT UP TO 10 KEV, 20 PERCENT
   
ABOVE.
   
O: FOR FAST REACTORS.
   
DISCREPANCY IN RADIATION WIDTH DATA AT 3 KEV
   
RESONANCE.

692038 100. EV 50.0 KEV 10.0% 1 JAP S. KATSURAGI JAE

Q: RESONANCE PARAMETERS NEEDED.
   
O: FOR FAST REACTORS.
   
DISCREPANCIES IN RESONANCE PARAMETERS EXIST.

11 SODIUM 23 NEUTRON CAPTURE CROSS SECTION (CONTINUED)

714002 25.3 MV 4.00 KEV 2 CCF M<sub>c</sub>N<sub>o</sub>NIKOLAEV FEI  
 Q: CAPTURE WIDTH OF 2.9 KEV RESONANCE SHOULD BE MEASURED IN THREE DIFFERENT EXPERIMENTS, RESULTS SHOULD COINCIDE WITHIN LIMITS OF 5-7 PERCENT. IF HIGH RPI CAPTURE WIDTH CONFIRMED, ENERGY DEPENDENCE OF CAPTURE CROSS SECTION SHOULD BE MEASURED FROM THERMAL TO RESONANCE REGION TO INVESTIGATE INTERFERENCE BETWEEN DIRECT AND RESONANCE CAPTURE.  
 MEASUREMENTS OF GAMMA RAY SPECTRA IN THERMAL AND 2.95 KEV REGIONS DESIRABLE FOR DECISION ABOUT EXISTENCE OF INTERFERENCE EFFECTS.  
 DIRECT MEASUREMENT OF THE EFFECTIVE RESONANCE INTEGRAL IN THE SODIUM MEDIUM FROM 24 KEV NEUTRON SOURCE SEEMS TO BE USEFUL FOR DECIDING THE QUESTION ABOUT THE 2.9 KEV RESONANCE CAPTURE WIDTH.  
 A: ACCURACY REQUIRED TO BETTER THAN 10 PERCENT.  
 O: FOR CALCULATION OF NA ACTIVATION IN LMFR.  
 SEE ALSO GENERAL COMMENTS IN THE INTRODUCTION.  
 M: SUBSTANTIAL MODIFICATIONS.

711016 1.00 KEV 100. KEV 20.0% 2 USA P<sub>o</sub>B<sub>o</sub>HEMMIG AEC  
 C<sub>o</sub>E<sub>o</sub>CLIFFORD ORL  
 A: ACCURACY OF 0.5 MB OR 20 PERCENT WANTED.  
 M: NEW REQUEST.

754017 5.00 KEV 10.0 MEV 1 CCP L<sub>o</sub>N<sub>o</sub>USACHEV FEI  
 A: FROM 0.5 - 100 KEV ACCURACY 44 PERCENT, PRIORITY 2 ACCURACY 44 PERCENT.  
 FROM 0.1 - 0.8 MEV ACCURACY 50 PERCENT, PRIORITY 2 ACCURACY 50 PERCENT.  
 FROM 0.8 - 4.5 MEV ACCURACY 50 PERCENT, PRIORITY 2 ACCURACY 50 PERCENT.  
 ABOVE 4.5 MEV REQUIREMENTS 2 TIMES WEAKER.  
 O: NEED FOR FAST REACTOR CALCULATIONS,  
 FOR MORE DETAIL SEE INTRODUCTION.  
 M: NEW REQUEST.

STATUS-----STATUS

BUC PLOSTINARU+ - SCF 25 387(1973), DATA 0.92 TO 4 MEV.  
 NPL RYVES+ - 71CANT 139, THERMAL.  
 AUA CLAYTON - AUJ 23 823(1970), FITS TOTAL SIGMA NEAR 2.85 KEV WITH CAPTURE WIDTH OF 0.36 EV.  
 RPI YAMAMURD+ - NSE 41 445(1970), FINDS CAPTURE WIDTH IS 0.47 EV AT 2.85 KEV.  
 RPI HOCKENBURY+ - PR 178 1746(1969), FINDS CAPTURE WIDTH OF 0.45 EV AT 2.85 KEV.  
 GA FRIESENHAHN+ - ERWASH 2 65E, FINDS CAPTURE WIDTH OF 0.34 EV AT 2.85 KEV.  
 COL RAHN+ - USNDC-3 66(1972), WORK IN PROGRESS.  
 ORL ALLEN - WORK IN PROGRESS.  
 USA USNDC (1974), 2.8 KEV CAPTURE WIDTH DISCREPANCY REMAINS.

11 SODIUM 23 NEUTRON CAPTURE GAMMA RAY SPECTRUM

721032 2.95 KEV 10.0% 1 USA C<sub>o</sub>E<sub>o</sub>TILL ANL  
 STATUS-----STATUS  
 ANL JACKSON - FILE SHIELDED-TARGET MEASUREMENT IN PROGRESS.

11 SODIUM 23 NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION

741016 2.00 KEV 15.0 MEV 15.0% 2 USA P<sub>o</sub>B<sub>o</sub>HEMMIG AEC  
 C<sub>o</sub>E<sub>o</sub>CLIFFORD ORL  
 Q: ENERGY AND ANGULAR DISTRIBUTION OF PHOTONS WANTED.  
 A: 20 PERCENT IN ANGULAR DISTRIBUTION IF NOT ISOTROPIC.  
 GAMMA ENERGY RESOLUTION 10 PERCENT.  
 M: NEW REQUEST.

11 SODIUM 23 NEUTRON N<sub>o</sub>2N

741220 16.0 MEV 15.0% 2 USA P<sub>o</sub>B<sub>o</sub>HEMMIG AEC  
 Q: NEEDED FOR COOLANT ACTIVATION.  
 M: NEW REQUEST.

11 SODIUM 23 NEUTRON RESONANCE PARAMETERS

621006 2.95 KEV 10.0% 1 USA C<sub>o</sub>E<sub>o</sub>TILL ANL  
 P<sub>o</sub>B<sub>o</sub>HEMMIG AEC  
 Q: NEUTRON AND CAPTURE WIDTH NEEDED.

714001 2.90 KEV 100. KEV 2 CCP M<sub>o</sub>N<sub>o</sub>NIKOLAEV FEI  
 Q: NEUTRON AND CAPTURE WIDTHS WANTED.  
 A: NEUTRON WIDTH FOR 2.95 KEV LEVEL WANTED WITH 5 PERCENT ACCURACY.  
 ALL OTHER WIDTHS REQUIRED WITH 10 PERCENT ACCURACY.  
 O: FOR FAST REACTOR CALCULATION.

STATUS-----STATUS

YAL SELTZER+ - NSE 53 415(1974), 2.8 KEV, DATA FOR TOTAL PARAMETERS.

KFK SCHATZc - KFK-1668 (1972), REVIEW OF RESONANCE PARAMETER DATA 2.8 TO 740 KEV.

RCN KOPECKY+ - RCN-175 (1972), PARAMETERS NEAR 2.8 KEV

AUJ CLAYTONc - AUJ 23 623(1970), FITS TOTAL SIGMA NEAR 2.85 KEV WITH CAPTURE WIDTH OF 0.36 EV.

KFK NEEB+ - KFK-1155(1970), DATA TO 1 MEV.

RPI YAMAMURO+ - NSE 41 445(1970), FINDS CAPTURE WIDTH IS 0.47 EV AT 2.85 KEV.

RPI HOCKENBURY+ - PR 176 1746(1969), FINDS CAPTURE WIDTH OF 0.45 EV AT 2.85 KEV.

GA FRIESENHANN+ - ERWASH 2 695, FINDS CAPTURE WIDTH OF 0.34 EV AT 2.85 KEV.

COL RAHN+ - USNDC-3 66(1972), WORK IN PROGRESS.

USA USNDCc (1974), 2.8 KEV CAPTURE WIDTH DISCREPANCY REMAINS.

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13 ALUMINUM 27 NEUTRON N, ALPHA

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692007 8.00 MEV 12.0 MEV 4.0% 1 JAP YOKANDA KYU

O: FOR NEUTRON YIELD MONITOR.  
DATA AVAILABLE 7 PERCENT.

792119 2.0% 1 EUR NEUTRON DOSIMETRY GROUP GEL

O: AVERAGE CROSS SECTION IN A U-235 FISSION SPECTRUM  
DESIRED.  
O: FOR NORMALIZATION OF AVERAGE CROSS SECTIONS FOR  
DOSIMETRY PURPOSES.

792123 6.40 MEV 11.9 MEV 5.0% 2 EUR NEUTRON DOSIMETRY GROUP GEL

O: FOR NEUTRON DOSIMETRY USING SPECTRUM UNFOLDING  
METHODS.  
GREATER THAN 10 PERCENT DISCREPANCY BETWEEN  
INTEGRAL AND DIFFERENTIAL MEASUREMENTS.

STATUS-----STATUS

NDC SCHETT+ - EANDC-55 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.

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15 PHOSPHORUS 31 NEUTRON N, F

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692250 15.0 MEV 2 SWT JOBRUNNER WUR

A: REQUIRED 5 PERCENT ACCURACY TO 6 MEV  
AND 10 PERCENT ABOVE.  
O: FAST FLUX MEASUREMENTS IN SHIELDS.  
DISAGREEMENT BETWEEN DIFFERENT MEASUREMENTS OF  
INSUFFICIENT ACCURACY.  
NO DATA BETWEEN 10 AND 14 MEV.

792124 2.20 MEV 7.00 MEV 5.0% 2 EUR NEUTRON DOSIMETRY GROUP GEL

O: FOR NEUTRON DOSIMETRY USING SPECTRUM UNFOLDING  
METHODS.  
GREATER THAN 10 PERCENT DISCREPANCY BETWEEN  
INTEGRAL AND DIFFERENTIAL MEASUREMENTS.

STATUS-----STATUS

NDC SCHETT+ - EANDC-55 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.

WUR BRUNNERc (1969), NO DATA BETWEEN 10 AND 14 MEV.

EUR NEUTRON DOSIMETRY GROUPc (1974), GREATER THAN 10 PERCENT DISCREPANCY BETWEEN INTEGRAL AND  
DIFFERENTIAL MEASUREMENTS.

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16 SULFUR NEUTRON TOTAL CROSS SECTION

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791021 10.0 KEV 500. KEV 3.0% 2 USA P.B. HEMMIG AEC  
C.E. CLIFFORD GEL

O: FOR SHIELDING EFFECT OF CONCRETE.  
M: NEW REQUEST.

STATUS-----STATUS

ANL WHALEN - DATA 100 TO 650 KEV WITH 2-KEV RESOLUTION

BRC CABE+ - CEA-R-4524(1973), DATA 0.1 TO 6 MEV.

=====

16 SULFUR NEUTRON CAPTURE CROSS SECTION

=====

791023 10.0 KEV 500. KEV 10.0% 2 USA P.B. HEMMIG AEC  
C.E. CLIFFORD ORL

O: FOR SHIELDING EFFECT OF CONCRETE.  
M: NEW REQUEST.

=====

16 SULFUR NEUTRON CAPTURE GAMMA RAY SPECTRUM

=====

791025 10.0 KEV 500. KEV 15.0% 2 USA P.B. HEMMIG AEC  
C.E. CLIFFORD ORL

O: FOR SHIELDING EFFECT OF CONCRETE.  
M: NEW REQUEST.

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16 SULFUR 32          NEUTRON          N,P
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692053          1500 MEV          2      SWT      J.BFUNNER      WUR
                A: REQUIRED 5% PERCENT ACCURACY TO 60 MEV
                AND 10% PERCENT ABOVE.
                O: STANDARD FOR FLUX MEASUREMENTS.

742125          2.50 MEV          7.50 MEV          5.0%          2      EUR      NEUTRON DOSIMETRY GROUP          GEL
                O: FOR NEUTRON DOSIMETRY USING SPECTRUM UNFOLDING
                METHODS.
                GREATER THAN 10 PERCENT DISCREPANCY BETWEEN
                INTEGRAL AND DIFFERENTIAL MEASUREMENTS.

STATUS-----STATUS
NEU  FOROUGH1+ - HPA 45 439(1972), DATA AT 6 MEV.
NRD  RAGO+ - HP 14 555(1968), DATA FROM 2.2 TO 18 MEV.
NDC  SCHETT+ - EANDC-55 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.
=====
17 CHLORINE          NEUTRON          N,P
=====

692054          1000 KEV          2000 MEV          10.0%          3      UK      J.CSMITH      WIN
                O: FOR FUSED SALT REACTORS.

17 CHLORINE 36          NEUTRON          TOTAL PHOTON PRODUCTION CROSS SECTION
=====

692008          3      BZL      L.O.B. AGHINA      IEN
                O: GAMMA SPECTRA BETWEEN RESONANCES WANTED.
                O: SPECIAL INTEREST ON INTERFERENCE AND DIRECT
                CAPTURE.

18 ARGON 40          NEUTRON          CAPTURE CROSS SECTION
=====

712006          1000 MEV          2      JAP      M.KAWAI      NPG
                A: ACCURACY REQUIRED TO BETTER THAN 20.0 PERCENT.
                O: FOR REACTOR HAZARD CALCULATION.

18 ARGON 40          NEUTRON          N,P
=====

693005          1400 MEV          10.0%          3      HUN      J.CSIKAI      KOS
                A: INCIDENT ENERGY RESOLUTION 200 KEV.
                O: NEEDED FOR NEUTRON ACTIVATION ANALYSIS AND CROSS
                SECTION SYSTEMATICS.

19 POTASSIUM 41          NEUTRON          N,P
=====

693010          1400 MEV          10.0%          3      HUN      J.CSIKAI      KOS
                A: INCIDENT ENERGY RESOLUTION 200 KEV.
                O: NEEDED FOR NEUTRON ACTIVATION ANALYSIS AND CROSS
                SECTION SYSTEMATICS.

20 CALCIUM          NEUTRON          TOTAL CROSS SECTION
=====

791027          1000 KEV          5000 KEV          2      USA      P.B.HEMMIG      AEC
                C.E.CLIFFORD      ORL
                A: ACCURACY REQUIRED - 3 TO 4 PERCENT.
                O: FOR SHIELDING EFFECT OF CONCRETE.
                M: NEW REQUEST.

STATUS-----STATUS
MCM  NORMAN+ - CJP 50 2385(1972), DATA 0.8 TO 3.5 MEV.
KFK  NEBE+ - NP/A 185 113(1972), DATA 420 KEV TO 32 MEV.
ORL  PEREY+ - ORNL-4823(1972), DATA 0.2 TO 20 MEV.
ORL  JOHNSON+ - ORNL-4844(1973), PRELIMINARY DATA FROM 60 KEV TO 1 MEV.
NBS  BOWMAN. HAS DATA

20 CALCIUM          NEUTRON          CAPTURE CROSS SECTION
=====

791025          1000 KEV          5000 KEV          10.0%          2      USA      P.B.HEMMIG      AEC
                C.E.CLIFFORD      ORL
                O: FOR SHIELDING EFFECT OF CONCRETE.
                M: NEW REQUEST.

STATUS-----STATUS
AUA  ALLEN. - TO BE PUBLISHED IN NUCLEAR PHYSICS. INCLUDES CA-44 RESONANCE CAPTURE FROM 20.5 TO
      187 KEV.

21 SCANDIUM 45          NEUTRON          CAPTURE CROSS SECTION
=====

691065          1000 KEV          1800 MEV          10.0%          2      USA      W.N.MC ELROY      HED
                O: FOR USE AS A FLUENCE MONITOR.

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692262 1.00 KEV 3.00 MEV 10.0% 2 FR A. MICHAUDON BRC  
 Q: PRODUCTION OF SC-46 (84 DAY).  
 O: DOSIMETRY.

STATUS-----STATUS  
 ORL HALPERIN (1974), HAS PROMPT CAPTURE DATA.

=====  
 21 SCANDIUM 45 NEUTRON N, 2N  
 =====

692561 15.0 MEV 5.0% 2 FR A. MICHAUDON BRC  
 Q: PRODUCTION OF SC-44 (20.44 DAY AND 30.9 HOUR).  
 O: DOSIMETRY.

STATUS-----STATUS  
 ALD MATHER+ - AWR/D-72/72, VALUE AT 12.3 MEV.  
 LRL NETHAWAY - NP/A 190 635(1972), AT 14 MEV.

=====  
 21 SCANDIUM 45 NEUTRON N, ALPHA  
 =====

692564 15.0 MEV 10.0% 2 FR A. MICHAUDON BRC  
 Q: PRODUCTION OF K-42 (12.4 HOUR).  
 O: DOSIMETRY.

=====  
 22 TITANIUM NEUTRON ABSORPTION CROSS SECTION  
 =====

712007 500. EV 15.0 MEV 25.0% 3 FR J. Y. BARRE CAD  
 Q: FOR FAST REACTOR CALCULATIONS.

=====  
 22 TITANIUM NEUTRON CAPTURE CROSS SECTION  
 =====

692565 100. EV 100. KEV 20.0% 2 UK C. G. CAMPBELL WIN  
 Q: FOR FAST REACTORS.

702005 500. EV 1.00 MEV 25.0% 3 FR J. Y. BARRE CAD  
 Q: FOR FAST REACTOR CALCULATIONS.

STATUS-----STATUS  
 ORL ALLEN+ - NCSAC-33 171(1970), DATA 30 KEV TO 3 MEV.  
 HAR COATES - MEASUREMENTS TO BEGIN MID-1975.

=====  
 22 TITANIUM NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION  
 =====

691068 10.0 KEV 16.0 MEV 20.0% 1 USA C. E. CLIFFORD ORL  
 Q: SECONDARY ENERGY-ANGLE DISTRIBUTIONS REQUIRED.  
 O: FOR USE IN REACTOR SHIELDING CALCULATIONS.

STATUS-----STATUS  
 ORL DICKENS+ - NCSAC-42 195(1971), WORK IN PROGRESS.

=====  
 22 TITANIUM NEUTRON N, F  
 =====

712008 15.0 MEV 30.0% 3 FR J. Y. BARRE CAD  
 Q: FOR FAST REACTOR CALCULATIONS.

792118 3.40 MEV 9.10 MEV 5.0% 1 EUR NEUTRON DOSIMETRY GROUP GEL  
 Q: ROUTINE FAST NEUTRON FLUENCE MONITOR.

=====  
 22 TITANIUM NEUTRON N, ALPHA  
 =====

712009 15.0 MEV 30.0% 3 FR J. Y. BARRE CAD  
 Q: FOR FAST REACTOR CALCULATIONS.

=====  
 22 TITANIUM 46 NEUTRON N, F  
 =====

691069 1.00 MEV 18.0 MEV 10.0% 2 USA W. N. MC ELROY HED  
 Q: REQUIRED IS ACTIVATION.  
 DATA REQUIRED AT 500 KEV INTERVALS.  
 A: ENERGY RESOLUTION 100 KEV.  
 O: FOR USE AS A FLUENCE MONITOR.

692067 15.0 MEV 10.0% 2 FR A. MICHAUDON BRC  
 Q: PRODUCTION OF SC-46 (85 DAY).  
 O: ACTIVATION DETECTOR.

792126 3.40 MEV 9.10 MEV 5.0% 2 EUR NEUTRON DOSIMETRY GROUP GEL  
 Q: FOR NEUTRON DOSIMETRY USING SPECTRUM UNFOLDING  
 METHODS.  
 GREATER THAN 10 PERCENT DISCREPANCY BETWEEN  
 INTEGRAL AND DIFFERENTIAL MEASUREMENTS.



STATUS-----STATUS

AUB GHORAI+ - JNE 25 319(1971), DATA TO 6.1 MEV.  
 NDC SCHETT+ - EANDC-95 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.  
 ANL SMITH+ - ANL/NDM-10 (1975), MEASUREMENTS AND EVALUATION FROM 3.7 TO 10 MEV  
 IAE VLASOV - (1975), REVIEW IN PROGRESS.

22 TITANIUM 47 NEUTRON N,P

691071 1.00 MEV 18.0 MEV 10.0% 2 USA W.C.MC ELROY HED  
 Q: REQUIRED IS ACTIVATION.  
 DATA REQUESTED IN 1 MEV INTERVALS.  
 A: ENERGY RESOLUTION 100 KEV.  
 O: FOR USE AS A FLUENCE MONITOR.  
 692070 15.0 MEV 10.0% 2 FR A. MICHAUDON BRC  
 Q: PRODUCTION OF SC-47 (3.43 DAY).  
 O: ACTIVATION DETECTOR.  
 742127 2.10 MEV 7.00 MEV 5.0% 2 EUR NEUTRON DOSIMETRY GROUP GEL  
 O: FOR NEUTRON DOSIMETRY USING SPECTRUM UNFOLDING  
 METHODS,  
 GREATER THAN 10 PERCENT DISCREPANCY BETWEEN  
 INTEGRAL AND DIFFERENTIAL MEASUREMENTS.

STATUS-----STATUS

AUB GHORAI+ - JNE 25 319(1971), DATA TO 6.1 MEV.  
 NDC SCHETT+ - EANDC-95 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.  
 ANL SMITH+ - ANL/NDM-10 (1975), MEASUREMENTS AND EVALUATION FROM 0.9 TO 10 MEV.  
 JAE GOTOH+ - (1975), PRELIMINARY DATA 4.1 TO 4.9 MEV.  
 IAE VLASOV - (1975), REVIEW IN PROGRESS.

22 TITANIUM 48 NEUTRON N,P

691073 1.00 MEV 18.0 MEV 10.0% 2 USA W.C.MC ELROY HED  
 Q: REQUIRED IS ACTIVATION.  
 DATA REQUESTED AT 500 KEV INTERVALS.  
 A: ENERGY RESOLUTION 100 KEV.  
 O: FOR USE AS FLUENCE MONITOR.  
 691074 3.20 MEV 10.0 MEV 20.0% 2 USA R. EHRlich KAP  
 Q: REQUIRED IS ACTIVATION.  
 692072 15.0 MEV 10.0% 2 FR A. MICHAUDON BRC  
 Q: PRODUCTION OF SC-48 (1.83 DAY).  
 O: ACTIVATION DETECTOR.  
 742128 6.60 MEV 12.8 MEV 5.0% 2 EUR NEUTRON DOSIMETRY GROUP GEL  
 O: FOR NEUTRON DOSIMETRY USING SPECTRUM UNFOLDING  
 METHODS,  
 GREATER THAN 10 PERCENT DISCREPANCY BETWEEN  
 INTEGRAL AND DIFFERENTIAL MEASUREMENTS.

STATUS-----STATUS

AUB GHORAI+ - JNE 25 319(1971), DATA TO 6.1 MEV.  
 NDC SCHETT+ - EANDC-95 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.  
 MUN MANNHART+ - ZP 272 279(1975), DATA AT 14 MEV.  
 ANL SMITH+ - ANL/NDM-10 (1975), MEASUREMENTS AND EVALUATION FROM 4.7 TO 10 MEV.  
 IAE VLASOV - (1975), REVIEW IN PROGRESS.

23 VANADIUM NEUTRON ELASTIC CROSS SECTION

753040 25.3 MV 20.0 MEV 3.0% 2 IND G.B.GARG TRM  
 O: REQUIRED FOR STRUCTURAL-MATERIAL CALCULATIONS.  
 M: NEW REQUEST.

23 VANADIUM NEUTRON DIFFERENTIAL ELASTIC CROSS SECTION

621009 1.40 MEV 10.0 MEV 10.0% 3 USA C.E.TILL ANL  
 P.O.B.CHEMMIG AEC  
 A: ENERGY RESOLUTION 500 KEV.  
 ANGULAR RESOLUTION 10 DEGREES.

STATUS-----STATUS

ORL PEREY+ - CFNL-4551 (1970), DATA 4.2 TO 8.6 MEV.  
 AE HOLMQVIST+ - NP/A 146 321(1970), DATA 2.5 TO 8.0 MEV.  
 ANL SMITH+ - PR/C 1 581(1970), DATA TO 1.5 MEV.  
 ANL SMITH+ - USNDC-7 9(1973), WRK IN PROGRESS TO 3.8 MEV.

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23 VANADIUM NEUTRON INELASTIC CROSS SECTION

755641 2000 MEV 300% 2 INC G0B0GARG TRM  
 O: REQUIRED FOR STRUCTURAL-MATERIAL CALCULATIONS.  
 M: NEW REQUEST.

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23 VANADIUM NEUTRON ENERGY DIFFERENTIAL INELASTIC CROSS SECTION

621011 1050 MEV 1000 MEV 1500% 3 USA C0E0TILL ANL  
 B0HUTCHINS GEB  
 P0B0HEMMIG AEC  
 O: TOTAL INTEGRAL OVER 4 PI REQUIRED.  
 SPECTRA AT SEVERAL ANGLES IF SIGNIFICANTLY  
 ANISOTROPIC.

-----STATUS-----

AE ALMEN+ - 7C HELSINKI 2 349(1970), 15 LEVELS FROM 2 TO 4.5 MEV  
 ANL SMITH+ - LSND-7 9(1973), WORK IN PROGRESS TO 4 MEV.

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23 VANADIUM NEUTRON ABSORPTION CROSS SECTION

621015 1000 KEV 1500 KEV 1000% 3 USA C0E0TILL ANL  
 B0HUTCHINS GEB  
 P0B0HEMMIG AEC  
 A: ENERGY RESOLUTION 10 PERCENT.  
 O: TO RESOLVE DISCREPANCIES IN EXISTING DATA.

712010 5000 EV 1500 MEV 2500% 3 FR J0Y0BARRE CAD  
 O: FOR FAST REACTOR CALCULATIONS.

-----STATUS-----

RP1 STIEGLITZ - NF/A 163 552(1971), DATA 100 EV TO 200 KEV.  
 ORL MACKLIN+ - LSND-3 148(1972), DATA 3 TO 500 KEV IN PROGRESS.  
 HAR MOXON+ - AERE-FR/NP-17 (1970), EXPERIMENT IN KEV REGION IN PROGRESS.  
 HAR COATES - MEASUREMENT PLANNED FOR LATE 1975.

=====

23 VANADIUM NEUTRON CAPTURE CROSS SECTION

652073 1000 EV 1000 KEV 1000% 2 UK C0G0CAMPBELL WIN  
 O: FOR FAST REACTORS.

702006 5000 EV 1000 MEV 2500% 3 FR J0Y0BARRE CAD  
 O: FOR FAST REACTOR CALCULATIONS.

753042 2500 MV 2000 MEV 300% 2 INC G0B0GARG TRM  
 O: REQUIRED FOR STRUCTURAL-MATERIAL CALCULATIONS.  
 M: NEW REQUEST.

-----STATUS-----

RP1 STIEGLITZ - NF/A 163 552(1971), DATA 100 EV TO 200 KEV.  
 ORL MACKLIN+ - LSND-3 148(1972), DATA 3 TO 500 KEV IN PROGRESS.  
 HAR COATES - MEASUREMENT PLANNED FOR LATE 1975.

=====

23 VANADIUM NEUTRON N,F

712011 1500 MEV 3000% 3 FR J0Y0BARRE CAD  
 O: FOR FAST REACTOR CALCULATIONS.

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23 VANADIUM NEUTRON N,ALPHA

712012 1500 MEV 3000% 3 FR J0Y0BARRE CAD  
 O: FOR FAST REACTOR CALCULATIONS.

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23 VANADIUM 51 NEUTRON N,ALPHA

692075 1500 MEV 500% 2 FR A0M0MICHAUDON ERC  
 O: PRODUCTION OF SC-48 (10.83 DAY).  
 O: ACTIVATION DETECTOR.

-----STATUS-----

MUN MANNHART+ - ZP 272 279(1975), DATA AT 14 MEV.

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24 CHROMIUM NEUTRON TOTAL CROSS SECTION

721035 1000 KEV 2000 MEV 300% 2 USA P0B0HEMMIG AEC  
 A: 5 PERCENT ACCURACY IN DEEP MINIMA.  
 ENERGY RESOLUTION SUFFICIENT TO RESOLVE MAJOR  
 STRUCTURE.  
 M: SUBSTANTIAL MODIFICATIONS.

24 CHROMIUM NEUTRON TOTAL CROSS SECTION (CONTINUED)

741431 1.00 KEV 20.0 MEV 3.0% 2 USA B.HUTCHINS GEB  
 A: 5 PERCENT ACCURACY IN DFEP MINIMA.  
 M: NEW REQUEST.

STATUS-----STATUS  
 KFK SCHATZ - KFK-1668 (1972), REVIEW.  
 TUD TRAN UNG+ - ZFK-243(1972), DATA 3.1 MEV.  
 BET GREEN+ - WAPD-TM-1073(1973), DATA 0.5 TO 10 MEV.  
 ANL WHALEN - DATA TO 1.5 MEV WITH 2-KEV RESOLUTION.

24 CHROMIUM NEUTRON ELASTIC CROSS SECTION

755031 25.3 MV 20.0 MEV 3.0% 2 IND G.B.CARG TRM  
 O: REQUIRED FOR STRUCTURAL-MATERIAL CALCULATIONS.  
 M: NEW REQUEST.

24 CHROMIUM NEUTRON DIFFERENTIAL ELASTIC CROSS SECTION

691076 2.00 MEV 14.0 MEV 9.0% 2 USA R.EHRLICH KAP  
 A: ENERGY RESOLUTION 100 KEV.  
 692076 1.50 MEV 3.00 MEV 15.0% 2 GER E.GOEL KFK  
 A: ABOUT 100 KEV ENERGY RESOLUTION NEEDED.  
 ABOUT 10 DEGREE ANGULAR RESOLUTION REQUIRED.  
 692077 2.00 MEV 16.0 MEV 20.0% 2 FR C.DEVILLERS SAC  
 A: ACCURACY 10 PERCENT PREFERRED.  
 ENERGY RESOLUTION 0.5 MEV.  
 ANGULAR RESOLUTION 5 TO 10 DEGREES.  
 O: EVALUATION MAY BE SUFFICIENT.  
 692078 8.00 MEV 16.0 MEV 20.0% 2 GER E.GOEL KFK  
 A: ENERGY RESOLUTION 0.5 MEV.  
 ANGULAR RESOLUTION 5 TO 10 DEGREES.  
 741032 100. KEV 15.0 MEV 10.0% 3 USA P.B.HEMMIG AEC  
 M: NEW REQUEST.

STATUS-----STATUS  
 IJI KORZH+ - 72 KIEV, DATA POINT AT 15 MEV.  
 IFU PASECHNIK+ - YF 11 958(1970), DATA TO 4.1 MEV.  
 AE HOLMQVIST+ - AE-366 (1969), DATA 2.5 TO 8 MEV.  
 AE MALMSKOG - AE-FN-25(1972), DATA 0.5 TO 1.5 MEV.  
 ORL KINNEY+ - ORNL-4806(1974), DATA 4.1 TO 8.6 MEV.  
 KFK SPENCER+ - KFK-1517, DATA 10 TO 300 KEV.  
 ANL SMITH - WORK IN PROGRESS.

24 CHROMIUM NEUTRON INELASTIC CROSS SECTION

755032 20.0 MEV 3.0% 2 IND G.B.CARG TPM  
 O: REQUIRED FOR STRUCTURAL-MATERIAL CALCULATIONS.  
 M: NEW REQUEST.

24 CHROMIUM NEUTRON ENERGY DIFFERENTIAL INELASTIC CROSS SECTION

661012 50. KEV 15.0 MEV 10.0% 2 USA B.HUTCHINS GEB  
 P.B.HEMMIG AEC  
 O: TOTAL INTEGRAL OVER 4 PI REQUIRED.  
 SPECTRA AT SEVERAL ANGLES IF SIGNIFICANTLY  
 ANISOTROPIC.  
 A: ENERGY RESOLUTION REQUIRED TO DETERMINE MAJOR  
 STRUCTURE.  
 M: SUBSTANTIAL MODIFICATIONS.  
 732040 15.0 MEV 20.0% 3 FR J.Y.BARRE CAD  
 O: FOR FAST REACTOR CALCULATIONS.

STATUS-----STATUS  
 AE ALMEN+ - INCC(SEC)-31(1973), IN PROGRESS 2 TO 4.5 MEV.  
 ORL KINNEY+ - ORNL-4806(1974), DATA 4.1 TO 8.6 MEV.  
 ANL SMITH - MEASUREMENTS IN PROGRESS.

24 CHROMIUM NEUTRON ABSORPTION CROSS SECTION

712014 500. EV 15.0 MEV 5.0% 1 FR J.Y.BARRE CAD  
 O: FOR FAST REACTOR CALCULATIONS.



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24 CHROMIUM          NEUTRON          N, ALPHA
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682208   3e00 MEV   15e0 MEV   2e00%   2   FR   C. DEVILLERS   SAC
                                O: EVALUATION MAY BE SUFFICIENT.

732041   3e00 MEV   15e0 MEV   1e00%   1   FR   J. Y. BARRE     CAD
                                O: FOR FAST REACTOR CALCULATIONS.

STATUS-----STATUS
AE WEITMAN+ - ANS 13 558(1970), HE PRODUCTION IN A FISSION SPECTRUM.
ALD FREEMAN+ - JNE 23 713(1969), FISSION SPECTRUM AVERAGE.
=====
24 CHROMIUM          NEUTRON          CAPTURE RESONANCE INTEGRAL
=====

651077   6e50 EV          1   USA   R. EHRlich     KAP
                                Q: ENERGY REQUESTED IS A MINIMUM VALUE ONLY.
                                REMOVE OR CORRECT FOR (N,P) CONTRIBUTION.
                                A: ACCURACY REQUIRED - 1% TO 15 PERCENT.
                                O: INTEGRAL EXPERIMENT NEEDED TO CHECK RESONANCE
                                  PARAMETERS.
                                M: SUBSTANTIAL MODIFICATIONS.

STATUS-----STATUS
RPI STIEGLITZ+ - NF/A 163 592(1971), 1e6 BARNS FROM RESONANCE PARAMETERS.
=====
24 CHROMIUM 50      NEUTRON          RESONANCE PARAMETERS
=====

741033          100e KEV   1e00%   2   USA   F. G. PEREY     ORL
                                Q: ENERGY REQUESTED IS A MAXIMUM VALUE ONLY.
                                NEUTRON WIDTH, GAMMA WIDTH, SPIN AND PARITY
                                  WANTED.
                                M: NEW REQUEST.

STATUS-----STATUS
KFK (1974), DATA FOR 29 RESONANCES FROM 19 TO 290 KEV.
ORL HALPERIN+ - DATA BEING ANALYZED.
=====
24 CHROMIUM 52      NEUTRON          RESONANCE PARAMETERS
=====

692086          15e0 MEV          2   GER   E. GOEL        KFK
                                A: ACCURACY 10-20 PERCENT DESIRED.
                                O: MAIN ABSORPTION PROCESS IN MEV RANGE.

STATUS-----STATUS
JYV HOLMBERG+ - JIN 36 715(1974), DATA AT 14e7 MEV.
=====
24 CHROMIUM 52      NEUTRON          RESONANCE PARAMETERS
=====

741034          100e KEV   1e00%   2   USA   F. G. PEREY     ORL
                                Q: ENERGY REQUESTED IS A MAXIMUM VALUE ONLY.
                                NEUTRON WIDTH, GAMMA WIDTH, SPIN AND PARITY
                                  WANTED.
                                M: NEW REQUEST.

STATUS-----STATUS
AUA ALLEN+ - AAEC/PP-39(1974), PRELIMINARY DATA FOR 32 CAPTURE RESONANCES FROM 5 TO 210 KEV.
KFK (1974), DATA FOR 26 RESONANCES FROM 23 TO 280 KEV.
ORL HALPERIN+ - DATA BEING ANALYZED.
=====
24 CHROMIUM 53      NEUTRON          RESONANCE PARAMETERS
=====

691081   1e00 KEV   60e0 KEV          2   USA   R. EHRlich     KAP
                                Q: NEUTRON WIDTHS WANTED.
                                O: INTEGRAL EXPERIMENT NEEDED TO CHECK RESONANCE
                                  PARAMETERS.
                                M: SUBSTANTIAL MODIFICATIONS.

741035          100e KEV   1e00%   2   USA   F. G. PEREY     ORL
                                Q: ENERGY REQUESTED IS A MAXIMUM VALUE ONLY.
                                NEUTRON WIDTH, GAMMA WIDTH, SPIN AND PARITY
                                  WANTED.
                                M: NEW REQUEST.

STATUS-----STATUS
KFK MUELLER+ - NF/A 164 97(1971), ANALYZES 30 RESONANCES BETWEEN 17 AND 250 KEV.
RPI STIEGLITZ+ - NF/A 163 592(1971), DATA FOR 9 S-WAVE AND 16 P-WAVE RESONANCES.
KFK (1974), DATA FOR 57 RESONANCES FROM 8e2 TO 250 KEV.
ORL HALPERIN+ - DATA BEING ANALYZED.
=====
25 MANGANESE 54     NEUTRON          CAPTURE CROSS SECTION
=====

692092   25e3 MV          5e0%   2   BLG   N. MAENE       MDL
                                O: FOR BURN-UP CALCULATION OF FE-54(N,P) MN-54
                                  REACTION PRODUCT.
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25 MANGANESE 55 NEUTRON TOTAL CROSS SECTION

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751195 4.0% 2 USA F.G.PEREY ORL  
 Q: NEED VALUES IN FE WINDOWS.  
 M: NEW REQUEST.

=====

25 MANGANESE 55 NEUTRON ABSORPTION CROSS SECTION

=====

712117 500. EV 150.0 MEV 20.0% 2 FR J.C.Y.BARRE CAD  
 Q: FOR FAST REACTOR CALCULATIONS.

=====

25 MANGANESE 55 NEUTRON CAPTURE CROSS SECTION

=====

682110 100. EV 100.0 KEV 20.0% 2 UK C.G.CAMPBELL WIN  
 Q: FOR FAST REACTORS.

692190 500. EV 1000 MEV 20.0% 2 FR J.C.Y.BARRE CAD  
 Q: FOR FAST REACTOR CALCULATIONS.

712116 100.0 MEV 2 JAF M.KAWAI NPG  
 A: ACCURACY REQUIRED TO BETTER THAN 20.0 PERCENT.  
 Q: FOR FUEL CASK DESIGN AND CONTROL ROD DESIGN.

-----STATUS-----

ORL MACKLIN+ - LSND-3 148(1972), WORK IN PROGRESS 3 TO 500 KEV.  
 HAR COATES - MEASUREMENTS PLANNED FOR EARLY 1976.  
 WUR WIDDER - PRECISE DATA FROM 0.01 TO 45 EV, TO BE PUBLISHED IN NSF.

=====

25 MANGANESE 55 NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION

=====

693012 3 BZL L.O.B.AGHINA IEN  
 Q: GAMMA SPECTRA BETWEEN RESONANCES WANTED.  
 Q: SPECIAL INTEREST ON INTERFERENCE AND DIRECT CAPTURE.

=====

25 MANGANESE 55 NEUTRON N,2N

=====

712125 130.0 MEV 5.0% 2 EUR NEUTRON DOSIMETRY GROUP GEL  
 Q: FOR NEUTRON DOSIMETRY USING SPECTRUM UNFOLDING METHODS.  
 Q: GREATER THAN 10 PERCENT DISCREPANCY BETWEEN INTEGRAL AND DIFFERENTIAL MEASUREMENTS.

-----STATUS-----

NDC SCHETT+ - EANDC-95 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.

=====

25 MANGANESE 55 NEUTRON N, F

=====

712119 150.0 MEV 25.0% 2 FR J.C.Y.BARRE CAD  
 Q: FOR FAST REACTOR CALCULATIONS.

=====

25 MANGANESE 55 NEUTRON N, ALPHA

=====

712020 150.0 MEV 25.0% 2 FR J.C.Y.BARRE CAD  
 Q: FOR FAST REACTOR CALCULATIONS.

=====

25 MANGANESE 55 NEUTRON CAPTURE RESONANCE INTEGRAL

=====

711036 0.50 EV 5.0% 2 USA N.C.STEEN BET  
 Q: ENERGY REQUESTED IS A MINIMUM VALUE ONLY.  
 Q: NEEDED FOR ANALYSIS OF EXPERIMENTS.  
 M: NEW REQUEST.

=====

26 IRON NEUTRON TOTAL CROSS SECTION

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712021 500. EV 150.0 MEV 1.0% 2 FR J.C.Y.BARRE CAD  
 Q: FOR FAST REACTOR CALCULATIONS.

714003 100.0 KEV 1000 MEV 5.0% 2 CCP M.N.NIKOLAEV FEI  
 Q: CAREFUL MEASUREMENTS OF INTERFERENCE MINIMA NEEDED.  
 A: OBSERVATION OF P-WAVE RESONANCES IS WANTED.  
 A: TRANSMISSION MEASUREMENTS WITH POOR RESOLUTION BUT STRONG ATTENUATION OF THE PRIMARY BEAM ARE WANTED FOR MINIMA CS MEASUREMENTS.  
 Q: HIGH RESOLUTION MEASUREMENTS ARE DESIRED FOR P-WAVE RESONANCE OBSERVATION AND RESONANCE PARAMETER DERIVATION.  
 Q: FOR SHIELDING CALCULATION NEEDS AND EVALUATION OF THE TOTAL AND CAPTURE CROSS SECTIONS FOR FAST REACTOR CALCULATIONS.  
 Q: COMPARISON OF THE S AND P-WAVE LEVEL DENSITIES IS VERY INTERESTING FROM THE POINT OF VIEW OF LEVEL DENSITY PARITY DEPENDENCE CONFIRMATION.  
 M: SUBSTANTIAL MODIFICATIONS.

Z41037 1.00 MV 1.00 MEV 5.0% 1 USA P.B. HEMMIG AEC  
 B. HUTCHINS GEB  
 C.E. CLIFFORD GRL  
 A: 5 PERCENT ACCURACY IN DEEP MINIMA (LESS THAN ONE BARN)  
 M: NEW REQUEST

-----STATUS-----

RPI ALFIERI+ - NSE E1 25(1973), DATA AT 24 KEV.  
 COL RAHN+ - NSE 47 372(1972), DATA NEAR RESONANCE MINIMA.  
 FEI FILIPOV - YK-E 35(1972), EVALUATION OF HIS OWN AND OTHER DATA.  
 ORL HARVEY+ - CRNL-4743 52(1971), PRECISE DATA NEAR RESONANCE MINIMA.  
 NBS NBS-138, DATA 0.5 TO 16 MEV.

===== 26 IRON NEUTRON ELASTIC CROSS SECTION =====

Z53039 25.3 MV 20.0 MEV 3.0% 2 INC G.B. GARG TRM  
 O: REQUIRED FOR STRUCTURAL-MATERIAL CALCULATIONS.  
 M: NEW REQUEST

===== 26 IRON NEUTRON DIFFERENTIAL ELASTIC CROSS SECTION =====

691089 7.00 MEV 14.0 MEV 9.0% 1 USA R. EHRLICH KAP  
 A: ENERGY RESOLUTION 100 KEV.  
 ANGULAR RESOLUTION 5 DEGREES.  
 691085 500. KEV 3.00 MEV 5.0% 1 USA C.E. CLIFFORD GRL  
 Q: REQUIRED AT SEVERAL PEAKS AND VALLEYS.  
 A: ENERGY RESOLUTION 1 PERCENT.  
 O: REQUIRED FOR SHIELDING.  
 691086 1.00 KEV 15.0 MEV 10.0% 1 USA C.E. TILL ANL  
 A: RESOLUTION AT LEAST TO RESOLVE INTERMEDIATE STRUCTURE.  
 M: SUBSTANTIAL MODIFICATIONS.  
 691087 1.00 KEV 15.0 MEV 10.0% 1 USA P.B. HEMMIG AEC  
 M: NEW REQUEST.  
 692094 8.00 MEV 15.0 MEV 10.0% 2 GER B. GOEL KFK  
 Q: MEASUREMENTS DESIRED IN ENERGY STEPS OF 1 MEV, AND ANGULAR STEPS OF 10 DEGREES.  
 O: FOR SHIELDING CALCULATIONS.  
 Z42029 1.00 KEV 15.0 MEV 5.0% 2 FR A. MICHAUDON BRC  
 O: FOR CRITICAL ASSEMBLIES.

-----STATUS-----

KGU LESHCHENKO+ YF 15 10(1972), DATA AT 14. MEV.  
 IJI KORZH+ - YFI-12 84(1972), DATA AT 15 MEV.  
 TNC TUCKER+ - NCSAC-42 181(1971), DATA 9 TO 11 MEV.  
 ORL PEREY+ - ORNL-4515 (1970), DATA 4.2 TO 8.6 MEV.  
 ORL KINNEY+ - ORNL-4807(1974), DATA 5.5 TO 8.5 MEV.  
 AE HOLMQUIST+ - AE-366 (1969), DATA 3.0 TO 8.0 MEV.  
 ANL SMITH+ - (1974), DETAILED DATA TO 4 MEV.  
 AE MALMSKOG - EANCC(OR)-115 (1972), IN PROGRESS TO 1.4 MEV.  
 RPI ZUPR+ - (1974), DETAILED DATA TO 600 KEV.  
 USA USNDCC (1974), CONSIDERS CROSS SECTION IS PROBABLY KNOWN TO 10 PERCENT ACCURACY WITH INTERMEDIATE ENERGY RESOLUTION TO 4 MEV.

===== 26 IRON NEUTRON INELASTIC CROSS SECTION =====

Z53035 20.0 MEV 3.0% 2 INC G.B. GARG TRM  
 O: REQUIRED FOR STRUCTURAL-MATERIAL CALCULATIONS.  
 M: NEW REQUEST

===== 26 IRON NEUTRON ENERGY DIFFERENTIAL INELASTIC CROSS SECTION =====

661016 850. KEV 2.00 MEV 5.0% 1 USA B. HUTCHINS GEB  
 P.B. HEMMIG AEC  
 Q: TOTAL INTEGRAL OVER 4 PI WANTED.  
 SPECTRA AT SEVERAL ANGLES IF SIGNIFICANTLY ANISOTROPIC.  
 A: RESOLUTION 20 KEV FOR INCIDENT AND SCATTERED NEUTRONS.  
 661018 2.00 MEV 5.00 MEV 10.0% 2 USA B. HUTCHINS GEB  
 P.B. HEMMIG AEC  
 Q: TOTAL INTEGRAL OVER 4 PI WANTED.  
 SPECTRA AT SEVERAL ANGLES IF SIGNIFICANTLY ANISOTROPIC.  
 A: RESOLUTION 20 KEV FOR INCIDENT AND SCATTERED NEUTRONS.  
 M: SUBSTANTIAL MODIFICATIONS.

26 IRON NEUTRON ENERGY DIFFERENTIAL INELASTIC CROSS SECTION (CONTINUED)

722207 14.0 MEV 5.0% 2 FR JoYc BARRE CAD  
 O: FOR FAST REACTOR CALCULATIONS.

712222 1.50 MEV 15.0 MEV 10.0% 2 SWD HcHAEGGBLOM AE  
 O: FOR FAST REACTOR CALCULATIONS.

714204 900. KEV 15.0 MEV 5.0% 2 CCP MoNoNIKOLAEV FEI  
 O: IN CONTINUUM REGION ENERGY DEPENDENCE OF NUCLEAR TEMPERATURE WANTED.  
 IN THE REGION BELOW 3 MEV AVERAGE CHARACTERISTICS OF STRUCTURE IN THE CROSS SECTION ARE WANTED FOR EVALUATION OF SELF SHIELDING.  
 TRANSMISSION MEASUREMENTS USING THE SELF-INDICATION METHOD WITH DETECTION OF GAMMA RAYS FROM INELASTIC SCATTERING ARE DESIRED.  
 MEASUREMENTS SHOULD EXTEND TO PRIMARY-BEAM ATTENUATION DOWN TO 1/100 OR 1/1000.  
 A: CROSS SECTION FOR INELASTIC REMOVAL BELOW FISSION THRESHOLD OF U-238 WANTED WITH 5.0 PERCENT ACCURACY.  
 LEVEL EXCITATION CROSS SECTION DESIRED WITH 10 PERCENT ACCURACY.  
 O: SEE GENERAL COMMENTS IN THE INTRODUCTION.  
 M: SUBSTANTIAL MODIFICATIONS.

STATUS-----STATUS

ORL KINNEY+ - CRNL-4515 (1970), DATA 4 TO 8.5 MEV.  
 AE ALMEN+ - INDC(SEC)-31 39(1973), DATA 2 TO 4.5 MEV.  
 CSE LINDOW+ - NCSAC-31 (1970), DATA 5 TO 5.5 MEV.  
 ANL SMITHo (1974), DATA TO 4 MEV.  
 USA USNDCo (1974), CONSIDERS DATA WITH 10 PERCENT ACCURACY PROBABLY AVAILABLE UP TO 4 MEV.

26 IRON NEUTRON DOUBLE DIFFERENTIAL INELASTIC CROSS SECTION

692298 10.0 MEV 3 UK CcGc CAMPBELL WIN  
 JoBUTLER WIN  
 A: ACCURACY REQUIRED IS 5 PERCENT TO 4 MEV AND 5 TO 10 PERCENT ABOVE  
 O: FOR FAST REACTORS AND SHIELDING.

742230 15.0 MEV 5.0% 2 FR AoMICHAUDON BRC  
 O: FOR CRITICAL ASSEMBLIES.

STATUS-----STATUS

ORL KINNEY+ - CRNL-4515 (1970), DATA 4 TO 8.5 MEV.  
 AE ALMEN+ - 70 HELSINKI 2 349(1970), DATA FOR 12 LEVELS FROM 2.0 TO 3.5 MEV.  
 CSE LINDOW+ - NCSAC-31 (1970), DATA 5 TO 5.5 MEV.  
 ANL SMITH+ - USNDC-7 9(1973), MEASUREMENTS TO 4 MEV IN PROGRESS.

26 IRON NEUTRON ABSORPTION CROSS SECTION

712223 500. EV 15.0 MEV 5.0% 1 FR JoYc BARRE CAD  
 O: FOR FAST REACTOR CALCULATIONS.

26 IRON NEUTRON CAPTURE CROSS SECTION

692101 100. EV 1.00 MEV 1 UK CcGc CAMPBELL WIN  
 A: ACCURACY REQUIRED 10 PERCENT TO 100 KEV, 20 PERCENT ABOVE.  
 O: FOR FAST REACTORS.

692102 1.00 KEV 200. KEV 10.0% 1 JAP SoKATSURAGI JAE  
 O: FOR FAST REACTORS.  
 DISCREPANCIES EXIST AMONG EXPERIMENTAL DATA.

692103 1.00 KEV 100. KEV 10.0% 2 GER BoGOEL KFK  
 O: EXISTING DATA DISAGREE UP TO 200 PERCENT.  
 STRONG DISAGREEMENT BETWEEN 10 AND 100 KEV.

692104 500. EV 1.00 MEV 5.0% 1 FR JoYc BARRE CAD  
 O: NEED OF RESONANCE PARAMETERS FOR THE MAIN ISOTOPES.  
 O: FOR FAST REACTOR CALCULATIONS.

712224 1.00 EV 1.00 MEV 10.0% 2 SWD HoHAEGGBLOM AE  
 O: FOR FAST REACTOR CALCULATIONS.

714205 500. EV 800. KEV 10.0% 1 CCP MoNoNIKOLAEV FEI  
 O: DESIRABLE TO USE EXPERIMENTAL METHODS WHICH ARE NOT VERY SENSITIVE TO SELF-SHIELDING AND TO CAPTURE-AFTER-SCATTERING EFFECTS.  
 A: 20 PERCENT ABOVE 100 KEV WOULD BE VERY USEFUL.  
 O: SEE GENERAL COMMENTS IN THE INTRODUCTION.  
 FIRST PRIORITY BECAUSE IT IS DIFFICULT TO EVALUATE THE IRON CAPTURE CROSS SECTION TO REQUESTED ACCURACY FROM MACROSCOPIC EXPERIMENTS ONLY.  
 M: SUBSTANTIAL MODIFICATIONS.



26 IRON NEUTRON CAPTURE CROSS SECTION (CONTINUED)

26 IRON	NEUTRON	CAPTURE CROSS SECTION					
Z21039	1000 MV	1000 MEV 100%	2	USA	F0EHRlich	KAP	Q: VALUES NEEDED IN MINIMA. Q: SHAPE OF RESOLUTION FUNCTION IMPORTANT SO MEANINGFUL BROADENING CAN BE APPLIED TO THEORETICAL VALUES TO COMPARE WITH EXPERIMENT. SAMPLE COMPOSITION SHOULD BE KNOWN WELL ENOUGH TO PERMIT ISOTOPE SYNTHESIS OF THEORETICAL CROSS SECTION. FOR SHIELDING CALCULATIONS.
Z21040	1000 KEV	1000 MEV	1	USA	F0G0PEREY P0B0HEMMIG C0E0TILL	ORL AEC ANL	A: ACCURACY REQUIRED - 5 TO 10 PERCENT. M: NEW REQUEST.
Z22032	1000 KEV	3000 MEV 100%	2	FR	A0MICHAUDON	BPC	Q: FOR CRITICAL ASSEMBLIES.
Z23036	2503 MV	2000 MEV 300%	2	IND	G0B0GARG	TRM	Q: REQUIRED FOR STRUCTURAL-MATERIAL CALCULATIONS. M: NEW REQUEST.

STATUS-----STATUS  
 WIN (1974) EVALUATION INDICATES 20 PERCENT UNCERTAINTY BELOW 100 KEV.  
 CAD LE RIGOLEUR+ - CEA-N-1661(1973), DATA FROM 70 TO 533 KEV.  
 HAR PATTENDEN+ - AERE-R-7425(1973), SEVERAL NEW RESONANCES SEEN IN TRANSMISSION.  
 ANL POENITZ (1974), DATA ABOVE 0.4 MEV.  
 ORL HALPERIN+ - DATA BEING ANALYZED.  
 HAR COATES - MEASUREMENTS PLANNED FOR EARLY 1975.

26 IRON NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION

651222	2503 MV	1000 MEV	1	USA	P0B0HEMMIG	AEC	Q: SECONDARY ENERGY DISTRIBUTION REQUIRED. A: ACCURACY REQUIRED TO BETTER THAN 15% PERCENT. Q: FOR USE IN SHIELDING CALCULATIONS.
692096	1000 KEV	1500 MEV 100%	2	FR	C0DEVILLERS	SAC	Q: GAMMA SPECTRA REQUIRED. A: ENERGY RESOLUTION OF 250 KEV FOR GAMMA RAYS LESS THAN 1 MEV AND 500 KEV FOR ENERGIES GREATER THAN 1 MEV. Q: FOR SHIELDING CALCULATIONS. EVALUATION MAY BE SUFFICIENT.

STATUS-----STATUS  
 ORL DICKENS - PR/C 5 100(1972), DATA FROM 5.3 TO 9 MEV.  
 CCP KRAVCOV+ - 72 KIEV (1972).  
 GA ORPHAN+ - GULF-RT-10743 (1971), DATA FROM 0.9 TO 16.7 MEV.  
 KFK VOSS+ - 71 KNOXVILLE 218(1971), DATA 0.8 TO 13 MEV.  
 IRT HARRIS+ - WORK IN PROGRESS 4 TO 15 MEV AT 125 DEGREES.

26 IRON NEUTRON N,F

Z12025		1500 MEV 100%	2	SWD	H0MAEGGBLOM	AE	Q: FOR FAST REACTOR CALCULATIONS.
Z12026		1500 MEV 100%	1	FR	J0Y0BARRE	CAD	Q: FOR FAST REACTOR CALCULATIONS.

26 IRON NEUTRON N,ALPHA

692105	2503 MV	1500 MEV 200%	2	GER	E0GOEL	KFK	Q: FOR THE THERMAL VALUE ONLY AN UPPER-LIMIT OF 0.01 MB IS AVAILABLE.
692107		1500 MEV 200%	2	FR	C0DEVILLERS	SAC	Q: EVALUATION MAY BE SUFFICIENT.
Z22042		1500 MEV 100%	1	FR	J0Y0BARRE	CAD	Q: FOR FAST REACTOR CALCULATIONS.

STATUS-----STATUS  
 AE WEITMAN+ - ANS 13 558(1970), HE PRODUCTION IN A FISSION SPECTRUM.  
 ALD FREEMAN+ - JNE 23 713(1969), FISSION SPECTRUM AVERAGE.

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26 IRON          NEUTRON          CAPTURE RESONANCE INTEGRAL
=====
691098  0.50 KEV          1  USA  R. EHRlich          KAP
          Q: ENERGY REQUESTED IS A MINIMUM VALUE ONLY;
          REMOVE OR CORRECT FOR (N,P) CONTRIBUTION.
          A: ACCURACY REQUIRED - 10 TO 15 PERCENT.
          O: INTEGRAL EXPERIMENT NEEDED TO CHECK RESONANCE
            PARAMETERS.
          M: SUBSTANTIAL MODIFICATIONS.
=====
26 IRON 54       NEUTRON          CAPTURE CROSS SECTION
=====
742033  1.00 KEV          3.00 MEV          10.0%          2  FR  A. MICHAUDON          BRC
          O: ACTIVATION DETECTOR.
=====
26 IRON 54       NEUTRON          N, F
=====
691099  1.00 MEV          18.0 MEV          10.0%          2  USA  W. N. MC ELROY          HED
          Q: REQUIRED IS ACTIVATION.
          ENERGY STEPS OF 500 KEV.
          A: ENERGY RESOLUTION 250 KEV.
          O: FOR USE AS A FLUENCE MONITOR.
721099          10.0 MEV          15.0%          2  USA  N. STEEN          GET
          Q: REQUIRED IS ACTIVATION.
          ENERGY INTERVALS - 500 KEV.
          A: ENERGY RESOLUTION 250 KEV.
          M: SUBSTANTIAL MODIFICATIONS.
742119  2.30 MEV          7.80 MEV          5.0%          1  EUR  NEUTRON DOSIMETRY GROUP          GEL
          O: ROUTINE FAST NEUTRON FLUENCE MONITOR.
STATUS-----STATUS
GEL  PAULSEN+ - 71CANTERBY 129(1971), DATA 1 TO 17 MEV.
JUL  QAIM+ - 71CANTERBY 121(1971), DATA AT 15 MEV.
NDC  SCHETT+ - EANDC-95 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.
ANL  SMITH+ - ANL/NDM-10 (1975), MEASUREMENTS AND EVALUATION FROM 1.9 TO 10 MEV.
=====
26 IRON 54       NEUTRON          RESONANCE PARAMETERS
=====
741093          100. KEV          10.0%          2  USA  F. G. PEREY          ORL
          P. B. HEMMIG          AEC
          C. E. TILL          ANL
          Q: ENERGY REQUESTED IS A MAXIMUM VALUE ONLY.
          NEUTRON WIDTH, GAMMA WIDTH, SPIN AND PARITY
            WANTED.
          M: NEW REQUEST.
STATUS-----STATUS
RPI  PANDY+ USNCC-11 221(1974), DATA ON TOTAL AND CAPTURE CROSS SECTIONS.
=====
26 IRON 56       NEUTRON          TOTAL PHOTON PRODUCTION CROSS SECTION
=====
653014          3  BZL  L. D. B. AGHINA          IEN
          Q: GAMMA SPECTRA BETWEEN RESONANCES WANTED.
          O: SPECIAL INTEREST ON INTERFERENCE AND DIRECT
            CAPTURE.
=====
26 IRON 56       NEUTRON          N, F
=====
682012  8.00 MEV          12.0 MEV          4.0%          1  JAP  Y. KANDA          KYU
          O: FOR NEUTRON YIELD MONITOR.
          DATA AVAILABLE 5 PERCENT TO 7 PERCENT.
692111          15.0 MEV          5.0%          2  FR  A. MICHAUDON          BRC
          Q: PRODUCTION OF MN-56 (2.58 HOUR).
          O: ACTIVATION DETECTOR.
STATUS-----STATUS
GEL  EURATOM NEUTRON DOSIMETRY GROUP, CURRENT ACCURACY IS 8 PERCENT.
NDC  SCHETT+ - EANDC-95 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.
ANL  SMITH+ - ANL/NDM-10 (1975), MEASUREMENTS AND EVALUATION FROM 4 TO 10 MEV.
=====
26 IRON 56       NEUTRON          N, ALPHA
=====
721090          10.0 MEV          15.0%          2  USA  B. HUTCHINS          GEB
          O: TO DETERMINE HE PRODUCTION IN FAST REACTORS.
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26 IRON 56          NEUTRON          RESONANCE PARAMETERS
=====
741046             100. KEV      10.0%      1      USA      F.G.PEREY      ORL
                  P.O.B.HEMMIG  AEC
                  C.E.TILL      ANL
                  Q: ENERGY REQUESTED IS A MAXIMUM VALUE ONLY.
                  NEUTRON WIDTH, GAMMA WIDTH, SPIN AND PARITY
                  WANTED.
                  M: NEW REQUEST.

STATUS-----STATUS
ORL  HALPERIN. DATA BEING ANALYZED.
=====
26 IRON 57          NEUTRON          RESONANCE PARAMETERS
=====
651102             1.00 KEV      600. KEV      9.0%      1      USA      R.EHRLICH      KAP
                  Q: NEUTRON WIDTH NEEDED.
                  O: NEEDED FOR EVALUATIONS.

741045             100. KEV      10.0%      2      USA      F.G.PEREY      ORL
                  P.O.B.HEMMIG  AEC
                  C.E.TILL      ANL
                  Q: ENERGY REQUESTED IS A MAXIMUM VALUE ONLY.
                  NEUTRON WIDTH, GAMMA WIDTH, SPIN AND PARITY
                  WANTED.
                  M: NEW REQUEST.

=====
26 IRON 58          NEUTRON          CAPTURE CROSS SECTION
=====
651104             1.00 KEV      18.0 MEV      10.0%     2      USA      W.C.MC ELROY   HED
                  Q: REQUIRED IS ACTIVATION.
                  O: FOR USE AS A FLUENCE MONITOR.

STATUS-----STATUS
RPI  HOCKENBURY+ - USNDC-3 155(1972), WORK IN PROGRESS 0.1 TO 200 KEV.
KFK  BEER+ - EANDC(E)-157 (1973), EXPERIMENT PLANNED.
=====
27 COBALT 58        NEUTRON          CAPTURE CROSS SECTION
=====
721048             10.0%      2      USA      N.C.STEEN      BET
                  Q: WANTED FOR BOTH THE 71.3 DAY RADIOACTIVE TARGET
                  AND THE 9.1 HOUR ISOMER.
                  ALL ENERGIES.
                  THERMAL CROSS SECTION MOST IMPORTANT.
                  RESONANCE INTEGRAL ALSO NEEDED.
                  O: FOR INTERPRETATION OF NI-58(N,P) FLUENCE MONITOR
                  DATA.
                  M: SUBSTANTIAL MODIFICATIONS.

=====
27 COBALT 59        NEUTRON          ABSORPTION CROSS SECTION
=====
712027             500. EV      15.0 MEV      25.0%     3      FR      J.Y.BARRE      CAD
                  O: FOR FAST REACTOR CALCULATIONS.

=====
27 COBALT 59        NEUTRON          CAPTURE CROSS SECTION
=====
651106             1.00 KEV      18.0 MEV      10.0%     2      USA      W.C.MC ELROY   HED
                  Q: REQUIRED IS ACTIVATION OF BOTH GROUND AND
                  METASTABLE STATES.
                  O: FOR USE AS A FLUENCE MONITOR.

712028             10.0 MEV      2      JAP      M.KAWAI        NPG
                  A: ACCURACY REQUIRED TO BETTER THAN 20.0 PERCENT.
                  O: FOR FUEL CASK DESIGN AND CONTRCL ROD DESIGN.

STATUS-----STATUS
AUW  MLRTY+ - JFJ 35 8(1973), VALUE AT 24 KEV.
ORL  MACKLIN+ - USNDC-3 148(1972), WORK IN PROGRESS.
ORL  SPENCER+ - ABSORPTION DATA BEING ANALYZED.
=====
27 COBALT 59        NEUTRON          N,P
=====
652119             15.0 MEV      10.0%      2      FR      A.C.MICHAUDON  BRC
                  Q: PRODUCTION OF FE-59 (45.1 DAY).
                  O: ACTIVATION DETECTOR.
                  MEASUREMENTS DIFFER BY FACTOR 10.

712029             15.0 MEV      30.0%      3      FR      J.Y.BARRE      CAD
                  O: FOR FAST REACTOR CALCULATIONS.

STATUS-----STATUS
ANL  SMITH+ - ANL/NDM-10 (1975), MEASUREMENTS AND EVALUATION FROM 4 TO 10 MEV.
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27 COBALT 55 NEUTRON N, ALPHA

712530 15.0 MEV 30.0% 3 FR J. Y. BARRE CAD  
 Q: FOR FAST REACTOR CALCULATIONS.

-----STATUS-----STATUS

NDC SCHETT+ - EANDC-55 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.

=====

27 COBALT 60 NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION

652016 3 BZL L. O. B. AGHINA IEN  
 Q: GAMMA SPECTRA BETWEEN RESONANCES WANTED.  
 O: SPECIAL INTEREST ON INTERFERENCE AND DIRECT CAPTURE.

=====

28 NICKEL NEUTRON TOTAL CROSS SECTION

721047 1.00 KEV 20.0 MEV 3.0% 2 USA C. E. CLIFFORD ORL  
 P. B. HEMMIG AEC  
 A: ACCURACY NEEDED TO 3 TO 5 PERCENT IN DEEP MINIMA.  
 ENERGY RESOLUTION SUFFICIENT TO RESOLVE MAJOR STRUCTURE.  
 O: FOR USE IN SHIELDING CALCULATIONS.  
 M: SUBSTANTIAL MODIFICATIONS.

-----STATUS-----STATUS

ANL GUENTHER+ - USNDC-11 17(1974), MEASUREMENTS AND EVALUATION FROM 0.3 TO 4 MEV. TO BE PUBLISHED

ORL PEREY+ - PRELIMINARY DATA. INFORMATION FROM NNCS.

NBS NBS-138.

=====

28 NICKEL NEUTRON ELASTIC CROSS SECTION

753037 25.3 MV 20.0 MEV 3.0% 2 IND G. B. GARG TRM  
 Q: REQUIRED FOR STRUCTURAL-MATERIAL CALCULATIONS.  
 M: NEW REQUEST.

=====

28 NICKEL NEUTRON DIFFERENTIAL ELASTIC CROSS SECTION

651110 1.50 MEV 14.0 MEV 9.0% 1 USA R. E. HRLICH KAP  
 A: ENERGY RESOLUTION 100 KEV.  
 ANGULAR RESOLUTION 5 DEGREES.

652120 1.50 MEV 3.00 MEV 15.0% 2 GER B. GOEL KFK  
 A: ABOUT 100 KEV ENERGY RESOLUTION AND ABOUT 5 DEGREES ANGULAR.  
 RESOLUTION 10 PERCENT ON AVERAGE (COS).

652123 8.00 MEV 15.0 MEV 20.0% 2 FR C. DEVILLERS SAC  
 A: ACCURACY 10 PERCENT PREFERRED.  
 ENERGY RESOLUTION - 500 KEV.  
 ANGULAR RESOLUTION - 10 DEGREES.  
 O: FOR FAST REACTOR SHIELDING CALCULATIONS.  
 EVALUATION MAY BE SUFFICIENT.

721048 100. KEV 15.0 MEV 2 USA C. E. TILL ANL  
 P. B. HEMMIG AEC  
 A: ACCURACY REQUIRED - 5 TO 10 PERCENT.  
 RESOLUTION OF INTERMEDIATE STRUCTURE PROBABLY ADEQUATE.  
 M: SUBSTANTIAL MODIFICATIONS.

-----STATUS-----STATUS

AE HOLMQUIST+ - AE-366(1969), DATA 3 TO 8 MEV.

ORL PEREY+ - ORNL-4515(1970), DATA 4.2 TO 8.6 MEV.

AE MALMSKAG. - AE-FN-25(1972), DATA 0.5 TO 1.5 MEV.

RPI ZUHR+ - COO-3058-35 22(1973), DATA 50 TO 650 KEV.

ORL KINNEY+ - ORNL-4807(1974), DATA 4.1 TO 8.6 MEV.

ARL VELKLEY+ - PR/C 9 2181(1974), DATA AT 9 MEV.

ABD BUCHER+ - USNDC-11 267(1974), SMALL-ANGLE SCATTERING. IN PROGRESS.

ANL GUENTHER+ - USNDC-11 17(1974), MEASUREMENTS AND EVALUATION FROM 0.3 TO 4 MEV. TO BE PUBLISHED

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28 NICKEL NEUTRON INELASTIC CROSS SECTION

753038 20.0 MEV 3.0% 2 IND G. B. GARG TRM  
 Q: REQUIRED FOR STRUCTURAL-MATERIAL CALCULATIONS.  
 M: NEW REQUEST.

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28 NICKEL NEUTRON ENERGY DIFFERENTIAL INELASTIC CROSS SECTION
   
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661229 15.0 MEV 10.0% 2 USA B. HUTCHINS GEB
   
 P. B. HEMMIG AEC
   
 Q: TOTAL INTEGRAL OVER 4 PI REQUIRED.
   
 SPECTRA AT SEVERAL ANGLES IF SIGNIFICANTLY
   
 ANISOTROPIC.
   
 A: ENERGY RESOLUTION - 1% PERCENT FOR INCIDENT AND
   
 SCATTERED NEUTRON REQUIRED TO DETERMINE MAJOR
   
 STRUCTURE.
   
 M: SUBSTANTIAL MODIFICATIONS.

702008 15.0 MEV 30.0% 3 FR J. Y. BARRE CAD
   
 Q: FOR FAST REACTOR CALCULATIONS.

-----STATUS-----STATUS

ORL PEREY+ - CFNL-4515(1970), DATA 4.2 TO 8.6 MEV.
   
 AE ALMEN+ - INDC(SEC)-31 39(1973), DATA 2 TO 4.5 MEV.
   
 AE ETEMAD - AE-481(1973), DATA AT 3 MEV.
   
 RPI ZUPR - DATA TO 600 KEV.
   
 ORL KINNEY+ - GRNL-4807(1974), DATA 4.1 TO 8.6 MEV.
   
 ANL GUENTHER+ - USNDC-11 17(1974), MEASUREMENTS AND EVALUATION FROM 0.3 TO 4 MEV. TO BE PUBLISHED
   
 ARL VELKLEY+ - PR/C 9 2181(1974), DATA AT 9 MEV.

=====
   
28 NICKEL NEUTRON DOUBLE DIFFERENTIAL INELASTIC CROSS SECTION
   
=====

642009 7.0 MEV 3 UK C. G. CAMPBELL WIN
   
 A: ACCURACY REQUIRED 5% PERCENT BELOW 4.0 MEV,
   
 5% TO 10% PERCENT ABOVE.
   
 Q: FOR FAST REACTORS.

=====
   
28 NICKEL NEUTRON ABSORPTION CROSS SECTION
   
=====

712031 500 EV 15.0 MEV 5.0% 1 FR J. Y. BARRE CAD
   
 Q: FOR FAST REACTOR CALCULATIONS.

=====
   
28 NICKEL NEUTRON CAPTURE CROSS SECTION
   
=====

692126 100 EV 1.00 MEV 1 UK C. G. CAMPBELL WIN
   
 A: ACCURACY REQUIRED 10 PERCENT TO 100 KEV,
   
 20% PERCENT OR 2 MB ABOVE.
   
 Q: FOR FAST REACTORS.

692129 1.00 KEV 200 KEV 10.0% 1 JAP S. KATSURAGI JAE
   
 Q: FOR FAST REACTORS.
   
 DATA ARE NOT SUFFICIENT ABOVE 10 KEV.

692131 1.00 KEV 300 KEV 20.0% 2 GER B. GOEL KFK

702009 500 EV 1.00 MEV 5.0% 1 FR J. Y. BARRE CAD
   
 Q: RESONANCE PARAMETERS ALSO REQUIRED.
   
 Q: FOR FAST REACTOR CALCULATIONS.

741253 1.00 KEV 1.00 MEV 10.0% 2 USA F. G. PEREY ORL
   
 P. B. HEMMIG AEC
   
 C. E. TILL ANL
   
 M: NEW REQUEST.

753039 25.3 MV 20.0 MEV 3.0% 2 IND G. B. GARG TRM
   
 Q: REQUIRED FOR STRUCTURAL-MATERIAL CALCULATIONS.
   
 M: NEW REQUEST.

-----STATUS-----STATUS

AUA BROOMHALL+ - AEC/PR34 (1971), WORK IN PROGRESS 10 TO 50 KEV.
   
 KFK SCHATZ - KFK-1668(1972), REVIEW OF EXPERIMENTAL DATA.
   
 KFK BEER+ - SANDC(E)-157 (1973), WORK IN PROGRESS ON SEPARATED ISOTOPES.
   
 CAD LE RIGOLEUF - CEA-N-1661(1973), DATA FROM 75 TO 538 KEV
   
 HAS MOXON - AERE-R-7568(1975), MEASUREMENTS AND EVALUATION COMPLETED.
   
 ANL POENITZ - DATA 0.4 TO 4 MEV
   
 HAK PATTENDEN+ - FURTHER MEASUREMENTS PLANNED.
   
 ORL HALPERIN - MEASUREMENTS PLANNED

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28 NICKEL NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION
   
=====

621220 25.3 MV 300 KEV 20.0% 1 USA C. E. CLIFFORD ORL
   
 Q: SECONDARY ENERGY DISTRIBUTION REQUIRED.
   
 Q: FOR SHIELDING AND GAMMA HEATING CALCULATIONS.

631003 2.00 MEV 14.0 MEV 20.0% 2 USA C. E. CLIFFORD ORL
   
 Q: SECONDARY ENERGY-ANGLE DISTRIBUTIONS REQUIRED.
   
 Q: FOR SHIELDING AND GAMMA HEATING CALCULATIONS.

28 NICKEL NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION (CONTINUED)

692125 1.00 KEV 15.0 MEV 10.0% 2 FR C. DEVILLERS SAC  
 Q: GAMMA SPECTRA REQUIRED.  
 A: ENERGY RESOLUTION OF 250 KEV FOR GAMMA RAYS LESS THAN 1 MEV AND 500 KEV FOR ENERGIES GREATER THAN 1 MEV.  
 O: FOR FAST REACTOR SHIELDING CALCULATIONS. EVALUATION MAY BE SUFFICIENT.

721052 25.3 MV 10.0 MEV 20.0% 2 USA P. B. HEMMIG AEC  
 Q: SECONDARY ENERGY DISTRIBUTION REQUIRED.  
 O: FOR SHIELDING AND GAMMA HEATING CALCULATIONS.

STATUS-----STATUS

ORL DICKENS - ORNL-TM-4379, DATA 1 TO 20 MEV.

28 NICKEL NEUTRON NEUTRON EMISSION CROSS SECTION

692129 2.00 MEV 15.0 MEV 10.0% 2 FR C. DEVILLERS SAC  
 Q: SECONDARY ENERGY DISTRIBUTION REQUIRED.  
 A: RESOLUTION FOR PRIMARY AND SECONDARY NEUTRONS 10 PERCENT.  
 O: FOR FAST REACTOR SHIELDING CALCULATIONS. EVALUATION MAY BE SUFFICIENT.

28 NICKEL NEUTRON N, F

722010 15.0 MEV 10.0% 1 FR J. Y. BARRE CAD  
 O: FOR FAST REACTOR CALCULATIONS.

28 NICKEL NEUTRON N, ALPHA

692132 15.0 MEV 20.0% 2 FR C. DEVILLERS SAC  
 O: FOR FAST REACTOR CALCULATIONS. EVALUATION MAY BE SUFFICIENT.

721051 10.0 MEV 15.0% 2 USA B. HUTCHINS GEB  
 O: TO DETERMINE HE PRODUCTION IN FAST REACTORS.

722044 15.0 MEV 10.0% 1 FR J. Y. BARRE CAD  
 O: FOR FAST REACTOR CALCULATIONS.

28 NICKEL NEUTRON CAPTURE RESONANCE INTEGRAL

691109 0.50 EV 15.0% 1 USA R. EHRlich KAP  
 O: REMOVE OR CORRECT FOR N, P CONTRIBUTION.

28 NICKEL 58 NEUTRON N, 2N

692133 15.0 MEV 10.0% 2 FR A. MICHAUDON BRC  
 Q: PRODUCTION OF NI-57 (36.4 HOUR).  
 O: ACTIVATION DETECTOR. EVALUATION MAY BE SUFFICIENT. DISAGREEMENT BETWEEN JERONYMO(SACLAY) AND OTHERS.

28 NICKEL 58 NEUTRON N, F

721055 15.0 MEV 5.0% 2 USA N. STEEN BET  
 O: FOR USE AS FAST FLUENCE MONITOR.  
 M: SUBSTANTIAL MODIFICATIONS.

742115 2.0% 1 EUR NEUTRON DOSIMETRY GROUP GEL  
 Q: AVERAGE CROSS SECTION IN A U-235 FISSION SPECTRUM DESIRED.  
 O: FOR NORMALIZATION OF AVERAGE CROSS SECTIONS FOR DOSIMETRY PURPOSES.

742117 2.10 MEV 7.00 MEV 5.0% 1 EUR NEUTRON DOSIMETRY GROUP GEL  
 O: ROUTINE FAST NEUTRON FLUENCE MONITOR. STRONG DISCREPANCY BETWEEN DIFFERENTIAL DATA AND AVERAGE VALUE IN U-235 FISSION NEUTRON SPECTRUM.

STATUS-----STATUS

IRK WAGNER+ - APA 37 288(1973), DATA 2 TO 20 MEV.

GEL PAULSEN+ - EANDC(E)-150 (1972), MEASUREMENT IN PROGRESS.

NOC SCHETT+ - EANCC-95 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.

ANL SMITH+ - ANL/NDM-10 (1975), MEASUREMENTS AND EVALUATION FROM 0.4 TO 10 MEV.

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28 NICKEL 58          NEUTRON          N,NF
=====
692136                15.0 MEV    10.0%    2    FR    A.MICHAUDON    BRC
                                Q: PRODUCTION OF CO-57 (270 DAY) THROUGH
                                  SIGMA(N,NP)+SIGMA(N,D).
                                O: ACTIVATION DETECTOR.
                                  CIRCUIT ACTIVATION.
                                  DISAGREEMENT BETWEEN JERONYMO(SACLAY) AND OTHERS.
=====
28 NICKEL 58          NEUTRON          N,ALPHA
=====
692135                14.0 MEV          2    GER    B.GOEL          KFK
                                A: ACCURACY REQUIRED TO BETTER THAN 20. PERCENT.
                                O: VERIFICATION OF EVAPORATION THEORY CALCULATIONS.
-----STATUS-----
STATUS-----
NDC    SCHEFF+ - EANDC-95 (1974), COMPILED OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.
=====
28 NICKEL 58          NEUTRON          RESONANCE PARAMETERS
=====
741056                100. KEV    10.0%    2    USA    F.G.PEREY      ORL
                                P.B.HEMMIG     AEC
                                C.E.TILL       ANL
                                Q: ENERGY REQUESTED IS A MAXIMUM VALUE ONLY.
                                  NEUTRON WIDTH, GAMMA WIDTH, SPIN AND PARITY
                                  WANTED.
                                M: NEW REQUEST.
-----STATUS-----
STATUS-----
ORL    HALPERIN - MEASUREMENTS PLANNED FOR 1975.
=====
28 NICKEL 58          NEUTRON          N,ALPHA
=====
742023                25.3 MV     500. EV    20.0%    2    BLG    N.MAENE        MOL
                                A: EVEN AN ACCURACY OF 50 PERCENT WOULD BE USEFUL.
                                O: EVALUATION OF HE PRODUCTION IN STEEL IN HIGH FLUX
                                  REACTORS THROUGH THE REACTION CHAIN
                                  NI-58(N,GAMMA)NI-59(N,ALPHA)FE-56.
-----STATUS-----
STATUS-----
MOL    MAENE - THEORETICAL EVALUATION OF THERMAL CROSS SECTION BY KIROUAC (NSE 46 427) YIELDS 30 BARNS,
                                  TO BE COMPARED WITH A VALUE OF 11 BARNS DEDUCED BY WEITMAN FROM ANOMALOUS HELIUM PRODUCTION
                                  RATE IN STEEL IRRADIATED IN A FILE SPECTRUM.
=====
28 NICKEL 60          NEUTRON          N,P
=====
692137                15.0 MEV    10.0%    2    FR    A.MICHAUDON    BRC
                                Q: PRODUCTION OF CO-60 (5.3 YEAR).
                                O: ACTIVATION DETECTOR.
=====
28 NICKEL 60          NEUTRON          N,ALPHA
=====
692138                14.0 MEV          2    GER    B.GOEL          KFK
                                A: ACCURACY REQUIRED TO BETTER THAN 20. PERCENT.
                                O: VERIFICATION OF EVAPORATION THEORY CALCULATIONS.
=====
28 NICKEL 60          NEUTRON          RESONANCE PARAMETERS
=====
741059                100. KEV    10.0%    2    USA    F.G.PEREY      ORL
                                P.B.HEMMIG     AEC
                                C.E.TILL       ANL
                                Q: ENERGY REQUESTED IS A MAXIMUM VALUE ONLY.
                                  NEUTRON WIDTH, GAMMA WIDTH, SPIN AND PARITY
                                  WANTED.
                                M: NEW REQUEST.
-----STATUS-----
STATUS-----
ORL    HALPERIN+ - MEASUREMENTS PLANNED FOR 1975.
=====
28 NICKEL 61          NEUTRON          RESONANCE PARAMETERS
=====
691128                1.00 KEV    600. KEV    9.0%    1    USA    R.EHRLICH      KAP
                                Q: NEUTRON WIDTH NEEDED.
=====
741062                100. KEV    10.0%    3    USA    F.G.PEREY      ORL
                                P.B.HEMMIG     AEC
                                C.E.TILL       ANL
                                Q: ENERGY REQUESTED IS A MAXIMUM VALUE ONLY.
                                  NEUTRON WIDTH, GAMMA WIDTH, SPIN AND PARITY
                                  WANTED.
                                M: NEW REQUEST.
=====

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STATUS-----STATUS  
 KFK ERNST+ - KFK-1231 (1970), CAPTURE WIDTHS FOR 14 RESONANCES.  
 KFK CHO+ - KFK-123C (1970), NEUTRON WIDTHS AND J.  
 RPI HOCKENBURY+ - LSND-3 155(1972), WORK IN PROGRESS.  
 KFK BEER+ - KFK-1272 3(1972), WORK IN PROGRESS.  
 RPI PANDY+ - DATA AVAILABLE.

28 NICKEL 62 NEUTRON CAPTURE CROSS SECTION

682013 1.00 KEV 1.00 MEV 20.0% 2 FR A.MICHAUDON BRC  
 Q: PRODUCTION OF NI-63 (92 YEAR).  
 O: ACTIVATION DETECTOR.  
 STATUS-----STATUS  
 KFK BEER+ - EANDC(E)-157 (1973), MEASUREMENT RELATIVE TO GOLD IN PROGRESS 5 TO 200 KEV.

28 NICKEL 62 NEUTRON RESONANCE PARAMETERS

791065 100. KEV 10.0% 3 USA F.G.PEREY ORL  
 P.B.HEMMIG AEC  
 C.E.TILL ANL  
 Q: ENERGY REQUESTED IS A MAXIMUM VALUE ONLY.  
 NEUTRON WIDTH, GAMMA WIDTH, SPIN AND PARITY  
 WANTED.  
 M: NEW REQUEST.

28 NICKEL 64 NEUTRON CAPTURE CROSS SECTION

682014 1.00 KEV 1.00 MEV 20.0% 2 FR A.MICHAUDON BRC  
 Q: PRODUCTION OF NI-65 (2.56 HOUR).  
 O: ACTIVATION DETECTOR.  
 STATUS-----STATUS  
 KFK BEER+ - EANDC(E)-157 (1973), MEASUREMENT RELATIVE TO GOLD IN PROGRESS 5 TO 200 KEV.

28 NICKEL 64 NEUTRON N,2N

652135 15.0 MEV 10.0% 2 FR A.MICHAUDON BRC  
 Q: PRODUCTION OF NI-63 (92 YEAR).  
 O: ACTIVATION DETECTOR.

28 NICKEL 64 NEUTRON RESONANCE PARAMETERS

791068 100. KEV 10.0% 3 USA F.G.PEREY ORL  
 P.B.HEMMIG AEC  
 C.E.TILL ANL  
 Q: ENERGY REQUESTED IS A MAXIMUM VALUE ONLY.  
 NEUTRON WIDTH, GAMMA WIDTH, SPIN AND PARITY  
 WANTED.  
 M: NEW REQUEST.

29 COPPER 63 NEUTRON CAPTURE CROSS SECTION

671001 25.3 MV 1.00 KEV 2 USA P.B.HEMMIG AEC  
 A: ACCURACY 2 PERCENT NEAR THERMAL, 5 PERCENT ABOVE  
 THERMAL.  
 O: FOR DETECTOR APPLICATIONS.  
 691132 1.00 KEV 18.0 MEV 10.0% 2 USA W.N.MC ELROY HED  
 Q: REQUIRED IS ACTIVATION.  
 O: FOR USE AS A FLUENCE MONITOR.  
 732043 10.0 KEV 3.0% 2 FR H.TELLIER SAC  
 O: DETECTOR.

STATUS-----STATUS  
 HAR MOXON+ - AERE-FR/NP13 (1968), MEASUREMENTS IN PROGRESS TO 100 KEV.  
 ORL MACKLIN+ - NCSAC-42 185(1971), MEASUREMENTS IN PROGRESS TO 500 KEV.  
 RPI PANDY+ - DATA BEING ANALYZED.

29 COPPER 63 NEUTRON N,2N

682015 12.0 MEV 5.0% 1 JAP Y.KANDA KYU  
 O: FOR NEUTRON YIELD MONITOR.  
 A FEW DATA AVAILABLE.  
 682016 14.0 MEV 20.0 MEV 5.0% 1 JAP Y.KANDA KYU  
 O: FOR NEUTRON YIELD MONITOR.  
 LARGE DISCREPANCIES AMONG DATA.



29 COPPER 63 NEUTRCN N,2N (CONTINUED)

792130 11.9 MEV 16.4 MEV 5.0% 2 EUR NEUTRON DOSIMETRY GROUP GEL  
 O: FOR NEUTRON DOSIMETRY USING SPECTRUM UNFOLDING METHODS.  
 GREATER THAN 10 PERCENT DISCREPANCY BETWEEN INTEGRAL AND DIFFERENTIAL MEASUREMENTS.

STATUS-----STATUS  
 NDC SCHETT+ - EANDC-55 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.

29 COPPER 63 NEUTRCN N,ALPHA

651133 6.00 MEV 18.0 MEV 10.0% 2 USA W.C. MC ELROY HED  
 O: REQUIRED IS ACTIVATION.  
 O: FOR USE AS A FLUENCE MONITOR.

792120 6.10 MEV 11.3 MEV 5.0% 1 EUR NEUTRON DOSIMETRY GROUP GEL  
 O: ROUTINE FAST NEUTRON FLUENCE MONITOR.

STATUS-----STATUS  
 GEL LISKIEN+ - JNE 27 39(1973), DATA AT 8.1 MEV.  
 HAM BORMANN+ - NP/A 186 65(1972), DATA AT 14 MEV.  
 NDC SCHETT+ - EANDC-55 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.

29 COPPER 65 NEUTRCN CAPTURE CROSS SECTION

571002 25.3 MV 1.00 KEV 2 USA P.O.B. HEMMIG AEC  
 A: ACCURACY 2 PERCENT NEAR THERMAL, 5 PERCENT ABOVE.  
 O: FOR DETECTOR APPLICATIONS.

STATUS-----STATUS  
 HAR MOXON+ - AERE-FR/NP13 (1968), MEASUREMENTS IN PROGRESS TO 100 KEV.  
 ORL MACKLIN+ - NCSAC-42 185(1971), MEASUREMENTS IN PROGRESS TO 500 KEV.

29 COPPER 65 NEUTRCN N,2N

682017 12.0 MEV 5.0% 1 JAP Y.KANDA KYU  
 O: FOR NEUTRON YIELD MONITOR.

682018 15.0 MEV 20.0 MEV 5.0% 1 JAP Y.KANDA KYU  
 O: FOR NEUTRON YIELD MONITOR.  
 LARGE DISCREPANCIES AMONG DATA.

STATUS-----STATUS  
 JUL QAIM - NP/A 185 614(1972), DATA AT 15.0 MEV.  
 HAM MOGHARRAB+ - AKE 19 107(1972), DATA AT 14 MEV.  
 JAE KANDA+ - JAERI-1207 (1972), EVALUATION 11 TO 20 MEV.  
 LOU ARAMINOWICZ+ - INR-1464 (1973), DATA AT 14 MEV.  
 NPL ROBERTSON+ - JNE 27 531(1973), DATA AT 15 MEV.  
 MUN MANNHART+ - ZP 272 279(1975), DATA AT 14 MEV.  
 NDC SCHETT+ - EANDC-55 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.

30 ZINC 64 NEUTRCN CAPTURE CROSS SECTION

702013 24.0 KEV 10.0% 3 JAP H. NAKAMURA FE  
 O: FOR NORMALIZATION OF THE CALCULATED CROSS SECTION CURVE.

30 ZINC 64 NEUTRCN N,2N

693018 14.0 MEV 10.0% 3 MUN J. CSIKAI KOS  
 A: INCIDENT ENERGY RESOLUTION 200 KEV.  
 O: NEEDED FOR NEUTRON ACTIVATION ANALYSIS AND CROSS SECTION SYSTEMATICS.

30 ZINC 64 NEUTRCN N,F

792131 2.30 MEV 7.80 MEV 5.0% 2 EUR NEUTRON DOSIMETRY GROUP GEL  
 O: FOR NEUTRON DOSIMETRY USING SPECTRUM UNFOLDING METHODS.  
 ABOUT 20 PERCENT DISCREPANCY BETWEEN INTEGRAL AND DIFFERENTIAL MEASUREMENTS.

STATUS-----STATUS  
 NDC SCHETT+ - EANDC-55 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.  
 ANL SMITH+ - ANL/NDM-10 (1975), MEASUREMENTS AND EVALUATION FROM 1.1 TO 10 MEV.

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=====
31 GALLIUM NEUTRON N,2N
=====
792036 1500 MEV 2000% 2 FR A,MICHAUDON BRC
=====
31 GALLIUM 69 NEUTRON N,2N
=====
692019 1400 MEV 1000% 3 HUN J,CSIKAI KOS
Q: INCIDENT ENERGY RESOLUTION 200 KEV
Q: NEEDED FOR NEUTRON ACTIVATION ANALYSIS AND CROSS
SECTION SYSTEMATICS
=====
33 ARSENIC 75 NEUTRON N,2N
=====
692195 1500 MEV 1000% 3 FR A,MICHAUDON BRC
Q: PRODUCTION OF AS-74 (17.9 DAY)
Q: ACTIVATION DETECTOR
=====
36 KRYPTON 83 NEUTRON TOTAL CROSS SECTION
=====
671116 1000 MV 1000 KEV 1000% 2 USA N,STEEN R,EBRLICH EET KAP
A: ENERGIES ABOVE 1 EV OF INTEREST TO GIVE RESONANCE
INTEGRAL TO 10 PERCENT
Q: FOR FISSION PRODUCT ABSORPTION CALCULATION
=====
36 KRYPTON 83 NEUTRON CAPTURE CROSS SECTION
=====
671190 1000 MV 1000 KEV 1000% 2 USA N,STEEN R,EBRLICH BET KAP
Q: THERMAL CROSS SECTION AND RI WANTED
A: ENERGIES ABOVE 1 EV OF INTEREST TO GIVE RESONANCE
INTEGRAL TO 10 PERCENT
Q: FOR FISSION PRODUCT ABSORPTION CALCULATION
Q: SUBSTANTIAL MODIFICATIONS
=====
36 KRYPTON 84 NEUTRON CAPTURE CROSS SECTION
=====
792290 1000 KEV 3000 MEV 1000% 1 FR A,MICHAUDON BRC
Q: FOR ACTIVATION
=====
37 RUBIDIUM 85 NEUTRON N,2N
=====
692197 1000 MEV 1500 MEV 500% 2 FR A,MICHAUDON BRC
Q: PRODUCTION OF RB-84 (33 DAY)
Q: ACTIVATION DETECTOR
=====
STATUS-----STATUS
HAM BORMANN+ - EANCC(E)-150 (1972), ACTIVATION MEASUREMENT IN PROGRESS 13 TO 18 MEV
AUB GHORAI+ - NF/A 223 118(1974), DATA AT 3 ENERGIES FROM 15 TO 17 MEV
=====
39 YTTRIUM 89 NEUTRON CAPTURE CROSS SECTION
=====
692019 1000 KEV 3000 MEV 1000% 1 FR A,MICHAUDON BRC
Q: PRODUCTION OF Y-90 (64.2 HOUR)
Q: ACTIVATION DETECTOR
=====
40 ZIRCONIUM NEUTRON DIFFERENTIAL ELASTIC CROSS SECTION
=====
691295 2000 KEV 1050 MEV 1000% 2 USA R,EBRLICH KAP
A: ENERGY RESOLUTION 5.0 PERCENT
Q: TO RESOLVE DISCREPANCIES IN EXISTING DATA
691296 7000 MEV 1400 MEV 2000% 2 USA R,EBRLICH KAP
A: ENERGY RESOLUTION 2.5 PERCENT
=====
STATUS-----STATUS
ANL SMITH - ANL/NDM-4, ISOTOPIC DATA TC 4 MEV
=====
40 ZIRCONIUM NEUTRON ENERGY DIFFERENTIAL INELASTIC CROSS SECTION
=====
702014 4000 MEV 7000 MEV 3 JAP H,NAKAMURA FE
A: ACCURACY REQUIRED TO BETTER THAN 20.0 PERCENT
Q: FOR INVESTIGATIONS OF LEVEL DENSITY PARAMETERS
=====
40 ZIRCONIUM NEUTRON ABSORPTION CROSS SECTION
=====
712039 5000 EV 1500 MEV 2500% 3 FR J,Y,BARRE CAD
Q: FOR FAST REACTOR CALCULATIONS
=====

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=====  
 40 ZIRCONIUM NEUTRON CAPTURE CROSS SECTION  
 =====

671025 25.3 MV 1.00 KEV 5.0% 2 USA GORTON FL  
 O: FOR REACTOR MODERATION AND REACTIVITY EFFECTS:

691142 3.00 KEV 10.0 MEV 15.0% 2 USA REHRLICH KAP  
 O: FOR REACTOR MODERATION AND REACTIVITY EFFECTS,  
 TO VERIFY EXISTING MEASUREMENTS FOR NEUTRON  
 ENERGIES LESS THAN 25 KEV,  
 TO RESOLVE DISCREPANCIES IN EXISTING DATA FROM  
 25 KEV TO 1 MEV,  
 NO DATA AVAILABLE ABOVE 1 MEV,  
 M: SUBSTANTIAL MODIFICATIONS:

STATUS-----STATUS

ANL POENITZ - LSND-1 8(1972), WORK IN PROGRESS 400 KEV TO 1.5 MEV.  
 LRL CZIRRA - LSND-1 94(1972), WORK IN PROGRESS 100 EV TO 1 MEV.

=====  
 40 ZIRCONIUM NEUTRON NEUTRON EMISSION CROSS SECTION  
 =====

671003 3.00 MEV 14.0 MEV 10.0% 1 USA REHRLICH KAP  
 COETILL ANL  
 O: SECONDARY ENERGY-ANGLE DISTRIBUTIONS REQUIRED,  
 A: INCIDENT AND EXIT ENERGY RESOLUTION 10 PERCENT,  
 Q: FOR DESIGN OF PRESSURIZED WATER REACTORS USING ZR,  
 M: SUBSTANTIAL MODIFICATIONS.

=====  
 40 ZIRCONIUM NEUTRON N,F  
 =====

712035 15.0 MEV 30.0% 3 FR JEBARRE CAD  
 O: FOR FAST REACTOR CALCULATIONS.

=====  
 40 ZIRCONIUM NEUTRON N,ALPHA  
 =====

712036 15.0 MEV 30.0% 3 FR JEBARRE CAD  
 O: FOR FAST REACTOR CALCULATIONS.

=====  
 40 ZIRCONIUM NEUTRON CAPTURE RESONANCE INTEGRAL  
 =====

691143 0.50 EV 5.0% 1 USA REHRLICH KAP  
 O: TO RESOLVE DISCREPANCIES IN EXISTING DATA.

=====  
 40 ZIRCONIUM 90 DISCRETE LEVEL STRUCTURE (ENERGY, SPIN, PARITY)  
 =====

691152 2 USA REHRLICH KAP  
 O: J AND PI FOR ALL LEVELS LESS THAN 5 MEV REQUIRED,  
 O: FOR CALCULATING COMPOUND ELASTIC AND INELASTIC  
 AND N,P.

STATUS-----STATUS

ANL SMITH - ANL/NDM-4, DATA AVAILABLE.

=====  
 40 ZIRCONIUM 90 NEUTRON TOTAL CROSS SECTION  
 =====

721059 5.00 MEV 15.0 MEV 3.0% 1 USA HUTCHINS GEB  
 NOSTEEN BET  
 O: TO RESOLVE DISCREPANCIES IN EXISTING DATA,  
 M: SUBSTANTIAL MODIFICATIONS.

STATUS-----STATUS

ANL GUENTHER - ANL/NDM-4 (1974), DATA 0.9 TO 5.5 MEV.

=====  
 40 ZIRCONIUM 90 NEUTRON DIFFERENTIAL ELASTIC CROSS SECTION  
 =====

721260 100. KEV 10.0 MEV 10.0% 1 USA NOSTEEN BET  
 O: SCATTERING FROM SEPARATED ISOTOPES 90-91,92-94, AND  
 96 IS DESIRED,  
 O: TO CHECK THE SHELL EFFECT ON THE OPTICAL  
 POTENTIAL,  
 TO DERIVE USEFUL OPTICAL MODEL PARAMETERS.

STATUS-----STATUS

KTY MC ELLISTREM - WORK IN PROGRESS 1.5 TO 6 MEV.

ANL GUENTHER - ANL/NDM-4 (1974), DATA 1.8 TO 4.0 MEV.

=====  
 40 ZIRCONIUM 90 NEUTRON ANGULAR DIFFERENTIAL INELASTIC CROSS SECTION  
 =====

691149 14.0 MEV 15.0% 2 USA REHRLICH KAP  
 O: RESOLVE DISCRETE LEVELS UP TO 3 MEV EXCITATION,  
 O: TO COMPUTE DIRECT INELASTIC SCATTERING AND  
 INVESTIGATE ISOTOPIC SPIN DEPENDENT COUPLING  
 BETWEEN GROUND AND EXCITED STATES.

STATUS-----STATUS

KTY MC ELLISTREM+ - WORK IN PROGRESS 1.5 TO 6 MEV.  
 ANL GUENTHER+ - ANL/NDM-4 (1974), DATA 1.8 TO 4.0 MEV.

=====  
 40 ZIRCONIUM 90 NEUTRON ENERGY DIFFERENTIAL INELASTIC CROSS SECTION  
 =====

Z21061 5.00 MEV 15.0 MEV 10.0% 1 USA NOSTEEN BET  
 O: TO DETERMINE THE SPLIT OF TOTAL ZR CROSS SECTION  
 BETWEEN ELASTIC AND INELASTIC.

=====  
 40 ZIRCONIUM 90 NEUTRON RESONANCE PARAMETERS  
 =====

691151 15.0 MEV 10.0% 2 USA ROEHLICH KAP  
 NOSTEEN BET  
 O: ELASTIC AND GAMMA WIDTHS WANTED.  
 ENERGY TO INCLUDE LOWEST RESOLVED RESONANCE.  
 O: NEEDED TO VERIFY EXISTING MEASUREMENTS.  
 DISCREPANCIES STILL EXIST.  
 M: SUBSTANTIAL MODIFICATIONS.

STATUS-----STATUS

ORL GOOD - 1 TO 400 KEV.

=====  
 40 ZIRCONIUM 90 NEUTRON CAPTURE RESONANCE INTEGRAL  
 =====

691150 0.50 EV 20.0% 2 USA ROEHLICH KAP  
 O: NEEDED FOR EVALUATING MEASUREMENTS AND  
 RESONANCE PARAMETERS.

=====  
 40 ZIRCONIUM 91 DISCRETE LEVEL STRUCTURE (ENERGY, SPIN, PARITY)  
 =====

691157 2 USA ROEHLICH KAP  
 O: LEVELS FROM 1.0 TO 3.0 MEV WANTED.  
 O: FOR CALCULATING COMPOUND ELASTIC AND INELASTIC.  
 M: SUBSTANTIAL MODIFICATIONS.

=====  
 40 ZIRCONIUM 91 NEUTRON TOTAL CROSS SECTION  
 =====

Z52092 2.00 MV 100. EV 10.0% 2 TUK COERTEK CNA  
 AOISYAR CNA  
 O: FOR REACTIVITY EFFECTS MEASUREMENTS.  
 M: NEW REQUEST.

STATUS-----STATUS

BRC ADAM+ - 73KIEV.

=====  
 40 ZIRCONIUM 91 NEUTRON DIFFERENTIAL ELASTIC CROSS SECTION  
 =====

Z21063 100. KEV 10.0 MEV 10.0% 1 USA NOSTEEN BET  
 O: SCATTERING FROM SEPARATED ISOTOPES 90-91, 92-94,  
 AND 96 IS DESIRED.  
 O: TO CHECK THE SHELL EFFECT ON THE OPTICAL  
 POTENTIAL.  
 TO DERIVE USEFUL OPTICAL MODEL PARAMETERS.

STATUS-----STATUS

KTY MC ELLISTREM+ - WORK IN PROGRESS 1.5 TO 6 MEV.

=====  
 40 ZIRCONIUM 91 NEUTRON ANGULAR DIFFERENTIAL INELASTIC CROSS SECTION  
 =====

691153 14.0 MEV 15.0% 2 USA ROEHLICH KAP  
 O: RESOLVE DISCRETE LEVELS UP TO 2 MEV EXCITATION.  
 O: TO COMPUTE DIRECT INELASTIC SCATTERING AND  
 INVESTIGATE ISOTOPIC SPIN DEPENDENT COUPLING  
 BETWEEN GROUND AND EXCITED STATES.

STATUS-----STATUS

KTY MC ELLISTREM+ - WORK IN PROGRESS 1.5 TO 6 MEV.

=====  
 40 ZIRCONIUM 91 NEUTRON ENERGY DIFFERENTIAL INELASTIC CROSS SECTION  
 =====

Z21064 5.00 MEV 15.0 MEV 10.0% 1 USA NOSTEEN BET  
 O: TO DETERMINE THE SPLIT OF THE TOTAL ZR CROSS  
 SECTION BETWEEN ELASTIC AND INELASTIC.  
 M: SUBSTANTIAL MODIFICATIONS.

=====  
 40 ZIRCONIUM 91 NEUTRON CAPTURE CROSS SECTION  
 =====

Z52091 2.00 MV 100. EV 10.0% 2 TUK COERTEK CNA  
 AOISYAR CNA  
 O: FOR REACTIVITY EFFECTS MEASUREMENTS.  
 M: NEW REQUEST.

=====

40 ZIRCONIUM 91 NEUTRON N, ALPHA

=====

691154 1400 MEV 300% 3 USA R. EHRlich KAP

=====

40 ZIRCONIUM 91 NEUTRON RESONANCE PARAMETERS

=====

691156 1500 KEV 100% 1 USA R. EHRlich N. STEEN KAP BET

O: ELASTIC AND GAMMA WIDTHS WANTED,  
 ENERGY TO INCLUDE LOWEST RESOLVED RESONANCE,  
 O: NEEDED TO RESOLVE DISCREPANCIES BELOW 4 KEV AND  
 TO EXTEND RESOLVED RANGE TO 15 KEV,  
 M: SUBSTANTIAL MODIFICATIONS.

-----STATUS-----

ORL MUGHABGHAB+ - USNDC-1 141(1972), IN PROGRESS.

ORL GOODO - 1 TO 400 KEV.

=====

40 ZIRCONIUM 91 NEUTRON CAPTURE RESONANCE INTEGRAL

=====

691155 0050 EV 50% 1 USA R. EHRlich KAP  
 O: VERIFICATION OF EXISTING DATA REQUIRED.

=====

40 ZIRCONIUM 92 DISCRETE LEVEL STRUCTURE (ENERGY, SPIN, PARITY)

=====

691161 2 USA R. EHRlich KAP  
 O: J AND PI FOR ALL LEVELS LESS THAN 4 MEV REQUIRED,  
 O: FOR CALCULATING COMPOUND ELASTIC AND INELASTIC.

=====

40 ZIRCONIUM 92 NEUTRON DIFFERENTIAL ELASTIC CROSS SECTION

=====

Z21066 5000 MEV 1500 MEV 100% 2 USA N. STEEN BET

O: SCATTERING ON SEPARATED ISOTOPES IS DESIRED TO  
 CHECK THE SHELL EFFECT ON THE OPTICAL POTENTIAL  
 AND DERIVE USEFUL PARAMETERS.  
 M: SUBSTANTIAL MODIFICATIONS.

-----STATUS-----

KTY MC ELLISTREM+ - WORK IN PROGRESS 1.5 TO 6 MEV.

ANL GUENTHER+ - ANL/NDM-4 (1974), DATA 1.8 TO 400 MEV.

=====

40 ZIRCONIUM 92 NEUTRON ANGULAR DIFFERENTIAL INELASTIC CROSS SECTION

=====

691158 1400 MEV 150% 2 USA R. EHRlich KAP

O: RESOLVE DISCRETE LEVELS TO 2 MEV EXCITATION,  
 O: TO COMPUTE DIRECT INELASTIC SCATTERING AND  
 INVESTIGATE ISOTOPIC SPIN-DEPENDENT COUPLING  
 BETWEEN GROUND AND EXCITED STATES.

-----STATUS-----

KTY MC ELLISTREM+ - WORK IN PROGRESS 1.5 TO 6 MEV.

ANL GUENTHER+ - ANL/NDM-4 (1974), DATA 1.8 TO 400 MEV.

=====

40 ZIRCONIUM 92 NEUTRON ENERGY DIFFERENTIAL INELASTIC CROSS SECTION

=====

Z21067 5000 MEV 1500 MEV 100% 2 USA N. STEEN BET

O: TO DETERMINE THE SPLIT OF THE TOTAL ZR CROSS  
 SECTION BETWEEN ELASTIC AND INELASTIC.  
 M: SUBSTANTIAL MODIFICATIONS.

=====

40 ZIRCONIUM 92 NEUTRON RESONANCE PARAMETERS

=====

691160 1500 MEV 100% 1 USA R. EHRlich N. STEEN KAP BET

O: NEUTRON AND CAPTURE WIDTH NEEDED,  
 ENERGY TO INCLUDE LOWEST RESOLVED RESONANCE,  
 O: VERIFICATION OF EXISTING DATA REQUIRED.

-----STATUS-----

ORL MACKLIN+ - WORK IN PROGRESS.

GEL O. MEASUREMENTS IN PROGRESS TO 30 KEV.

=====

40 ZIRCONIUM 92 NEUTRON CAPTURE RESONANCE INTEGRAL

=====

691159 0050 EV 200% 2 USA R. EHRlich KAP  
 O: NEEDED FOR EVALUATING MEASUREMENTS, AND  
 RESONANCE PARAMETERS.

=====

40 ZIRCONIUM 93 NEUTRON CAPTURE CROSS SECTION

=====

Z21071 1000 KEV 1000 MEV 200% 2 USA R. E. SCHENTER HED

O: CALCULATION OF FISSION PRODUCT POISON FOR FAST  
 REACTORS.  
 M: NEW REQUEST.

752264 100. EV 400. KEV 30.0% 2 JAP S. IIJIMA NPG  
 H. MATSUNOBU SAE  
 Q: FOR FAST REACTOR CALCULATIONS.  
 NO EXPERIMENTAL DATA ABOVE 100 EV.  
 M: NEW REQUEST.

40 ZIRCONIUM 94 DISCRETE LEVEL STRUCTURE (ENERGY, SPIN, PARITY)

691163 2 USA R. EHRLICH KAP  
 Q: J AND PI FOR ALL LEVELS LESS THAN 4 MEV REQUIRED.  
 O: FOR CALCULATING COMPOUND ELASTIC AND INELASTIC.

40 ZIRCONIUM 94 NEUTRON DIFFERENTIAL ELASTIC CROSS SECTION

671008 5.00 MEV 15.0 MEV 10.0% 2 USA N. STEEN BET  
 Q: SCATTERING ON SEPARATED ISOTOPES IS DESIRED TO  
 CHECK THE SHELL EFFECT ON THE OPTICAL POTENTIAL  
 AND DERIVE USEFUL PARAMETERS.  
 M: SUBSTANTIAL MODIFICATIONS.

STATUS-----STATUS

KTY MC ELLISTREM+ - WORK IN PROGRESS 1.5 TO 6 MEV.

40 ZIRCONIUM 94 NEUTRON ANGULAR DIFFERENTIAL INELASTIC CROSS SECTION

671005 14.0 MEV 15.0% 2 USA R. EHRLICH KAP  
 Q: RESOLVE DISCRETE LEVELS UP TO 2 MEV EXCITATION.  
 O: TO COMPUTE DIRECT INELASTIC SCATTERING AND  
 INVESTIGATE ISOTOPIC SPIN-DEPENDENT COUPLING  
 BETWEEN GROUND AND EXCITED STATES.

40 ZIRCONIUM 94 NEUTRON ENERGY DIFFERENTIAL INELASTIC CROSS SECTION

791072 5.00 MEV 15.0 MEV 10.0% 2 USA N. STEEN BET  
 Q: TO DETERMINE SPLIT OF THE TOTAL ZR CROSS SECTION  
 BETWEEN NONELASTIC AND ELASTIC.  
 M: NEW REQUEST.

40 ZIRCONIUM 94 NEUTRON CAPTURE CROSS SECTION

732095 10.0 KEV 5.0% 2 FR H. TELLIER SAC  
 Q: DETECTOR.

40 ZIRCONIUM 94 NEUTRON RESONANCE PARAMETERS

691162 15.0 MEV 10.0% 2 USA R. EHRLICH KAP  
 Q: NEUTRON AND CAPTURE WIDTH NEEDED.  
 O: VERIFICATION REQUIRED INCLUDES RECENT RPJ RESULTS.

STATUS-----STATUS

ORL MACKLIN+ - WORK IN PROGRESS.

40 ZIRCONIUM 95 NEUTRON CAPTURE CROSS SECTION

671010 1.00 EV 10.0 KEV 2 USA N. STEEN BET  
 Q: RADIOACTIVE TARGET, 65 DAY.  
 THERMAL CROSS SECTION AND RI WANTED.  
 A: ACCURACY 10 PERCENT IF CROSS SECTION GREATER THAN  
 100 BARNS AND 20 PERCENT IF BETWEEN 10 AND 100  
 BARNS.  
 ENERGIES ABOVE 1 EV OF INTEREST TO GIVE 10 PERCENT  
 IN RESONANCE INTEGRAL IF GREATER THAN 1000  
 BARNS AND 20 PERCENT IF BETWEEN 100 AND 1000  
 BARNS.  
 Q: THE DECAY IS TO AN IMPORTANT FISSION PRODUCT.  
 M: SUBSTANTIAL MODIFICATIONS.

671011 0.50 EV 10.0 KEV 2 USA R. EHRLICH KAP  
 Q: RADIOACTIVE TARGET, 65 DAY.  
 THERMAL CROSS SECTION AND RI WANTED.  
 A: ACCURACY 10 PERCENT IF CROSS SECTION GREATER THAN  
 100 BARNS AND 20 PERCENT IF BETWEEN 10 AND 100  
 BARNS.  
 ENERGIES ABOVE 1 EV OF INTEREST TO GIVE 10 PERCENT  
 IN RESONANCE INTEGRAL IF GREATER THAN 1000  
 BARNS AND 20 PERCENT IF BETWEEN 100 AND 1000  
 BARNS.  
 Q: THE DECAY IS TO AN IMPORTANT FISSION PRODUCT.  
 M: NEW REQUEST.

691002 25.3 MV 2 CAN W. H. WALKER CRC  
 A: ACCURACY REQUIRED 20 BARNS.  
 O: FISSION PRODUCT, UNKNOWN CROSS SECTION.

741073 1.00 KEV 10.0 MEV 20.0% 2 USA R. E. SCHENTER HED  
 Q: RADIOACTIVE TARGET, 65.5 DAY.  
 O: CALCULATION OF FISSION PRODUCT POISON FOR FAST  
 REACTORS.  
 M: NEW REQUEST.

STATUS-----STATUS

SAC RIBON - 73BOLCGNA 1 235, REVIEW

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40 ZIRCONIUM 96 NEUTRON CAPTURE CROSS SECTION

Z52046 10.0 KEV 5.0% 2 FR H. TELLIER SAC  
O: DETECTOR

=====

40 ZIRCONIUM 96 NEUTRON RESONANCE PARAMETERS

Z41074 300. EV 10.0% 1 USA R. EHRlich KAP  
Q: NEUTRON AND GAMMA WIDTHS REQUIRED.  
O: NEEDED TO VERIFY MEASUREMENT ON 300 EV RESONANCE  
AND REMOVE DISCREPANCIES.  
M: NEW REQUEST

STATUS-----STATUS

ORL GOOD - 1 TO 400 KEV

=====

41 NIOBIUM 93 NEUTRON TOTAL CROSS SECTION

Z52090 2.00 MV 25.0 MV 10.0% 2 TUK C. ERTEK CNA  
A. ISYAR CNA  
O: FOR REACTIVITY EFFECTS MEASUREMENTS.  
M: NEW REQUEST

=====

41 NIOBIUM 93 NEUTRON ELASTIC CROSS SECTION

Z53042 25.3 MV 20.0 MEV 3.0% 2 INC G. B. GARG TRM  
O: REQUIRED FOR STRUCTURAL-MATERIAL CALCULATIONS.  
M: NEW REQUEST

=====

41 NIOBIUM 93 NEUTRON INELASTIC CROSS SECTION

Z42121 8.00 MEV 5.0% 1 EUR NEUTRON DOSIMETRY GROUP GEL  
Q: PRODUCTION OF 3.7 YEAR ISOMER NEEDED.  
O: PROMISING FAST NEUTRON FLUENCE MONITOR DUE TO LOW  
THRESHOLD ENERGY.

Z53044 20.0 MEV 3.0% 2 INC G. B. GARG TRM  
O: REQUIRED FOR STRUCTURAL-MATERIAL CALCULATIONS.  
M: NEW REQUEST

STATUS-----STATUS

ALD COLES - AWRE/O-66/71, DATA 1 TO 5 MEV

AE ETEMAD - AE-481 (1973), DATA 2.0 TO 4.6 MEV

NDC SCHETT - EANDC-95 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974

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41 NIOBIUM 93 NEUTRON ABSORPTION CROSS SECTION

Z12037 500. EV 15.0 MEV 25.0% 3 FR J. Y. BARRE CAD  
O: FOR FAST REACTOR CALCULATIONS

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41 NIOBIUM 93 NEUTRON CAPTURE CROSS SECTION

Z21049 1.00 KEV 100. KEV 10.0% 2 USA P. B. HEMMIG AEC  
C. E. TILL ANL  
Q: LOOK FOR NON-1/V BELOW 1 EV.  
A: ACCURACY - 5 PERCENT IN CALCULATED DILUTE AND  
SELF-SHIELDED RESONANCE INTEGRAL.  
O: FOR FAST REACTOR CALCULATIONS, TO RESOLVE  
DISCREPANCIES IN THERMIONIC REACTOR WORTHS.

Z82020 100. EV 100. KEV 20.0% 2 UK C. G. CAMPBELL WIN  
O: FOR FAST REACTORS.

Z02015 500. EV 1.00 MEV 30.0% 3 FR J. Y. BARRE CAD  
O: FOR FAST REACTOR CALCULATIONS

Z42132 1.00 EV 10.0 KEV 5.0% 2 EUR NEUTRON DOSIMETRY GROUP GEL  
Q: PRODUCTION OF NB-94 (2000 YEARS) WANTED.  
O: POSSIBLE LONG TERM FLUENCE MONITOR

Z52089 2.00 MV 25.0 MV 10.0% 2 TUK C. ERTEK CNA  
A. ISYAR CNA  
O: FOR REACTIVITY EFFECTS MEASUREMENTS.  
M: NEW REQUEST

Z53045 25.3 MV 20.0 MEV 3.0% 2 INC G. B. GARG TRM  
O: REQUIRED FOR STRUCTURAL-MATERIAL CALCULATIONS.  
M: NEW REQUEST

STATUS-----STATUS

JRL MACKLIN - (1974), DATA TO 700 KEV.  
 ANL POENITZ - ANL/NDM-8 (1974), DATA 0.3 TO 2.5 MEV.  
 HAR CGATES - MEASUREMENT PLANNED.

41 NIOBIUM 93 NEUTRON PHOTON PRODUCTION CROSS SECTION IN INELASTIC SCAT.

692155 15.0 MEV 10.0% 2 SWT J.BRUNNER WUR  
 Q: FORMATION OF THE 3.7 YEAR ISOMER (E\* = 29 KEV),  
 Q: FOR FAST FLUX MEASUREMENTS.

41 NIOBIUM 93 NEUTRON N,2N

742133 15.0 MEV 5.0% 2 EUR NEUTRON DOSIMETRY GROUP GEL  
 Q: FOR NEUTRON DOSIMETRY USING SPECTRUM UNFOLDING  
 METHODS.  
 GREATER THAN 10 PERCENT DISCREPANCY BETWEEN  
 INTEGRAL AND DIFFERENTIAL MEASUREMENTS.

STATUS-----STATUS

KFK KUSTERS - (1973), PRESENT RESULTS OBTAINED BY COUNTING 0.93 MEV GAMMA RAYS FROM ZR-92  
 FOLLOWING DECAY OF 10.2-DAY NB-92. A 3.2-HOUR NB-92 ISOMER IS ALSO REPORTED. SYSTEMATICS AND  
 STATISTICAL THEORY INDICATE TGC LOW CROSS SECTION PERHAPS DUE TO UNOBSERVED DECAY.  
 HAR BLOW - JNE 26 5(1972), DISCUSSION OF DISCREPANCY BETWEEN THEORY AND EXPERIMENT.  
 NDC SCHETT - EANDC-95 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.  
 ANL SMITH - ANL/NDM-6 (1974), EVALUATION FROM 12 TO 20 MEV.

41 NIOBIUM 93 NEUTRON N,F

712038 15.0 MEV 30.0% 3 FR J.Y.BARRE CAD  
 Q: FOR FAST REACTOR CALCULATIONS.

41 NIOBIUM 93 NEUTRON N,ALPHA

712039 15.0 MEV 30.0% 3 FR J.Y.BARRE CAD  
 Q: FOR FAST REACTOR CALCULATIONS.

41 NIOBIUM 93 NEUTRON CAPTURE CROSS SECTION

671012 2E.3 MV 1 USA R.EHRLICH KAP  
 Q: RADIOACTIVE TARGET - 35 D.  
 THERMAL AVERAGE WILL BE USEFUL.  
 A: WANT 20 PERCENT ACCURACY IF ABSORPTION CROSS  
 SECTION IS 10 TO 100 B, 10 PERCENT IF GREATER.  
 Q: DECAYS TO AN IMPORTANT FISSION PRODUCT POISON.

42 MOLYBDENUM NEUTRON ENERGY DIFFERENTIAL INELASTIC CROSS SECTION

721070 1.50 MEV 3.00 MEV 20.0% 3 USA C.E.TILL ANL  
 P.B.HEMMIG AEC  
 Q: TOTAL INTEGRAL OVER 4 PI REQUIRED.  
 SPECTRA AT SEVERAL ANGLES IF SIGNIFICANTLY  
 ANISOTROPIC.  
 A: ENERGY RESOLUTION OF PRIMARY AND SCATTERED  
 NEUTRONS 20 PERCENT.

STATUS-----STATUS

ALD COLES - AWR/O-89/70, DATA FOR 10 LEVELS AND CONTINUUM 1.5 TO 6 MEV.  
 ANL SMITH - ANL/NDM-7, DATA TO 4 MEV FOR EVEN ISOTOPES.  
 KTY MC ELLISTRE - WORK UNDERWAY FOR EVEN ISOTOPES TO 6 MEV.

42 MOLYBDENUM NEUTRON ABSORPTION CROSS SECTION

712040 500. EV 15.0 MEV 20.0% 2 FR J.Y.BARRE CAD  
 Q: FOR FAST REACTOR CALCULATIONS.

42 MOLYBDENUM NEUTRON CAPTURE CROSS SECTION

692157 100. EV 1.00 MEV 1 UK C.G.CAMPBELL WIN  
 A: ACCURACY 10 PERCENT TO 100 KEV, 20 PERCENT ABOVE.  
 Q: FOR FAST REACTORS.

702016 500. EV 1.00 MEV 25.0% 2 FR J.Y.BARRE CAD  
 Q: FOR FAST REACTOR CALCULATIONS.

721072 1.00 KEV 1.00 MEV 10.0% 3 USA P.B.HEMMIG AEC  
 Q: TO RESOLVE DISCREPANCY IN REACTIVITY WORTH  
 MEASUREMENTS.



STATUS-----STATUS  
 ANL POENITZ - (1974), DATA TO 205 MEV  
 HAR COATES - MEASUREMENT PLANNED

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 42 MOLYBDENUM NEUTRON N,F  
 =====

692155 14.0 MEV 10.0% 2 GER FOWELLER KFK  
 712091 15.0 MEV 25.0% 2 FR JOYBARRE CAD  
 O: FOR FAST REACTOR CALCULATIONS

STATUS-----STATUS  
 KFK CIERJACKS - (1973), 14-MEV DATA POINTS FOR MO-92, -94, -96, -97 AND FISSION-SPECTRUM-AVERAGED DATA ONLY. PRESENT ACCURACY 30 TO 50 PERCENT

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 42 MOLYBDENUM NEUTRON N,ALPHA  
 =====

712042 15.0 MEV 25.0% 2 FR JOYBARRE CAD  
 O: FOR FAST REACTOR CALCULATIONS

STATUS-----STATUS  
 KFK CIERJACKS - (1973), 14-MEV DATA FOR MO-92, -98, -100 AND FISSION-SPECTRUM-AVERAGED DATA FOR MO ONLY. ESTIMATED ACCURACY 30 TO 50 PERCENT

=====  
 42 MOLYBDENUM 92 NEUTRON N,F  
 =====

692160 15.0 MEV 10.0% 3 FR AMICHAUDON BRC  
 O: PRODUCTION OF NB-92 (10.1 DAY)  
 O: ACTIVATION DETECTOR

STATUS-----STATUS  
 KYU KANDA - NF/A 165 177(1972), DATA 13 TO 15 MEV  
 GIT FINK+ - PR/C 1 358(1970), DATA AT 14.4 MEV  
 NDC SCHETT+ - EANDC-55 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974

=====  
 42 MOLYBDENUM 95 NEUTRON INELASTIC CROSS SECTION  
 =====

732547 15.0 MEV 50.0% 1 FR JOYBARRE CAD  
 O: FISSION PRODUCT EFFECT IN FAST REACTORS

STATUS-----STATUS  
 SAC RIBON - 73BOLCGNA 1 235, REVIEW

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 42 MOLYBDENUM 95 NEUTRON CAPTURE CROSS SECTION  
 =====

732296 50.0 EV 200.0 KEV 30.0% 2 FR JOYBARRE CAD  
 Q: RELATIVE VALUE VERSUS ENERGY OR VALUE RELATIVE TO CAPTURE IN ANOTHER NUCLEUS SUCH AS U-238  
 O: FISSION PRODUCT EFFECT IN FAST REACTORS

752005 50.0 KEV 400.0 KEV 30.0% 2 JAP SIIJIMA NPG  
 HONATSUNOBU SAE  
 Q: DESIRED WITH LOWER PRIORITY FOR WIDER ENERGY RANGE  
 Q: FOR FAST REACTOR CALCULATIONS  
 NO EXPERIMENTAL DATA ABOVE 50 KEV  
 M: NEW REQUEST

STATUS-----STATUS  
 NPG IJIMA+ (1975), NO EXPERIMENTAL DATA ABOVE 50 KEV

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 42 MOLYBDENUM 95 NEUTRON N,F  
 =====

692164 15.0 MEV 10.0% 3 FR AMICHAUDON ERC  
 Q: PRODUCTION OF NB-95 (35 DAY)  
 O: ACTIVATION DETECTOR

=====  
 42 MOLYBDENUM 95 NEUTRON CAPTURE RESONANCE INTEGRAL  
 =====

741075 0.50 EV 10.0 KEV 10.0% 2 USA NOSTEEN BET  
 M: NEW REQUEST

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 42 MOLYBDENUM 96 NEUTRON CAPTURE CROSS SECTION  
 =====

692020 10.0 KEV 100.0 KEV 10.0% 2 AUL JOLESYMONDS AUA  
 Q: RESONANCE PARAMETERS AND P-WAVE STRENGTH FUNCTION ALSO REQUIRED  
 O: FOR FISSION PRODUCT CALCULATIONS AND ASTROPHYSICS



44 RUTHENIUM 101 NEUTRON CAPTURE CROSS SECTION (CONTINUED)

791278 1.00 KEV 10.0 MEV 10.0% 1 USA R.E.SCHENTER HED  
 O: CALCULATION OF FISSION PRODUCT POISON FOR FAST REACTORS.  
 M: NEW REQUEST.

752006 100. EV 400. KEV 20.0% 1 JAP S.IIJIMA NPG  
 H.MATSUNOBU SAE  
 Q: DESIRED WITH LOWER PRIORITY FOR WIDER ENERGY RANGE  
 O: FOR FAST REACTOR CALCULATIONS.  
 NO EXPERIMENTAL DATA ABOVE 100 EV.  
 M: NEW REQUEST.

-----STATUS-----

SAC RIBON - 73BOLCGNA 1 235, REVIEW.  
 NPG IIJIMA+ (1975), NO EXPERIMENTAL DATA ABOVE 50 KEV.

44 RUTHENIUM 102 NEUTRON CAPTURE CROSS SECTION

722055 500. EV 200. KEV 20.0% 1 FR J.Y.BARRE CAD  
 Q: RELATIVE VALUE VERSUS ENERGY OR VALUE RELATIVE TO CAPTURE IN ANOTHER NUCLEUS SUCH AS U-238.  
 O: FISSION PRODUCT EFFECT IN FAST REACTORS.

752009 100. EV 400. KEV 30.0% 2 JAP S.IIJIMA NPG  
 H.MATSUNOBU SAE  
 Q: DESIRED WITH LOWER PRIORITY FOR WIDER ENERGY RANGE  
 O: FOR FAST REACTOR CALCULATIONS.  
 NO EXPERIMENTAL DATA EXCEPT 3 DATA POINTS AT 2, 24 AND 190 KEV.  
 M: NEW REQUEST.

-----STATUS-----

SAC RIBON - 73BOLCGNA 1 235, REVIEW.  
 NPG IIJIMA+ (1975), EXPERIMENTAL DATA AVAILABLE AT ONLY 3 ENERGIES - 2, 24 AND 190 KEV.

44 RUTHENIUM 103 NEUTRON CAPTURE CROSS SECTION

671015 1.00 MV 1.00 KEV 2 USA N.STEEN BET  
 R.EHRLICH KAP  
 Q: RADIOACTIVE TARGET 40 DAYS.  
 A: 20 PERCENT ACCURACY DESIRED IF CROSS SECTION IN RANGE 10 TO 100 BARN, 10 PERCENT IF LARGER.  
 ENERGIES ABOVE 1 EV OF INTEREST TO GIVE 10 PERCENT IN RESONANCE INTEGRAL IF GREATER THAN 1000 BARN AND 20 PERCENT IF BETWEEN 100 AND 1000 BARN.  
 O: WANTED FOR FISSION PRODUCT POISON CALCULATIONS IN THERMAL REACTORS.

691804 25.3 MV 2 CAN W.C.WALKER CRC  
 A: ACCURACY REQUIRED 35 B.  
 O: FISSION PRODUCT, UNKNOWN CROSS SECTION.

791075 1.00 KEV 10.0 MEV 20.0% 2 USA R.E.SCHENTER HED  
 Q: RADIOACTIVE TARGET 39.6 DAY.  
 O: CALCULATION OF FISSION PRODUCT POISON FOR FAST REACTORS.  
 M: NEW REQUEST.

44 RUTHENIUM 104 NEUTRON CAPTURE CROSS SECTION

722056 500. EV 200. KEV 30.0% 2 FR J.Y.BARRE CAD  
 Q: RELATIVE VALUE VERSUS ENERGY OR VALUE RELATIVE TO CAPTURE IN ANOTHER NUCLEUS SUCH AS U-238.  
 O: FISSION PRODUCT EFFECT IN FAST REACTORS.

791081 1.00 KEV 10.0 MEV 10.0% 1 USA R.E.SCHENTER HED  
 Q: RADIOACTIVE TARGET 4.35 MIN.  
 O: CALCULATION OF FISSION PRODUCT POISON FOR FAST REACTORS.  
 M: NEW REQUEST.

752010 100. EV 400. KEV 30.0% 2 JAP S.IIJIMA NPG  
 H.MATSUNOBU SAE  
 Q: DESIRED WITH LOWER PRIORITY FOR WIDER ENERGY RANGE  
 O: FOR FAST REACTOR CALCULATIONS.  
 M: NEW REQUEST.

-----STATUS-----

NPG IIJIMA+ (1975), THERE ARE 7 DATA POINTS IN THE RANGE 1 KEV TO 15 MEV, BUT THE DISCREPANCIES ARE REMARKABLE AT 24 KEV AND BETWEEN 14 AND 15 MEV.

44 RUTHENIUM 106 NEUTRON CAPTURE CROSS SECTION

791082 1.00 KEV 10.0 MEV 10.0% 1 USA R.E.SCHENTER HED  
 Q: RADIOACTIVE TARGET 2.18 HOUR.  
 O: CALCULATION OF FISSION PRODUCT POISON FOR FAST REACTORS.  
 M: NEW REQUEST.

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45 RHODIUM                      NEUTRON                      CAPTURE CROSS SECTION

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791080    1.00 MV    1.00 KEV    10.0%    1    USA    NoSTEEN                      BET

Q: THERMAL CROSS SECTION AND RI WANTED.

O: FOR FISSION PRODUCT POISON CALCULATIONS.

M: NEW REQUEST.

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45 RHODIUM 103                      NEUTRON                      INELASTIC CROSS SECTION

=====

592977                      10.0 MEV    5.0%    1    GER    McKUECHLE                      KFK

Q: CROSS SECTION LEADING TO ISOMERIC STATE AFTER GAMMA DE-EXCITATION IS WANTED.

O: THRESHOLD DETECTOR.

732057                      15.0 MEV    50.0%    1    FR    JoY.BARRE                      CAD

O: FISSION PRODUCT EFFECT IN FAST REACTORS.

792122                      10.0 MEV    5.0%    1    EUR    NEUTRON DOSIMETRY GROUP                      GEL

Q: PRODUCTION OF 57 MINUTE ISOMER WANTED.

O: PROMISING FAST NEUTRON FLUENCE MONITOR DUE TO LOW THRESHOLD ENERGY.

-----STATUS-----

NOC    SCHETT+ - EANDC-95 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.

MOL    FABRY+ - INDC(IAE)-005 (1974), U-235 FISSION SPECTRUM AND OTHER INTEGRAL DATA.

DEB    PETO+ - (1974), DATA AT 2.7 AND 14.8 MEV AND FOR CF-252 FISSION AND PU-238 ALPHA-BERYLLIUM SPECTRA. EXFCR\*30266, CORRECTION OF EARLIER DATA

CRC    SANTRY+ - CJP 52 1421(1974), NEW DATA 0.1 TO 15 MEV

SAC    RIBON+ - (1974), CALCULATIONS IN PROGRESS.

USP    DOUGLAS+ MEASUREMENTS ABOVE 3 MEV PLANNED FOR 1974

PEL    REITMANN+ - 75WASH, PRELIMINARY DATA FROM 600 TO 1500 KEV.

GEL    LISKIEN+ - MEASUREMENTS PLANNED FOR 1975.

=====

45 RHODIUM 103                      NEUTRON                      CAPTURE CROSS SECTION

=====

671017    0.50 EV    1.00 KEV    10.0%    2    USA    RoEPRILICH                      KAP

A: ENERGIES ABOVE 1 EV OF INTEREST TO GIVE 10 PERCENT ACCURACY IN RESONANCE INTEGRAL.

O: FOR CALCULATION OF FISSION PRODUCT POISONS.

671018    1.00 MV    1.00 EV    10.0%    2    USA    BoHUTCHINS                      GEB

O: FOR CALCULATION OF FISSION PRODUCT POISONS.

712044    1.00 MV    1.00 KEV    5.0%    3    DEN    CoF.HOEJERUP                      RIS

O: WANTED FOR FISSION PRODUCT CALCULATIONS.

732058    10.0 MV    5.00 KEV    10.0%    2    FR    HoTELLIER                      SAC

O: REACTOR CALCULATIONS.

732059    500. EV    200. KEV    20.0%    1    FR    JoY.BARRE                      CAD

Q: RELATIVE VALUE VERSUS ENERGY OR VALUE RELATIVE TO CAPTURE IN ANOTHER NUCLEUS SUCH AS U-238.

O: FISSION PRODUCT EFFECT IN FAST REACTORS.

-----STATUS-----

GA    CARLSON+ - GULF-10739R (1971), DATA 1 KEV TO 1 MEV.

SAC    RIBON. - 73BOLCGNA 1 235, REVIEW.

RPI    KNCK+ - USNDC-9 168(1973), IN PROGRESS 20 EV TO 100 KEV.

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45 RHODIUM 105                      NEUTRON                      CAPTURE CROSS SECTION

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671015    1.00 MV    1.00 EV    10.0%    2    USA    BoHUTCHINS                      GEB

Q: RADIOACTIVE TARGET 36 HOURS.

O: FOR CALCULATION OF FISSION PRODUCT POISONS.

691805    10.0 MV    500. EV                         2    CAN    WoHoWALKER                      CRC

A: ACCURACY 5. PERCENT TO 10 EV, 20 PERCENT ABOVE.

O: AVAILABLE DATA SUGGEST LARGE RESONANCE NEAR CADMIUM CUT-OFF.

ADDITIONAL DATA NEEDED TO DETERMINE DEPENDANCE ON NEUTRON TEMPERATURE AND EPITHERMAL FLUX.

741083    1.00 MV    1.00 KEV    10.0%    1    USA    NoSTEEN                      BET

Q: RADIOACTIVE TARGET 35.5 HOUR.

O: FOR FISSION PRODUCT POISON CALCULATIONS.

M: NEW REQUEST.

=====

46 PALLADIUM 105                      NEUTRON                      CAPTURE CROSS SECTION

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732060    500. EV    200. KEV    20.0%    1    FR    JoY.BARRE                      CAD

Q: RELATIVE VALUE VERSUS ENERGY OR VALUE RELATIVE TO CAPTURE IN ANOTHER NUCLEUS SUCH AS U-238.

O: FISSION PRODUCT EFFECT IN FAST REACTORS.

46 PALLADIUM 105 NEUTRON CAPTURE CROSS SECTION (CONTINUED)

791086 1.00 KEV 10.0 MEV 10.0% 1 USA R.E.C.SCHENTER HED  
 O: CALCULATION OF FISSION PRODUCT POISON FOR FAST REACTORS.  
 M: NEW REQUEST.

752011 100. EV 400. KEV 20.0% 1 JAF S.I.IJIMA H.MATSUNOBU NPG SAE  
 O: DESIRED WITH LOWER PRIORITY FOR WIDER ENERGY RANGE  
 O: FOR FAST REACTOR CALCULATIONS.  
 NO EXPERIMENTAL DATA ABOVE 100 EV.  
 M: NEW REQUEST.

-----STATUS-----

SAC RIBON - 73EOLCGNA 1 235, REVIEW.  
 ORL MACKLIN - (1974), PRELIMINARY DATA 2.5 TO 500 KEV  
 RPI KNX+ - USDC-11 220(1974), IN PROGRESS

46 PALLADIUM 107 NEUTRON CAPTURE CROSS SECTION

671020 1.00 MV 10.0 KEV 10.0% 2 USA N.STEEN BET  
 O: RADIOACTIVE TARGET - 7 MILLION YEARS.  
 A: ABOVE 1 EV WANT RESONANCE INTEGRAL TO 10 PERCENT.  
 O: FOR CALCULATION OF FISSION PRODUCT POISONS.

691806 25.3 MV 2 CAN W.H.WALKER CRC  
 A: ACCURACY REQUIRED 10 BARNS.  
 O: PU FISSION PRODUCT, UNKNOWN CROSS SECTION.

732061 500. EV 200. KEV 20.0% 1 FR J.Y.BARRE CAD  
 O: RELATIVE VALUE VERSUS ENERGY OR VALUE RELATIVE TO CAPTURE IN ANOTHER NUCLEUS SUCH AS U-238.  
 O: FISSION PRODUCT EFFECT IN FAST REACTORS.

741084 1.00 KEV 10.0 MEV 10.0% 1 USA R.E.C.SCHENTER HED  
 O: RADIOACTIVE TARGET - 6.5 MILLION YEARS.  
 O: CALCULATION OF FISSION PRODUCT POISON FOR FAST REACTORS.  
 M: NEW REQUEST.

752012 100. EV 400. KEV 20.0% 1 JAF S.I.IJIMA H.MATSUNOBU NPG SAE  
 O: DESIRED WITH LOWER PRIORITY FOR WIDER ENERGY RANGE  
 O: FOR FAST REACTOR CALCULATIONS.  
 NO EXPERIMENTAL DATA FROM 100 EV TO 400 KEV.  
 M: NEW REQUEST.

-----STATUS-----

SAC RIBON - 73EOLCGNA 1 235, REVIEW.  
 NPG IJIMA+ (1975), NO EXPERIMENTAL DATA FROM 100 EV TO 400 KEV.

47 SILVER NEUTRON CAPTURE CROSS SECTION

752001 1.00E-04 EV 200. EV 5.0% 2 SWC H.MAEGGLOM AE  
 M: NEW REQUEST.

741085 1.00 MV 5.00 KEV 10.0% 2 USA N.STEEN BET  
 O: THERMAL CROSS SECTION AND RI WANTED.  
 O: FOR FISSION PRODUCT POISON CALCULATIONS.  
 M: NEW REQUEST.

47 SILVER 107 NEUTRON N, ALPHA CAPTURE CROSS SECTION

692021 25.3 MV 10.0% 3 HUN J.C.SIKAI KOS  
 O: FOR NEUTRON ACTIVATION ANALYSIS AND CROSS SECTION SYSTEMATICS WANTED.

671021 1.00 MV 1.00 EV 10.0% 2 USA B.PUTCHINS GEB  
 O: FISSION PRODUCT POISON.

732062 500. EV 200. KEV 30.0% 2 FR J.Y.BARRE CAD  
 O: RELATIVE VALUE VERSUS ENERGY OR VALUE RELATIVE TO CAPTURE IN ANOTHER NUCLEUS SUCH AS U-238.  
 O: FISSION PRODUCT EFFECT IN FAST REACTORS.

752013 100. EV 400. KEV 30.0% 2 JAF S.I.IJIMA H.MATSUNOBU NPG SAE  
 O: DESIRED WITH LOWER PRIORITY FOR WIDER ENERGY RANGE  
 O: FOR FAST REACTOR CALCULATIONS.  
 M: NEW REQUEST.

STATUS-----STATUS

NPG IIJIMA+ (1975). THERE ARE 37 DATA POINTS BELOW 6 MEV, BUT A SYSTEMATIC DISCREPANCY IS OBSERVED BETWEEN WESTON'S DATA AND KRONOV'S DATA.

48 CADMIUM NEUTRON CAPTURE CROSS SECTION

752002 1.00E-04 EV 200. EV 5.0% 2 SWC H. HAEGGBLOM AE  
M: NEW REQUEST.

48 CADMIUM 110 NEUTRON CAPTURE CROSS SECTION

693022 1.00 KEV 100. KEV 10.0% 2 AUL J. L. SYMONDS AUA  
Q: RESONANCE PARAMETERS AND P WAVE STRENGTH FUNCTION ALSO REQUIRED.  
O: FOR FISSION PRODUCT CALCULATIONS AND ASTROPHYSICS.

48 CADMIUM 113 NEUTRON CAPTURE CROSS SECTION

752063 100. EV 5.0% 3 FR H. TELLIER SAC  
O: CONTROL AND POISON.

49 INDIUM NEUTRON ENERGY DIFFERENTIAL INELASTIC CROSS SECTION

702017 4.00 MEV 7.00 MEV 3 JAF H. NAKAMURA FE  
A: ACCURACY REQUIRED TO BETTER THAN 20.0 PERCENT.  
O: FOR INVESTIGATION OF LEVEL DENSITY PARAMETERS.

49 INDIUM NEUTRON CAPTURE CROSS SECTION

752003 1.00E-04 EV 200. EV 5.0% 2 SWC H. HAEGGBLOM AE  
M: NEW REQUEST.

49 INDIUM 115 NEUTRON INELASTIC CROSS SECTION

692180 15.0 MEV 3.0% 1 GER M. KUECHLE KFK  
Q: CROSS SECTION LEADING TO ISOMERIC STATE AFTER GAMMA DE-EXCITATION IS NEEDED.  
O: THRESHOLD DETECTOR.

742116 2.0% 1 EUR NEUTRON DOSIMETRY GROUP GEL  
Q: PRODUCTION OF IN-115 (4.5 HOUR) ISOMER. AVERAGE CROSS SECTION IN A U-235 FISSION SPECTRUM DESIRED.  
O: FOR NORMALIZATION OF AVERAGE CROSS SECTIONS FOR DOSIMETRY PURPOSES.

STATUS-----STATUS

MOL FABRY+ - 70 HELSINKI 2 535(1970), EVALUATION.  
KTO KOBAYASHI+ - JNE 27 741(1973), DATA 3.4 TO 4.9 MEV  
NDC SCHETT+ - EANDC-95 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.  
CRC SANTRY+ - 75 WASH, DATA FROM 0.3 TO 15 MEV.

49 INDIUM 115 NEUTRON PHOTON PRODUCTION CROSS SECTION IN INELASTIC SCAT.

692194 5.00 MEV 15.0 MEV 10.0% 2 SWT J. BRUNNER WUR  
Q: FORMATION OF THE 4.5 HOUR ISOMER (E' = 0.335 MEV).  
O: FOR FAST FLUX MEASUREMENTS.

50 TIN 126 NEUTRON CAPTURE CROSS SECTION

651807 25.3 MV 2 CAN W. H. WALKER CRC  
A: ACCURACY REQUIRED 120 BARNS.  
O: FISSION PRODUCT, UNKNOWN CROSS SECTION.

51 ANTIMONY 121 NEUTRON N, 2N

742042 15.0 MEV 20.0% 3 FR A. MICHAUDON BRC  
O: FOR ACTIVATION.

51 ANTIMONY 123 NEUTRON N, 2N

742043 15.0 MEV 20.0% 3 FR A. MICHAUDON BRC  
O: FOR ACTIVATION.

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=====
51 ANTIMONY 125      NEUTRON      CAPTURE CROSS SECTION
=====
651808  25.3  MV                3   CAN   W0H0WALKER      CRC
                                     A: ACCURACY REQUIRED 300 BARNS.
                                     O: FISSION PRODUCT, UNKNOWN CROSS SECTION.
=====
51 ANTIMONY 127      NEUTRON      CAPTURE CROSS SECTION
=====
651809  25.3  MV                3   CAN   W0H0WALKER      CRC
                                     A: ACCURACY REQUIRED 4000 BARNS.
                                     O: FISSION PRODUCT, UNKNOWN CROSS SECTION.
=====
52 TELLURIUM 127     NEUTRON      CAPTURE CROSS SECTION
=====
671022  1.00  MV      1.00  EV      20.0%  2   USA   R0E0RHLICH        KAP
                                     Q: RADIOACTIVE TARGET 105 DAY ISOMER.
                                     THERMAL OR THERMAL AVERAGE VALUE USEFUL.
                                     O: NEEDED FOR CALCULATION OF FISSION PRODUCT POISONS.
651810  25.3  MV                3   CAN   W0H0WALKER      CRC
                                     Q: FOR THE ISOMERIC STATE (105 D).
                                     A: ACCURACY REQUIRED 900 BARNS.
                                     O: FISSION PRODUCT.
=====
52 TELLURIUM 129     NEUTRON      CAPTURE CROSS SECTION
=====
651811  25.3  MV                3   CAN   W0H0WALKER      CRC
                                     Q: FOR THE ISOMERIC STATE (33 D).
                                     A: ACCURACY REQUIRED 1000 BARNS.
                                     O: FISSION PRODUCT.
=====
52 TELLURIUM 132     NEUTRON      CAPTURE CROSS SECTION
=====
671023  25.3  MV      1.00  EV      20.0%  2   USA   N0STEEN           BET
                                     Q: RADIOACTIVE TARGET 78 HOURS.
                                     A: ACCURACY 10 PERCENT IF CROSS SECTION LARGER THAN
                                       2500 BARNS.
                                       ABOVE 1 EV RESONANCE INTEGRAL WANTED TO 20 PERCENT
                                       IF BETWEEN 2500 AND 25000 BARNS AND 10 PERCENT
                                       IF LARGER THAN 25000 BARNS.
                                     O: FOR CALCULATION OF FISSION PRODUCT POISONS.
                                     M: SUBSTANTIAL MODIFICATIONS.
=====
53 IODINE 127        NEUTRON      N,2N
=====
792139  10.0  MEV     14.6  MEV     5.0%   2   EUR   NEUTRON DOSIMETRY GROUP      GEL
                                     Q: FOR NEUTRON DOSIMETRY USING SPECTRUM UNFOLDING
                                       METHODS.
                                       MORE THAN 25 PERCENT DISCREPANCY BETWEEN INTEGRAL
                                       AND DIFFERENTIAL MEASUREMENTS.
STATUS-----STATUS
NDC   SCHETT+ - EANDC-95 (1974), CCMPIATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.
=====
53 IODINE 129        NEUTRON      CAPTURE CROSS SECTION
=====
791087  1.00  KEV     10.0  MEV     20.0%  2   USA   R0E0SCHENTER      HED
                                     Q: RADIOACTIVE TARGET - 15.9 MILLION YEARS.
                                     O: CALCULATION OF FISSION PRODUCT POISON FOR FAST
                                       REACTORS.
                                     M: NEW REQUEST.
=====
53 IODINE 133        NEUTRON      CAPTURE CROSS SECTION
=====
671024  1.00  MV      1.00  KEV     20.0%  2   USA   N0STEEN           BET
                                     Q: RADIOACTIVE TARGET 21 HOURS.
                                     A: ACCURACY 10 PERCENT IF CROSS SECTION LARGER THAN
                                       9000 BARNS.
                                       ABOVE 1 EV RESONANCE INTEGRAL WANTED TO 20 PERCENT
                                       IF BETWEEN 9000 AND 90000 BARNS AND 10 PERCENT
                                       IF LARGER THAN 90000 BARNS.
                                     O: WANTED FOR FISSION PRODUCT POISON CALCULATIONS.
=====
54 XENON 131         NEUTRON      CAPTURE CROSS SECTION
=====
671025  1.00  MV      1.00  KEV     10.0%  2   USA   N0STEEN           BET
                                     B0HUTCHINS        GEB
                                     Q: THERMAL CROSS SECTION AND RESONANCE INTEGRAL
                                       WANTED.
                                     A: ENERGIES ABOVE 1 EV OF INTEREST TO GIVE 10 PERCENT
                                       ACCURACY IN RESONANCE INTEGRAL.
                                     O: FISSION PRODUCT.
                                     M: SUBSTANTIAL MODIFICATIONS.
732069  10.0  MV      5.00  KEV     10.0%  2   FR    H0TELLIER         SAC
                                     O: REACTOR CALCULATIONS.

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54 XENON 131 NEUTRON CAPTURE CROSS SECTION (CONTINUED)

752214 100 EV 400 KEV 20.0% 1 JAP S. IIJIMA NPG  
 F. MATSUNOBU SAE  
 Q: DESIRED WITH LOWER PRIORITY FOR WIDER ENERGY RANGE  
 O: FOR FAST REACTOR CALCULATIONS.  
 NO EXPERIMENTAL DATA FROM 100 EV TO 400 KEV.  
 M: NEW REQUEST.

STATUS-----STATUS  
 NPG IIJIMA+ (1975), NO EXPERIMENTAL DATA FROM 100 EV TO 400 KEV.

54 XENON 133 NEUTRON CAPTURE CROSS SECTION

671027 25.3 MV 10.0% 2 USA B. HUTCHINS GEB  
 Q: RADIOACTIVE TARGET 5.3 DAYS.  
 THERMAL OR THERMAL AVERAGE VALUE WANTED.  
 O: WANTED FOR FISSION PRODUCT POISON CALCULATIONS.

712045 1.00 MV 1.00 KEV 5.0% 3 DEN C. F. HOEJERUP RIS  
 O: WANTED FOR FISSION PRODUCT CALCULATIONS.

741088 1.00 MV 5.00 KEV 3.0% 2 USA N. STEEN BET  
 Q: RADIOACTIVE TARGET - 5.29 DAY.  
 THERMAL CROSS SECTION AND RESONANCE INTEGRAL  
 WANTED.  
 O: FOR FISSION PRODUCT POISON CALCULATIONS.  
 M: NEW REQUEST.

STATUS-----STATUS  
 MCM KENNETT+ - JIN 5 253(1958), THERMAL VALUE.  
 SAC RIBON - 73BOLCGNA 1 235, EVALUATION FOR THERMAL AND FISSION SPECTRA.

54 XENON 135 NEUTRON CAPTURE CROSS SECTION

671028 1.00 MV 2.00 EV 5.0% 2 USA R. H. CAHLBERG GA  
 Q: RADIOACTIVE TARGET 9.3 HOURS.  
 O: FOR DESIGN OF THORIUM CYCLE REACTORS.

732065 10.0 MV 5.00 KEV 10.0% 2 FR H. TELLIER SAC  
 O: REACTOR CALCULATIONS.

741089 1.00 MV 5.00 KEV 5.0% 1 USA N. STEEN BET  
 Q: RADIOACTIVE TARGET - 9.17 HOUR.  
 THERMAL CROSS SECTION AND RESONANCE INTEGRAL  
 WANTED TO 3 PERCENT.  
 O: FOR FISSION PRODUCT POISON CALCULATIONS.  
 M: NEW REQUEST.

54 XENON 135 NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION

671029 25.3 MV 2 USA R. EHRlich KAP  
 Q: RADIOACTIVE TARGET 9.2 HOURS.  
 GAMMA RAY SPECTRA WANTED FOR GAMMA RAY ENERGIES  
 BETWEEN 1 AND 2 MEV.  
 A: GAMMA RESOLUTION 10-20 PERCENT.  
 O: NEEDED FOR GAMMA SHIELDING AND HEATING  
 CALCULATIONS.

55 CESIUM 133 NEUTRON INELASTIC CROSS SECTION

732066 15.0 MEV 50.0% 1 FR J. Y. BARRE CAD  
 O: FISSION PRODUCT EFFECT IN FAST REACTORS.

STATUS-----STATUS  
 SAC RIBON - 73BOLCGNA 1 235, REVIEW.

55 CESIUM 133 NEUTRON ABSORPTION CROSS SECTION

732069 500 EV 15.0 MEV 30.0% 2 FR C. DEVILLERS SAC  
 O: FOR FAST REACTOR CALCULATIONS.

55 CESIUM 133 NEUTRON CAPTURE CROSS SECTION

671030 1.00 MV 1.00 KEV 10.0% 1 USA B. HUTCHINS GEB  
 Q: THERMAL CROSS SECTION AND RESONANCE INTEGRAL  
 WANTED.  
 O: FOR FISSION PRODUCT POISON CALCULATIONS.  
 M: SUBSTANTIAL MODIFICATIONS.

671031 1.00 MV 1.00 KEV 10.0% 2 USA N. STEEN BET  
 Q: THERMAL CROSS SECTION AND RESONANCE INTEGRAL  
 WANTED.  
 O: FOR FISSION PRODUCT POISON CALCULATIONS.  
 M: NEW REQUEST.



55 CESIUM 133 NEUTRON CAPTURE CROSS SECTION (CONTINUED)

ISOTOPE	ENERGY	NEUTRON ENERGY	CROSS SECTION	ORDER	COUNTRY	RESEARCHER	STATUS
511222	0.50 EV	1.00 KEV	10.0%	1	USA	E. HUTCHINS N. STEEN	GEB BET Q: FOR CALCULATION OF FISSION PRODUCT POISONS.
722067	10.0 MV	5.00 KEV	10.0%	1	FR	H. TELLIER	SAC Q: BURN UP PHYSICS.
722068	500. EV	200. KEV	10.0%	1	FR	J. Y. BARRE	CAD Q: RELATIVE VALUE VERSUS ENERGY OR VALUE RELATIVE TO CAPTURE IN ANOTHER NUCLEUS SUCH AS U-238. Q: FISSION PRODUCT EFFECT IN FAST REACTORS.
752015	100. EV	400. KEV	20.0%	1	JAP	S. IIJIMA H. MATSUNOBU	NPG SAE Q: DESIRED WITH LOWER PRIORITY FOR WIDER ENERGY RANGE Q: FOR FAST REACTOR CALCULATIONS. M: NEW REQUEST.

STATUS-----STATUS

SAC RIBON - 73BOLCGNA 1 235, REVIEW, THERMAL TC 30 KEV ALSO FISSION NEUTRON SPECTRUM AVERAGE.  
 BOR RIGAUD - NF/A 176 545(1971), AT 14.0 MEV.  
 KFK KOMPE - NP/A 133 513(1969), FROM 10 KEV TO 150 KEV  
 WUR WIDDER - PRECISE DATA FROM 0.01 TC 45 EV, TO BE PUBLISHED IN NSE.  
 NPG IIJIMA+ (1975), MANY EXPERIMENTAL DATA BELOW 15 MEV, BUT SYSTEMATIC DISCREPANCIES ARE OBSERVED ABOVE 10 KEV.

55 CESIUM 135 NEUTRON CAPTURE CROSS SECTION

722070	500. EV	200. KEV	30.0%	2	FR	J. Y. BARRE	CAD Q: RELATIVE VALUE VERSUS ENERGY OR VALUE RELATIVE TO CAPTURE IN ANOTHER NUCLEUS SUCH AS U-238. Q: FISSION PRODUCT EFFECT IN FAST REACTORS.
741090	1.00 MV	10.0 KEV	10.0%	1	USA	N. STEEN	BET Q: RADIOACTIVE TARGET - 3.3 MILLION YEARS. THERMAL CROSS SECTION AND RESONANCE INTEGRAL WANTED. Q: FOR FISSION PRODUCT POISON CALCULATIONS. M: NEW REQUEST.
741091	1.00 KEV	10.0 MEV	10.0%	1	USA	R. E. SCHENTER	HED Q: RADIOACTIVE TARGET - 3.3 MILLION YEARS. Q: CALCULATION OF FISSION PRODUCT POISON FOR FAST REACTORS. M: NEW REQUEST.
752016	100. EV	400. KEV	20.0%	1	JAP	S. IIJIMA H. MATSUNOBU	NPG SAE Q: DESIRED WITH LOWER PRIORITY FOR WIDER ENERGY RANGE Q: FOR FAST REACTOR CALCULATIONS. NO EXPERIMENTAL DATA FROM 100 EV TO 400 KEV. M: NEW REQUEST.

56 BARIUM 136 NEUTRON CAPTURE CROSS SECTION

653023	10.0 KEV	100. KEV	10.0%	2	AUL	J. L. SYMONDS	AUA Q: RESONANCE PARAMETERS ALSO REQUIRED. P AND D WAVE STRENGTH FUNCTIONS ALSO NEEDED. Q: FOR FISSION PRODUCT CALCULATIONS AND ASTROPHYSICS.
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58 CERIUM 144 NEUTRON CAPTURE CROSS SECTION

741093	1.00 KEV	10.0 MEV	10.0%	1	USA	R. E. SCHENTER	HED Q: RADIOACTIVE TARGET - 284 DAY. Q: CALCULATION OF FISSION PRODUCT POISON FOR FAST REACTORS. M: NEW REQUEST.
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59 PRASEODYMIUM 141 NEUTRON CAPTURE CROSS SECTION

741092	1.00 MV	10.0 KEV	10.0%	2	USA	N. STEEN	BET Q: THERMAL CROSS SECTION AND RESONANCE INTEGRAL WANTED. Q: FOR FISSION PRODUCT POISON CALCULATIONS. RESOLVE UNCERTAINTIES IN AVAILABLE DATA. M: NEW REQUEST.
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STATUS-----STATUS

DEB CSIKAI+ - NF/A 55 229(1968).  
 DEB PETO+ - JNE 21 757(1967).  
 ANL STUEGIA+ - JNE 22 267(1968).  
 ORL MACKLIN+ - (1974), PRELIMINARY DATA 2.5 TC 500 KEV

=====

59 PRASEODYMIUM 141

NEUTRON

RESONANCE PARAMETERS

692214

5.00 KEV

3

ITY

V. BENZI

BOL

Q: PARTIAL RADIATION WIDTHS NEEDED.  
A: ACCURACY REQUIRED TO BETTER THAN 15 PERCENT.

=====

60 NEODYMIUM 143

NEUTRON

CAPTURE CROSS SECTION

671034

1.00 MV

1.00 KEV

10.0%

1

USA

N. STEEN  
B. HUTCHINS

BET  
GEB

Q: THERMAL CROSS SECTION AND RESONANCE INTEGRAL  
WANTED.  
A: ENERGIES ABOVE 1.0 EV OF INTEREST TO GIVE 10  
PERCENT IN RESONANCE INTEGRAL.  
O: FOR CALCULATION OF FISSION PRODUCT POISONS.  
M: SUBSTANTIAL MODIFICATIONS.

732071

10.0 MV

5.00 KEV

10.0%

1

FR

H. TELLIER

SAC

O: BURN UP PHYSICS.

732072

500. EV

200. KEV

10.0%

2

FR

J. BARRE

CAD

O: BURN UP PHYSICS.

752017

100. EV

400. KEV

20.0%

1

JAP

S. IIJIMA  
H. MATSUNOBU

NPG  
SAE

Q: DESIRED WITH LOWER PRIORITY FOR WIDER ENERGY RANGE  
O: FOR FAST REACTOR CALCULATIONS.  
NO EXPERIMENTAL DATA FROM 100 EV TO 400 KEV.  
M: NEW REQUEST.

-----STATUS-----

SAC RIBON - 73BOLCGNA 1 235, EVALUATION FROM 0.025 EV TO 30 KEV. ALSO FISSION NEUTRON SPECTRUM AVERAGE  
HAR CABELL+ - JIN 30 857(1968). PILE SPECTRA AVERAGES.  
NPG IIJIMA+ - (1975). NO EXPERIMENTAL DATA BETWEEN 100 EV AND 400 KEV.

=====

60 NEODYMIUM 145

NEUTRON

CAPTURE CROSS SECTION

671036

1.00 MV

1.00 KEV

10.0%

1

USA

N. STEEN  
B. HUTCHINS  
R. EHRLICH

BET  
GEB  
KAP

Q: THERMAL CROSS SECTION AND RESONANCE INTEGRAL  
WANTED.  
A: ENERGIES ABOVE 1.0 EV OF INTEREST TO GIVE 10  
PERCENT IN RESONANCE INTEGRAL.  
O: FOR CALCULATION OF FISSION PRODUCT POISONS.  
M: SUBSTANTIAL MODIFICATIONS.

732073

10.0 MV

5.00 KEV

10.0%

1

FR

H. TELLIER

SAC

O: BURN UP STUDY.

732074

500. EV

200. KEV

10.0%

2

FR

J. BARRE

CAD

O: BURN UP STUDY.

741099

1.00 KEV

10.0 MEV

10.0%

1

USA

R. SCHENTER

HED

O: CALCULATION OF FISSION PRODUCT POISON FOR FAST  
REACTORS.  
M: NEW REQUEST.

752018

100. EV

400. KEV

20.0%

1

JAP

S. IIJIMA  
H. MATSUNOBU

NPG  
SAE

Q: DESIRED WITH LOWER PRIORITY FOR WIDER ENERGY RANGE  
O: FOR FAST REACTOR CALCULATIONS.  
NO EXPERIMENTAL DATA FROM 100 EV TO 400 KEV.  
M: NEW REQUEST.

-----STATUS-----

SAC RIBON - 73BOLCGNA 1 235, EVALUATION FROM 0.025 EV TO 30 KEV. ALSO FISSION NEUTRON SPECTRUM AVERAGE  
HAR CABELL+ - JIN 30 857(1968). PILE SPECTRA AVERAGES  
ORL MACKLIN+ - (1974). PRELIMINARY DATA 2.5 TO 500 KEV

=====

60 NEODYMIUM 146

NEUTRON

CAPTURE CROSS SECTION

732075

500. EV

200. KEV

20.0%

2

FR

J. BARRE

CAD

O: BURN UP STUDY.

-----STATUS-----

SAC RIBON - 73BOLCGNA 1 235, EVALUATION FROM 0.025 EV TO 30 KEV.  
OSL ALSTAD+ - JIN 29 2155(1967). THERMAL VALUE.

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61 PROMETHIUM 149      NEUTRCN      CAPTURE CROSS SECTION
=====
671095  1.00  MV      1.00  KEV      20.0%   1   USA   N. STEEN      BET
          B. HUTCHINS  GEB
          R. EHRLICH   KAP
          Q: RADIOACTIVE TARGET - 53 HOUR.
          THERMAL CROSS SECTION AND RI WANTED.
          A: ACCURACY 10 PERCENT WANTED IF CROSS SECTION
              GREATER THAN 1000 BARN. 20 PERCENT IF BETWEEN
              10 AND 1000 BARN.
          ENERGIES ABOVE 1 EV OF INTEREST TO GIVE RESONANCE
              INTEGRAL TO 10 PERCENT IF GREATER THAN 10000
              BARN OR 20 PERCENT IF BETWEEN 1000 AND 10000
              BARN.
          M: SUBSTANTIAL MODIFICATIONS.
=====
61 PROMETHIUM 151      NEUTRCN      CAPTURE CROSS SECTION
=====
671057  1.00  MV      1.00  KEV      10.0%   2   USA   N. STEEN      BET
          B. HUTCHINS  GEB
          Q: RADIOACTIVE TARGET 28 HOUR.
          THERMAL CROSS SECTION AND RI WANTED.
          A: ENERGIES ABOVE 1 EV OF INTEREST TO GIVE RESONANCE
              INTEGRAL TO 10 PERCENT.
          O: FOR CALCULATION OF FISSION PRODUCT POISONS.
          M: SUBSTANTIAL MODIFICATIONS.
=====
62 SAMARIUM           NEUTRCN      RESONANCE PARAMETERS
=====
652230           200.  EV           3   ITY   V. BENZI      BOL
          Q: PARTIAL RADIATION WIDTHS NEEDED.
          A: ACCURACY REQUIRED TO BETTER THAN 15 PERCENT.
=====
62 SAMARIUM 144      NEUTRCN      N, 2N
=====
653029  14.0  MEV           10.0%   3   HUN   J. CSIKAI     KOS
          A: INCIDENT ENERGY RESOLUTION 200 KEV.
          O: NEEDED FOR NEUTRON ACTIVATION ANALYSIS AND CROSS
              SECTION SYSTEMATICS.
STATUS-----STATUS
AUB  GHORAI+ - NP/A 223 118(1974), DATA 14.9 TO 17.0 MEV.
=====
62 SAMARIUM 147      NEUTRCN      CAPTURE CROSS SECTION
=====
722075  500.  EV      200.  KEV      20.0%   1   FR    J. Y. EARRE   CAD
          Q: RELATIVE VALUE VERSUS ENERGY OR VALUE RELATIVE
              TO CAPTURE IN ANOTHER NUCLEUS SUCH AS U-238.
          O: FISSION PRODUCT EFFECT IN FAST REACTORS.
=====
62 SAMARIUM 149      NEUTRCN      CAPTURE CROSS SECTION
=====
722048  1.00  MV      1.00  KEV      5.0%   3   DEN   C. F. O. E. JERUP  RIS
          O: WANTED FOR FISSION PRODUCT CALCULATIONS.
722080  10.0  MV      5.00  KEV      10.0%   2   FR    H. TELLIER     SAC
          O: REACTOR CALCULATIONS.
722081  500.  EV      200.  KEV      20.0%   1   FR    J. Y. BARRE    CAD
          Q: RELATIVE VALUE VERSUS ENERGY OR VALUE RELATIVE
              TO CAPTURE IN ANOTHER NUCLEUS SUCH AS U-238.
          O: FISSION PRODUCT EFFECT IN FAST REACTORS.
741095  1.00  KEV      10.0  MEV      10.0%   1   USA   R. E. SCHENTER  HED
          O: CALCULATION OF FISSION PRODUCT POISON FOR FAST
              REACTORS.
          M: NEW REQUEST.
752020  100.  EV      400.  KEV      20.0%   1   JAP   S. IJIMA       NPG
          H. MATSUNOBU  SAE
          Q: DESIRED WITH LOWER PRIORITY FOR WIDER ENERGY RANGE
          O: FOR FAST REACTOR CALCULATIONS.
          NO EXPERIMENTAL DATA EXCEPT A MEASUREMENT AT
              30 KEV.
          M: NEW REQUEST.
STATUS-----STATUS
SAC  RIBON. - 73BOLCGNA 1 235. REVIEW.
=====
62 SAMARIUM 150      NEUTRCN      CAPTURE CROSS SECTION
=====
671052  1.00  MV      1.00  KEV           1   USA   N. STEEN      BET
          B. HUTCHINS  GEB
          Q: THERMAL CROSS SECTION AND RI WANTED.
          A: ACCURACY REQUIRED - 2 TO 5 PERCENT.
          ENERGIES ABOVE 1 EV OF INTEREST TO GIVE RESONANCE
              INTEGRAL TO BETWEEN 2 AND 3 PERCENT.
          O: FOR CALCULATION OF FISSION PRODUCT POISONS.
          M: SUBSTANTIAL MODIFICATIONS.
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63 EUROPIUM			NEUTRON				DIFFERENTIAL ELASTIC CROSS SECTION	
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692254	100	KEV	1000	MEV	1000%	3	GER	FOWELLER	KFK
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63 EUROPIUM			NEUTRON				INELASTIC CROSS SECTION	
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692255	300	KEV	1000	MEV	2000%	3	GER	FOWELLER	KFK
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692257	300	KEV	2000	MEV	2000%	3	GER	FOWELLER	KFK
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Q: MEASUREMENT OF INELASTIC SCATTERING TO GROUPS OF LEVELS REQUIRED.

=====

63 EUROPIUM			NEUTRON				ENERGY DIFFERENTIAL INELASTIC CROSS SECTION	
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692258	200	MEV	1000	MEV	2000%	3	GER	FOWELLER	KFK
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=====

63 EUROPIUM			NEUTRON				CAPTURE CROSS SECTION	
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692259	200	KEV	2000	MEV	1000%	2	GER	FOWELLER	KFK
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732111	100	EV	5000	KEV	1000%	1	UK	CcGcCAMPBELL	WIN
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Q: FOR FAST REACTORS.

-----STATUS-----

HAR MOXON - (1974), SOME DATA AVAILABLE, FURTHER WORK IN PROGRESS.

KFK CHOU+ - JNE 27 E11(1973), DATA 1 EV TO 50 KEV.

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63 EUROPIUM 151			NEUTRON				CAPTURE CROSS SECTION	
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=====

693025	1000	MEV	1000	EV	500%	2	DDR	DcALBERT	ROS
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Q: CROSS SECTION DATA NEEDED FOR EVALUATION OF MEASURED ACTIVATION RATES BY MEANS OF FOILS (ESPECIALLY SPECTRAL INDICES) FOR THERMAL NEUTRON FLUXES.

693026			1000	EV	500%	2	BUL	VcCHRISTOV	BAC
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Q: FOR ACTIVATION DETECTORS FOR THERMAL NEUTRON FLUX DETERMINATION.

732089	2503	MEV	5000	KEV	500%	3	FR	HcTELLIER	SAC
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Q: REACTOR CALCULATIONS.

741099	1000	KEV	1000	MEV	500%	1	USA	PcBcHEMMIG	AEC
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M: NEW REQUEST.

741102	1000	KEV	1000	MEV	1000%	2	USA	PcBcHEMMIG FcGcPEREY	AEC ORL
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Q: RATIO GROUND STATE TO ISOMER CAPTURE WANTED.  
M: NEW REQUEST.

-----STATUS-----

MOL POORTMANS+ - NF/A 172 485(1971), DATA 002 TO 065 EV.

NPL RYVES - JNE 25 129(1970), THERMAL VALUE.

LRL CZIRR+ - UCRL-50804 (1970), DATA 200 EV TO 12 KEV.

LRL NEITHAWAY - NF/A 160 635(1972), DATA NEAR 14 MEV.

RPI KNCX+ - USNDC-11 220(1974), IN PROGRESS 20 EV TO 100 KEV.

WUR WIDDER - PRECISE DATA FROM 001 TO 105 EV, TO BE PUBLISHED IN NSE.

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63 EUROPIUM 151			NEUTRON				CAPTURE GAMMA RAY SPECTRUM	
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741100	1000	KEV	1000	MEV	1000%	2	USA	PcBcHEMMIG FcGcPEREY	AEC ORL
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M: NEW REQUEST.

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63 EUROPIUM 151			NEUTRON				RESONANCE PARAMETERS	
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692260	2000	EV	2000	EV	1000%	2	GER	FOWELLER	KFK
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Q: NEUTRON AND CAPTURE WIDTH NEEDED.

-----STATUS-----

COL RAHN+ - PR/C E 251(1972), PARAMETERS FROM 0032 TO 99 EV.

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63 EUROPIUM 151			NEUTRON				CAPTURE RESONANCE INTEGRAL	
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692027	2503	MEV	1000	KEV	500%	2	DDR	DcALBERT	ROS
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Q: CROSS SECTION DATA NEEDED FOR EVALUATION OF MEASURED ACTIVATION RATES BY MEANS OF FOILS (ESPECIALLY SPECTRAL INDICES) FOR THERMAL NEUTRON FLUXES.

653028 1.00 EV 5.0% 2 BUL V. CHRISTOV BAC  
 O: FOR ACTIVATION DETECTORS FOR THERMAL NEUTRON FLUX DETERMINATION.

63 EUROPIUM 153 NEUTRON CAPTURE CROSS SECTION

671064 1.00 MV 1.00 KEV 2 USA E. HUTCHINS GEB  
 A: ACCURACY OF 2 PERCENT NEAR THERMAL AND 5 PERCENT ABOVE ENERGIES ABOVE 1 EV OF INTEREST TO GIVE RESONANCE INTEGRAL TO 10 PERCENT.  
 O: FOR CALCULATION OF FISSION PRODUCT POISON.

732085 1.00 EV 5.00 KEV 10.0% 3 FR H. TELLIER SAC  
 O: REACTOR CALCULATIONS.

741104 1.00 MV 5.00 KEV 10.0% 2 USA N. STEEN BET  
 Q: THERMAL CROSS SECTION AND RI WANTED.  
 O: FOR FISSION PRODUCT POISON CALCULATIONS.  
 M: NEW REQUEST.

741105 1.00 KEV 1.00 MEV 5.0% 1 USA P. B. HEMMIG AEC  
 M: NEW REQUEST.

752022 40.0 KEV 400. KEV 30.0% 2 JAF S. IJIMA M. MATSUNOBU NPG SAE  
 Q: DESIRED WITH LOWER PRIORITY FOR WIDER ENERGY RANGE  
 O: FOR FAST REACTOR CALCULATIONS.  
 NO EXPERIMENTAL DATA FROM 40 KEV TO 400 KEV.  
 M: NEW REQUEST.

STATUS-----STATUS

RPI KNCX+ - USDC-11 220(1974), IN PROGRESS 20 EV TO 100 KEV.  
 LAS HARLOW+ - EEWASHINGTON P. 837(1968), 25 EV TO 10KEV  
 DUB KCNKS+ - SNP 7 310(1968), 1 EV TO 50 KEV.  
 WUR WIDDER - PRECISE DATA FROM 0.01 TO 10 EV, TO BE PUBLISHED IN NSE.  
 ERROR AT THERMAL 15 PERCENT, AT LEAST 8 PERCENT IN REST OF ENERGY RANGE.

63 EUROPIUM 153 NEUTRON CAPTURE GAMMA RAY SPECTRUM

741106 1.00 KEV 1.00 MEV 10.0% 2 USA P. B. HEMMIG F. G. PEREY AEC ORL  
 M: NEW REQUEST.

63 EUROPIUM 153 NEUTRON RESONANCE PARAMETERS

652263 25.0 EV 200. EV 10.0% 2 GER F. W. WELLMER KFK  
 Q: NEUTRON AND CAPTURE WIDTH NEEDED.  
 O: FISSION PRODUCT IMPORTANT IN FAST REACTOR BURNUP CALCULATIONS.

63 EUROPIUM 154 NEUTRON CAPTURE CROSS SECTION

671066 1.00 MV 1.00 KEV 10.0% 2 USA N. STEEN B. HUTCHINS BET GEB  
 Q: RADIOACTIVE TARGET - 8.6 YEARS.  
 THERMAL CROSS SECTION AND RI WANTED.  
 RESONANCE PARAMETERS WANTED.  
 A: ENERGIES ABOVE 1 EV OF INTEREST TO GIVE RESONANCE INTEGRAL TO 10 PERCENT.  
 O: FOR CALCULATION OF FISSION PRODUCT POISONS.  
 M: SUBSTANTIAL MODIFICATIONS.

STATUS-----STATUS

ANL HAYDEN+ - PR 75 1500(1949), THERMAL VALUE WITH 15 PERCENT ERROR.

63 EUROPIUM 155 NEUTRON CAPTURE CROSS SECTION

671068 1.00 MV 1.00 KEV 10.0% 2 USA N. STEEN B. HUTCHINS BET GEB  
 Q: RADIOACTIVE TARGET - 4.8 YEARS.  
 THERMAL CROSS SECTION AND RI WANTED.  
 RESONANCE PARAMETERS NEEDED.  
 A: ENERGIES ABOVE 1 EV OF INTEREST TO GIVE RESONANCE INTEGRAL TO 10 PERCENT.  
 O: FOR CALCULATION OF FISSION PRODUCT POISONS.  
 M: SUBSTANTIAL MODIFICATIONS.

712050 1.00 MV 1.00 KEV 5.0% 3 DEN C. F. HOEJERUP RIS  
 O: WANTED FOR FISSION PRODUCT CALCULATIONS.

741108 1.00 KEV 10.0 MEV 20.0% 2 USA R. E. SCHENTER HED  
 Q: RADIOACTIVE TARGET - 4.8 YEARS.  
 O: CALCULATIONS OF FISSION PRODUCT POISON FOR FAST REACTORS.  
 M: NEW REQUEST.

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63 EUROPIUM 156          NEUTRON          CAPTURE CROSS SECTION
=====
651815    2E03 MV          3    CAN    W0H0WALKER    CRC
                A: REQUIRED WITH A 700 BARN ACCURACY0
                O: FISSION PRODUCT WITH UNKNOWN CROSS SECTION0
=====
64 GADOLINIUM          NEUTRON          DIFFERENTIAL ELASTIC CROSS SECTION
=====
671070    1.50 MEV          10.0 MEV          10.0%          1    USA    B0HUTCHINS    GEB
STATUS-----STATUS
USA    USNOC0 BELIEVES THAT AVAILABILITY CF ISOTGPIC SAMPLES WOULD MAKE MEASUREMENTS MORE ATTRACTIVE0
=====
64 GADOLINIUM          NEUTRON          NEUTRON EMISSION CROSS SECTION
=====
671071    1.50 MEV          10.0 MEV          15.0%          1    USA    B0HUTCHINS    GEB
                O: SECONDARY ENERGY-ANGLE DISTRIBUTIONS REQUIRED0
                A: INCIDENT AND EXIT RESOLUTION 15 PERCENT0
                O: FOR DESIGN OF THERMAL REACTORS HAVING APPRECIABLE
                  QUANTITIES OF GD0
=====
64 GADOLINIUM          NEUTRON          CAPTURE RESONANCE INTEGRAL
=====
651180    0.50 EV              5.0%          1    USA    B0HUTCHINS    GEB
                O: FOR EVALUATING RESONANCE PARAMETERS0
=====
64 GADOLINIUM 156          NEUTRON          CAPTURE CROSS SECTION
=====
671072    0.50 EV              1.00 KEV          5.0%          1    USA    B0HUTCHINS    GEB
                A: ENERGIES ABOVE 1 EV OF INTEREST TO GIVE RESONANCE
                  INTEGRAL TO 5 PERCENT0
                O: NEEDED TO DEFINE NEGATIVE ENERGY RESONANCE IN
                  EITHER GD-156 OR GD-1570
                M: SUBSTANTIAL MODIFICATIONS0
722086    10.0 MV              5.00 KEV          5.0%          2    FR     H0TELLIER    SAC
                O: CONSUMABLE POISON0
792001              10.0 KEV          2    SWD    H0HAEGGBLOM    AE
                A: ACCURACY 3 PERCENT TO 10 EV, 10 PERCENT ABOVE0
                O: THERMAL REACTOR CALCULATIONS0
=====
64 GADOLINIUM 156          NEUTRON          RESONANCE PARAMETERS
=====
651182              500. EV          10.0%          1    USA    B0HUTCHINS    GEB
                O: NEUTRON AND CAPTURE WIDTH NEEDED0
                  MINIMUM ENERGY MUST INCLUDE LOWEST RESOLVED
                  RESONANCE0
                O: REQUIRED TO VERIFY EXISTING MEASUREMENTS0
=====
64 GADOLINIUM 156          NEUTRON          CAPTURE RESONANCE INTEGRAL
=====
651181    0.50 EV              5.0%          1    USA    B0HUTCHINS    GEB
                O: ENERGY REQUESTED IS A MINIMUM VALUE ONLY0
                O: FOR EVALUATING RESONANCE PARAMETERS0
                  NEEDED TO DEFINE NEGATIVE ENERGY RESONANCE IN
                  EITHER GD-156 OR GD-1570
                M: SUBSTANTIAL MODIFICATIONS0
=====
64 GADOLINIUM 156          NEUTRON          CAPTURE CROSS SECTION
=====
671073    1.00 MV              1.00 KEV          5.0%          1    USA    B0HUTCHINS    GEB
                A: ENERGIES ABOVE 1 EV OF INTEREST TO GIVE RESONANCE
                  INTEGRAL TO 5 PERCENT0
                O: FOR CALCULATING OF BURN UP IN THERMAL REACTORS0
=====
64 GADOLINIUM 156          NEUTRON          RESONANCE PARAMETERS
=====
651183              2.00 KEV          5.0%          1    USA    B0HUTCHINS    GEB
                O: NEUTRON AND CAPTURE WIDTH NEEDED0
                  MINIMUM ENERGY TO INCLUDE LOWEST RESOLVED
                  RESONANCE0
                O: REQUIRED TO VERIFY EXISTING MEASUREMENTS0
=====
64 GADOLINIUM 156          NEUTRON          CAPTURE RESONANCE INTEGRAL
=====
651258    0.50 EV              5.0%          1    USA    B0HUTCHINS    GEB
                O: FOR EVALUATING RESONANCE PARAMETERS0
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64 GADOLINIUM 157      NEUTRGN      CAPTURE CROSS SECTION
=====
671079   0.50 EV      1.00 KEV      5.0%      1   USA   B.HUTCHINS   GEB
          A: ENERGIES ABOVE 1 EV OF INTEREST TO GIVE RESONANCE
          INTEGRAL TO 5 PERCENT.
          O: FOR CALCULATION OF BURN UP IN THERMAL REACTORS.

712051   1.00 MV      1.00 KEV      5.0%      3   DEN   C.F.HOEJERUP   RIS
          O: WANTED FOR FISSION PRODUCT CALCULATIONS.

722087   10.0 MV      5.00 KEV      5.0%      2   FR    H.TELLIER     SAC
          O: CONSUMABLE POISON.

742003           10.0 KEV      2   SWD   H.HAEGGBLOM   AE
          A: ACCURACY 3 PERCENT TO 10 EV, 10 PERCENT ABOVE.
          O: THERMAL REACTOR CALCULATIONS.

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64 GADOLINIUM 157      NEUTRGN      RESONANCE PARAMETERS
=====
691185           1.00 KEV      10.0%      1   USA   B.HUTCHINS   GEB
          Q: NEUTRON AND CAPTURE WIDTH NEEDED.
          MINIMUM ENERGY TO INCLUDE LOWEST RESOLVED
          RESONANCE.
          O: REQUIRED TO VERIFY EXISTING MEASUREMENTS.

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64 GADOLINIUM 157      NEUTRGN      CAPTURE RESONANCE INTEGRAL
=====
691184   0.50 EV              5.0%      1   USA   B.HUTCHINS   GEB
          O: FOR EVALUATING RESONANCE PARAMETERS.

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64 GADOLINIUM 158      NEUTRGN      RESONANCE PARAMETERS
=====
741105           2.00 KEV      10.0%      1   USA   B.HUTCHINS   GEB
          Q: ELASTIC AND GAMMA WIDTH WANTED.
          ENERGY TO INCLUDE LOWEST RESOLVED RESONANCE.
          O: TO VERIFY EXISTING MEASUREMENTS.
          M: NEW REQUEST.

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=====
64 GADOLINIUM 160      NEUTRGN      RESONANCE PARAMETERS
=====
741110           2.00 KEV      10.0%      1   USA   B.HUTCHINS   GEB
          Q: ELASTIC AND GAMMA WIDTH WANTED.
          ENERGY TO INCLUDE LOWEST RESOLVED RESONANCE.
          O: TO VERIFY EXISTING MEASUREMENTS.
          M: NEW REQUEST.

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=====
66 DYSPROSIUM 161      NEUTRGN      RESONANCE PARAMETERS
=====
692283           200. EV              3   ITY   V.BENZI      BOL
          Q: PARTIAL RADIATION WIDTHS NEEDED.
          A: ACCURACY REQUIRED TO BETTER THAN 15. PERCENT.

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=====
66 DYSPROSIUM 164      NEUTRGN      CAPTURE CROSS SECTION
=====
692229   1.00 MV      10.0 EV      5.0%      2   DDR   D.ALBERT     ROS
          O: CROSS SECTION DATA NEEDED FOR EVALUATION OF
          MEASURED ACTIVATION RATES BY MEANS OF FOILS
          (ESPECIALLY SPECTRAL INDICES) FOR THERMAL
          NEUTRON FLUXES.

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-----STATUS-----
WUR  BRUNNER - PRECISE DATA ON NATURAL DY FROM .01 TO 10 EV TO BE PUBLISHED IN NSE.
BNL  COLE+ - USNDC-11 35(1974), MEASUREMENTS FROM THERMAL TO 140 EV. DATA FOR RESONANCE GAMMAS OF
      EVEN ISOTYPES.
COL  LIQU+ - USNDC-11 65(1974), RESONANCE PARAMETERS FOR DY-162 AND DY-164.

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68 ERBIUM      NEUTRGN      RESONANCE PARAMETERS
=====
692286           200. EV              3   ITY   V.BENZI      BOL
          Q: PARTIAL RADIATION WIDTHS NEEDED.
          A: ACCURACY REQUIRED TO BETTER THAN 15. PERCENT.

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=====
68 ERBIUM 167      NEUTRGN      CAPTURE CROSS SECTION
=====
741132           2.00 EV      3.0%      2   USA   R.H.DAHLBERG   GA
          Q: ENERGY REQUESTED IS A MAXIMUM VALUE ONLY.
          O: NEEDED FOR BURNABLE POISON IN TRIGA REACTORS.
          M: NEW REQUEST.

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=====
68 ERBIUM 168 NEUTRON N,ALPHA
=====

693030 25.3 MV 10.0% 3 HUN J.CSIKAI KOS
O: FOR NEUTRON ACTIVATION ANALYSIS AND CROSS SECTION
SYSTEMATICS WANTED.

=====
69 THULIUM 169 NEUTRON CAPTURE CROSS SECTION
=====

692289 1.00 KEV 15.0 MEV 10.0% 1 FR A.CMICAUDON BRC
Q: PRODUCTION OF TM-170 (130 DAY).
O: ACTIVATION DETECTOR.

STATUS-----STATUS
OSL ALSTAD+ - INDC(NGR)-1 1(1972), THERMAL AVERAGE.

=====
69 THULIUM 169 NEUTRON N,P
=====

692290 15.0 MEV 10.0% 1 FR A.CMICAUDON BRC
Q: PRODUCTION OF ER-169 (9.4 DAY).
O: ACTIVATION DETECTOR.

=====
69 THULIUM 169 NEUTRON N,ALPHA
=====

692291 15.0 MEV 10.0% 2 FR A.CMICAUDON BRC
Q: PRODUCTION OF HO-166 (27 HOUR).
O: ACTIVATION DETECTOR.

=====
70 YTTERBIUM 168 NEUTRON CAPTURE CROSS SECTION
=====

693032 1.00 EV 5.0% 2 BUL V.CHRISTOV BAC
O: FOR ACTIVATION DETECTORS FOR THERMAL NEUTRON FLUX
DETERMINATION.

=====
70 YTTERBIUM 168 NEUTRON CAPTURE RESONANCE INTEGRAL
=====

693031 1.00 EV 5.0% 2 BUL V.CHRISTOV BAC
O: FOR ACTIVATION DETECTORS FOR THERMAL NEUTRON FLUX
DETERMINATION.

=====
71 LUTETIUM 175 NEUTRON CAPTURE CROSS SECTION
=====

692292 1.00 KEV 1.00 MEV 20.0% 3 FR A.CMICAUDON BRC
Q: PRODUCTION OF LU-176 (30 THOUSAND-MILLION YEARS)
AND LU-176M (3.7 HOURS).
O: ACTIVATION DETECTOR.
DISCREPANCY AT 10 KEV (2.5 AND 7 B).

692294 5.00 MV 250. EV 2 SWT J.BRUNNER WUR
A: ACCURACY 2 PERCENT AT THERMAL, 5 PERCENT ABOVE.
O: NEUTRON THERMOMETER.

STATUS-----STATUS

CAS PUBINI+ - NC/A E 748(1972), THERMAL AVERAGE VALUE.
MTR YOUNG - BNL-50276 89(1970), THERMAL AVERAGE VALUE.
WUR BRUNNER - PRECISE DATA FROM 0.01 TO 10 EV TO BE PUBLISHED IN NSE.
COL LIQU+ - PR/C 11 1231(1975), RESONANCE PARAMETERS FROM TRANSMISSION, CAPTURE AND SELF-INDICATION
MEASUREMENTS. DATA 1 EV TO 3 KEV.

=====
71 LUTETIUM 175 NEUTRON N,2N
=====

692036 15.0 MEV 10.0% 3 FR A.CMICAUDON BRC
Q: PRODUCTION OF LU-174 (165 DAY).
O: ACTIVATION DETECTOR.

STATUS-----STATUS

JUL QAIM - NP/A 224 319(1974), TOTAL AND ISCMERIC DATA AT 14.7 MEV.
BRC FREHAUT+ - CEA-R-4627 (1974), DATA THRESHOLD TO 15 MEV.

=====
71 LUTETIUM 176 NEUTRON CAPTURE CROSS SECTION
=====

692039 1.00 KEV 3.00 MEV 20.0% 3 FR A.CMICAUDON BRC
Q: PRODUCTION OF LU-177 (6.2 DAY).
O: ACTIVATION DETECTOR.

692296 5.00 MV 250. EV 2 SWT J.BRUNNER WUR
Q: ACTIVATION IS REQUIRED.
A: ACCURACY 2 PERCENT THERMAL, 5 PERCENT ABOVE.
O: NEUTRON THERMOMETER.

693033 1.00 EV 5.0% 2 BUL V.CHRISTOV BAC
O: FOR ACTIVATION DETECTORS FOR THERMAL NEUTRON FLUX
DETERMINATION.

693036 1.00 MV 10.0 EV 5.0% 2 DDR CoALBERT ROS

O: CROSS SECTION DATA NEEDED FOR EVALUATION OF MEASURED ACTIVATION RATES BY MEANS OF FOILS (ESPECIALLY SPECTRAL INDICES) FOR THERMAL NEUTRON FLUXES.

STATUS-----STATUS

MTR YOUNG - BNL-50276 89(1970), THERMAL AVERAGE VALUE.

WUR BRUNNER - PRECISE DATA FROM .01 TO 2 EV TO BE PUBLISHED IN NSE.

71 LUTETIUM 176 NEUTRON N,2N

682038 15.0 MEV 10.0% 3 FR A.MICHAUDON BRC

71 LUTETIUM 176 NEUTRON CAPTURE RESONANCE INTEGRAL

693034 25.3 MV 10.0 KEV 5.0% 2 DDR DoALBERT ROS

O: CROSS SECTION DATA NEEDED FOR EVALUATION OF MEASURED ACTIVATION RATES BY MEANS OF FOILS (ESPECIALLY SPECTRAL INDICES) FOR THERMAL NEUTRON FLUXES.

693035 1.00 EV 5.0% 2 BUL VoCHRISTOV BAC

O: FOR ACTIVATION DETECTORS FOR THERMAL NEUTRON FLUX DETERMINATION.

72 HAFNIUM NEUTRON DIFFERENTIAL ELASTIC CROSS SECTION

661036 1.00 EV 15.0 MEV 10.0% 2 USA NoSTEEN BET

A: ACCURACY IN AVERAGE (1-COS) 10 PERCENT.  
ENERGY RESOLUTION - 10 PERCENT.  
O: WANTED FOR THERMAL REACTOR DESIGN.  
M: SUBSTANTIAL MODIFICATIONS.

STATUS-----STATUS

AE HOLMQVIST+ - AE 430 (1970).

ANL SHERWOOD+ - NSE 39 67(1969), DATA TO 1.5 MEV.

72 HAFNIUM NEUTRON CAPTURE CROSS SECTION

621024 1.00 MV 1.00 EV 2.0% 1 USA NoSTEEN RoEHRlich BET KAP

O: NEEDED FOR MONTE CARLO CALCULATIONS OF BURNUP IN THERMAL REACTORS.

72 HAFNIUM NEUTRON NEUTRON EMISSION CROSS SECTION

661037 1.00 EV 15.0 MEV 15.0% 2 USA NoSTEEN BET

Q: SECONDARY ENERGY DISTRIBUTION REQUIRED.  
A: INCIDENT AND EXIT ENERGY RESOLUTIONS 15 PERCENT.  
O: FOR DESIGN OF THERMAL REACTORS HAVING APPRECIABLE QUANTITIES OF HF.  
M: SUBSTANTIAL MODIFICATIONS.

72 HAFNIUM 174 NEUTRON CAPTURE CROSS SECTION

661038 1.00 MV 5.00 KEV 1 USA RoEHRlich KAP

A: THERMAL VALUE WANTED TO 20 PERCENT.  
NEED AVERAGE P-WAVE CAPTURE WIDTH TO 20 PERCENT.  
BETWEEN 10 AND 100 EV, TOTAL, NEUTRON AND CAPTURE WIDTHS NEEDED WITH 10 PERCENT ACCURACY.  
ABOVE 100 EV, 20 PERCENT ACCURACY REQUIRED.  
O: NEEDED FOR MONTE CARLO BURN UP CALCULATIONS.

72 HAFNIUM 176 NEUTRON CAPTURE CROSS SECTION

621026 1.00 MV 5.00 KEV 1 USA NoSTEEN RoEHRlich BET KAP

A: THERMAL VALUE WANTED TO 20 PERCENT.  
BELOW 1 EV, 40 PERCENT ACCURACY NEEDED.  
BETWEEN 10 AND 100 EV, TOTAL, NEUTRON AND CAPTURE WIDTHS NEEDED WITH 10 PERCENT ACCURACY.  
ABOVE 100 EV, 20 PERCENT ACCURACY REQUIRED.  
AVERAGE P-WAVE CAPTURE WIDTH TO 20 PERCENT.  
S-WAVE STRENGTH FUNCTION TO 40 PERCENT.  
O: TO RESOLVE DISCREPANCIES IN RESONANCE INTEGRAL.  
NEEDED FOR MONTE CARLO BURN UP CALCULATIONS.  
M: SUBSTANTIAL MODIFICATIONS.

732028 10.0 MV 5.00 KEV 10.0% 1 FR HoTELLIER SAC

O: REACTOR CALCULATIONS.

STATUS-----STATUS

SAC RIBON - 73BOLCNA 1 235, REVIEW.

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72 HAFNIUM 177 NEUTRON CAPTURE CROSS SECTION
   
=====

62102E 1.00 MV 5.00 KEV 1 USA N STEEN BET
   
 R EHRLICH KAP
   
 A: S-WAVE STRENGTH FUNCTION TO 20 PERCENT.
   
 NEED AVERAGE P-WAVE CAPTURE WIDTH TO 20 PERCENT.
   
 BELOW 1 EV, 4 PERCENT ACCURACY NEEDED.
   
 BETWEEN 10 AND 100 EV, TOTAL, NEUTRON AND CAPTURE
   
 WIDTHS NEEDED WITH 10 PERCENT ACCURACY.
   
 ABOVE 100 EV, 20 PERCENT ACCURACY REQUIRED.
   
 5.89, 6.57, AND 8.87 EV RESONANCE WIDTHS 5 PERCENT.
   
 O: TO RESOLVE DISCREPANCIES IN RESONANCE INTEGRAL.
   
 NEEDED FOR MONTE CARLO BURN UP CALCULATIONS.
   
 M: SUBSTANTIAL MODIFICATIONS.

62202 10.0 MV 5.00 KEV 5.0% 1 FR H TELLIER SAC
   
 O: RESONANCE INTEGRAL ALSO WANTED.
   
 A: ACCURACY 1 PERCENT AT THERMAL AND 5 PERCENT FOR
   
 RESONANCE INTEGRAL.
   
 O: EVALUATION MAY SUFFICE IF IT EXPLAINS
   
 DISCREPANCIES.

-----STATUS-----
   
SAC RIBON - 73BOLCGNA 1 235, REVIEW, PROBABLY DOES NOT MEET ACCURACY REQUIREMENTS.

=====
   
72 HAFNIUM 178 NEUTRON CAPTURE CROSS SECTION
   
=====

621030 1.00 MV 5.00 KEV 1 USA N STEEN BET
   
 R EHRLICH KAP
   
 A: BELOW 1 EV, 5 PERCENT ACCURACY NEEDED.
   
 BETWEEN 10 AND 100 EV, TOTAL, NEUTRON AND CAPTURE
   
 WIDTHS NEEDED WITH 10 PERCENT ACCURACY.
   
 ABOVE 100 EV, 20 PERCENT ACCURACY REQUIRED.
   
 7.78-EV RESONANCE WIDTH TO 3 PERCENT.
   
 S-WAVE STRENGTH FUNCTION TO 20 PERCENT.
   
 P-WAVE AVERAGE CAPTURE WIDTH TO 20 PERCENT.
   
 O: TO RESOLVE DISCREPANCIES IN RESONANCE INTEGRAL.
   
 NEEDED FOR MONTE CARLO BURN UP CALCULATIONS.
   
 M: SUBSTANTIAL MODIFICATIONS.

62204 10.0 MV 5.00 KEV 5.0% 1 FR H TELLIER SAC
   
 O: RESONANCE INTEGRAL ALSO WANTED.
   
 A: ACCURACY 1 PERCENT AT THERMAL AND 5 PERCENT FOR
   
 RESONANCE INTEGRAL.
   
 O: EVALUATION MAY SUFFICE IF IT EXPLAINS
   
 DISCREPANCIES.

-----STATUS-----
   
SAC RIBON - 73BOLCGNA 1 235, REVIEW, PROBABLY DOES NOT MEET ACCURACY REQUIREMENTS.

=====
   
72 HAFNIUM 179 NEUTRON CAPTURE CROSS SECTION
   
=====

621032 1.00 MV 5.00 KEV 1 USA N STEEN BET
   
 R EHRLICH KAP
   
 A: BELOW 1 EV, 5 PERCENT ACCURACY NEEDED.
   
 BETWEEN 10 AND 100 EV, TOTAL, NEUTRON AND CAPTURE
   
 WIDTHS NEEDED WITH 10 PERCENT ACCURACY.
   
 ABOVE 100 EV, 20 PERCENT ACCURACY REQUIRED.
   
 5.68-EV RESONANCE WIDTHS TO 5 PERCENT.
   
 S-WAVE STRENGTH FUNCTION TO 20 PERCENT.
   
 AVERAGE P-WAVE CAPTURE WIDTH TO 20 PERCENT.
   
 O: TO RESOLVE DISCREPANCIES IN RESONANCE INTEGRAL.
   
 NEEDED FOR MONTE CARLO BURN UP CALCULATIONS.
   
 M: SUBSTANTIAL MODIFICATIONS.

62205 10.0 MV 5.00 KEV 5.0% 1 FR H TELLIER SAC
   
 O: RESONANCE INTEGRAL ALSO WANTED.
   
 A: ACCURACY 1 PERCENT AT THERMAL AND 5 PERCENT FOR
   
 RESONANCE INTEGRAL.
   
 O: EVALUATION MAY SUFFICE IF IT EXPLAINS
   
 DISCREPANCIES.

-----STATUS-----
   
SAC RIBON - 73BOLCGNA 1 235, REVIEW, PROBABLY DOES NOT MEET ACCURACY REQUIREMENTS.

=====
   
72 HAFNIUM 180 NEUTRON CAPTURE CROSS SECTION
   
=====

621040 1.00 MV 5.00 KEV 1 USA N STEEN BET
   
 R EHRLICH KAP
   
 A: BELOW 1 EV, 4 PERCENT ACCURACY NEEDED.
   
 BETWEEN 10 AND 100 EV, TOTAL, NEUTRON AND CAPTURE
   
 WIDTHS NEEDED WITH 10 PERCENT ACCURACY.
   
 ABOVE 100 EV, 20 PERCENT ACCURACY REQUIRED.
   
 S-WAVE STRENGTH FUNCTION TO 20 PERCENT.
   
 AVERAGE P-WAVE CAPTURE WIDTH TO 20 PERCENT.
   
 O: TO RESOLVE DISCREPANCIES IN RESONANCE INTEGRAL.
   
 NEEDED FOR MONTE CARLO BURN UP CALCULATIONS.
   
 M: SUBSTANTIAL MODIFICATIONS.

72209 10.0 MV 5.00 KEV 5.0% 1 FR H TELLIER SAC
   
 O: REACTOR CALCULATIONS.

-----STATUS-----
   
SAC RIBON - 73BOLCGNA 1 235, REVIEW, PROBABLY DOES NOT MEET ACCURACY REQUIREMENTS.

=====

73 TANTALUM 181                    NEUTRON                    CAPTURE CROSS SECTION

=====

691192    1.00 EV            500. KEV                    2    USA    P.O.B. HEMMIG            AEC

A: ACCURACY - 1 EV TO 1 KEV, 10 PERCENT,  
               - 1 KEV TO 150 KEV, 5 PERCENT,  
               - 150 KEV TO 500 KEV, 10 PERCENT.  
 DOUBLE ACCURACY USEFUL.  
 Q: FAST BREEDER CONTROL AND BURN-UP CALCULATIONS.  
 M: NEW REQUEST.

STATUS-----STATUS

AE    HELLSTROM - JNE 27 71(1973), DATA 30 KEV TO 1.5 MEV.  
 USP   LEPINE+ - NP/A 196 83(1972), DATA 30 TO 300 KEV.  
 RPI   BLOCK+ - USNOC-3 164(1972), WORK IN PROGRESS.  
 LRL   CZIRR+ - LSND-1 94(1972), WORK IN PROGRESS.  
 ANL   POENITZ - PRELIMINARY DATA 0.5 TO 3 MEV.  
 ORL   MACKLIN - PRELIMINARY DATA 2.5 TO 500 KEV.  
 WUR   WIDDER - PRECISE DATA FOR NATURAL TA FROM 0.01 TO 20 EV TO BE PUBLISHED IN NSE.

=====

73 TANTALUM 181                    NEUTRON                    TOTAL PHOTON PRODUCTION CROSS SECTION

=====

741111    1.00 EV            16.0 MEV    15.0%                    2    USA    P.O.B. HEMMIG            AEC

Q: GAMMA RAYS BELOW 1 MEV IMPORTANT.  
 M: NEW REQUEST.

STATUS-----STATUS

ORL   MORGAN+ - CNL-TM-3702 (1972), DATA AT 90 AND 120 DEGREES UP TO 20 MEV.  
 ANC   GREENWOOD - DATA AT 2 KEV.  
 LRL   STELTS - DATA TO 100 KEV.

=====

74 TUNGSTEN                    NEUTRON                    DIFFERENTIAL ELASTIC CROSS SECTION

=====

742096    1.00 KEV            15.0 MEV    10.0%                    1    FR    A. MICHAUDON            BRC

Q: FOR CRITICAL ASSEMBLIES.

=====

74 TUNGSTEN                    NEUTRON                    DOUBLE DIFFERENTIAL INELASTIC CROSS SECTION

=====

742097                    15.0 MEV    10.0%                    1    FR    A. MICHAUDON            BRC

Q: FOR CRITICAL ASSEMBLIES.

=====

74 TUNGSTEN                    NEUTRON                    CAPTURE CROSS SECTION

=====

742099    1.00 KEV            3.00 MEV    10.0%                    1    FR    A. MICHAUDON            BRC

Q: FOR CRITICAL ASSEMBLIES.

=====

74 TUNGSTEN                    NEUTRON                    NEUTRON EMISSION CROSS SECTION

=====

661090    4.00 MEV            16.0 MEV    5.0%                    2    USA    C.O.E. CLIFFORD            ORL

Q: SECONDARY ENERGY-ANGLE DISTRIBUTIONS REQUIRED.  
 LOW ENERGY NEUTRONS SHOULD BE INCLUDED.  
 SPECTRA AT A FEW ANGLES MAY SUFFICE.  
 A: ANGULAR RESOLUTION - 10 DEGREES.  
 OUTGOING ENERGY RESOLUTION - 500 KEV.  
 ENERGY RESOLUTION 5 PERCENT.  
 M: SUBSTANTIAL MODIFICATIONS.

STATUS-----STATUS

JUL   QAIM - NP/A 242 317(1974), DATA AT 14.7 MEV FOR ENRICHED ISOTOPES.

=====

74 TUNGSTEN 182                    NEUTRON                    CAPTURE CROSS SECTION

=====

691202    1.00 KEV            10.0 MEV    10.0%                    2    USA    P.O.B. HEMMIG            AEC

Q: FAST BREEDER CONTROL AND BURNUP CALCULATIONS.  
 M: SUBSTANTIAL MODIFICATIONS.

STATUS-----STATUS

ANL   POENITZ - PRELIMINARY DATA.

=====

74 TUNGSTEN 182                    NEUTRON                    N,2N

=====

692208                    15.0 MEV    20.0%                    1    FR    A. MICHAUDON            BRC

Q: PRODUCTION OF W-181 (140 DAY).  
 Q: ACTIVATION DETECTOR.

STATUS-----STATUS

JUL   QAIM - NP/A 242 317(1975), DATA AT 14.7 MEV FOR ENRICHED ISOTOPES.

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=====
74 TUNGSTEN 182          NEUTRON          N,ALPHA
=====

652240    25.3 MV          10.0%    3    HUN    J.CSIKAI      KOS
                O: FOR NEUTRON ACTIVATION ANALYSIS AND CROSS SECTION
                SYSTEMATICS WANTED.

STATUS-----STATUS
JUL    QAIME - NF/A 242 317(1975), DATA AT 14.7 MEV FOR ENRICHED ISOTOPES.
=====
74 TUNGSTEN 183          NEUTRON          CAPTURE CROSS SECTION
=====

691203    1.00 KEV          10.0 MEV    10.0%    2    USA    P.B.HEMMIG    AEC
                O: FAST BREEDER CONTROL AND BURN UP CALCULATIONS.
                M: SUBSTANTIAL MODIFICATIONS.

=====
74 TUNGSTEN 184          NEUTRON          CAPTURE CROSS SECTION
=====

691204    10.0 KEV          10.0 MEV    10.0%    2    USA    P.B.HEMMIG    AEC
                O: FAST BREEDER CONTROL AND BURNUP CALCULATIONS.
                M: SUBSTANTIAL MODIFICATIONS.

692305    1.00 KEV          3.00 MEV    10.0%    1    FR     A.MICHAUDON   BRC
                O: PRODUCTION OF W-185 (74 DAY).
                O: ACTIVATION DETECTOR.

STATUS-----STATUS
ANL    POENITZ - PRELIMINARY DATA.
=====
74 TUNGSTEN 186          NEUTRON          CAPTURE CROSS SECTION
=====

691207    10.0 KEV          10.0 MEV    10.0%    2    USA    P.B.HEMMIG    AEC
                O: FAST BREEDER CONTROL AND BURNUP CALCULATIONS.
                M: SUBSTANTIAL MODIFICATIONS.

692313    1.00 KEV          3.00 MEV    10.0%    1    FR     A.MICHAUDON   BRC
                O: PRODUCTION OF W-187 (24 HOUR).
                O: ACTIVATION DETECTOR.

STATUS-----STATUS
LRL    LINDER+ - UCRL-75838, DATA 120 KEV TO 2.9 MEV.
ANL    POENITZ+ - PRELIMINARY DATA.
=====
74 TUNGSTEN 186          NEUTRON          N,2N
=====

692312          15.0 MEV          20.0%    1    FR     A.MICHAUDON   BRC
                O: PRODUCTION OF W-185 (74 DAY).
                O: ACTIVATION DETECTOR.

STATUS-----STATUS
JUL    QAIME - NF/A 242 317(1974), DATA AT 14.7 MEV FOR ENRICHED ISOTOPES.
=====
76 OSMIUM 186           NEUTRON          CAPTURE CROSS SECTION
=====

701023    1.00 KEV          100. KEV    9.0%    3    USA    R.L.MACKLIN    ORL
                O: NEED AVERAGE CAPTURE FOR A MAXWELLIAN WITH A
                TEMPERATURE OF 30 KEV.
                O: FOR NUCLEOSYNTHESIS STUDIES.

STATUS-----STATUS
ORL    PEREY+ - ORNL-4803 (1974), DATA 4.8 TO 8.5 MEV.
LRL    BROWNE+ - USNDC-11 143(1974), MEASUREMENTS PLANNED FOR LATE 1974.
=====
76 OSMIUM 187           NEUTRON          CAPTURE CROSS SECTION
=====

701024    1.00 KEV          100. KEV    9.0%    3    USA    R.L.MACKLIN    ORL
                O: NEED AVERAGE CAPTURE FOR A MAXWELLIAN WITH A
                TEMPERATURE OF 30 KEV.
                O: FOR NUCLEOSYNTHESIS STUDIES.

STATUS-----STATUS
ORL    PEREY+ - ORNL-4803 (1974), DATA 4.8 TO 8.5 MEV.
LRL    BROWNE+ - USNDC-11 143(1974), MEASUREMENTS PLANNED FOR LATE 1974.
=====
77 IRIDIUM 191          NEUTRON          CAPTURE CROSS SECTION
=====

742051    1.00 KEV          3.00 MEV    15.0%    1    FR     A.MICHAUDON   BRC
                O: FOR ACTIVATION.
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=====
77 IRIDIUM 191          NEUTRON          N,2N
=====
I42050          15.0 MEV      10.0%      1   FR   A.MICHAUDON      BRC
                    O: FOR ACTIVATION.
=====
77 IRIDIUM 193          NEUTRON          CAPTURE CROSS SECTION
=====
I42053          1.00 KEV      3.00 MEV     20.0%      2   FR   A.MICHAUDON      BRC
                    O: FOR ACTIVATION.
=====
77 IRIDIUM 193          NEUTRON          N,2N
=====
I42052          15.0 MEV      10.0%      1   FR   A.MICHAUDON      BRC
                    O: FOR ACTIVATION.
=====
78 PLATINUM          NEUTRON          DIFFERENTIAL ELASTIC CROSS SECTION
=====
I42054          1.00 KEV      15.0 MEV     10.0%      1   FR   A.MICHAUDON      BRC
=====
78 PLATINUM          NEUTRON          DOUBLE DIFFERENTIAL INELASTIC CROSS SECTION
=====
I42055          15.0 MEV      10.0%      1   FR   A.MICHAUDON      BRC
=====
78 PLATINUM          NEUTRON          CAPTURE CROSS SECTION
=====
I42058          1.00 KEV      3.00 MEV     10.0%      1   FR   A.MICHAUDON      BRC
=====
78 PLATINUM          NEUTRON          TOTAL PHOTON PRODUCTION CROSS SECTION
=====
I42056          1.00 KEV      15.0 MEV     20.0%      2   FR   A.MICHAUDON      BRC
=====
78 PLATINUM          NEUTRON          N,2N
=====
I42057          15.0 MEV      10.0%      1   FR   A.MICHAUDON      BRC
=====
78 PLATINUM 190          NEUTRON          N,F
=====
I42059          15.0 MEV      20.0%      2   FR   A.MICHAUDON      BRC
                    O: FOR ACTIVATION.
=====
78 PLATINUM 192          NEUTRON          N,F
=====
I42060          15.0 MEV      20.0%      2   FR   A.MICHAUDON      BRC
                    O: FOR ACTIVATION.
=====
78 PLATINUM 198          NEUTRON          CAPTURE CROSS SECTION
=====
I42061          1.00 KEV      3.00 MEV     20.0%      2   FR   A.MICHAUDON      BRC
                    O: FOR ACTIVATION.
=====
79 GOLD 197          NEUTRON          DIFFERENTIAL ELASTIC CROSS SECTION
=====
I42062          1.00 KEV      15.0 MEV     10.0%      1   FR   A.MICHAUDON      BRC
=====
79 GOLD 197          NEUTRON          DOUBLE DIFFERENTIAL INELASTIC CROSS SECTION
=====
I42063          15.0 MEV      10.0%      1   FR   A.MICHAUDON      BRC
=====
79 GOLD 197          NEUTRON          CAPTURE CROSS SECTION
=====
671082          0.50 EV       1.00 KEV      1.0%       2   USA   N.STEEN           BET
                    Q: INDIVIDUAL AND AVERAGE RESONANCE PARAMETERS
                      REQUIRED.
                    A: ENERGIES ABOVE 0.5 EV WANTED SO AS TO GIVE
                      INFINITE DILUTION RESONANCE INTEGRAL TO
                      1 PERCENT.
                    O: FOR USE AS A STANDARD.
=====
682041          10.0 KEV      3.00 MEV      3.0%       1   BLG   A.FABRY           MOL
                    O: DETECTOR APPLICATIONS.
=====
692317          1.00 KEV      3.00 MEV     10.0%      1   FR   A.MICHAUDON      BRC
                    Q: PRODUCTION OF AU-198 (2.7 DAY).
                    O: ACTIVATION DETECTOR.
=====

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=====

Z21023 10.0 KEV 1.00 MEV 2.0% 2 USA R.S. CASWELL NBS

O: REQUIRED AS PRIMARY STANDARD.

STATUS-----STATUS

RPI BLOCK - USDC-3 164(1972), IN PROGRESS TO 80 KEV.

CAD FORT+ - 72VIENNA 239, ACTIVATION METHOD, PRELIMINARY DATA 115 TO 498 KEV.

CAD LE RIGOLEUR+ - CEA-N-1662(1973), PROMPT CAPTURE GAMMA DETECTION, DATA 75 TO 550 KEV. ANALYSIS OF LOWER-ENERGY DATA IN PROGRESS.

AE HELLSTROM - JNE 27 71(1973), DATA 30 KEV TO 1.5 MEV.

LRL CZIRR+ - NSE 52 299(1973), DATA 167 EV TO 600 KEV.

GEL LISKIEN+ - EANCC(E)-157(1973), PRELIMINARY DATA 200 KEV TO 3 MEV.

ORL MACKLIN+ - PR/C 11 1270(1975), DATA 3 TO 550 KEV.

ANL POENITZ - DATA 400 TO 3500 KEV, TO BE PUBLISHED.

BNL CHRIEN+ - 79WASH, MEASUREMENT AT 24 KEV.

=====

79 GOLD 197 NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION

=====

693042 3 BZL L.O.B. AGHINA IEN

O: GAMMA SPECTRA BETWEEN RESONANCES WANTED.

O: SPECIAL INTEREST ON INTERFERENCE AND DIRECT CAPTURE.

=====

79 GOLD 197 NEUTRON RESONANCE PARAMETERS

=====

693041 2.00 KEV 3 BZL L.O.B. AGHINA IEN

O: SPECIAL INTEREST IN THE RATIO OF S WAVE STRENGTH FUNCTIONS S(J=1)/S(J=2) AND ITS VARIATION AS A FUNCTION OF THE ENERGY INTERVAL.

=====

80 MERCURY 198 NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION

=====

693043 3 BZL L.O.B. AGHINA IEN

O: GAMMA SPECTRA BETWEEN RESONANCES WANTED.

O: SPECIAL INTEREST ON INTERFERENCE AND DIRECT CAPTURE.

=====

80 MERCURY 200 NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION

=====

693044 3 BZL L.O.B. AGHINA IEN

O: GAMMA SPECTRA BETWEEN RESONANCES WANTED.

O: SPECIAL INTEREST ON INTERFERENCE AND DIRECT CAPTURE.

=====

80 MERCURY 201 NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION

=====

693045 3 BZL L.O.B. AGHINA IEN

O: GAMMA SPECTRA BETWEEN RESONANCES WANTED.

O: SPECIAL INTEREST ON INTERFERENCE AND DIRECT CAPTURE.

=====

81 THALLIUM 203 NEUTRON CAPTURE CROSS SECTION

=====

682044 1.00 KEV 3.00 MEV 10.0% 1 FR A. MICHAUDON BRC

O: PRODUCTION OF TL-204 (3 YEAR).

O: ACTIVATION DETECTOR.

=====

81 THALLIUM 203 NEUTRON N,2N

=====

682043 15.0 MEV 10.0% 1 FR A. MICHAUDON BRC

O: PRODUCTION OF TL-202 (12 DAY).

O: ACTIVATION DETECTOR.

=====

81 THALLIUM 204 NEUTRON CAPTURE CROSS SECTION

=====

681002 25.3 MV 10.0% 2 USA G. T. ORTON RL

O: RADIOACTIVE TARGET - 3.8 YEAR.

O: WANTED TO TEST FEASIBILITY OF TL-204 PRODUCTION.

=====

81 THALLIUM 205 NEUTRON CAPTURE CROSS SECTION

=====

682046 1.00 KEV 3.00 MEV 10.0% 1 FR A. MICHAUDON BRC

O: PRODUCTION OF TL-206 (4.2 MINUTE).

O: ACTIVATION DETECTOR.

STATUS-----STATUS

ORL EARLE+ - USDC-11 197(1974), RESONANCE PARAMETERS.

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=====
81 THALLIUM 205          NEUTRON          N,2N
=====
652045      15.0 MEV      10.0%      1      FR      A.MICHAUDON      ERC
                Q: PRODUCTION OF TL-204 (3 YEAR).
                O: ACTIVATION DETECTOR.
=====
82 LEAD                NEUTRON          TOTAL PHOTON PRODUCTION CROSS SECTION
=====
652319      1.00 KEV      16.0 MEV      10.0%      2      FR      C.DEVILLERS      SAC
                Q: GAMMA SPECTRA REQUIRED.
                A: NEUTRON AND GAMMA ENERGY RESOLUTION 500 KEV.
                O: FOR SHIELDING CALCULATION.
                NEW EVALUATION TO BE DONE IF NEW EXPERIMENTAL
                DATA.
=====
82 LEAD                NEUTRON          NEUTRON EMISSION CROSS SECTION
=====
631005      2.00 MEV      16.0 MEV      5.0%      2      USA      C.E.CLIFFORD      ORL
                Q: SECONDARY ENERGY-ANGLE DISTRIBUTIONS REQUIRED.
652318      500. KEV      16.0 MEV      10.0%      2      FR      C.DEVILLERS      SAC
                Q: SECONDARY ENERGY-ANGLE DISTRIBUTIONS REQUIRED.
                ENERGY STEP - 500 KEV(INCIDENT NEUTRONS).
                A: ENERGY RESOLUTION - 250 KEV(EMITTED NEUTRONS)
                O: FOR SHIELDING CALCULATION.
                NEW EVALUATION TO BE DONE IF NEW EXPERIMENTAL
                DATA.
=====
88 RADIUM 226          NEUTRON          CAPTURE CROSS SECTION
=====
752093      0.30 EV      10.0 KEV      10.0%      2      BLG      A.FAERY          MOL
                Q: RESONANCE PARAMETERS ALSO WANTED.
                VALUE OF (N,GAMMA) CAN BE DEDUCED FROM TOTAL
                CROSS SECTION WITH REASONABLE ACCURACY.
                A: 20 PERCENT WOULD BE USEFUL AS A FIRST STEP.
                O: FOR DOSIMETRY OF EPITHERMAL AND FAST FLUX AND FOR
                PRODUCTION OF AC-227.
                TO PROVIDE BASIC INFORMATION.
                M: NEW REQUEST.
=====
89 ACTINIUM 227        NEUTRON          RESONANCE PARAMETERS
=====
652322      20.0 EV      20.0%      2      BLG      A.DE TROYER      UMK
                Q: NEUTRON AND CAPTURE WIDTH NEEDED.
                O: ISOTOPE CONTEMPLATED AS POWER SOURCE FOR
                SATELLITES.
                DATA NEEDED FOR EVALUATION OF BURN-UP DURING
                PRODUCTION BY REACTOR IRRADIATION OF RA-226.
=====
90 THORIUM 232         NEUTRON          TOTAL CROSS SECTION
=====
753001      25.3 MV      20.0 MEV      5.0%      2      IND      G.B.GARG          TRM
                Q: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.
                M: NEW REQUEST.
=====
90 THORIUM 232         NEUTRON          ELASTIC CROSS SECTION
=====
752002      25.3 MV      20.0 MEV      5.0%      2      IND      G.B.GARG          TRM
                Q: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.
                M: NEW REQUEST.
=====
90 THORIUM 232         NEUTRON          DIFFERENTIAL ELASTIC CROSS SECTION
=====
721074      1.00 MEV      5.00 MEV      10.0%      3      USA      C.E.TILL          ANL
STATUS-----STATUS
ANL SMITH+ - WRK IN PROGRESS TO 4.0 MEV.
=====
90 THORIUM 232         NEUTRON          INELASTIC CROSS SECTION
=====
753003      20.0 MEV      5.0%      2      IND      G.B.GARG          TRM
                Q: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.
                M: NEW REQUEST.
=====
90 THORIUM 232         NEUTRON          ENERGY DIFFERENTIAL INELASTIC CROSS SECTION
=====
652325      10.0 MEV      10.0%      3      GER      H.GERWIN          JUL
721075      1.00 MEV      4.00 MEV      5.0%      3      USA      C.E.TILL          ANL
                A: IF ANISOTROPIC, NEED 20 PERCENT ACCURACY IN
                (1-CDS).
                INCIDENT AND EXIT ENERGY RESOLUTION 20 PERCENT.
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STATUS-----STATUS

FEI ZHURAVLEV+ - 71 KIEV, DATA AT 9.2 MEV.  
 FOA HOLMBERG+ - NP/A 127 149(1969), DATA 1 TO 2.2 MEV.  
 SUN MC MURRY+ - INCC(SAF)-4 5(1972), IN PROGRESS.  
 ANL SMITH+ - WORK IN PROGRESS TO 4.0 MEV.

90 THORIUM 232 NEUTRON CAPTURE CROSS SECTION

621034	1.00 MV	5.00 KEV		1	USA	N. STEEN	BET	
								Q: CAPTURE SHAPE IMPORTANT IN KEV RANGE A: ACCURACY REQUIRED - BELOW 2 EV, 2 PERCENT ABOVE 2 EV, 5 PERCENT NEED LESS THAN 5 PERCENT IN RESONANCE INTEGRAL BUT 10 PERCENT IS USEFUL. O: FOR THERMAL BREEDER CALCULATIONS. M: SUBSTANTIAL MODIFICATIONS.
692329	1.00 KEV	1.00 MEV	3.0%	3	UK	C. G. CAMPBELL	WIN	O: FOR FAST REACTORS.
692330	4.00 KEV	10.0 MEV		1	GER	H. GERWIN	JUL	A: ACCURACY 5 PERCENT TO 2 MEV AND 10 PERCENT ABOVE.
732090	25.3 MV		2.0%	3	FR	H. TELLIER	SAC	
741204	10.0 KEV	15.0 MEV	3.0%	1	USA	W. DAVEY	LAS	O: NEEDED FOR ASSESSMENT OF U-233/THORIUM REACTOR POTENTIAL. M: NEW REQUEST.
753004	25.3 MV	20.0 MEV	5.0%	2	IND	G. B. GARG	TRM	O: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES. M: NEW REQUEST.

STATUS-----STATUS

FEI CHELNOKOV+ - YF1-13 6(1972), DATA 200 EV TO 35 KEV.  
 CCP STAVISKY+ - AE 31 107(1970), RELATIVE TO AU.  
 COL RAHN+ - PR/C 6 1654(1972).  
 LRL LINDNER+ - LCRL-75838, DATA 0.12 TO 2.9 MEV.  
 ORL HALPERIN. - DATA 20 TO 120 EV.  
 ORL HALPERIN. - WORK IN PROGRESS 2.5 TO 500 KEV.

90 THORIUM 232 NEUTRON N=2N

671003		10.0 MEV	10.0%	1	USA	E. HUTCHINS	GEB	O: NEEDED FOR CONTROL OF U-232 PRODUCTION.
692326		10.0 MEV	20.0%	3	GER	H. GERWIN	JUL	O: SECONDARY ENERGY DISTRIBUTION REQUIRED.

90 THORIUM 232 NEUTRON FISSION CROSS SECTION

692328	25.3 MV	10.0 MEV	5.0%	2	GER	H. GERWIN	JUL	O: SPECTRUM INDEX.
732091	100. KEV	10.0 MEV	10.0%	3	FR	H. TELLIER	SAC	
741205		15.0 MEV	3.0%	2	USA	W. DAVEY	LAS	O: RATIO TO U-235 FISSION PREFERRED. O: NEEDED FOR ASSESSMENT OF U-233/THORIUM REACTOR POTENTIAL. M: NEW REQUEST.
742135	1.50 MEV	7.20 MEV	5.0%	2	EUR	NEUTRON DOSIMETRY GROUP		GEL O: FOR NEUTRON DOSIMETRY USING SPECTRUM UNFOLDING METHODS. GREATER THAN 10 PERCENT DISCREPANCY BETWEEN INTEGRAL AND DIFFERENTIAL MEASUREMENTS.
753005	25.3 MV	20.0 MEV	5.0%	2	IND	G. B. GARG	TRM	O: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES. M: NEW REQUEST.

STATUS-----STATUS

SOR BEN-DAVID - IAEA-107 57 (1968), REVIEW TO 14 MEV.  
 IAE BAK+ - KNS 3 77 (1971), EVALUATION.  
 NDC SCHETT+ - EANDC-95 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.

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90 THORIUM 232	NEUTRON	RESONANCE PARAMETERS						
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652322                    4.00 KEV    10.0%    1    GER    H.GERWIN            JUL  
 Q: RADIATION WIDTH NEEDED.

712053    10.0 EV    10.0 KEV    5.0%    3    FR    J.O.Y.EARRE        CAD  
 O: FOR FAST REACTOR CALCULATIONS.

-----STATUS-----STATUS

COL    RAHN+ - CGC-2176 4 (1972).  
 SAC    RIBON+ - 71 KNOXVILLE 438, EVALUATION.

=====

90 THORIUM 233	NEUTRON	TOTAL CROSS SECTION						
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753006    25.3 MV    20.0 MEV    5.0%    2    INC    G.B.GARG            TRM  
 O: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.  
 M: NEW REQUEST.

=====

90 THORIUM 233	NEUTRON	ELASTIC CROSS SECTION						
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753007    25.3 MV    20.0 MEV    5.0%    2    INC    G.B.GARG            TRM  
 O: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.  
 M: NEW REQUEST.

=====

90 THORIUM 233	NEUTRON	INELASTIC CROSS SECTION						
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=====

753008                    20.0 MEV    5.0%    2    INC    G.B.GARG            TRM  
 O: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.  
 M: NEW REQUEST.

=====

90 THORIUM 233	NEUTRON	CAPTURE CROSS SECTION						
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=====

753009    25.3 MV    20.0 MEV    5.0%    2    INC    G.B.GARG            TRM  
 O: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.  
 M: NEW REQUEST.

=====

90 THORIUM 233	NEUTRON	FISSION CROSS SECTION						
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=====

753010    25.3 MV    20.0 MEV    5.0%    2    INC    G.B.GARG            TRM  
 O: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.  
 M: NEW REQUEST.

=====

91 PROTACTINIUM 231	NEUTRON	CAPTURE CROSS SECTION						
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=====

651215    25.3 MV    10.0 MEV    10.0%    2    USA    B.HUTCHINS        GEB  
 O: NEEDED FOR CONTROL OF U-232 PRODUCTION.

=====

91 PROTACTINIUM 233	NEUTRON	TOTAL CROSS SECTION						
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=====

753011    25.3 MV    20.0 MEV    5.0%    2    INC    G.B.GARG            TRM  
 O: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.  
 M: NEW REQUEST.

=====

91 PROTACTINIUM 233	NEUTRON	ELASTIC CROSS SECTION						
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753012    25.3 MV    20.0 MEV    5.0%    2    INC    G.B.GARG            TRM  
 O: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.  
 M: NEW REQUEST.

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91 PROTACTINIUM 233	NEUTRON	INELASTIC CROSS SECTION						
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753013                    20.0 MEV    5.0%    2    INC    G.B.GARG            TRM  
 O: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.  
 M: NEW REQUEST.

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91 PROTACTINIUM 233	NEUTRON	ABSORPTION CROSS SECTION						
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652333    25.3 MV    500. EV    5.0%    1    GER    MAERKL            SRE

652482    25.3 MV    500. EV    5.0%    3    NED    M.O.E.A.C.HERMANS    VDN

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91 PROTACTINIUM 233	NEUTRON	CAPTURE CROSS SECTION						
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671085    1.00 MV    1.00 KEV               2    USA    R.O.H.DAHLBERG        GA  
 A: ACCURACY 5 PERCENT BELOW 2 EV, 10 PERCENT ABOVE.  
 O: DESIGN OF THORIUM CYCLE REACTORS.

91 PROTACTINIUM 233 NEUTRON CAPTURE CROSS SECTION (CONTINUED)

691221 1.00 MV 100.0 EV 10.0% 2 USA A.M.PERRY ORL  
O: THORIUM CYCLE DESIGNS.

753019 25.3 MV 20.0 MEV 5.0% 2 INC G.B.GARG TRM  
O: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.  
M: NEW REQUEST.

STATUS-----STATUS

BET CGNNER - WAPD-TM-837 (1970), THERMAL VALUE.

91 PROTACTINIUM 233 NEUTRON FISSION CROSS SECTION

753018 25.3 MV 20.0 MEV 5.0% 2 INC G.B.GARG TRM  
O: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.  
M: NEW REQUEST.

91 PROTACTINIUM 233 NEUTRON RESONANCE PARAMETERS

692332 100.0 EV 10.0% 3 NEC M.E.C.A. HERMANS VON  
O: NEUTRON AND CAPTURE WIDTH NEEDED.

91 PROTACTINIUM 233 NEUTRON ABSORPTION RESONANCE INTEGRAL

692334 0.50 EV 10.0% 1 GER MAERKL SRE

STATUS-----STATUS

BET CGNNER - WAPD-TM-837 (1970).

91 PROTACTINIUM 234 NEUTRON TOTAL CROSS SECTION

753016 25.3 MV 20.0 MEV 5.0% 2 INC G.B.GARG TRM  
O: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.  
M: NEW REQUEST.

91 PROTACTINIUM 234 NEUTRON ELASTIC CROSS SECTION

753017 25.3 MV 20.0 MEV 5.0% 2 IND G.B.GARG TRM  
O: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.  
M: NEW REQUEST.

91 PROTACTINIUM 234 NEUTRON INELASTIC CROSS SECTION

753018 20.0 MEV 5.0% 2 IND G.B.GARG TRM  
O: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.  
M: NEW REQUEST.

91 PROTACTINIUM 234 NEUTRON CAPTURE CROSS SECTION

753019 25.3 MV 20.0 MEV 5.0% 2 INC G.B.GARG TRM  
O: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.  
M: NEW REQUEST.

91 PROTACTINIUM 234 NEUTRON FISSION CROSS SECTION

753020 25.3 MV 20.0 MEV 5.0% 2 IND G.B.GARG TRM  
O: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.  
M: NEW REQUEST.

92 URANIUM 232 NEUTRON CAPTURE CROSS SECTION

741134 500.0 EV 10.0 MEV 2 USA R.H.C. DAHLBERG GA  
A: ACCURACY REQUIRED - 2 TO 10 PERCENT.  
O: FOR FAST REACTOR BLANKETS.  
M: NEW REQUEST.

92 URANIUM 233 NEUTRON HALF LIFE

741115 0.5% 1 USA N.C. STEEN BET  
O: TO RESOLVE DISCREPANCIES.  
M: NEW REQUEST.

92 URANIUM 233 NEUTRON TOTAL CROSS SECTION

753021 25.3 MV 20.0 MEV 5.0% 2 INC G.B.GARG TRM  
O: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.  
M: NEW REQUEST.



92 URANIUM 233	NEUTRON	N,2N				
692341	15.0 MEV	10.0%	1	FR	A. MICHAUDON	BRC
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92 URANIUM 233	NEUTRON	FISSION CROSS SECTION				
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621035	1.00 MV	1.00 KEV		1	USA	N. STEEN BET
						Q: SHAPE IMPORTANT AT LOW ENERGIES. A: ACCURACY REQUIRED - 0.5 TO 1 PERCENT. WANT ETA TO 0.25 PERCENT BELOW 1 EV. M: SUBSTANTIAL MODIFICATIONS.
621036	1.00 MV	1.00 KEV	10.0%	1	USA	R. H. CAHLBERG GA A. M. PERRY ORL
						Q: SHAPE IMPORTANT AT LOW ENERGIES. A: WANT ETA TO 0.25 PERCENT BELOW 1 EV. WANT INTEGRAL ETA TO 1 PERCENT BELOW 1 KEV. M: SUBSTANTIAL MODIFICATIONS.
621037	1.00 KEV	30.0 KEV	5.0%	3	USA	C. E. TILL ANL R. H. CAHLBERG GA P. B. HEMMIG AEC A. M. PERRY ORL
						A: WANT 2 PERCENT IN ETA AND INTEGRAL DATA.
671089	10.0 KEV	15.0 MEV	1.0%	1	USA	G. E. HANSEN LAS
						Q: RATIO WANTED RELATIVE TO U-235.
691226	1.00 KEV	10.0 MEV	1.0%	2	USA	P. B. HEMMIG AEC
						Q: RATIO WANTED RELATIVE TO U-235. A: CALIBRATION IN ENERGY 1 PERCENT. RESOLUTION 3 PERCENT. ACCURACY OF 2 TO 3 PERCENT WOULD BE USEFUL.
692342	25.3 MV	50.0 EV	2.0%	2	GER	H. GERWIN JUL
692343	50.0 EV	10.0 MEV		2	GER	H. GERWIN JUL
						A: ACCURACY REQUIRED TO BETTER THAN 10.0 PERCENT. Q: SPECTRUM INDEX.
692344	100. EV	15.0 MEV	5.0%	3	FR	J. Y. BARRE CAD
						A: THIS ACCURACY CONCERNS THE FISSION RATIO U-233 U-235. ACCURACY OF 2 PERCENT NEEDED BETWEEN 10 KEV AND 1 MEV.
732092		10.0 KEV	3.0%	3	FR	H. TELLIER SAC
741207	10.0 KEV	15.0 MEV	3.0%	1	USA	W. DAVEY LAS
						Q: RATIO TO U-235 FISSION PREFERRED. A: ACCURACY OF 1.5 PERCENT NEEDED WITH PRIORITY 2. Q: NEEDED FOR ASSESSMENT OF U-233/THORIUM REACTOR POTENTIAL. M: NEW REQUEST.
753025	25.3 MV	20.0 MEV	5.0%	2	IND	G. B. GARG TRM
						Q: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES. M: NEW REQUEST.

STATUS-----STATUS

SAC BLGNS - NSE 51 130(1973), DATA 8 EV TO 30 KEV.  
 GEL DERUYTTER+ - EANDC(E)-150 (1972), DATA IN THERMAL RANGE RELATIVE TO B-10(N,A).  
 ORL WESTON+ - NSE 42 143(1970), DATA THERMAL TO 1 EV.  
 KFK KAEPPELER+ - KFK-1240 (1970), DATA 5 KEV TO 1 MEV.  
 LRL BEHRENS+ - LSND-11 136(1974), DATA AVAILABLE, REPORT IN PROGRESS.  
 ANL MEADOWS - NSE 54 317(1974), DATA 0.1 TO 7.5 MEV.

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92 URANIUM 233	NEUTRON	CAPTURE TO FISSION RATIO (ALPHA)				
621041	5.00 MV	15.0 MEV		1	USA	N. STEEN BET
						Q: CAPTURE CROSS SECTION EQUALLY USEFUL. INTEGRAL EXPERIMENTS NEEDED TO RESOLVE DISCREPANCIES. A: ACCURACY REQUIRED - 2 TO 8 PERCENT BELOW 0.5 EV, 3 PERCENT ABOVE 0.5 EV (AT PRIORITY 2). WANT ETA TO 0.25 PERCENT BELOW 3 EV (1 PERCENT USEFUL BELOW 1 EV), 1 PERCENT FROM 30 EV TO 1 KEV (5 PERCENT USEFUL) AND 2 PERCENT FROM 1 KEV TO 30 KEV. Q: EXPERIMENTAL UNCERTAINTIES NEED VERIFICATION. M: SUBSTANTIAL MODIFICATIONS.
621042	1.00 MV	30.0 MEV			USA	R. H. CAHLBERG GA A. M. PERRY ORL
						Q: CAPTURE CROSS SECTION EQUALLY USEFUL. A: PRIORITY ENERGY RANGE ACCURACY 1 1 MV TO 1 KEV 2 TO 8 PERCENT 2 1 KEV TO 3 MEV 10 TO 20 PERCENT WANT ETA TO 0.25 PERCENT BELOW 3 EV (1 PERCENT USEFUL BELOW 1 EV), 1 PERCENT FROM 30 EV TO 1 KEV (5 PERCENT USEFUL) AND 2 PERCENT FROM 1 KEV TO 30 KEV. M: NEW REQUEST.

92 URANIUM 233 NEUTRON CAPTURE TO FISSION RATIO (ALPHA) (CONTINUED)

621043 1.00 KEV 3.00 MEV 2 USA CoEoTILL ANL  
 PoBoHEMMIG AEC  
 Q: CAPTURE CROSS SECTION EQUALLY USEFUL.  
 A: ACCURACY REQUIRED - 10 TO 20 PERCENT.  
 WANT ETA TO 2 PERCENT FROM 1 TO 30 EV.

622346 1.00 KEV 100. KEV 5.0% 3 UK CoGoCAMPBELL WIN  
 Q: FOR FAST REACTORS.

92 URANIUM 233 NEUTRON NEUTRONS EMITTED PER NEUTRON ABSORPTION (ETA)

622346 10.0 MV 0.20 EV 0.5% 2 UK JoGcTYROR WIN  
 Q: VALUE RELATIVE TO 25.3 MV ETA WANTED.  
 A: ACCURACY IS FOR AVERAGE VALUES IN 0.02 EV STEPS.  
 Q: FOR THERMAL REACTORS.

741113 1.00 MV 1.00 EV 0.4% 2 USA NoSTEEN BET  
 Q: THERMAL VALUE AND SHAPE NEEDED.  
 Q: TO VERIFY FEW EXISTING RESULTS.  
 M: NEW REQUEST.

741114 5.0% 2 USA NoSTEEN BET  
 Q: U-233 FISSION SPECTRUM AVERAGE VALUE NEEDED.  
 Q: FOR ANALYSIS OF TARGET FAST MULTIPLICATION.  
 M: NEW REQUEST.

STATUS-----STATUS

KAP REYNOLDS+ - KAFI-M-7323, CAREFUL REICH-MODRE ANALYSIS.

92 URANIUM 233 NEUTRON NEUTRONS EMITTED PER FISSION (NU BAR)

651229 10.0 KEV 1.50 MEV 2 USA NoSTEEN BET  
 A: ACCURACY REQUIRED - 1 TO 3 PERCENT.  
 Q: TO LOOK FOR STRUCTURE BELOW 1 MEV.  
 M: SUBSTANTIAL MODIFICATIONS.

651230 30.0 KEV 3.00 MEV 2 USA RoH:DAHLBERG GA  
 AoMcPERRY ORL  
 A: ACCURACY REQUIRED - 1 TO 3 PERCENT.  
 Q: TO LOOK FOR STRUCTURE BELOW 1 MEV.  
 M: NEW REQUEST.

651443 1.00 MV 30.0 KEV 1 USA NoSTEEN BET  
 RoHoDAHLBERG GA  
 AoMcPERRY ORL  
 A: REQUIRE 0.25 PERCENT ACCURACY TO 30 EV, 1 PERCENT  
 FROM 30 EV TO 1 KEV, AND 2 PERCENT ABOVE.  
 INTERMEDIATE ACCURACY OF 1.5 PERCENT USEFUL.  
 M: SUBSTANTIAL MODIFICATIONS.

692486 30.0 KEV 10.0 MEV 1.0% 2 GER HoGERWIN JUL

741208 50.0 KEV 5.00 MEV 0.5% 1 USA WoDAVEY LAS  
 Q: NEEDED TO CHECK POSSIBLE STRUCTURE (DIP) IN FEW  
 100-KEV REGION.  
 NEEDED FOR ASSESSMENT OF U-233/THORIUM REACTOR  
 POTENTIAL.  
 M: NEW REQUEST.

STATUS-----STATUS

IAE MANERO+ - REA 10 637(1972), REVIEW.

RPI REED+ - USNDC-7 202(1973), IN PROGRESS THERMAL TO 100 EV.

FOA CONDE - MORE WRK REQUIRED CN CF-252 NU STANDARD AND ENERGY DEPENDENCE TO GET 0.25 PERCENT  
 ACCURACY.  
 MORE WORK REQUIRED IN 30 EV TO 1 KEV RANGE TO REACH 1 PERCENT ACCURACY,  
 BELOW 4 MEV MORE WORK REQUIRED FOR BETTER THAN 2 PERCENT ACCURACY.  
 NO DATA AVAILAELE BETWEEN 4.5 AND 14 MEV.

92 URANIUM 233 NEUTRON DELAYED NEUTRONS EMITTED PER FISSION

741116 25.3 MV 5.0% 1 USA NoSTEEN BET  
 Q: TO RESOLVE DISCREPANCIES.  
 M: NEW REQUEST.

STATUS-----STATUS

AI TUTTLE. - NSE 66 37(1975), REVIEW WITH RECOMMENDED VALUES.

92 URANIUM 233 NEUTRON FISSION PRODUCT MASS YIELD SPECTRUM

671055 25.3 MV 3.0% 2 USA NoSTEEN BET  
 Q: CUMULATIVE AND DIRECT YIELD OF XE-135 INCLUDING  
 15 MINUTE ISOMER REQUIRED.  
 Q: FOR CALCULATION OF FISSION PRODUCT POISONS.

671056 25.3 MV 1.0% 2 USA NoSTEEN BET  
 Q: YIELD OF CS-137 WANTED.  
 Q: FOR BURN UP INDICATOR STANDARD.

671097 25.3 MV 3.0% 2 USA NoSTEEN BET  
 O: YIELD OF ND-147 AND SM-149 WANTED.  
 O: FOR CALCULATION OF FISSION PRODUCT POISONS.

711801 25.3 MV 1.0% 2 CAN W.H.WALKER CRC  
 O: YIELD OF XE-135 WANTED.  
 O: FOR CALCULATION OF FISSION PRODUCT ABSORPTION.

-----STATUS-----

ANL GLENDENIN+ - WORK IN PROGRESS.  
 IIT REED+ - DATA AVAILABLE.

92 URANIUM 233 NEUTRON RESONANCE PARAMETERS

671195 25.3 MV 5.00 KEV 2 USA CoE.TILL ANL  
 PoBcHEMMIG AEC  
 O: MULTILEVEL PARAMETERS AND STATISTICAL  
 DISTRIBUTIONS WANTED IN EV RANGE.  
 A: ACCURACY 10 PERCENT WANTED TO 100 EV, 30 PERCENT  
 ABOVE.  
 O: FOR THERMAL BREEDER CALCULATIONS.

712059 200. EV 10.0 KEV 5.0% 3 FR JoYcBARRE CAD  
 O: FOR FAST REACTOR CALCULATIONS.

-----STATUS-----

COL RAHN+ - USNCC-1 70(1972), PARAMETERS FOR 38 RESONANCES.  
 SAC BLONS+ - EANDC(E)-150, ANALYSIS IN PROGRESS.  
 LAS KEYWORTH+ - NCSAC-42 153(1971), EXPERIMENT IN PROGRESS.

92 URANIUM 234 NEUTRON TOTAL CROSS SECTION

753026 25.3 MV 20.0 MEV 5.0% 2 INC GoBoGARG TRM  
 O: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.  
 M: NEW REQUEST.

92 URANIUM 234 NEUTRON ELASTIC CROSS SECTION

753027 25.3 MV 20.0 MEV 5.0% 2 INC GoBoGARG TRM  
 O: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.  
 M: NEW REQUEST.

92 URANIUM 234 NEUTRON INELASTIC CROSS SECTION

753028 20.0 MEV 5.0% 2 INC GoBoGARG TRM  
 O: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.  
 M: NEW REQUEST.

92 URANIUM 234 NEUTRON CAPTURE CROSS SECTION

691400 1.00 MV 10.0 MEV 2 USA CoE.TILL ANL  
 A: ACCURACY 3 PERCENT BELOW 2 EV, 6 PERCENT BELOW 10  
 KEV, 10 PERCENT ABOVE 10 KEV.

692356 1.00 EV 10.0 MEV 15.0% 2 GER HoGERWIN JUL

732094 10.0 KEV 5.0% 3 FR HoTELLIER SAC

753029 25.3 MV 20.0 MEV 5.0% 2 IND GoBoGARG TRM  
 O: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.  
 M: NEW REQUEST.

-----STATUS-----

ORL KASTEN - REA 8 473(1970), REVIEW.  
 RPI BLOCK+ - MEASUREMENTS PLANNED.

92 URANIUM 234 NEUTRON N, 2N

682050 15.0 MEV 10.0% 1 FR AoMICHAUDON BRC

92 URANIUM 234 NEUTRON N, 3N

682051 15.0 MEV 15.0% 1 FR AoMICHAUDON BRC

92 URANIUM 234 NEUTRON FISSION CROSS SECTION

692352 4.00 MEV 10.0 MEV 15.0% 2 GER HoGERWIN JUL  
 O: SPECTRUM INDEX.



753030 25.3 MV 20.0 MEV 5.0% 2 IND G. B. GARG TRM  
 O: REQUIRED FOR THORIUM FUEL-CYCLE STUDIES.  
 M: NEW REQUEST.

STATUS-----STATUS  
 HAR JAMES+ - AERE-FR/NP19 (1972), DATA 180 KEV TO 6.0 MEV.

92 URANIUM 235 DISCRETE LEVEL STRUCTURE (ENERGY, SPIN, PARITY)

652379 2 GER F. W. W. KFK  
 O: ENERGY, SPIN AND PARITY WANTED FOR LEVELS BELOW 1.0 MEV.

STATUS-----STATUS  
 LAS RICKEY+ - FR/C 5 2072(1972).

92 URANIUM 235 NEUTRON ELASTIC CROSS SECTION

692360 10.0% 3 UK J. G. TYROR WIN  
 O: THERMAL AVERAGE INCIDENT ENERGY.  
 O: FOR LONG TERM IMPROVEMENT OF THE ABSORPTION CROSS SECTION.

792067 1.00 KEV 15.0 MEV 10.0% 1 FR A. MICHAUDON BRC  
 O: FOR CRITICAL ASSEMBLIES.

92 URANIUM 235 NEUTRON DIFFERENTIAL ELASTIC CROSS SECTION

651237 1.00 MEV 5.00 MEV 20.0% 2 USA C. E. TILL ANL  
 P. B. HEMMIG AEC  
 A: ENERGY RESOLUTION AT LEAST 0.5 MEV.  
 O: NEEDED FOR ANALYZING FAST CRITICAL EXPERIMENTS.

792068 1.00 KEV 15.0 MEV 10.0% 1 FR A. MICHAUDON BRC  
 O: FOR CRITICAL ASSEMBLIES.

STATUS-----STATUS  
 GEL KNITTER+ - ZP 257 108(1972), DATA 1.6 TO 5.5 MEV.

ANL GUENTHER+ - USNDC-11 25(1974), EXPERIMENTAL AND THEORETICAL WORK IN PROGRESS TO 4 MEV.

92 URANIUM 235 NEUTRON INELASTIC CROSS SECTION

692363 15.0 MEV 10.0% 2 SWC H. HAEGGBLOM AE  
 O: FAST CRITICAL SYSTEMS.

792070 15.0 MEV 10.0% 2 FR A. MICHAUDON BRC  
 O: FOR CRITICAL ASSEMBLIES.

759029 800. KEV 5.00 MEV 1 CCP L. S. USACHEV FEI  
 A: FROM 0.8 - 1.4 MEV ACCURACY 15 PERCENT.  
 PRIORITY 2 ACCURACY 15 PERCENT.  
 FROM 1.4 - 2.5 MEV ACCURACY 17 PERCENT.  
 PRIORITY 2 ACCURACY 17 PERCENT.  
 FROM 2.5 - 5.0 MEV ACCURACY 30 PERCENT.  
 PRIORITY 2 ACCURACY 30 PERCENT.  
 O: NEED FOR FAST REACTOR CALCULATION.  
 FOR MORE DETAIL SEE INTRODUCTION.  
 M: NEW REQUEST.

92 URANIUM 235 NEUTRON ENERGY DIFFERENTIAL INELASTIC CROSS SECTION

692369 15.0 MEV 20.0% 2 GER F. W. W. KFK  
 A: ACCURACY OF 10 PERCENT REQUIRED BELOW 1.5 MEV.  
 RESOLUTION FOR INCIDENT AND EXIT NEUTRON ENERGIES 100 KEV.  
 O: FAST REACTOR CALCULATIONS.

719006 15.0 MEV 2 CCP M. N. NIKOLAEV FEI  
 O: CROSS SECTION FOR INELASTIC REMOVAL BELOW FISSION THRESHOLDS OF U-238 (7 PERCENT ACCURACY) AND OF PU-240 OR NP-237 (10 PERCENT ACCURACY) WANTED. EXCITATION CROSS SECTION FOR LOW LYING LEVELS REQUESTED WITH 15 PERCENT ACCURACY. TEMPERATURES OF THE INELASTIC SCATTERING SPECTRA AS WELL AS DIRECT AND PRE-EQUILIBRIUM MECHANISM CONTRIBUTIONS IN THE CONTINUUM ARE OF INTEREST.  
 O: SEE GENERAL COMMENTS IN THE INTRODUCTION.

721076 50.0 KEV 6.00 MEV 10.0% 2 USA C. E. TILL ANL  
 P. B. HEMMIG AEC  
 O: LOW ENERGY NEUTRONS MUST BE INCLUDED.  
 ABSOLUTE SPECTRA AT 30 AND 75 DEGREES MAY SUFFICE.  
 A: INCIDENT AND EXIT ENERGY RESOLUTIONS 10. PERCENT.

STATUS-----STATUS

GEL KNITTER+ - ZP 257 108(1972), DATA 1.5 TO 2.3 MEV.  
 LRL KAMMERDIENER - UCRL-51232 (1972), DATA AT 14 MEV.  
 ALD BATCHELOR+ - AURE/O-55/69, DATA 2 TO 4 MEV.  
 ANL GUENTHER+ - USNDC-11 25(1974), EXPERIMENTAL AND THEORETICAL WORK IN PROGRESS TO 4 MEV.

92 URANIUM 235 NEUTRON DOUBLE DIFFERENTIAL INELASTIC CROSS SECTION

652052 13.0 KEV 10.0 MEV 10.0% 1 JAP H.MATSUNOBU SAE  
 Q: CROSS SECTIONS FOR EXCITATION OF INDIVIDUAL LEVELS  
 ALSO WANTED.  
 A: ENERGY RESOLUTION 1 TO 2 PERCENT DESIRED.  
 O: FOR FAST REACTORS.  
 FOR EVALUATION OF NUCLEAR DATA.  
 NO EXPERIMENTAL DATA ABOVE 7.5 MEV.  
 M: SUBSTANTIAL MODIFICATIONS.

653052 30.0 KEV 10.0 MEV 10.0% 1 BAN M.M.ISLAM RAM  
 O: FOR FAST REACTORS.

742071 15.0 MEV 20.0% 2 FR A.MICHAUDON BRC  
 O: FOR CRITICAL ASSEMBLIES.

92 URANIUM 235 NEUTRON TOTAL SCATTERING CROSS SECTION

752026 1.00 KEV 10.0 MEV 2.0% 1 JAP H.MATSUNOBU SAE  
 A: ENERGY RESOLUTION - 1 TO 2 PERCENT.  
 O: EVALUATION OF U-235 NUCLEAR DATA AND FOR REACTOR  
 DESIGN CALCULATIONS.  
 THE EXPERIMENTAL DATA ARE VERY POOR.  
 NO EXPERIMENTAL DATA FROM 5.5 MEV TO 10 MEV.  
 M: NEW REQUEST.

92 URANIUM 235 NEUTRON DIFFERENTIAL TOTAL SCATTERING CROSS SECTION

752027 1.00 KEV 10.0 MEV 1 JAP H.MATSUNOBU SAE  
 A: ACCURACY REQUIRED - 2 TO 5 PERCENT.  
 ENERGY RESOLUTION - 1 TO 2 PERCENT.  
 O: EVALUATION OF U-235 NUCLEAR DATA AND FOR REACTOR  
 DESIGN CALCULATIONS.  
 THE EXPERIMENTAL DATA ARE VERY POOR.  
 NO EXPERIMENTAL DATA FROM 5.5 MEV TO 10 MEV.  
 M: NEW REQUEST.

92 URANIUM 235 NEUTRON NON-ELASTIC CROSS SECTION

652361 15.0 MEV 2 GER F.WELLER KFK  
 A: ACCURACY 10 PERCENT REQUIRED TO 1.5 MEV AND 20  
 PERCENT ABOVE.  
 ENERGY RESOLUTION ABOUT 100 KEV.

653051 10.0 KEV 10.0 MEV 10.0% 2 BAN M.M.ISLAM RAM  
 O: FOR FAST REACTORS.

92 URANIUM 235 NEUTRON CAPTURE CROSS SECTION

682255 1.00 KEV 10.0 MEV 1 JAP S.KATSURAGI JAE  
 H.MATSUNOBU SAE  
 Q: ALPHA ALSO WANTED.  
 A: REQUIRED ACCURACY - 5 TO 10 PERCENT.  
 RESOLUTION - 1 TO 2 PERCENT.  
 O: FOR FAST REACTORS.  
 NUCLEAR DATA EVALUATION.  
 NO EXPERIMENTAL DATA ABOVE 2.6 MEV.  
 M: SUBSTANTIAL MODIFICATIONS.

69237B 10.0 KEV 10.0 MEV 2 GER H.GERWIN JUL  
 A: ACCURACY TO OBTAIN 1 PERCENT IN ALPHA.  
 O: ANALYSIS OF CRITICAL EXPERIMENTS.

653060 25.3 MV 30.0 KEV 3.0% 2 BAN M.M.ISLAM RAM  
 O: FOR FAST REACTORS.

741117 1.00 MV 1.00 EV 1.0% 1 USA N.STEEN BET  
 Q: SHAPE ESPECIALLY IMPORTANT AT LOW ENERGY.  
 M: NEW REQUEST.

742005 20.0 EV 50.0 KEV 3.0% 2 SWD H.HAEGGBLOM AE  
 O: FAST REACTOR CALCULATIONS.

742078 3.00 MEV 5.0% 1 FR A.MICHAUDON BRC  
 O: FOR CRITICAL ASSEMBLIES.

754007 5.00 KEV 10.0 MEV 1 CCF L<sub>0</sub>N<sub>0</sub>USACHEV FEI  
 A: FROM 0.5 - 100 KEV ACCURACY 4.5 PERCENT,  
 PRIORITY 2 ACCURACY 3.7 PERCENT.  
 FROM 0.1 - 0.8 MEV ACCURACY 10 PERCENT,  
 PRIORITY 2 ACCURACY 10 PERCENT.  
 FROM 0.8 - 4.5 MEV ACCURACY 50 PERCENT,  
 PRIORITY 2 ACCURACY 50 PERCENT.  
 ABOVE 4.5 MEV REQUIREMENTS 2 TIMES WEAKER.  
 O: NEED FOR FAST REACTOR CALCULATIONS.  
 FOR MORE DETAIL SEE INTRODUCTION.  
 M: NEW REQUEST.

-----STATUS-----

ORL PEREZ+ - LSND-1 145(1972), DATA 8. EV TO 10 KEV.  
 ORL DE SAUSSURE+ - PR/C 7 2018(1973), ANALYSIS TO 60 EV.

92 URANIUM 235 NEUTRON CAPTURE GAMMA RAY SPECTRUM

671103 25.3 MV 15.0 EV 10.0% 2 USA N<sub>0</sub>STEEN BET  
 671104 25.3 MV 20.0% 2 USA R<sub>0</sub>EHRLICH KAP

-----STATUS-----

ATI FLECK+ - AKE 21 136(1973).  
 GEL CORVI+ - NP/A 203 145(1973), DATA FOR 14 RESONANCES.  
 NYU GRAVES - DA/B 32 4793(1972), EPITHERMAL NEUTRONS.

92 URANIUM 235 NEUTRON PHOTON PRODUCTION CROSS SECTION IN INELASTIC SCAT.

693053 300. KEV 4.00 MEV 10.0% 1 BAN M<sub>0</sub>M<sub>0</sub>ISLAM RAM

Q: SECONDARY ENERGY-ANGLE DISTRIBUTIONS REQUIRED.  
 O: FOR FAST REACTORS.

92 URANIUM 235 NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION

692262 120. KEV 20.0% 3 UK C<sub>0</sub>G<sub>0</sub>CAMPBELL WIN  
 A<sub>0</sub>WHITTAKER UKW

Q: GAMMA SPECTRUM WANTED.  
 A: LOW RESOLUTION ADEQUATE FOR INCIDENT ENERGY AND  
 PHOTON SPECTRUM.  
 O: FOR STUDY OF ACTIVATION AND HEAT RELEASE IN CORE.

792069 1.00 KEV 15.0 MEV 10.0% 1 FR A<sub>0</sub>MICHAUDON BRC

O: FOR SHIELDING.

92 URANIUM 235 NEUTRON N,2N

752028 5.00 MEV 10.0 MEV 10.0% 1 JAP H<sub>0</sub>MATSUNOBU SAE

A: ENERGY RESOLUTION - 1 TO 2 PERCENT.  
 O: EVALUATION OF U-235 NUCLEAR DATA AND FOR REACTOR  
 DESIGN CALCULATIONS.  
 THE EXPERIMENTAL DATA ARE VERY POOR.  
 M: NEW REQUEST.

92 URANIUM 235 NEUTRON N,3N

792072 15.0 MEV 15.0% 1 FR A<sub>0</sub>MICHAUDON BRC

O: FOR CRITICAL ASSEMBLIES.

92 URANIUM 235 NEUTRON FISSION CROSS SECTION

661092 10.0 KEV 15.0 MEV 1.0% 1 USA G<sub>0</sub>E<sub>0</sub>HANSEN LAS

691241 1.00 EV 1.00 KEV 3.0% 2 USA B<sub>0</sub>HUTCHINS GEB

O: USED AS STANDARD AT HIGHER ENERGIES.

691245 10.0 KEV 14.0 MEV 1.0% 1 USA R<sub>0</sub>S<sub>0</sub>CASWELL NBS

A: ENERGY RESOLUTION 3 PERCENT.

691246 1.00 KEV 14.0 MEV 1.0% 1 USA C<sub>0</sub>E<sub>0</sub>TILL ANL  
 P<sub>0</sub>B<sub>0</sub>HEMMIG AEC  
 F<sub>0</sub>C<sub>0</sub>MAIENSCHN ORL

Q: REQUIRED IS RATIO OF U-235(N,F) TO B-10(N,ALPHA),  
 AND TO H-1(N,P) TO 1 PERCENT.  
 A: INTERMEDIATE ACCURACY OF 3 PERCENT USEFUL.  
 O: NEEDED TO COMPARE STANDARDS.

691449 1.00 KEV 14.0 MEV 1.0% 1 USA B<sub>0</sub>HUTCHINS GEB  
 P<sub>0</sub>B<sub>0</sub>HEMMIG AEC

Q: ABSOLUTE VALUES REQUIRED.  
 A: FROM 1-20 KEV, ACCURACY 2 PERCENT, 5 PERCENT  
 USEFUL.  
 FROM 20 KEV - 3 MEV, ACCURACY 1 PERCENT, 3 PERCENT  
 USEFUL.  
 FROM 3-14 MEV, ACCURACY 2 PERCENT,  
 5 PERCENT USEFUL.  
 O: FOR FAST REACTOR CALCULATIONS AND FOR USE AS A  
 STANDARD.

Reference	Energy 1	Energy 2	Energy 3	Energy 4	Energy 5	Country	Author	Year	Notes
692366	100 eV	1000 eV				GER	F. GERWIN	JUL	A: ACCURACY 5 PERCENT FOR 100 EV - 10 KEV, 2 PERCENT FOR 10 KEV - 1 MEV AND 5 PERCENT FOR 1-10 MEV. O: SPECTRUM INDEX. STANDARD CROSS SECTION.
692368	1.00 MEV	5.00 MEV	3.0X			UK	C. G. CAMPBELL	WIN	A: ACCURACY FOR AVERAGE VALUE OF THE ERROR BETWEEN E AND 2E. O: STANDARD FOR PU CROSS-SECTIONS FOR FAST REACTORS.
692496	200 eV	500 KEV	2.0X			SWD	H. HAEGGBLOM	AE	O: FAST REACTOR CALCULATIONS.
693054	25.3 MV	15.0 MEV	5.0X			BAN	M. M. ISLAM	RAM	O: FOR FAST REACTORS.
714007	5.00 KEV	7.00 MEV	2.0X			CCP	M. N. NIKOLAEV	FEI	Q: BELOW 20 KEV MEASUREMENTS OF TRANSMISSION CURVES BY FLAT RESPONSE DETECTOR AND BY SELF DETECTION METHOD WITH FISSION DETECTOR WANTED FOR SELF SHIELDING EVALUATION. THESE CURVES MUST BE MEASURED WITH ATTENUATIONS OF THE PRIMARY BEAM DOWN TO 1 PERCENT. AVERAGE CS IN FISSION NEUTRON SPECTRUM OF CF-252 TIMES NU-BAR OF CF-252 IS OF GREAT INTEREST FOR REDUCING THE DEPENDENCE OF THE ACCURACY OF NEUTRON PRODUCTION CALCULATIONS UPON THE ACCURACY OF THE CF-252 NU-BAR STANDARD (REQUIRED ACCURACY 1 PERCENT). A: ACCURACY DETERMINED BY USE OF THIS CROSS SECTION AS STANDARD IN FISSION AND CAPTURE MEASUREMENTS FOR OTHER ISOTOPES. IF MEASUREMENT IS ABSOLUTE AND PU-239 AND U-238 FISSION CROSS SECTIONS ARE MEASURED RELATIVE TO U-235 FISSION, THEN 2 PERCENT ACCURACY IS REQUIRED. BEST ACCURACY OF 1.5 PERCENT DESIRABLE IN 1.2 TO 2.5 MEV REGION BECAUSE OF U-238 FISSION CROSS SECTION NORMALIZATION. O: SEE GENERAL COMMENTS IN THE INTRODUCTION. REQUEST CONSIDERED FULFILLED, WHEN AT LEAST THREE MEASUREMENTS WITH DIFFERENT METHODS AGREE WITHIN REQUESTED ACCURACY. M: SUBSTANTIAL MODIFICATIONS.
741118	1.00 MV	1.00 EV	5.0X			USA	N. STEEN	BET	Q: SHAPE ESPECIALLY IMPORTANT AT LOW ENERGY. M: NEW REQUEST.
741209	400 KEV	2.00 MEV	1.5X			USA	W. DAVEY	LAS	Q: A RELATIVE MEASUREMENT NORMALIZED TO EXISTING DATA ABOVE 1 MEV IS SUFFICIENT. O: EXTENSION OF LASL ABSOLUTE MEASUREMENT BELOW 1 MEV TO OVERLAP IMPORTANT LOWER ENERGY DATA. A REFERENCE WHICH IS VITAL TO ALL REACTOR STUDIES. M: NEW REQUEST.
742073		15.0 MEV				FR	A. MICHAUDON	BRC	A: ACCURACY 3 PERCENT TO 1 KEV, 2 PERCENT ABOVE. O: FOR CRITICAL ASSEMBLIES.
742113			2.0X			EUR	NEUTRON DOSIMETRY GROUP	GEL	Q: AVERAGE CROSS SECTION IN A U-235 FISSION SPECTRUM DESIRED. O: FOR NORMALIZATION OF AVERAGE CROSS SECTIONS FOR DOSIMETRY PURPOSES.
752023	1.00 KEV	100 KEV	2.0X			JAP	H. MATSUNOBU	SAE	Q: ABSOLUTE MEASUREMENT WANTED. A: ENERGY RESOLUTION - 1 TO 2 PERCENT. O: EVALUATION OF U-235 NUCLEAR DATA AND FOR REACTOR DESIGN CALCULATIONS. DISCREPANCIES BETWEEN THE EXPERIMENTAL DATA ARE VERY REMARKABLE IN THE ENERGY RANGE BELOW 70 KEV. M: NEW REQUEST.
752024	100 KEV	1.00 MEV	1.0X			JAP	H. MATSUNOBU	SAE	Q: ABSOLUTE MEASUREMENT WANTED. A: ENERGY RESOLUTION - 1 TO 2 PERCENT. O: EVALUATION OF U-235 NUCLEAR DATA AND FOR REACTOR DESIGN CALCULATIONS. M: NEW REQUEST.
752025	1.00 MEV	20.0 MEV				JAP	H. MATSUNOBU	SAE	Q: ABSOLUTE MEASUREMENT WANTED. A: ACCURACY REQUIRED - 1 TO 2 PERCENT. ENERGY RESOLUTION - 1 TO 2 PERCENT. O: EVALUATION OF U-235 NUCLEAR DATA AND FOR REACTOR DESIGN CALCULATIONS. THE EXPERIMENTAL DATA ARE COMPARATIVELY POOR IN THE ENERGY RANGE ABOVE 6 MEV EXCEPT 14 MEV DATA. M: NEW REQUEST.

75400# 5.00 KEV 10.0 MEV 1 CCP L<sub>0</sub>N<sub>0</sub>USACHEV FEI  
 A: FROM 0.5 - 100 KEV ACCURACY 2.8 PERCENT,  
 PRIORITY 2 ACCURACY 1.2 PERCENT,  
 FROM 0.1 - 0.8 MEV ACCURACY 2.1 PERCENT,  
 PRIORITY 2 ACCURACY 1.1 PERCENT,  
 FROM 0.8 - 4.5 MEV ACCURACY 2.9 PERCENT,  
 PRIORITY 2 ACCURACY 1.4 PERCENT,  
 ABOVE 4.5 MEV REQUIREMENTS 2 TIMES WEAKER,  
 O: NEED FOR FAST REACTOR CALCULATIONS,  
 STANDARD CS ABOVE 100 KEV,  
 FOR MORE DETAIL SEE INTRODUCTION.  
 M: NEW REQUEST.

-----STATUS-----

HAR SOWERBY+ - ANE 1 409(1974), EVALUATION OF DATA PUBLISHED BEFORE ABOUT JANUARY 1973.  
 ESTIMATED UNCERTAINTY IN FISSION CROSS SECTION.  
 100 EV TO 4 KEV 3.3 PERCENT  
 4 KEV TO 20 KEV BETTER THAN 4 PERCENT  
 20 KEV TO 100 KEV 4 TO 5 PERCENT  
 100 KEV TO 3 MEV 3 TO 4 PERCENT  
 3 MEV TO 20 MEV 4 TO 7 PERCENT EXCEPT  
 NEAR 14 MEV 2 PERCENT  
 FOLLOWING DATA AVAILABLE SINCE SOWERBY EVALUATION:  
 LRL CZIRR+ - 75WASH, DATA 1 KEV TO 20 MEV, MEASUREMENTS TO THERMAL ENERGIES IN PROGRESS.  
 LRL CZIRR+ - NSE 57 18(1975), DATA 3 TO 20 MEV, REPORTED ACCURACY 1 PERCENT FROM 3 TO 7 MEV,  
 2 PERCENT AT 14 MEV AND 6 PERCENT AT 20 MEV.  
 ANL POENITZ - NSE 53 370(1974), DATA 35 KEV TO 3.5 MEV  
 ORL PEREZ+ - NSE 55 203(1974), DATA 2 TO 100 KEV.  
 MHG GILLIAM+ - USNDC-11 162(1974), IN PROGRESS AT 960 KEV, ALSO SEE THESIS(1973).  
 LAS HANSEN+ - LSND-11 147(1974), TELESCOPE EFFICIENCY BEING STUDIED, PRELIMINARY DATA WERE CONSIDERED  
 IN EVALUATION BY SOWERBY.  
 ORL PEREZ+ - NSE 52 46(1973), DATA 8 EV TO 10 KEV.  
 SAC BLCNS - NSE 51 130(1973), DATA 18 EV TO 30 KEV.  
 KFK KAPPELER - KFK-1772(1973), DATA 0.5 TO 1.2 MEV.  
 HAR GAYTHER+ - 72VIENNA 201, DATA 1 KEV TO 1 MEV.  
 GEL KNITTER+ - ZP 257 108(1972), DATA 1.5 TO 2.3 MEV.  
 ORL GWIN+ - USNDC-3 149(1972), IN PROGRESS THERMAL TO 200 KEV, DATA AVAILABLE FROM DATA CENTERS.  
 GEL THEOBALD+ - NEANDC(E)-161 202(1974), IN PROGRESS 1 TO 500 KEV.  
 KFK BROTZ+ -NEANDC(E)-161 99(1974), IN PROGRESS FROM 1 TO 30 MEV.  
 NBS WASSON+ - MEASUREMENTS FROM 200 KEV TO 1.5 MEV USING BLACK DETECTOR, IN PROGRESS.  
 NBS CARLSON+ - MEASUREMENT 0.8 TO 15 MEV RELATIVE TO H<sub>0</sub> IN PROGRESS.  
 HAR LYNN - MEASUREMENT PLANNED.

=====92 URANIUM 235 NEUTRON CAPTURE TO FISSION RATIO (ALPHA)=====

691249 1.00 MV 7.00 MEV 2 USA C<sub>0</sub>E<sub>0</sub>TILL ANL  
 B<sub>0</sub>HUTCHINS GEB  
 P<sub>0</sub>B<sub>0</sub>HEMMIG AEC  
 Q: CAPTURE CROSS SECTION EQUALLY USEFUL.  
 A: REQUIRED ACCURACY - 5 TO 10 PERCENT.  
 O: EXPERIMENTAL UNCERTAINTIES NEED VERIFICATION.  
 M: SUBSTANTIAL MODIFICATIONS.  
 692373 100. EV 1.00 MEV 5.0% 2 UK C<sub>0</sub>G<sub>0</sub>CAMPBELL WIN  
 A: ACCURACY FOR AVERAGE VALUE OF THE ERROR BETWEEN  
 E AND 2E.  
 O: FOR FAST REACTORS.  
 71400# 100. EV 800. KEV 7.0% 1 CCP M<sub>0</sub>N<sub>0</sub>NIKOLAEV FEI  
 Q: FOR EVALUATION OF THE DIFFERENCES IN THE CAPTURE-  
 AND FISSION-RESONANCE SELF SHIELDING.  
 MEASUREMENTS OF TRANSMISSION CURVES WITH FLAT-  
 RESPONSE DETECTOR AND BY SELF-INDICATION METHOD  
 WITH CAPTURE AND FISSION DETECTORS IN THE TEMP-  
 ERATURE RANGE 70-2500 DEGREE K ARE WANTED.  
 A: IN REGION 1-100 KEV BETTER ACCURACY DESIRABLE  
 (ABOUT 5 PERCENT).  
 IN THE TRANSMISSION MEASUREMENTS ATTENUATION OF AT  
 LEAST 1/100 WANTED.  
 O: SEE GENERAL COMMENTS IN THE INTRODUCTION.  
 ALSO NEEDED FOR COMPARISON WITH ALPHA PU-239 FOR  
 TEST OF MEASUREMENT METHODS.  
 AT LEAST THREE DIFFERENT RESULTS MUST COINCIDE  
 WITHIN REQUESTED ACCURACY.  
 M: SUBSTANTIAL MODIFICATIONS.  
 721077 1.00 MV 1.00 EV 1.0% 1 USA N<sub>0</sub>STEEN BET  
 Q: CAPTURE CROSS SECTION EQUALLY USEFUL.  
 O: EXPERIMENTAL UNCERTAINTIES NEED VERIFICATION.  
 M: SUBSTANTIAL MODIFICATIONS.

-----STATUS-----

FEI KONONOV+ - AE 32 85(1972), DATA 10 KEV TO 1 MEV.  
 KFK BANDL+ - KFK-1563 (1972), DATA 8 TO 60 KEV.  
 ORL GWIN+ - NCSAC-42 159(1971), DATA THERMAL TO 400 KEV.  
 ORL PEREZ+ - LSND-7 176(1973), WORK IN PROGRESS.  
 SAC BLONS+ - NSE 51 130(1973), DATA 18 EV TO 30 KEV.  
 LRL CZIRR+ - WORK IN PROGRESS.



-----STATUS-----

A1 TUTTLE+ - NSE 56 37(1975), REVIEW WITH RECOMMENDED VALUES.  
 ANL COX+ - ANL/NDM-5 (1974), REVIEW.  
 HFA SHALEV+ - NSE 51 52(1973), SPECTRUM AVERAGE.  
 IAE MANERO+ - REA 10 637(1972), REVIEW.  
 KFK FIEG - EANDC(E)-157 (1973), WORK IN PROGRESS.  
 FEI TARASKO+ - YF 17 1149(1973), IN PROGRESS.  
 SOR AMIEL - 73BOLCGNA, REP. 13, TC 15 MEV.  
 LAS KRICK+ - NSE 47 311(1972), 0.1 TC 6.5 MEV.

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92 URANIUM 235 NEUTRON ENERGY SPECTRUM OF FISSION NEUTRONS

651256	25.3 MV	3.00 MEV	5.0%	2	USA	C. E. TILL P. B. HEMMIG	ANL AEC	O: VERIFICATION OF FISSION SPECTRUM NEEDED.
651257	25.3 MV		3.0%	1	USA	R. EHRlich	KAP	A: OUTGOING NEUTRON ENERGY RESOLUTION 5 PERCENT FOR NEUTRON ENERGIES BELOW 0.3 MEV. O: VERIFICATION OF FISSION SPECTRUM. M: SUBSTANTIAL MODIFICATIONS.
652376	100. KEV		2.0%	2	UK	C. G. CAMPBELL A. WHITTAKER S. B. WRIGHT	WIN UKW HAR	A: ACCURACY FOR AVERAGE E'. ACCURACY 10 PERCENT ON NUMBER OF NEUTRONS ABOVE 5 MEV AND BELOW 0.25 MEV. LOW RESOLUTION ADEQUATE FOR INCIDENT ENERGY. O: FOR FAST REACTORS. FOR REACTION RATE ANALYSIS.
721080	25.3 MV		1.0%	1	USA	N. STEEN	BET	O: VERIFICATION OF FISSION SPECTRUM NEEDED.
742077		15.0 MEV	5.0%	1	FR	A. MICHAUDON	BRC	O: FOR CRITICAL ASSEMBLIES.

-----STATUS-----

GEL KNITTER+ - ZP 257 108(1972), DATA 1.5 TO 2.5 MEV.  
 LAS AUCHAMPAUGH+ - USNDC-3 118(1972), DATA AT 1.8 MEV.  
 KFK WERLE+ - JNE 26 165(1972), DATA 100 KEV TO 9.5 MEV.  
 AE ALMEN+ - AE-425 (1971), DATA AT 950 KEV.  
 ANL SMITH - ANL-7510 18(1972), WORK IN PROGRESS.  
 CAD ABRAMSON+ - NEANDC(E)-161 34(1974), WORK IN PROGRESS AT 30 KEV.  
 AE JOHANSSON+ - EANDC(OR)-135 47(1973), PRELIMINARY RESULT AT 530 KEV, WORK IN PROGRESS AT 2.1 MEV.  
 GEL KNITTER+ - NSE 50 108(1973), DATA AT 0.4 MEV.  
 HAR ADAMS+ - (1974), PRELIMINARY DATA AVAILABLE FROM JOINT HAR/AE STUDY.

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92 URANIUM 235 NEUTRON FISSION PRODUCT MASS YIELD SPECTRUM

671105	25.3 MV		2.0%	2	USA	N. STEEN	BET	O: CUMULATIVE AND DIRECT YIELDS OF XE-135. O: CALCULATION OF FISSION PRODUCT POISONS. M: SUBSTANTIAL MODIFICATIONS.
671106	25.3 MV		1.0%	2	USA	N. STEEN	BET	O: YIELD OF CS-137 WANTED. O: FOR BURN UP INDICATOR STANDARD.
671107	25.3 MV		3.0%	2	USA	N. STEEN	BET	O: YIELD OF SM-149 AND ND-147 WANTED. O: CALCULATION OF FISSION PRODUCT POISONS.
711802	25.3 MV		1.0%	2	CAN	W. H. WALKER	CRC	O: YIELD OF XE-135 WANTED. O: CALCULATION OF FISSION PRODUCT POISONS.

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STATUS-----STATUS

KUR MILLER+ - SJA 27 281(1968)。

SRE HILLER - KT 12 485(1970)

CCP GRECHUSHKINA - TABLES SHCWIN THE COMPOSITION OF PROMPT FISSION PRODUCTS FROM U-235, U-238, AND PU-239 FISSION, ATOMIZDAT, MOSCCW(1964)。

AE FORSYTH+ - 70 KARLSRUHE VCL01 P0521。

CCP GQSEV - PROTECTION AGAINST GAMMA RADIATION FROM FISSION PRODUCTS, ATOMIZDAT, MOSCOW(1968)。

SGA LAMMER+ - 73 PARIS PAPER 13, EVALUATION。

HAK CROUCH - 73 PARIS PAPER 94, EVALUATION。

GRE DEVILLERS+ - 73 PARIS PAPER 63, EVALUATION。

CRC WALKER - 73 PARIS PAPER 34, EVALUATION。

GEV MEEK+ - NECC-12154, EVALUATION。

ANL GLENDENIN+ - WRK IN PROGRESS。

92 URANIUM 235 NEUTRON RESONANCE PARAMETERS

691262 25.3 MV 200. EV 10.0% 1 USA C0E0TILL ANL  
 N0STEEN BET  
 B0HUTCHINS GEB  
 P0B0HEMMIG AEC

Q: NEEDED TO AS HIGH AN ENERGY AS POSSIBLE。  
 MULTILEVEL FIT WANTED WHERE FEASIBLE。  
 A: NEEDED 10 PERCENT ACCURACY BELOW 100 EV。  
 O: NEEDED FOR EXTRAPOLATION TO UNRESOLVED RESONANCE REGION。

692359 150. EV 200. EV 10.0% 2 GER F0WELLER KFK

702025 1.00 EV 200. EV 3.0% 2 FR H0TELLIER SAC

O: FOR RESONANCE SELF SHIELDING。

STATUS-----STATUS

COL 0 (1974), NEW RESULTS USING FRAGMENT DETECTION。

BNL REDDINGIUS+ NF/A 218 84(1974), POLARIZED BEAM AND TARGET, DATA FOR RESONANCES BELOW 14 EV。

LAS KEYWORTH+ - PRL 31 1077(1973), POLARIZED BEAM AND POLARIZED TARGET, DATA FOR 65 RESONANCES BELOW 60 EV。

COL FELVINCI+ - COC-2176 11(1972)。

NYU GRAVES - CA/B 32 4793(1972)。

SAC BLONS+ - 71 KNCXVILLE 829(1971)。

92 URANIUM 236 NEUTRON ENERGY DIFFERENTIAL INELASTIC CROSS SECTION

714012 5.00 MEV 10.0% 2 CCP M0N0NIKOLAEV FEI

Q: CROSS SECTION FOR INELASTIC REMOVAL BELOW FISSION THRESHOLDS OF U-236 AND U-238 WANTED。  
 THIN SPHERE TRANSMISSION MEASUREMENTS WITH CF-252 SOURCE AND FISSION THRESHOLD DETECTORS WOULD BE USEFUL。  
 O: SEE GENERAL COMMENTS IN THE INTRODUCTION。

92 URANIUM 236 NEUTRON CAPTURE CROSS SECTION

671109 25.3 MV 1.00 MEV 10.0% 1 USA B0HUTCHINS GEB

A: REQUIRED 10 PERCENT ACCURACY IN CAPTURE WIDTHS。  
 O: ABOVE 1 KEV PRIORITY 2。  
 NEEDED FOR CONTROL OF U-232 PRODUCTION。  
 M: SUBSTANTIAL MODIFICATIONS。

681801 1.00 EV 500. EV 5.0% 2 CAN W0H0WALKER CRC

O: DISAGREEMENT BETWEEN INTEGRAL AND DIFFERENTIAL MEASUREMENTS。

682060 1.00 KEV 3.00 MEV 10.0% 1 FR A0MICHAUDON BRC

692381 1.00 EV 10.0 MEV 20.0% 2 GER H0GERWIN JUL

712064 500. EV 1.00 MEV 10.0% 3 FR J0Y0BARRE CAD

Q: RATIO TO U-235 FISSION OR U-238 CAPTURE NEEDED。  
 O: FOR FAST REACTOR CALCULATIONS。

714015 500. EV 1.40 MEV 7.0% 2 CCP M0N0NIKOLAEV FEI

Q: RATIO WANTED RELATIVE TO U-235 FISSION。  
 O: SEE GENERAL COMMENTS IN THE INTRODUCTION。



STATUS-----STATUS  
 GA CARLSON+ - NP/A 141 577(1970), DATA THERMAL TO 20 KEV.  
 GEL ROHR+ - EANDC(E)-157 (1973), IN PROGRESS 5 EV TO 2 KEV.  
 SGA EDER+ - 73 PARIS PAPER 12, COMPILATION.  
 HAR CABELL+ - AERE-R-6761(1971), THERMAL.  
 SRL BAUMANN+ - NSE 32 265(1968), 8 PERCENT AT THERMAL.

92 URANIUM 236 NEUTRON FISSION CROSS SECTION

662056 15.0 MEV 10.0% 1 FR A.MICHAUDON BRC  
 O: EVALUATION MAY BE SUFFICIENT.  
 692380 4.00 MEV 10.0 MEV 5.0% 2 GER H.GERWIN JUL  
 Z12062 500. EV 15.0 MEV 3.0% 3 FR J.Y.BARRE CAD  
 O: WANTED RELATIVE TO U-235 FISSION CROSS SECTION.  
 O: FOR FAST REACTOR CALCULATIONS.  
 Z14013 100. KEV 5.00 MEV 5.0% 2 CCP M.N.NIKOLAEV FEI  
 O: RATIO WANTED RELATIVE TO U-235.  
 AVERAGE CS IN FISSION NEUTRON SPECTRUM OF CF-252  
 TIMES NU-BAR OF CF-252 WOULD BE VERY USEFUL  
 (REQUIRED ACCURACY 1 PERCENT).  
 O: SEE GENERAL COMMENTS IN THE INTRODUCTION.  
 M: SUBSTANTIAL MODIFICATIONS.

STATUS-----STATUS  
 LAS CRAMER+ - LA-442C (1970), DATA 35 EV TO 2.9 MEV.  
 ORL RCSLER+ - LSND-1 148(1972), WORK IN PROGRESS 500 KEV TO 8 MEV.  
 GEL THEOBALD+ - EANDC(E)-157 (1973), IN PROGRESS IN SUBTHRESHOLD REGION.

92 URANIUM 236 NEUTRON NEUTRONS EMITTED PER FISSION (NU BAR)

Z12062 500. EV 15.0 MEV 3.0% 3 FR J.Y.BARRE CAD  
 A: ACCURACY RELATIVE TO NU CF-252.  
 O: FOR FAST REACTOR CALCULATIONS.  
 Z14019 5.00 MEV 1.0% 2 CCP M.N.NIKOLAEV FEI  
 O: SEE GENERAL COMMENTS IN THE INTRODUCTION.

STATUS-----STATUS  
 IAE MANERO+ - REA 10 637(1972), REVIEW.

92 URANIUM 236 NEUTRON RESONANCE PARAMETERS

Z14011 10.0 EV 5.00 KEV 2 CCP M.N.NIKOLAEV FEI  
 O: NEUTRON AND CAPTURE WIDTHS WANTED FOR EVALUATION  
 OF SELFSHIELDING IN RESOLVED RESONANCE REGION.  
 A: OBSERVATION OF AT LEAST 50 PERCENT OF P-WAVE  
 RESONANCES IN THE ENERGY INTERVAL TO 1 KEV IS  
 DESIRED.  
 O: SEE GENERAL COMMENTS IN THE INTRODUCTION.  
 STATISTICAL ANALYSIS OF MEASURED  
 RESONANCE PARAMETERS WANTED.  
 AVERAGE S AND P WAVE RESONANCE PARAMETERS SHOULD  
 BE DERIVED.  
 M: SUBSTANTIAL MODIFICATIONS.

STATUS-----STATUS  
 GEL CARRARO+ - 72 EUDAPEST 200, 39 RESONANCES.  
 GEL THEOBALD+ - EANDC(E)-157 (1973), IN PROGRESS.

92 URANIUM 237 NEUTRON CAPTURE CROSS SECTION

Z42080 1.00 KEV 3.00 MEV 20.0% 1 FR A.MICHAUDON BRC  
 O: EVALUATION MAY BE SUFFICIENT.

92 URANIUM 237 NEUTRON FISSION CROSS SECTION

Z42075 1.00 KEV 15.0 MEV 20.0% 1 FR A.MICHAUDON BRC  
 O: EVALUATION MAY BE SUFFICIENT.

STATUS-----STATUS  
 USA USNDC, TECHNICALLY VERY DIFFICULT OR IMPOSSIBLE AT PRESENT.  
 LAS MC NALLY+ - PR/C 9 717(1974), DATA 43 TO 1000 EV AND 0.1 TO 2 MEV FROM NUCLEAR EXPLOSION(POMMARD)

92 URANIUM 238 NEUTRON TOTAL CROSS SECTION

Z12065 500. EV 15.0 MEV 1.0% 2 FR J.Y.BARRE CAD  
 O: FOR FAST REACTOR CALCULATIONS.

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92 URANIUM 238 NEUTRON ELASTIC CROSS SECTION
   
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742081 1.00 KEV 15.0 MEV 5.0% 2 FR A.MICHAUDON BRC
   
Q: FOR CRITICAL ASSEMBLIES.

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92 URANIUM 238 NEUTRON DIFFERENTIAL ELASTIC CROSS SECTION
   
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651907 1.00 KEV 10.0 MEV 1 USA C.E.TILL ANL
   
B.HUTCHINS GEB
   
P.B.HEMMIG AEC
   
A.M.PERRY ORL
   
A: ACCURACY 10 PERCENT FROM 1 TO 300 KEV.
   
5 PERCENT FROM 300 KEV TO 2 MEV.
   
10 PERCENT FROM 2 TO 10 MEV.
   
FACTORS OF 2 LOWER ACCURACY WOULD BE USEFUL ON
   
SHORT TERM.

742082 1.00 KEV 15.0 MEV 5.0% 2 FR A.MICHAUDON BRC
   
Q: FOR CRITICAL ASSEMBLIES.

-----STATUS-----STATUS

GEL KNITTER+ - ZP 244 358(1970), DATA 1.5 TO 5.5 MEV.
   
ANL SMITH+ - LSND-11 25(1974), RESULTS TO 4 MEV.
   
ABD BUCHER+ - USND-11 25(1974), DATA 7 TO 14 MEV. SMALL-ANGLE SCATTERING.
   
GEL KNITTER+ - EAND(E)-150 (1972), WRK CONTINUES.

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92 URANIUM 238 NEUTRON INELASTIC CROSS SECTION
   
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652387 15.0 MEV 5.0% 2 FR J.Y.EARRE CAD
   
Q: ALTERNATE QUANTITY - NONELASTIC CROSS SECTION.
   
Q: FOR FAST REACTOR CALCULATIONS.

652389 80.0 KEV 500. KEV 2 SWC H.HAEGGBLOM AE
   
A: ACCURACY REQUIRED TO BETTER THAN 10 PERCENT.
   
Q: NEEDED FOR FAST REACTOR CALCULATIONS.

652393 1.20 MEV 2.00 MEV 10.0% 2 GER F.WELLER KFK
   
Q: LEVEL EXCITATION CROSS SECTIONS FOR THE 45 AND
   
148 KEV LEVELS WANTED.

742083 15.0 MEV 5.0% 2 FR A.MICHAUDON BRC
   
Q: FOR CRITICAL ASSEMBLIES.

754021 100. KEV 10.0 MEV 1 CCP L.N.USACHEV FEI
   
A: FROM 0.1-0.8 MEV ACCURACY 4.0 PERCENT,
   
PRIORITY 2 ACCURACY 3.4 PERCENT.
   
FROM 0.8-1.4 MEV ACCURACY 4.0 PERCENT,
   
PRIORITY 2 ACCURACY 2.7 PERCENT.
   
FROM 1.4-2.5 MEV ACCURACY 5.0 PERCENT,
   
PRIORITY 2 ACCURACY 3.0 PERCENT.
   
FROM 2.5-5.0 MEV ACCURACY 12 PERCENT,
   
PRIORITY 2 ACCURACY 10 PERCENT.
   
FROM 5.0-6.5 MEV ACCURACY 7.8 PERCENT,
   
PRIORITY 2 ACCURACY 7.0 PERCENT.
   
FROM 6.5-10 MEV ACCURACY 10 PERCENT,
   
PRIORITY 2 ACCURACY 10 PERCENT.
   
Q: NEED FOR FAST REACTOR CALCULATION.
   
FOR MORE DETAIL SEE INTRODUCTION.
   
M: NEW REQUEST.

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92 URANIUM 238 NEUTRON ANGULAR DIFFERENTIAL INELASTIC CROSS SECTION
   
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652390 2.00 MEV 10.0% 2 GER F.WELLER KFK

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92 URANIUM 238 NEUTRON ENERGY DIFFERENTIAL INELASTIC CROSS SECTION
   
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651270 50.0 KEV 10.0 MEV 5.0% 1 USA C.E.TILL ANL
   
B.HUTCHINS GEB
   
P.B.HEMMIG AEC
   
Q: EMISSION INSTEAD OF INELASTIC AND N,2N MIGHT
   
BE USEFUL.
   
A: ACCURACY OF 20 PERCENT WOULD BE USEFUL.
   
ENERGY RESOLUTION 5 PERCENT.
   
M: SUBSTANTIAL MODIFICATIONS.

652391 15.0 MEV 5.0% 2 FR J.Y.BARRE CAD
   
Q: SEPARATION OF LEVELS UP TO 2 MEV REQUIRED.
   
A: ACCURACY ON NUCLEAR TEMPERATURE ABOVE 2 MEV.
   
Q: FOR FAST REACTOR CALCULATIONS.

652394 7.00 MEV 14.0 MEV 5.0% 2 GER F.WELLER KFK

Z19018 50.0 KEV 15.0 MEV 1 CCF MoNoNIKOLAEV FEI  
 Q: DECISION ABOUT TOTAL INELASTIC CROSS SECTION AT 1.0 TO 2.5 MEV WANTED. TEMPERATURE FOR INELASTIC NEUTRONS WANTED AT THE HIGHER ENERGIES. SPECTRA AND CROSS SECTION FOR DIRECT INELASTIC SCATTERING PROCESSES TO BE INVESTIGATED IN THE MEV REGION AS WELL AS DIRECT MECHANISM CONTRIBUTIONS.  
 A: CROSS SECTION FOR INELASTIC REMOVAL BELOW FISSION THRESHOLD OF U-238 WANTED TO 1.5 - 2.0 PERCENT. CROSS SECTION FOR INELASTIC REMOVAL BELOW FISSION THRESHOLD OF PU-240 OR NP-237 WANTED TO 3 - 5 PERCENT. EXCITATION CS FOR FIRST LEVEL ABOVE THRESHOLD TO 2 MEV SHOULD BE MEASURED WITH 5 PERCENT ACCURACY. NEUTRON SPECTRA TO BE MEASURED WITH 5 PERCENT ACCURACY AT 2.515 MEV.  
 Q: SEE GENERAL COMMENTS IN THE INTRODUCTION. PRECISION MEASUREMENTS OF MENTIONED INTEGRAL PARAMETERS IN SHELL TRANSMISSION EXPERIMENTS WITH Cf-252 NEUTRON SOURCE AND U-238 AND NP-237 FISSION THRESHOLD DETECTORS AS WELL AS BY NEUTRON SPECTROMETER SEEMS VERY USEFUL.  
 M: SUBSTANTIAL MODIFICATIONS.

STATUS-----STATUS

GEL KNITTER+ - ZP 244 358(1971), DATA 1.5 TO 2.3 MEV.  
 PEL BARNARD+ - 70 HELSINKI 2 103, DATA TC 1.4 MEV.  
 HAR ARMITAGE+ - AERE-PR/NP18 (1972), IN PROGRESS 1.1 TO 2.4 MEV.  
 GEL KNITTER+ - EANDC(E)-150 (1972), WORK CONTINUES.  
 ANL SMITH+ - LSND-11 25(1974), NEW RESULTS TO 4 MEV.  
 KFK VOSS+ - EANDC(E)-157 (1973), IN PROGRESS TC 2 MEV.  
 AE CONDE+ - WORK IN PROGRESS.  
 LTI MARCELLA+ - DATA 1 TO 2.7 MEV.

92 URANIUM 238 NEUTRON DOUBLE DIFFERENTIAL INELASTIC CROSS SECTION

692392 1.00 MEV 2.50 MEV 5.0% 1 UK CoGoCAMPBELL WIN  
 Q: FOR FAST REACTORS.  
 693062 300. KEV 10.0 MEV 10.0% 1 BAN MoMoISLAM RAM  
 Q: FOR FAST REACTORS.  
 Z92084 15.0 MEV 5.0% 2 FR AoMICHAUDON BRC

STATUS-----STATUS

HAR ARMITAGE. - IN PROGRESS.

92 URANIUM 238 NEUTRON NON-ELASTIC CROSS SECTION

693061 100. KEV 10.0 MEV 10.0% 2 BAN MoMoISLAM RAM  
 Q: FOR FAST REACTORS.  
 Z19017 10.0 KEV 15.0 MEV 2 CCP MoNoNIKOLAEV FEI  
 A: DIRECT MEASUREMENTS BY SHELL TRANSMISSION DESIRABLE WITH 3-5 PERCENT ACCURACY.  
 Q: FOR EVALUATION OF INELASTIC SCATTERING CROSS SECTION FOR FAST REACTORS.

92 URANIUM 238 NEUTRON CAPTURE CROSS SECTION

691419 500. EV 10.0 MEV 1 USA CoEoTILL ANL  
 BoHUTCHINS GEB  
 PoB:HEMMIG AEC  
 A: ACCURACY 6 PERCENT FROM 500 EV TO 1 KEV, 4 PERCENT FROM 1 KEV TO 300 KEV, 6 PERCENT FROM 300 KEV TO 500 KEV, 10 PERCENT FROM 500 KEV TO 10 MEV. ACCURACY OF 10 PERCENT FROM 1 KEV TO 10 MEV. USEFUL.  
 Q: HIGHEST PRIORITY NEED FOR FAST REACTOR CALCULATIONS.  
 691435 10.0 KEV 10.0 MEV 1 USA CoEoTILL ANL  
 BoHUTCHINS GEB  
 PoB:HEMMIG AEC  
 AoMoPERRY ORL  
 Q: NEEDED IS RATIO OF CAPTURE CROSS SECTION U-238 TO FISSION CROSS SECTION OF PU-239 OR U-235. DIRECT RATIO NEEDED TO SUPPLEMENT SEPARATE MEASUREMENT.  
 A: ACCURACY 1.5 PERCENT BELOW 300 KEV, 7 PERCENT ABOVE. INTERMEDIATE ACCURACY USEFUL NEAR TERM.  
 692401 5.00 MV 6.00 EV 1 UK JoGoTYROR WIN  
 A: ACCURACY REQUIRED .03 BARNS.  
 Q: FOR THERMAL REACTORS.  
 692402 4.00 EV 500. EV 2.0% 2 FR HoTELLIER SAC  
 Q: RELATIVE TO SIGMA(N,G) AT THERMAL.  
 Q: FOR CALCULATION OF IEFF.  
 EVALUATION MAY SUFFICE IF IT EXPLAINS DISCREPANCIES.

Reference	Energy Range	Energy Unit	Energy Value	Energy Unit	Energy Value	Priority	Country	Author	Year	Comments
692403	500 eV	EV	800	KEV		1	GER	F. GERWIN	JUL	A: ACCURACY 2 PERCENT 10 TO 400 KEV, 3 PERCENT ELSEWHERE. O: FAST REACTOR CALCULATIONS.
692404	500 eV	EV	1.00	MEV	5.0%	2	FR	H. TELLIER	SAC	O: RELATIVE TO SIGMA(N,G) AT THERMAL. O: EVALUATION MAY SUFFICE IF IT EXPLAINS DISCREPANCIES.
692405	10.0	KEV	2.00	MEV	3.0%	1	UK	C. G. CAMPBELL	WIN	A: ACCURACY FOR AVERAGE VALUE OF THE ERROR BETWEEN E AND 2E. O: FOR FAST REACTORS.
692406	5.00	KEV	1.00	MEV	3.0%	2	SWC	H. HAEGGBLOM	AE	O: NEEDED FOR FAST REACTOR CALCULATIONS.
692406	25.3	MV	30.0	KEV	3.0%	2	BAN	M. M. ISLAM	RAM	O: FOR FAST REACTORS.
702032	1.00	KEV	1.00	MEV		1	JAP	S. IJIMA	NPG	A: ACCURACY REQUIRED TO BETTER THAN 5.0 PERCENT. O: FOR FAST REACTOR CALCULATIONS. PRECISE MEASUREMENT AT SOME ENERGY POINTS ALSO DESIRED.
714022	500 eV	EV	1.40	MEV	3.0%	1	CCP	M. N. NIKOLAEV	FEI	O: RATIO TO U-235 FISSION CS IS WANTED. ABSOLUTE MEASUREMENTS OR RATIOS TO B-10(N,ALPHA) AND LI-6(N,ALPHA) CROSS SECTIONS WOULD ALSO BE USEFUL, AND AT HIGHER ENERGIES THE RATIO TO THE NP-237 FISSION CS. TRANSMISSION MEASUREMENTS WITH FLAT-RESPONSE DETECTOR AND BY THE SELF-INDICATION METHOD WITH CAPTURE GAMMA-RAY DETECTOR IN THE TEMPERATURE RANGE 70-2500 DEGREES K ARE DESIRED FOR EVAL- UATION OF SELF-SHIELDING AND DOPPLER EFFECTS. SPHERICAL TRANSMISSION TIME-OF-FLIGHT MEASURE- MENTS SEEM TO BE A USEFUL INDEPENDENT METHOD FOR DETERMINING THE RELIABILITY OF CAPTURE CROSS-SECTION DATA. A: BETWEEN 1 AND 100 KEV INFORMATION ON RESONANCE SELFSHIELDING FACTORS (SEE BOOK BY ABAGYAN ET AL., CONSULTANTS BUREAU, NEW YORK, 1964.) WITH 2 PERCENT ACCURACY AND AVERAGED OVER 0.2 LETHARGY INTERVALS DESIRED. TEMPERATURE DIFFERENCES OF SELFSHIELDING FACTORS MUST BE KNOWN WITH 7 PERCENT ACCURACY. O: SEE GENERAL COMMENTS IN THE INTRODUCTION. FIRST PRIORITY BECAUSE IT IS DIFFICULT TO INTERPRET THE DOPPLER-EFFECT AND SELF-SHIELDING FACTORS FROM MACROSCOPIC DATA ONLY. M: SUBSTANTIAL MODIFICATIONS.
741123	1.00	EV	20.0	KEV	5.0%	1	USA	N. STEEN	BET	O: TO RESOLVE DISCREPANCIES AMONG INTEGRAL AND DIFFERENTIAL EXPERIMENTS. M: NEW REQUEST.
742087	1.00	KEV	3.00	MEV	5.0%	1	FR	A. MICHAUDON	BRC	O: FOR CRITICAL ASSEMBLIES.
754005	5.00	KEV	10.0	MEV		1	CCP	L. N. USACHEV	FEI	A: FROM 0.5 - 100 KEV ACCURACY 4.6 PERCENT, PRIORITY 2 ACCURACY 2.1 PERCENT. FROM 0.1 - 0.8 MEV ACCURACY 4.0 PERCENT, PRIORITY 2 ACCURACY 2.7 PERCENT. FROM 0.8 - 4.5 MEV ACCURACY 9.6 PERCENT, PRIORITY 2 ACCURACY 9.3 PERCENT. ABOVE 4.5 MEV REQUIREMENTS 2 TIMES WEAKER. O: NEEDED FOR FAST REACTOR CALCULATIONS. FOR MORE DETAIL SEE INTRODUCTION. M: NEW REQUEST.

STATUS-----STATUS

HAR SOWERBY+ - ANE 1 409(1974), EVALUATION OF DATA PUBLISHED BEFORE ABOUT JANUARY 1973.  
 ESTIMATED UNCERTAINTY IN CAPTURE CROSS SECTION:  
 1 KEV TO 100 KEV 6 PERCENT  
 100 KEV TO 300 KEV 5 PERCENT  
 300 KEV TO 2 MEV 5 TO 10 PERCENT  
 2 MEV TO 20 MEV 10 TO 100 PERCENT  
 FOLLOWING DATA AVAILABLE SINCE SOWERBY EVALUATION:  
 KFK BLUHM - KFK-1758 (1973), DATA 10 KEV TO 5 MEV.  
 FEI CHELNDKOV+ - YFI-13 6(1972), DATA 200 EV TC 35 KEV.  
 CCP STAVISSKY+ - AE 31 107(1971), DATA TC 40 KEV.  
 ANL POENITZ - LSND-1 8(1972), IN PROGRESS 400 KEV TO 1.5 MEV.  
 QRL DE SAUSSURE+ - NSE 51 385(1973), DATA 5 EV TO 100 KEV. ALSO DATA 270 EV TO 500 KEV AND WORK IN PROGRESS.  
 HAR PEARLSTEIN+ - EANDC(UK)-151(1973), DATA 80 TO 1600 KEV.  
 KFK SPENCER+ - NEANDC(E)-161 91(1974), 10 TO 600 KEV, IN PROGRESS.  
 LRL LINDNER+ - UCRL-75838, DATA 120 KEV TO 2.9 MEV.  
 HAR MOXON, (1974), PROVISIONAL DATA AVAILABLE FROM 5 MV TO 6 EV, ANALYSIS CONTINUES.  
 BNL RIMAWI, (1974), DATA AT 24 KEV.  
 CAD (1974), DATA TO 65 KEV.  
 GEL (1974), DATA TC 4.1 KEV.  
 BNL SEMINAR ON U-238 RESONANCE CAPTURE, 18-20 MARCH 75

92 URANIUM 238 NEUTRON PHOTON PRODUCTION CROSS SECTION IN INELASTIC SCAT.

693062 300 KEV 4.00 MEV 10.0% 1 BAN M.M. ISLAM RAM  
 Q: SECONDARY ENERGY-ANGLE DISTRIBUTIONS REQUIRED.  
 O: FOR FAST REACTORS.

STATUS-----STATUS

SUN MC MURRY+ - 72 BUDAPEST 10, DATA 700 KEV TC 1.9 MEV.

92 URANIUM 238 NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION

712066 200 KEV 15.0% 2 UK C.G. CAMPBELL WIN  
 Q: GAMMA SPECTRUM WANTED.  
 A: LOW RESOLUTION ADEQUATE FOR INCIDENT ENERGY AND PHOTON SPECTRUM.  
 O: FOR STUDY OF ACTIVATION AND HEAT RELEASE IN CORE.

721079 1.00 MV 15.0 MEV 10.0% 2 USA P.B. HEMMIG AEC  
 Q: SECONDARY ENERGY-ANGLE DISTRIBUTIONS REQUIRED FOR ALL GAMMA ENERGIES.  
 A: GAMMA-ENERGY INTERVALS - 500 KEV.  
 O: FOR SHIELDING AND GAMMA-HEATING CALCULATIONS.  
 M: SUBSTANTIAL MODIFICATIONS.

92 URANIUM 238 NEUTRON N,2N

719019 20.0 MEV 2 CCF M.N. NIKOLAEV FEI  
 Q: SECONDARY ENERGY DISTRIBUTION REQUIRED.  
 A: ACCURACY 5 TO 10 PERCENT WANTED.  
 ENERGY SPECTRA OF SECONDARY NEUTRONS DESIRABLE WITH 5 PERCENT ACCURACY AND 0.2 RESOLUTION IN LETHARGY.  
 O: FOR FAST REACTORS.

721078 10.0 MEV 7.0% 1 USA B. HUTCHINS GEB  
 O: IMPORTANT TO PRODUCTION OF U-238.  
 M: SUBSTANTIAL MODIFICATIONS.

STATUS-----STATUS

ALD MATHER+ - ANRE/O-72/72, DATA 7.0 TO 12 MEV.  
 BNM WOLKENHAUER+ - 73PARIS 1 39, REVIEW THRESHOLD TO 16 MEV.  
 LRL LANDRUM+ - PR/C 8 1938(1973), DATA 14 TO 15 MEV.  
 DUB BELOV+ - IJP 47 232(1973), WORK AT 15 MEV.  
 BRC FREHAUT+ - CEA-R-4627 (1974), WORK THRESHOLD TO 15 MEV.

92 URANIUM 238 NEUTRON FISSION CROSS SECTION

671203 500 KEV 15.0 MEV 1 USA G.E. HANSEN LAS  
 Q: RATIO TO U-235 FISSION WANTED.  
 A: ACCURACY 5 PERCENT TO 1.3 MEV AND 1 PERCENT ABOVE.  
 ENERGY RESOLUTION - 3 PERCENT.  
 ENERGY CALIBRATION - 1 PERCENT.  
 O: FOR FAST BREEDER CALCULATIONS.  
 FOR CURIUM AND CALIFORNIUM PRODUCTION.

691916 500 EV 14.0 MEV 1 USA P.B. HEMMIG AEC  
 Q: RATIO WANTED RELATIVE TO U-235 FISSION.  
 A: ACCURACY 4 PERCENT BELOW 1.3 MEV, 2 PERCENT 1.3 TO 5.0 MEV, 3 PERCENT ABOVE 5.0 MEV.  
 ENERGY RESOLUTION 3 PERCENT, ENERGY CALIBRATION 1 PERCENT.  
 INTERMEDIATE ACCURACY USEFUL.

653065	15.0	MEV	5.0%	1	BAN	MoMc ISLAM	RAM		
									Q: FOR FAST REACTORS.
712067			2.0%	2	UK	CoGo CAMPBELL JoGo TYROR	WIN WIN		
									Q: FISSION SPECTRUM AVERAGE WANTED. Q: FOR FAST AND THERMAL REACTORS.
714020	800.	KEV	15.0	MEV	1	CCP	MoNo NIKOLAEV	FEI	
									Q: RATIO TO U-235 FISSION CS IS WANTED. ABSOLUTE MEASUREMENTS AND MEASUREMENT OF THE RATIO TO THE NP-237 FISSION CS WOULD BE VERY USEFUL. AVERAGE CS IN FISSION-NEUTRON SPECTRUM OF CF-252 TIMES NU-BAR OF CF-252 IS OF GREAT INTEREST FOR REDUCING THE DEPENDENCE OF THE ACCURACY OF NEUTRON PRODUCTION CALCULATIONS UPON THE ACCURACY OF THE CF-252 NU-BAR STANDARD (REQUIRED ACCURACY 1 PERCENT). A: REQUESTED ACCURACIES - 5 PERCENT BELOW 1.3 MEV, AND ABOVE 6.5 MEV, AND 2 PERCENT BETWEEN 1.3 AND 6.5 MEV. Q: ABSOLUTE VALUES WITH 2 TO 3 PERCENT ACCURACY. SEE GENERAL COMMENTS IN THE INTRODUCTION. AT LEAST THREE DIFFERENT MEASUREMENTS WITH THESE ACCURACIES WANTED. FIRST PRIORITY BECAUSE HIGH ACCURACY OF THE U-238 FISSION CS IS IMPORTANT IN CONNECTION WITH THE USE OF THIS CS AS A CONVENIENT STANDARD FOR THRESHOLD-REACTION MEASUREMENTS. M: SUBSTANTIAL MODIFICATIONS.
732112	5.00	MEV	3.0%	1	UK	CoGo CAMPBELL	WIN		
									Q: FOR FAST REACTORS.
742086	15.0	MEV	3.0%	1	FR	Ac MICHAUDON	BRC		
									Q: FOR CRITICAL ASSEMBLIES.
742112			2.0%	1	EUR	NEUTRON DOSIMETRY GROUP		GEL	
									Q: RATIO OF AVERAGE CROSS SECTION IN A U-235 FISSION SPECTRUM TO AVERAGE U-235 FISSION CROSS SECTION IS WANTED. Q: FOR NORMALIZATION OF AVERAGE CROSS SECTIONS FOR DOSIMETRY PURPOSES.
742136	1.50	MEV	6.70	MEV	5.0%	2	EUR	NEUTRON DOSIMETRY GROUP	GEL
									Q: FOR NEUTRON DOSIMETRY USING SPECTRUM UNFOLDING METHODS. GREATER THAN 10 PERCENT DISCREPANCY BETWEEN INTEGRAL AND DIFFERENTIAL MEASUREMENTS.
754019	800.	KEV	10.0	MEV	1	CCP	LoNo USACHEV	FEI	
									A: FROM 0.8 - 10.0 MEV ACCURACY 2.8 PERCENT. PRIORITY 2 ACCURACY 1.8 PERCENT. Q: NEED FOR FAST REACTOR CALCULATIONS. FOR MORE DETAIL SEE INTRODUCTION. M: NEW REQUEST.

STATUS-----STATUS

HAR SOWERBY+ ANE 1 409(1974), EVALUATION OF DATA PUBLISHED BEFORE ABOUT JANUARY 1973.  
 .. ESTIMATED UNCERTAINTY IN FISSION CROSS SECTION ..  
 .. 600 KEV TO 1 MEV ..... 20 TO 10 PERCENT ..  
 .. 2 MEV TO 20 MEV ..... 4.0 TO 5.5 PERCENT ..  
 .. NEAR 14 MEV ..... 2 PERCENT ..  
 FOLLOWING DATA AVAILABLE SINCE SOWERBY EVALUATION

LRL BEHRENS+ - LSND-11 136(1974), TO 20 MEV.

RPI BLOCK+ - PFL 31 247(1973), SUBTHRESHOLD FISSION.

HAR COATES+ - AERE-PR/NP-21 8(1974), DATA 400KEV TO 22 MEV RELATIVE TO U-235 FISSION CROSS SECTION.

KFK BROTZ+ - NEANDC(E)-161 99(1974), IN PROGRESS 1 TO 30 MEV.

CCP FUSSOV - 73KIEV, DATA 1.4 TO 7.4 MEV.  
 ALCHASOV - 73KIEV, VALUE AT 14.6 MEV.

LAS SILBERT+ - PR/C 4 220(1971), BOMB DATA, AVERAGE SUBTHRESHOLD CROSS SECTION, 10 KEV TO 100 KEV.

92 URANIUM 238 NEUTRON NEUTRONS EMITTED PER FISSION (NU BAR)

651275	10.0	MEV	1.0%	1	USA	CoEo TILL PoBo HEMMIG	ANL AEC		
									Q: ENERGY REQUESTED IS A MAXIMUM VALUE ONLY. RATIO TO CF-252 NU WANTED. Q: TO VERIFY MEASUREMENT OF SOLEILAC. M: SUBSTANTIAL MODIFICATIONS.
714021	5.00	MEV	0.7%	2	CCP	MoNo NIKOLAEV	FEI		
									Q: RATIO TO CF-252 NU WANTED. A: ENERGY DEPENDENCE MUST BE KNOWN WITH 0.7 PERCENT ACCURACY AND ABOUT 10 PERCENT ENERGY RESOLUTION. Q: SEE GENERAL COMMENTS IN THE INTRODUCTION.
742088	15.0	MEV	1.0%	1	FR	Ac MICHAUDON	BRC		
									Q: FOR CRITICAL ASSEMBLIES.

759020 800 KEV 1000 MEV 1 CCP LONUSACHEV FEI  
 A: FROM 0.8 - 10.0 MEV ACCURACY 2.1 PERCENT,  
 PRIORITY 2 ACCURACY 1.0 PERCENT.  
 O: NEED FOR FAST REACTOR CALCULATIONS.  
 FOR MORE DETAIL SEE INTRODUCTION.  
 M: NEW REQUEST.

STATUS-----STATUS

IAE MANERO+ - REA 10 637(1972), REVIEW.  
 LRL HOWE+ - NCSAC-42 130(1971), 1 KEV TO 15 MEV., IN PROGRESS.  
 ANL DAVEY - NSE 44 345(1971), EVALUATION TO 15 MEV.  
 ALD MATHER+ - AERE-O-44471, EVALUATION TO 15 MEV

92 URANIUM 238 NEUTRON DELAYED NEUTRONS EMITTED PER FISSION

652397 2000 MEV 500% 2 UK COO CAMPBELL WIN  
 JOO TYROR WIN  
 A: LOW RESOLUTION ADEQUATE FOR INCIDENT ENERGY.  
 O: FOR FAST AND THERMAL REACTORS.

741122 1500 MEV 500% 1 USA NOSTEEN BET  
 O: DATA STILL DISCREPANT.  
 M: NEW REQUEST.

STATUS-----STATUS

AI TUTTLE. - NSE 56 37(1975), REVIEW WITH RECOMMENDED VALUES.  
 HFA SHALEV+ - NSE 51 52(1973), FAST REACTOR SPECTRUM.  
 IAE MANERO+ - REA 10 637(1972), REVIEW 0.1 TO 15 MEV.  
 LAS EVANS+ - USNOC-3 127(1972), REVISED DATA AT 3.1 AND 15 MEV.  
 ANL COX. ANL/NDM-5(1974). MEASUREMENT AND EVALUATION, 2 TO 15 MEV.  
 ALD MCTAGGART - EANDC(UK)-151(1973), FAST REACTOR SPEC MEASUREMENT IN PROGRESS.

92 URANIUM 238 NEUTRON ENERGY SPECTRUM OF FISSION NEUTRONS

692400 2000 MEV 200% 3 UK COO CAMPBELL WIN  
 A: ACCURACY FOR AVERAGE E'.  
 ACCURACY 10 PERCENT ON NUMBER OF NEUTRONS  
 ABOVE 5.0 MEV AND BELOW 0.25 MEV.  
 LOW RESOLUTION ADEQUATE FOR INCIDENT ENERGY.  
 O: FOR FAST REACTORS.

721145 5000 MEV 500% 1 USA POB HEMMIG AEC  
 O: TO RESOLVE DISCREPANCIES IN EXISTING DATA.

742085 1500 MEV 200% 1 FR AO MICHAUDON BRC  
 O: FOR CRITICAL ASSEMBLIES.

STATUS-----STATUS

AE JOHANSSON+ - EANDC(OR)-135 47(1974), RELATIVE TO U-235, IN PROGRESS.

92 URANIUM 238 NEUTRON RESONANCE PARAMETERS

651256 1000 EV 2000 KEV 1000% 1 USA POB HEMMIG AEC  
 COO TILL ANL  
 BO HUTCHINS GEB  
 POB HEMMIG AEC

Q: WANTED TO AS HIGH AN ENERGY AS CAN BE MEASURED.  
 O: NEEDED FOR DOPPLER EFFECT IN FAST REACTORS.  
 NEED ANSWERS TO QUESTIONS OF MISSING P-WAVE LEVELS  
 AND UNCERTAINTY OF GAMMA WIDTHS.

692385 2000 KEV 5000 KEV 300% 2 SWD HO HAEGGLOM AE  
 Q: NEUTRON CAPTURE AND FISSION WIDTH NEEDED.  
 O: NEEDED FOR FAST REACTOR CALCULATIONS.

702029 5000 EV 4000 KEV 200% 2 FR HOTELLIER SAC  
 Q: FOR RESONANCE SELF SHIELDING AND DOPPLER EFFECT.

714016 5000 KEV 1 CCP MONIKOLAEV FEI

Q: OBSERVATION OF VERY WEAK P-WAVE RESONANCES IS  
 DESIRED.  
 RESOLUTION OF 90 PERCENT OF P-WAVE RESONANCES  
 CONTROLLED BY PORTER-THOMAS DISTRIBUTION AND  
 LEVEL SPACING DISTRIBUTION AND ALL S-WAVE  
 RESONANCES BELOW 5 KEV IS DESIRED.  
 O: CAREFUL IDENTIFICATION OF S AND P WAVE RESONANCES  
 NEEDED FOR DETERMINATION OF P WAVE STRENGTH  
 FUNCTION.  
 REQUEST CONNECTED WITH PROBLEM OF SELF SHIELDING  
 EVALUATION IN UNRESOLVED RESONANCE REGION.  
 ATTENTION TO BE PAID TO THE PROBABLE DIFFERENCE  
 BETWEEN THE 1/2 (+) AND 1/2 (-) LEVEL DENSITIES.  
 FIRST PRIORITY BECAUSE INVESTIGATION OF THE PARITY  
 DEPENDENCE OF LEVEL DENSITY IS OF INTEREST FROM  
 A SCIENTIFIC AS WELL AS FROM A PRACTICAL POINT  
 OF VIEW.  
 M: SUBSTANTIAL MODIFICATIONS.

722113 6.00 EV 10.0 KEV 3.0% 1 UK C.G.CAMPBELL WIN  
 A: ACCURACY IS FOR THE AVERAGE ERROR BETWEEN E AND  $2E_c$   
 BROAD RESOLUTION MEASUREMENTS COULD SUFFICE.  
 Q: FOR FAST REACTORS.  
 TO GIVE SHIELDED CROSS SECTIONS TO 3 PERCENT.  
 TO GIVE DOPPLER CHANGE TO 5 PERCENT FOR  
 TEMPERATURES BETWEEN 300 AND 1200 DEGREES K<sub>0</sub>

-----STATUS-----

COL RAHN+ - USNDC-1 67(1972), 74 P-WAVE RESONANCES.  
 DUB MALECKY+ - AE 32 49(1972), DATA TO 1.2 KEV.  
 BNL CHRIEN+ - PR/C 4 900(1971), DATA TO 600 EV.  
 RPI BYOUN+ - USNDC-3 166(1972), IN PROGRESS.  
 HAR SOWERBY+ (1974), FEASIBILITY STUDIES RELATED TO REQUEST NUMBER 732113 IN PROGRESS.

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92 URANIUM 239 NEUTRON FISSION CROSS SECTION

722090 1.00 KEV 15.0 MEV 20.0% 1 FR A.MICHAUDON BRC  
 Q: EVALUATION MAY BE SUFFICIENT.

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93 NEPTUNIUM 237 GAMMA GAMMA,N

692409 20.0% 3 UK A.WHITTAKER UKW  
 Q: PRODUCTION OF PU-236.  
 FOR AN AVERAGE GAMMA RAY ENERGY FROM MG, C,  
 ZIRCALOY AND STAINLESS STEEL(20/25).  
 Q: FOR ISOTOPE PRODUCTION.

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93 NEPTUNIUM 237 NEUTRON CAPTURE CROSS SECTION

671115 1.00 MV 5.00 MEV 1 USA B.HUTCHINS GEB  
 A: ACCURACY - 3 PERCENT FROM THERMAL TO 10 EV,  
 10 PERCENT ABOVE 10 EV,  
 5 PERCENT IN NEUTRON WIDTH, 10 PERCENT IN GAMMA  
 WIDTH FROM THERMAL TO 1 KEV.  
 Q: ABOVE 1 KEV PRIORITY.  
 FOR THERMAL REACTOR CALCULATIONS AND PU-238  
 PRODUCTION.  
 M: NEW REQUEST.

-----STATUS-----

LRL NAGLE+ - 71 KNCXVILLE 259, DATA 100 KEV TO 3 MEV.  
 GEL THEOBALD+ - EANDC(E)-157 (1973), IN PROGRESS TO 300 EV.  
 ANC SMITH+ - IN-1182(1969), EVALUATION TO 15 MEV.

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93 NEPTUNIUM 237 NEUTRON N,2N

671112 15.0 MEV 10.0% 2 USA F.C.J.MC CROSSON SRL  
 Q: TO EVALUATE CONTAMINATION OF PU-238 BY PU-236.  
 691290 10.0 MEV 10.0% 2 USA B.HUTCHINS GEB  
 Q: NEEDED FOR CONTROL OF U-232 PRODUCTION.

-----STATUS-----

ALD PERKIN+ JNE/AB 14 69(1961), DATA AT 19.5 MEV.

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93 NEPTUNIUM 237 NEUTRON FISSION CROSS SECTION

661044 20.0 EV 50.0 KEV 10.0% 3 USA G.E.C.HANSEN LAS  
 Q: RATIO TO U-235 FISSION WANTED.  
 A: ENERGY RESOLUTION - 30 PERCENT.  
 661045 50.0 KEV 1.00 MEV 5.0% 1 USA G.E.C.HANSEN LAS  
 Q: RATIO TO U-235 FISSION WANTED.  
 A: ENERGY RESOLUTION - 3 PERCENT.  
 661046 1.00 MEV 15.0 MEV 1.0% 2 USA G.E.C.HANSEN LAS  
 Q: RATIO TO U-235 FISSION WANTED.  
 A: ENERGY RESOLUTION - 3 PERCENT.

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STATUS-----STATUS

KTO KOBAYASHI+ - EANDC(J)-26 (1972), DATA 4.3 TO 4.8 MEV.

LAS JIACOLETTI+ - LA-4763 (1971), DATA 20 EV TO 7.7 MEV.

GEL THEOBALD+ - EANDC(E)-150 (1972), IN PROGRESS 1 EV TO 1 KEV.

NBS BOWMAN+ - WORK PLANNED 10 KEV TO 2 MEV.

CCP GAVRILOV+ - AE 2E 362(1970), DATA TO 1 KEV.

LAS BROWN+ - NF/A 156 609(1970), BOMB DATA.

IAE BAK+ - KNS 3 77(1971), EVALUATION TO 19 MEV.

SAC PAYA+ - EANDC(E)-127U(1970), TO 2 KEV.

NDC SCHETT+ - EANDC-95 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.

NBS BOWMAN+ - MEASUREMENTS PLANNED FOR 1975.

93 NEPTUNIUM 238 NEUTRON CAPTURE CROSS SECTION

681802 25.3 MV 2 CAN W.H.WALKER CRC  
 O: ACCURACY REQUIRED 100 B.  
 O: UNKNOWN CROSS SECTION.

93 NEPTUNIUM 239 NEUTRON CAPTURE CROSS SECTION

712075 10.0 KEV 3.00 MEV 20.0% 3 JAP M.OMTA KYU  
 O: FOR CORRECTION OF CALCULATED INELASTIC SCATTERING  
 CROSS SECTION.  
 M: SUBSTANTIAL MODIFICATIONS.

94 PLUTONIUM 236 NEUTRON FISSION CROSS SECTION

712076 25.3 MV 15.0 MEV 10.0% 2 GER E.GOEL KFK  
 O: FOR BURN UP CALCULATIONS.

94 PLUTONIUM 237 NEUTRON CAPTURE CROSS SECTION

742092 1.00 KEV 3.00 MEV 20.0% 1 FR A.MICHAUDON BRC  
 O: EVALUATION MAY BE SUFFICIENT.

94 PLUTONIUM 237 NEUTRON FISSION CROSS SECTION

682011 1.00 KEV 15.0 MEV 20.0% 1 FR A.MICHAUDON BRC

94 PLUTONIUM 238 NEUTRON CAPTURE CROSS SECTION

681803 25.3 MV 5.0% 2 CAN W.H.WALKER CRC  
 O: DISAGREEMENT BETWEEN INTEGRAL (APPROX 450 B) AND  
 DIFFERENTIAL (APPROX 530 B) MEASUREMENTS.

732096 500. EV 1.00 MEV 20.0% 2 FR J.Y.BARRE CAD  
 O: VALUE RELATIVE TO U-238 CAPTURE CROSS SECTION.  
 O: FOR FAST REACTOR CALCULATIONS.

742093 1.00 KEV 3.00 MEV 20.0% 2 FR A.MICHAUDON BRC

STATUS-----STATUS

LAS SILBERT+ - LA-5C24 (1972), DATA 18 EV TO 200 KEV.

KFK HINKELMANN - KFK-1186(1970), EVALUATION TO 10 MEV.

94 PLUTONIUM 238 NEUTRON N,2N

682062 15.0 MEV 10.0% 1 FR A.MICHAUDON BRC

STATUS-----STATUS

BRC EXPERIMENT IN PROGRESS.

94 PLUTONIUM 238 NEUTRON FISSION CROSS SECTION

682064 15.0 MEV 20.0% 1 FR A.MICHAUDON BRC  
 O: MEASUREMENTS DONE AT LOS ALAMOS MAY SATISFY THIS  
 REQUEST UP TO 1 MEV.  
 EVALUATION MAY BE SUFFICIENT

732095 500. EV 15.0 MEV 10.0% 2 FR J.Y.BARRE CAD  
 O: VALUE RELATIVE TO U-235 FISSION CROSS SECTION.  
 O: FOR FAST REACTOR CALCULATIONS.

STATUS-----STATUS  
 ALD MCAT - AWR/0-13/72, DATA 17 EV TO 1 MEV.  
 LAS SILBERT - LA-4674 (1971), DATA 18 EV TO 3 MEV.  
 LAS DRAKE+ - LA-442C(1970), DATA TO 2.6 MEV

94 PLUTONIUM 238 NEUTRON NEUTRONS EMITTED PER FISSION (NU BAR)

722097 500. EV 15.0 MEV 10.0% 2 FR J. BARRE CAD  
 Q: VALUE RELATIVE TO CF-252 NU.  
 O: FOR FAST REACTOR CALCULATIONS.

94 PLUTONIUM 239 NEUTRON TOTAL CROSS SECTION

741124 1.00 EV 500. KEV 3.0% 1 USA B. HUTCHINS GEB  
 A: ENERGY RESOLUTION TO SHOW SECONDARY STRUCTURE UP TO 10 KEV.  
 M: NEW REQUEST.

94 PLUTONIUM 239 NEUTRON ELASTIC CROSS SECTION

692916 10.0% 3 UK J. TYROR WIN  
 Q: THERMAL AVERAGE INCIDENT ENERGY.  
 O: FOR LONG TERM IMPROVEMENT OF THE ABSORPTION CROSS SECTION.

742094 1.00 KEV 15.0 MEV 5.0% 1 FR A. MICHAUDON BRC  
 O: FOR CRITICAL ASSEMBLIES.

94 PLUTONIUM 239 NEUTRON DIFFERENTIAL ELASTIC CROSS SECTION

691202 1.00 MEV 3.00 MEV 10.0% 2 USA C. E. TILL P. B. HEMMIG ANL AEC  
 A: ENERGY RESOLUTION 500 KEV OR BETTER.

742095 1.00 KEV 15.0 MEV 5.0% 1 FR A. MICHAUDON BRC  
 O: FOR CRITICAL ASSEMBLIES.

STATUS-----STATUS

GEL COPPOLA+ - ZP 232 286(1970), DATA 1.5 TO 5.5 MEV.  
 ANL GUENTHER+ - USNDC-3 13(1972), IN PROGRESS TO 4.0 MEV.

94 PLUTONIUM 239 NEUTRON INELASTIC CROSS SECTION

692915 15.0 MEV 25.0% 1 GEF E. GOEL KFK  
 Q: TOTAL INELASTIC OR NONELASTIC CROSS SECTION.

742097 15.0 MEV 10.0% 2 FR A. MICHAUDON BRC  
 O: FOR CRITICAL ASSEMBLIES.

754023 800. KEV 5.00 MEV 1 CCP L. N. USACHEV FEI  
 A: FROM 0.8 - 1.4 MEV ACCURACY 15 PERCENT, PRIORITY 2 ACCURACY 15 PERCENT.  
 FROM 1.4 - 2.5 MEV ACCURACY 17 PERCENT, PRIORITY 2 ACCURACY 17 PERCENT.  
 FROM 2.5 - 5.0 MEV ACCURACY 30 PERCENT, PRIORITY 2 ACCURACY 30 PERCENT.  
 O: NEED FOR FAST REACTOR CALCULATION.  
 M: FOR MORE DETAIL SEE INTRODUCTION.

94 PLUTONIUM 239 NEUTRON ENERGY DIFFERENTIAL INELASTIC CROSS SECTION

682066 10.0 KEV 10.0 MEV 10.0% 1 JAF M. KAWAI NPG  
 Q: CROSS SECTIONS FOR EXCITATION OF INDIVIDUAL LEVELS DESIRED.  
 O: FOR FAST REACTORS.

692921 15.0 MEV 2 GER B. GOEL KFK  
 Q: SEPARATION OF LEVELS UP TO 1 MEV REQUIRED.  
 A: ACCURACY 20 PERCENT UP TO 1.4 MEV AND 10 PERCENT ABOVE.  
 ACCURACY ON NUCLEAR TEMPERATURE 10 PERCENT.  
 PRIMARY AND SECONDARY ENERGY RESOLUTION 100 KEV.

714023 15.0 MEV 2 CCP M. N. NIKOLAEV FEI  
 A: CROSS SECTION FOR INELASTIC REMOVAL BELOW FISSION THRESHOLDS OF U-238 AND OF PU-240 OR NP-237 DESIRED WITH 10 PERCENT ACCURACY.  
 EXCITATION CROSS SECTION FOR LOW LYING LEVELS REQUIRED WITH 15 PERCENT ACCURACY.  
 O: SEE GENERAL COMMENTS IN THE INTRODUCTION.

721089 10.0 KEV 10.0 MEV 20.0% 1 USA P. B. HEMMIG AEC

STATUS-----STATUS

GEL COPPOLA+ - ZP 232 286(1970), DATA 1.9 TO 5.5 MEV.

ANL GUENTHER+ - USNDC-3 13(1972), IN PROGRESS TO 4.0 MEV.

94 PLUTONIUM 239 NEUTRON DOUBLE DIFFERENTIAL INELASTIC CROSS SECTION

692068 300. KEV 10.0 MEV 10.0% 1 BAN M.M. ISLAM RAM  
Q: FOR FAST REACTORS.

792098 15.0 MEV 20.0% 2 FR A.MICHAUDON BRC  
Q: FOR CRITICAL ASSEMBLIES.

94 PLUTONIUM 239 NEUTRON NON-ELASTIC CROSS SECTION

692067 100. KEV 10.0 MEV 10.0% 2 BAN M.M. ISLAM RAM  
Q: FOR FAST REACTORS.

94 PLUTONIUM 239 NEUTRON CAPTURE CROSS SECTION

692437 1.00 KEV 500. KEV 3.0% 2 SWC H.HAEGGBLOM AE  
Q: NEEDED FOR FAST REACTOR CALCULATIONS.

693078 25.3 MV 30.0 KEV 3.0% 2 BAN M.M. ISLAM RAM  
Q: FOR FAST REACTORS.

792039 1.00 KEV 200. KEV 5.0% 1 JAP S.KATSURAGI JAE  
Q: ALPHA ALSO USEFUL.  
Q: FOR FAST REACTORS.

712082 30.0 KEV 15.0 MEV 10.0% 2 GER B.GOEL KFK  
Q: ALPHA ALSO USEFUL.  
A: PREFER 5 PERCENT ACCURACY UP TO 100 KEV.  
Q: FOR BURNUP CALCULATIONS.

792109 1.00 KEV 3.00 MEV 5.0% 1 FR A.MICHAUDON BRC  
Q: FOR CRITICAL ASSEMBLIES.

754012 5.00 KEV 10.0 MEV 1 CCP L.N.USACHEV FEI  
A: FROM 0.5 - 100 KEV ACCURACY 4.5 PERCENT.  
PRIORITY 2 ACCURACY 3.7 PERCENT.  
FROM 0.1 - 0.8 MEV ACCURACY 10 PERCENT.  
PRIORITY 2 ACCURACY 10 PERCENT.  
FROM 0.8 - 4.5 MEV ACCURACY 50 PERCENT.  
PRIORITY 2 ACCURACY 50 PERCENT.  
ABOVE 4.5 MEV REQUIREMENTS 2 TIMES WEAKER.  
Q: NEED FOR FAST REACTOR CALCULATIONS.  
FOR MORE DETAIL SEE INTRODUCTION.  
M: NEW REQUEST.

STATUS-----STATUS

FEI CHELNOKOV+ - YFI-13 6(1972), DATA 200 EV TC 12 KEV.

ORL GWIN+ - NSE 45 25(1971), DATA THERMAL TO 30 KEV.

ORL WESTON+ - LSND-3 149(1972), WORK IN PROGRESS.

HAR SCHOMBERG+ - 70HELSINKI 1 315. 100 EV TO 30 KEV.

94 PLUTONIUM 239 NEUTRON PHOTON PRODUCTION CROSS SECTION IN INELASTIC SCAT.

692065 300. KEV 4.00 MEV 10.0% 1 BAN M.M. ISLAM RAM  
Q: SECONDARY ENERGY-ANGLE DISTRIBUTIONS REQUIRED.  
Q: FOR FAST REACTORS.

STATUS-----STATUS

LAS DRAKE+ - NSE 40 294(1970), DATA 4 TO 7.7 MEV.

94 PLUTONIUM 239 NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION

692418 120. KEV 20.0% 2 UK C.G. CAMPBELL WIN  
Q: GAMMA SPECTRUM WANTED.  
A: LOW RESOLUTION ADEQUATE FOR INCIDENT ENERGY AND  
PHOTON SPECTRUM.  
Q: FOR STUDY OF ACTIVATION AND HEAT RELEASE IN CORE.

792096 1.00 KEV 15.0 MEV 10.0% 1 FR A.MICHAUDON BRC  
Q: FOR SHIELDING.

94 PLUTONIUM 239 NEUTRON N.2A

682067 15.0 MEV 10.0% 1 FR A.MICHAUDON BRC

651306 6.00 MEV 10.0 MEV 10.0% 2 USA P.B. HEMMIG AEC  
Q: NEEDED TO PREDICT BUILDUP OF PU-236.

STATUS-----STATUS

ALD MATHER+ - AURE/O-72/72, IN PROGRESS 6 TO 13 MEV.

94 PLUTONIUM 239 NEUTRON N,3N

692069 15.0 MEV 20.0% 1 FR A.MICHAUDON BRC

STATUS-----STATUS

ALD MATHER+ - AURE/O-72/72, IN PROGRESS 6 TO 13 MEV.

94 PLUTONIUM 239 NEUTRON FISSION CROSS SECTION

661095 10.0 KEV 15.0 MEV 1.0% 1 USA G.E.FANSEN LAS

Q: RELATIVE TO U-235.  
A: ENERGY RESOLUTION 3 PERCENT, ENERGY CALIBRATION 1 PERCENT.

691439 1.00 EV 10.0 MEV USA B.HUTCHINS GEB

A: PRIORITY ENERGY RANGE ACCURACY  
1 1 EV TO 10 KEV 3 PERCENT  
2 10 KEV TO 1 MEV 2 TO 5 PERCENT  
1 1 MEV TO 10 MEV 5 PERCENT  
VERIFICATION OF CURRENT ACCURACY OR INTERMEDIATE ACCURACY USEFUL.  
Q: NEED RELATED ACCURACY FOR 5-10 PERCENT ENERGY BINS FOR FAST REACTOR CALCULATIONS.  
M: NEW REQUEST.

691467 1.00 EV 10.0 MEV 1 USA C.E.TILL ANL  
P.B.HEMMIG AEC

A: ACCURACY 3 PERCENT BELOW 20 KEV, 2 PERCENT, 20 KEV TO 3 MEV, 5 PERCENT, 3 MEV TO 10 MEV.  
Q: HIGHEST PRIORITY FOR FAST REACTOR CALCULATIONS.

692426 1.00 MEV 5.00 MEV 3.0% 1 UK C.G.CAMPBELL WIN

Q: RATIO TO U-235 FISSION CROSS SECTION ACCEPTABLE.  
A: ACCURACY FOR AVERAGE VALUE OF THE ERROR BETWEEN E AND 2E.  
Q: FOR FAST REACTORS.  
M: MODIFIED (PARTIALLY FULFILLED).

693070 25.3 MV 15.0 MEV 5.0% 1 BAN M.M.ISLAM RAM

Q: FOR FAST REACTORS.

714024 1.00 KEV 4.00 MEV 1 CCP M.N.NIKOLAEV FE1

Q: RATIO TO U-235 FISSION CS IS WANTED BUT ABSOLUTE MEASUREMENT AND MEASUREMENT OF RATIOS TO B-10 (N,ALPHA), LI-6(N,ALPHA) CROSS SECTIONS AND OTHER STANDARDS WOULD BE VERY USEFUL.  
BELOW 30 KEV MEASUREMENTS OF TRANSMISSION CURVES BY FLAT RESPONSE DETECTOR AND BY SELF DETECTION METHOD WITH FISSION DETECTOR WANTED FOR SELFSHIELDING EVALUATION.  
THESE CURVES MUST BE MEASURED WITH ATTENUATIONS OF THE PRIMARY BEAM DOWN TO 1 PERCENT.  
A: ACCURACY REQUIRED TO BETTER THAN 2.0 PERCENT. OPTIMUM PRECISION OF 1.5 PERCENT DESIRED IN REGION 20 KEV TO 1 MEV.  
LETHARGY RESOLUTION OF ABOUT 0.2 CONSIDERED SUFFICIENT FOR SUCH MEASUREMENTS.  
Q: SEE GENERAL COMMENTS IN THE INTRODUCTION. REQUEST CONSIDERED FULFILLED, WHEN AT LEAST THREE MEASUREMENTS WITH DIFFERENT METHODS AGREE WITHIN REQUESTED ACCURACY.  
FIRST PRIORITY BECAUSE IT IS DIFFICULT TO INTERPRET THE SELF-SHIELDING FACTORS FROM MACROSCOPIC DATA ONLY.  
M: SUBSTANTIAL MODIFICATIONS.

721085 25.3 MV 1.00 KEV 1.0% 2 USA B.HUTCHINS GEB

Q: DIRECT MEASUREMENTS DISAGREE. IMPROVED PRECISION NEEDED FOR THERMAL REACTORS. U AND PU HALF LIVES SHOULD BE CONFIRMED AS THEY AFFECT THIS MEASUREMENT.  
M: SUBSTANTIAL MODIFICATIONS.

721086 10.0 KEV 14.0 MEV 2.0% 1 USA P.B.HEMMIG AEC

Q: RELATIVE TO U-235. AVERAGES OVER 10 TO 20 PERCENT ENERGY INTERVALS WANTED.  
A: ENERGY RESOLUTION 3 PERCENT, ENERGY CALIBRATION 1 PERCENT.

741125 10.0 KEV 1.00 MEV 2.0% 2 USA B.HUTCHINS GEB

Q: RATIO TO U-235 (N,F) WANTED.  
M: NEW REQUEST.

742006 1.00 KEV 5.00 MEV 2 SWC H.HAEGGBLOM AE

A: ACCURACY 2 PERCENT TO 1 MEV, 5 PERCENT ABOVE.  
Q: FAST REACTOR CALCULATIONS.

742095 15.0 MEV 1 FR A.MICHAUDON BRC

A: ACCURACY 5 PERCENT TO 1 KEV, 2 PERCENT ABOVE.  
Q: FOR CRITICAL ASSEMBLIES.

754009 5.00 KEV 10.0 MEV 1 CCP L<sub>0</sub>N<sub>0</sub>USACHEV FEI  
 A: FROM 0.5 - 100 KEV ACCURACY 2.8 PERCENT,  
 PRIORITY 2 ACCURACY 1.2 PERCENT,  
 FROM 0.1 - 0.8 MEV ACCURACY 3.0 PERCENT,  
 PRIORITY 2 ACCURACY 1.3 PERCENT,  
 FROM 0.08 - 4.5 MEV ACCURACY 4.0 PERCENT,  
 PRIORITY 2 ACCURACY 2.6 PERCENT,  
 ABOVE 4.5 MEV REQUIREMENTS 2 TIMES WEAKER.  
 O: NEED FOR FAST REACTOR CALCULATIONS.  
 FOR MORE DETAIL SEE INTRODUCTION.  
 M: NEW REQUEST.

-----STATUS-----

HAR SOWERBY+ - ANE 1 409(1974), EVALUATION OF DATA PUBLISHED BEFORE ABOUT JANUARY 1973.  
 ESTIMATED UNCERTAINTY IN FISSION CROSS SECTION:  
 100 EV TO 30 KEV 3 TO 4 PERCENT  
 30 KEV TO 100 KEV 5.5 PERCENT  
 100 KEV TO 3 MEV 4.0 TO 5.5 PERCENT  
 3 MEV TO 20 MEV 5.5 TO 10 PERCENT  
 NEAR 14 MEV 2 PERCENT  
 FOLLOWING DATA AVAILABLE SINCE SOWERBY EVALUATION:  
 SAC BLONS - NSE 51 130(1973), DATA 39 EV TO 30 KEV.  
 FEI CHELNOKOV+ - YFI-13 6(1972), DATA 200 EV TO 35 KEV.  
 LRL BÉPRENS+ - LSND-11 136(1974), IN PROGRESS 0.01 EV TO 100 KEV AND 10 KEV TO 20 MEV.  
 GEL THEOBALD+ - EANDC(E)-150 (1972), IN PROGRESS 50 EV TO 2 KEV.  
 HAR GAYTHER+ - AERE-PR/NP19(1972), IN PROGRESS 1 KEV TO 1 MEV, PRELIMINARY DATA AVAILABLE.  
 ORL GWIN+ - USND-3 149(1972), IN PROGRESS THERMAL TO 200 KEV.  
 NBS BOWMAN - WCRK PLANNED.

94 PLUTONIUM 239 NEUTRON CAPTURE TO FISSION RATIO (ALPHA)

651314 100. EV 100.0 MEV 1 USA C<sub>0</sub>E<sub>0</sub>TILL ANL  
 B<sub>0</sub>HUTCHINS GEB  
 P<sub>0</sub>B<sub>0</sub>HEMMIG AEC  
 F<sub>0</sub>C<sub>0</sub>MAIENSCHIEIN ORL  
 Q: CAPTURE CROSS SECTION EQUALLY USEFUL.  
 A: ACCURACY 100 EV TO 1 KEV, 8 PERCENT,  
 1 KEV TO 50 KEV, 4 PERCENT,  
 50 KEV TO 600 KEV, 6 PERCENT,  
 600 KEV TO 10 MEV, 10 PERCENT.

722035 500. EV 1.00 MEV 5.0% 2 FR J<sub>0</sub>Y<sub>0</sub>BARRE CAD  
 Q: ABSOLUTE VALUES USEFUL BUT REQUEST CONCERNS MAINLY  
 RELATIVE VALUES VERSUS ENERGY.  
 O: FOR FAST REACTOR CALCULATIONS.

712078 20.0 KEV 100. KEV 10.0% 3 UK C<sub>0</sub>G<sub>0</sub>CAMPBELL WIN  
 A: ACCURACY FOR AVERAGE VALUE OF THE ERROR BETWEEN  
 E AND 2E.  
 O: FOR FAST REACTORS.

714225 100. EV 800. KEV 7.0% 1 CCP M<sub>0</sub>N<sub>0</sub>NIKOLAEV FEI  
 Q: FOR EVALUATION OF DIFFERENCES IN CAPTURE AND  
 FISSION-RESONANCE SELF SHIELDING.  
 MEASUREMENTS OF TRANSMISSION CURVES WITH FLAT-  
 RESPONSE DETECTOR AND BY SELF-INDICATION METHOD  
 WITH CAPTURE AND FISSION DETECTORS ARE WANTED.  
 BEAM ATTENUATION DOWN TO 1 PERCENT WANTED.  
 A: IN REGION 1 TO 100 KEV, 4 TO 5 PERCENT ACCURACY  
 DESIRABLE.  
 LETHARGY RESOLUTION OF 0.2 SUFFICIENT FOR REGION  
 0.1 TO 30 KEV.  
 AT LEAST THREE DIFFERENT REQUESTS MUST COINCIDE  
 WITHIN REQUESTED ACCURACY.  
 O: SEE GENERAL COMMENTS IN THE INTRODUCTION.  
 FIRST PRIORITY BECAUSE IT IS DIFFICULT TO  
 INTERPRET THE SELF-SHIELDING FACTORS FROM  
 MACROSCOPIC DATA ONLY.  
 M: SUBSTANTIAL MODIFICATIONS.

-----STATUS-----

FEI CHELNOKOV+ - YFI-13 6(1972), DATA 200 EV TO 12 KEV.  
 FEI KONONOV+ - AE 32 85(1972), DATA 10 KEV TO 1 MEV.  
 KUR VOROTNIKOV+ - 73KIEV 4 42, DATA 3 TO 200 KEV.  
 DUB BOLOTSKII+ - 73 KIEV 4 49, DATA THERMAL TO 30 KEV.  
 ORL WESTON+ - LSND-7 179(1973), IN PROGRESS THERMAL TO 20 KEV.  
 KFK BANDL+ - EANDC(E)-157 (1973), IN PROGRESS 8.1 TO 60 KEV.  
 ORL GWIN+ - NCSAC-42 199(1971), THERMAL TO 400 KEV.  
 ANL KATO+ - NSE 45 37(1971), FAST REACTOR SPECTRUM.  
 KAP SILAND+ - NSE 44 180(1971), PILE SPECTRUM.

94 PLUTONIUM 239 NEUTRON NEUTRONS EMITTED PER NEUTRON ABSORPTION (ETA)

642506 10.0 MV 0.50 EV 0.8% 1 UK J<sub>0</sub>G<sub>0</sub>TYROR WIN  
 Q: VALUE RELATIVE TO 25.3 MV ETA WANTED.  
 A: ACCURACY IS FOR AVERAGE VALUES IN 20 MV STEPS.  
 O: FOR TEMPERATURE COEFFICIENT WORK.

671124 25.3 MV 1.00 EV 0.5% 1 USA B<sub>0</sub>HUTCHINS GEB  
 O: FOR PU-FUELED REACTOR CALCULATIONS.

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94 PLUTONIUM 239                    NEUTRON                    NEUTRONS EMITTED PER FISSION (NU BAR)

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661062	25.3	MV	10.0	MEV		1	USA	C.E.TILL B.HUTCHINS P.B.HEMMIG A.M.PERRY	ANL GEB AEC ORL
									Q: MEASUREMENT SHOULD INCLUDE LOW ENERGY NEUTRONS (TO APPROXIMATELY 100 KEV). A: ACCURACY 1 KEV TO 3 MEV, 0.5 PERCENT, OTHERWISE 1 PERCENT. ACCURACY OF 1.5 PERCENT WOULD BE USEFUL. REQUIRE RESOLUTION OF SIGNIFICANT STRUCTURE UP TO 500 KEV. O: HIGHEST PRIORITY FOR FAST REACTOR CALCULATIONS.
702037			15.0	MEV		1	JAP	M.KAWAI	NPG
									A: ACCURACY REQUIRED TO BETTER THAN 0.5 PERCENT. O: FOR FAST REACTORS CALCULATIONS.
714026	25.3	MV	2.50	MEV	0.5%	2	CCP	M.N.NIKOLAEV	FEI
									Q: RATIO TO CF-252 NU REQUIRED. ABSOLUTE MEASUREMENTS OF NU-BAR AND ETA FOR THERMAL NEUTRONS WITH ACCURACY OF AT LEAST 0.5 PERCENT WOULD BE VERY USEFUL FOR LOWERING THE DEPENDENCE OF PU-239 NU-BAR RESULTS FROM THE CF-252 NU-BAR STANDARD. A: ENERGY DEPENDENCE OF NU IS WANTED WITH 0.7 PERCENT ACCURACY. ENERGY RESOLUTION OF 10 PERCENT REQUIRED BELOW 2.5 MEV. O: SEE GENERAL COMMENTS IN THE INTRODUCTION. M: SUBSTANTIAL MODIFICATIONS.
742101			15.0	MEV		1	FR	A.MICHAUDON	BPC
									A: ACCURACY 2 PERCENT TO 1 KEV, 1 PERCENT ABOVE. O: FOR CRITICAL ASSEMBLIES.
754011	5.00	KEV	10.0	MEV		1	CCP	L.N.USACHEV	FEI
									A: FROM 0.5 - 100 KEV ACCURACY 1.2 PERCENT, PRIORITY 2 ACCURACY 0.5 PERCENT. FROM 0.1 - 0.8 MEV ACCURACY 1.0 PERCENT, PRIORITY 2 ACCURACY 0.5 PERCENT. FROM 0.8 - 4.5 MEV ACCURACY 2.1 PERCENT, PRIORITY 2 ACCURACY 1.2 PERCENT. ABOVE 4.5 MEV REQUIREMENTS 2 TIMES WEAKER. O: NEED FOR FAST REACTOR CALCULATIONS. FOR MORE DETAIL SEE INTRODUCTION. M: NEW REQUEST.

-----STATUS-----

IAE MANERO+ - REA 10 637(1972), REVIEW.

CCP VOLODIN+ - AE 33 901(1972), DATA TO 1.6 MEV.

BRC FREHAUT+ - EANDC(E)-150(1972), IN PROGRESS 7 EV TO 40 KEV.

LRL HOWE+ - USNDC-7 105(1973), IN PROGRESS THERMAL TO 15 MEV.

RPI REED+ - USNDC-7 202(1973), IN PROGRESS THERMAL TO 100 EV.

JRL WESTON+ - PR/C 10 1402(1974), DATA FOR RESOLVED RESONANCES IN RANGE 10 TO 170 EV.

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94 PLUTONIUM 239                    NEUTRON                    DELAYED NEUTRONS EMITTED PER FISSION

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651212	25.3	MV	5.00	MEV	5.0%	2	USA	C.E.TILL P.B.HEMMIG	ANL AEC
									Q: NEUTRON SPECTRUM WANTED: YIELD, HALF LIFE, AND ENERGY NEEDED. O: NEEDED FOR ANALYSIS OF FAST CRITICALS AND FAST REACTOR CALCULATIONS.
722114	100.	KEV			5.0%	2	UK	C.G.CAMPBELL	WIN
									A: LOW RESOLUTION ADEQUATE FOR INCIDENT ENERGY. O: FOR FAST REACTORS.

-----STATUS-----

AI TUTTLE. - NSE 56 37(1975), REVIEW WITH RECOMMENDED VALUES.

ANL COX. - ANL/NDM-5 (1974), MEASUREMENTS AND REVIEW, 2 TO 15 MEV.

FEI TARASKO+ - YF 17 1149(1973), IN THERMAL AND FISSION SPECTRUM.

HFA SHALEV+ - NSE 51 52(1973), THERMAL.

KFK FIEG - EANDC(E)-157(1973), AT 14 MEV, IN PROGRESS.

LAS EVANS+ - USNDC-3 127(1972), 0.1 TO 15 MEV, REVISED

LAS KRICK+ - NSE 47 311(1972), 0.1 TO 1.8 MEV.

FEI MAKJUTENKO+ - YFI-10 27(1971), 18 TC 21 MEV.

IAE MANERO+ - REA 10 637(1972), REVIEW.

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94 PLUTONIUM 239                    NEUTRON                    ENERGY SPECTRUM OF FISSION NEUTRONS

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652433	100.	KEV			2.0%	1	UK	C.G.CAMPBELL A.WHITTAKER S.B.WRIGHT	WIN UKW HAR
									A: ACCURACY 2 PERCENT AVERAGE E', 10 PERCENT ON THE NUMBER OF NEUTRONS ABOVE 5 MEV AND BELOW 0.25 MEV. LOW RESOLUTION ADEQUATE FOR INCIDENT ENERGY. O: FOR FAST REACTORS. FOR REACTION RATE ANALYSIS.

712080 2503 MV 2 JAP T. IIJIMA JAE  
 A: ACCURACY OF NUCLEAR TEMPERATURE FOR MAXWELL DISTRIBUTION IS REQUIRED WITHIN 30 KEV.  
 Q: FOR FAST REACTORS.  
 742103 15.0 MEV 1.0% 1 FR A. MICHAUDDN BRC  
 Q: FOR CRITICAL ASSEMBLIES.

-----STATUS-----

KFK WERLE+ - JNE 26 165(1972), DATA 100 KEV TO 10 MEV.  
 ANL SMITH - ANL-7910 18(1972), DATA 300 KEV TO 8 MEV.  
 HAR ADAMS+ - (1974), PRELIMINARY DATA AVAILABLE, WORK CONTINUES.

94 PLUTONIUM 239 NEUTRON FISSION PRODUCT MASS YIELD SPECTRUM

671125 2503 MV 3.0% 2 USA N. STEEN BET  
 Q: CUMULATIVE AND DIRECT YIELD OF XE-135 INCLUSIVE OF 15 MINUTE ISOMER IS WANTED.  
 Q: FOR CALCULATION OF FISSION PRODUCT POISONS.  
 671126 2503 MV 1.0% 2 USA N. STEEN F. J. MC CROSSON BET SRL  
 Q: FISSION PRODUCT YIELD OF CS-137 WANTED.  
 Q: FOR BURN UP INDICATOR STANDARD.  
 671128 2503 MV 3.0% 2 USA N. STEEN BET  
 Q: FISSION PRODUCT YIELD OF NO-147 AND SM-149 WANTED.  
 Q: FOR CALCULATION OF FISSION PRODUCT POISONS.  
 711903 2503 MV 1.0% 2 CAN W. H. WALKER CRC  
 Q: YIELD OF XE-135 WANTED.  
 Q: FOR CALCULATION OF FISSION PRODUCT ABSORPTION.  
 741126 2503 MV 15.0 MEV 5.0% 2 USA B. HUTCHINS GEB  
 Q: ALL FISSION PRODUCTS.  
 M: NEW REQUEST.

-----STATUS-----

KUR MILLER+ - SJA 27 281(1969).  
 AE FORSYTH+ - 70 KARLSRUHE VCL.1 P. 521.  
 SRE HILLER - KT 12 485(1970).  
 CCP GRECHUSHKINA - TABLES SHOWING THE COMPOSITION OF PROMPT FISSION PRODUCTS FROM U-235, U-238 AND PU-239 FISSION, ATOMIZDAT, MOSCOW(1964).  
 CCP GUSEV - PROTECTION AGAINST GAMMA RADIATION FROM FISSION PRODUCTS, ATOMIZDAT, MOSCOW(1969).  
 CCP GRESHILOV+ - PRODUCTS OF PROMPT FISSION OF U-235, U-238, AND PU-239 FROM 0 TO 1 HOUR, ATOMIZDAT, MOSCOW(1965).  
 SGA LAMMER+ - 73 PARIS PAPER 13, EVALUATION.  
 HAR CROUCH - 73 PARIS PAPER 94, EVALUATION.  
 GRE DEVILLERS+ - 73 PARIS PAPER 63, EVALUATION.  
 CRC WALKER - 73 PARIS PAPER 34, EVALUATION.  
 GEV MEEK+ - NEDO-12154, EVALUATION.  
 ANL GLENDENIN+ - (1974), WORK IN PROGRESS.

94 PLUTONIUM 239 NEUTRON RESONANCE PARAMETERS

691319 600. EV 10.0% 2 USA C. E. TILL P. B. HEMMIG B. HUTCHINS ANL AEC GEB  
 Q: FOR THERMAL REACTORS.  
 TO DETERMINE STATISTICAL PARAMETERS FOR EXTRAPOLATION TO HIGHER ENERGIES FOR FAST REACTORS.  
 M: SUBSTANTIAL MODIFICATIONS.  
 692415 250. EV 1.00 KEV 3.0% 2 SWC H. HAEGGBLOM AE  
 Q: NEUTRON, CAPTURE AND FISSION WIDTH NEEDED.  
 Q: NEEDED FOR FAST REACTOR CALCULATIONS.

-----STATUS-----

ORL GWIN+ - ORNL-47C7 (1971), PARAMETERS FOR 48 RESONANCES.

94 PLUTONIUM 240 NEUTRON TOTAL CROSS SECTION

652435 10.0 KEV 1.00 MEV 10.0% 2 GER B. GOEL KFK  
 A: BETWEEN 10 AND 100 KEV AT 1 NS/M RESOLUTION.

-----STATUS-----

RPI HOCKENBURY+ - 72 BUDAPEST 224, DATA UP TO 30 KEV.







STATUS-----STATUS

IAE MANERO+ - REA 10 637(1972), REVIEW.  
 BRC FREHAUT+ - 73KIEV, DATA 1.5 TO 20 MEV.

94 PLUTONIUM 240 NEUTRON ENERGY SPECTRUM OF FISSION NEUTRONS

732098 15.0 MEV 3.0% 2 FR J. Y. BARRE CAD  
 A: ACCURACY FOR AVERAGE E' RELATIVE TO AVERAGE E'  
 U-235 OR PU-239.

94 PLUTONIUM 240 NEUTRON RESONANCE PARAMETERS

691391 100. EV 5.00 KEV 10.0% 2 USA C. E. TILL ANL  
 P. B. HEMMIG AEC  
 O: NEEDED FOR FAST REACTOR CALCULATIONS INCLUDING  
 DOPPLER EFFECT.

714028 10.0 EV 5.00 KEV 2 CCP M. N. NIKOLAEV FEI  
 O: NEUTRON AND CAPTURE WIDTHS WANTED FOR EVALUATION  
 OF SELF SHIELDING IN RESOLVED RESONANCE REGIONS  
 AND EVALUATION OF AVERAGE RESONANCE PARAMETERS.  
 SELF-INDICATION CAPTURE MEASUREMENTS ARE DESIRED  
 FOR P-WAVE RESONANCE OBSERVATION.  
 O: AVERAGE S AND P WAVE RESONANCE PARAMETERS SHOULD  
 BE DERIVED.  
 STATISTICAL ANALYSIS OF MEASURED RESONANCE  
 PARAMETERS WANTED.  
 SEE ALSO GENERAL COMMENTS IN THE INTRODUCTION.  
 M: SUBSTANTIAL MODIFICATIONS.

STATUS-----STATUS

RPI HOCKENBURY+ - NSE 49 153(1972), PARAMETERS FOR 35 RESONANCES.  
 GEL WEIGMANN+ - JNE 26 643(1972), NEW ANALYSIS.

94 PLUTONIUM 241 NEUTRON TOTAL CROSS SECTION

692455 1.00 KEV 1.00 MEV 10.0% 2 GER E. GOEL KFK  
 692457 1.00 MEV 15.0 MEV 10.0% 3 GER E. GOEL KFK

STATUS-----STATUS

GEL BOECKHOFF+ - EANDC(E)-150 (1972), WORK IN PROGRESS 07 TO 700 EV.  
 ORL SIMPSON+ - IN PROGRESS TO 8 MEV.

94 PLUTONIUM 241 NEUTRON ABSORPTION CROSS SECTION

712095 15.0 EV 300. EV 8.0% 3 UK J. G. TYROR WIN  
 A: ACCURACY FOR AVERAGE VALUE OF THE ERROR BETWEEN  
 E AND 2E.  
 O: FOR THERMAL REACTORS.

712096 1.00 KEV 2.00 KEV 20.0% 3 UK J. G. TYROR WIN  
 A: ACCURACY FOR AVERAGE VALUE OF THE ERROR BETWEEN  
 E AND 2E.  
 O: FOR THERMAL REACTORS.

94 PLUTONIUM 241 NEUTRON CAPTURE CROSS SECTION

671132 25.3 MV 30.0 KEV 3.0% 1 USA B. HUTCHINS GEB  
 O: ALPHA ALSO USEFUL.  
 A: ACCURACY TO 3 PERCENT IN ETA.  
 O: IMPROVED PRECISION NEEDED FOR THERMAL REACTORS.  
 ALSO WANTED FOR FAST REACTORS.

652470 1.00 KEV 5.00 MEV 10.0% 2 SWD H. HAEGGBLOM AE  
 O: FAST REACTOR CALCULATIONS.

692471 200. EV 1.00 MEV 10.0% 2 GER E. GOEL KFK  
 O: ALPHA IS USEFUL.

754001 5.00 KEV 10.0 MEV 1 CCP L. N. USACHEV FEI  
 A: FROM 0.5 - 100 KEV ACCURACY 18 PERCENT,  
 PRIORITY 2 ACCURACY 18 PERCENT.  
 FROM 0.1 - 0.8 MEV ACCURACY 30 PERCENT,  
 PRIORITY 2 ACCURACY 30 PERCENT.  
 FROM 0.8 - 4.5 MEV ACCURACY 50 PERCENT,  
 PRIORITY 2 ACCURACY 50 PERCENT.  
 ABOVE 4.5 MEV REQUIREMENTS 2 TIMES WEAKER.  
 O: NEED FOR FAST REACTOR CALCULATIONS.  
 FOR MORE DETAIL SEE INTRODUCTION.  
 M: NEW REQUEST.

STATUS-----STATUS

ORL WESTON+ - (SNDC-3 149(1972), WORK IN PROGRESS THERMAL TO 30 KEV.  
 SOR CANER+ - IA-1276(1973), EVALUATION TO 15 MEV



STATUS-----STATUS

ORL WESTON+ - USNDC-7 179(1973), IN PROGRESS THERMAL TO 200 KEV.  
 ANL DAVEY - 70HELSINKI 2 119, REVIEW , 0.1 TO 10 MEV.  
 KAP EILAND+ - NSE 44 180(1971), PILE SPECTRUM.

94 PLUTONIUM 241 NEUTRON NEUTRONS EMITTED PER NEUTRON ABSORPTION (ETA)

692007 10.0 MV 15.0 EV 2 UK J.G.TYROR WIN  
 Q: VALUE RELATIVE TO 25.3 MV ETA WANTED.  
 A: ACCURACY 2 PERCENT TO 1 EV, 6 PERCENT ABOVE.  
 O: FOR THERMAL REACTORS.

692464 25.3 MV 1.0X 2 FR H.TELLIER SAC  
 O: FOR THERMAL REACTOR CALCULATIONS.  
 EVALUATION MAY SUFFICE IF IT EXPLAINS  
 DISCREPANCIES.

94 PLUTONIUM 241 NEUTRON NEUTRONS EMITTED PER FISSION (NU BAR)

691330 1.00 KEV 1.00 MEV 4.0X 1 USA P.B.HEMMIG AEC  
 M: SUBSTANTIAL MODIFICATIONS.

692466 1.00 KEV 15.0 MEV 5.0X 2 GER B.GOEL KFK

721095 1.00 MEV 10.0 MEV 6.0X 1 USA C.E.TILL ANL  
 M: SUBSTANTIAL MODIFICATIONS.

754013 5.00 KEV 10.0 MEV 1 CCP L.N.USACHEV FEI  
 A: FROM 0.5 - 100 KEV ACCURACY 1.8 PERCENT,  
 PRIORITY 2 ACCURACY 1.2 PERCENT.  
 FROM 0.1 - 0.8 MEV ACCURACY 2.6 PERCENT,  
 PRIORITY 2 ACCURACY 2.3 PERCENT.  
 FROM 0.8 - 4.5 MEV ACCURACY 4.0 PERCENT,  
 PRIORITY 2 ACCURACY 4.0 PERCENT.  
 ABOVE 4.5 MEV REQUIREMENTS 2-TIMES WEAKER.  
 O: NEED FOR FAST REACTOR CALCULATIONS.  
 FOR MORE DETAIL SEE INTRODUCTION.  
 M: NEW REQUEST.

STATUS-----STATUS

IAE MANERO+ - REA 10 637(1972), REVIEW.  
 LRL HOWE+ - NCSAC-42 130(1971), IN PROGRESS TO 15 MEV.

94 PLUTONIUM 241 NEUTRON FISSION PRODUCT MASS YIELD SPECTRUM

711804 25.3 MV 1.0X 2 CAN W.H.WALKER CRC  
 Q: YIELD OF XE-135 WANTED.  
 O: FOR CALCULATION OF FISSION PRODUCT ABSORPTION.

STATUS-----STATUS

HAR CROUCH - 73 PARIS PAPER 94, THERMAL EVALUATION.  
 CRC WALKER - 73 PARIS PAPER 34, THERMAL EVALUATION.  
 GEV MEEK+ - NEDO-12154, THERMAL EVALUATION.

94 PLUTONIUM 241 NEUTRON RESONANCE PARAMETERS

692459 35.0 EV 200. EV 10.0X 2 GER B.GOEL KFK  
 Q: NEUTRON WIDTHS NEEDED.

721140 25.3 MV 400. EV 2 USA C.E.TILL ANL  
 A: ACCURACY 5 PERCENT TO 100 EV AND 10 PERCENT ABOVE,  
 ACCURACY 20 PERCENT USEFUL.  
 O: FOR THERMAL AND FAST REACTOR CALCULATIONS.

94 PLUTONIUM 242 NEUTRON CAPTURE CROSS SECTION

702047 25.3 MV 5.0X 1 FR H.TELLIER SAC  
 O: EVALUATION MAY SUFFICE IF IT EXPLAINS  
 DISCREPANCIES.

702048 5.00 KEV 5.0X 2 FR H.TELLIER SAC  
 A: ACCURACY FOR RATIO TO THERMAL CROSS SECTION.  
 O: EVALUATION MAY SUFFICE IF IT EXPLAINS  
 DISCREPANCIES.

712102 500. EV 1.00 MEV 15.0X 2 FR J.Y.BARRE CAD  
 Q: RELATIVE VALUES VERSUS ENERGY OR TO U-238 CAPTURE.  
 O: FOR FAST REACTOR CALCULATIONS.

721098 1.00 KEV 7.00 MEV 20.0X 1 USA P.B.HEMMIG AEC  
 O: FOR FAST BREEDER CALCULATIONS, CM AND CF  
 PRODUCTION.

94 PLUTONIUM 242 NEUTRON CAPTURE CROSS SECTION (CONTINUED)

721192 25.3 MV 7.00 MEV 1 USA E.HUTCHINS GEB  
 A: ACCURACY 3 PERCENT TO 100 EV, 10 PERCENT 100 EV TO 1 KEV, 15-20 PERCENT 1 KEV TO 7 MEV.  
 RESONANCE PARAMETERS TO 10-20 PERCENT BELOW 10 KEV.  
 O: FOR FAST BREEDER CALCULATIONS, CM AND CF PRODUCTION.

742010 1.00 KEV 5.00 MEV 10.0% 3 SWD H.HAEGGBLOM AE  
 O: FAST REACTOR CALCULATIONS.

754019 5.00 KEV 10.0 MEV 1 CCP L.N.USACHEV FEI  
 A: FROM 0.5 - 100 KEV ACCURACY 30 PERCENT, PRIORITY 2 ACCURACY 30 PERCENT.  
 FROM 0.1 - 0.8 MEV ACCURACY 30 PERCENT, PRIORITY 2 ACCURACY 30 PERCENT.  
 FROM 0.8 - 4.5 MEV ACCURACY 50 PERCENT, PRIORITY 2 ACCURACY 50 PERCENT.  
 ABOVE 4.5 MEV REQUIREMENTS 2 TIMES WEAKER.  
 O: NEED FOR FAST REACTOR CALCULATIONS.  
 FOR MORE DETAIL SEE INTRODUCTION.  
 M: NEW REQUEST.

STATUS-----STATUS

GEL POORTMANS+ - NF/A 207 342(1973), DATA 2 EV TO 1.3 KEV.  
 RPI SANISLO+ - USNCC-11 220(1974), KEV TIME-OF-FLIGHT DATA BEING ANALYZED.  
 ORL WESTON+ - (1974), DATA TC 200 KEV.  
 SOR CANER+ - IA-1275 (1973), EVALUATION TO 15 MEV.  
 MTR YOUNG+ - IN-14C7 63(1970), THERMAL VALUE  
 CRC DURHAM+ - CJP 4E 716(197C), THERMAL VALUE

94 PLUTONIUM 242 NEUTRON FISSION CROSS SECTION

742005 1.00 KEV 5.00 MEV 10.0% 3 SWD H.HAEGGBLOM AE  
 O: FAST REACTOR CALCULATIONS.

94 PLUTONIUM 242 NEUTRON NEUTRONS EMITTED PER FISSION (NU BAR)

691339 500. KEV 10.0 MEV 5.0% 2 USA P.B.HEMMIG AEC  
 712100 500. EV 15.0 MEV 5.0% 2 FR J.Y.BARRE CAD  
 Q: RELATIVE TO CF-252 NU.  
 O: FOR FAST REACTOR CALCULATIONS.

94 PLUTONIUM 243 NEUTRON CAPTURE CROSS SECTION

752031 25.3 MV 10.0 MEV 1 JAP R.YUMOTO H.MATSUNOBU PNC SAE  
 A: ACCURACY REQUIRED 10 TO 20 PERCENT.  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

STATUS-----STATUS

ANL STUDIER+ - PR 93 1433(1954), THERMAL VALUE.  
 ANL BENTLEY+ - 55GENEVA 7 261(1955), PILE.  
 ANL FIELDS+ - NSE 1 62(1956), PILE.  
 LRL INGLEY+ - AF 3E 509(1967), ESTIMATE AT 20 KEV FROM NUCLEAR EXPLOSION (TWEED) DATA.  
 LRL INGLEY+ - NF/A 124 130(1969), ESTIMATE FROM PU-242 FISSION YIELDS.

94 PLUTONIUM 243 NEUTRON FISSION CROSS SECTION

752025 25.3 MV 500. KEV 10.0% 1 JAP R.YUMOTO H.MATSUNOBU PNC SAE  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

752030 2.00 MEV 10.0 MEV 10.0% 1 JAP R.YUMOTO H.MATSUNOBU PNC SAE  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

STATUS-----STATUS

LAS BELL+ - PR 15E 1127(1967), ESTIMATE AT 10 KEV FROM NUCLEAR EXPLOSION (TWEED) DATA.  
 ANL DIAMOND+ - JIN 3C 2553(1968), THERMAL COLUMN DATA  
 JAP NO EXPERIMENTAL DATA IN ENERGY RANGE 2 TO 10 MEV.



95 AMERICIUM 241 NEUTRON CAPTURE CROSS SECTION (CONTINUED)

752033 2000 EV 1000 MEV 1000% 1 JAF R<sub>0</sub>YUMOTO PNC  
 R<sub>0</sub>MATSUNOBU SAE  
 Q: PRODUCTION OF AM-242 AND AM-242 M WANTED  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF  
 TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

STATUS-----STATUS

BUC FLEROV+ NF/A 102 443(1967), DATA 0.3 TO 6.8 MEV.  
 BUC VILCOV<sub>0</sub> - SCF 22 795(1970), DATA AT 7 MEV.  
 FEI DOVBENKO+ - INDC(CCP)-9 7(1970), THERMAL.  
 KFK HINKELMANN - KFK-1186(1970), EVALUATION TO 10 MEV.  
 CCP IVANOVA+ - AE 30 369(1971), CROSS SECTION FOR FAST REACTOR SPECTRUM.  
 HAR WILTSHIRE+ AERE-R-7363(1973), CROSS SECTION FOR FAST REACTOR SPECTRUM.  
 ORL WESTON+ - USNDC-7 179(1973), THERMAL TO 20 KEV. IN PROGRESS.  
 HAR COATES<sub>0</sub> (1974), MEASUREMENTS PLANNED, AWAITING SAMPLES.

95 AMERICIUM 241 NEUTRON FISSION CROSS SECTION

712102 5000 EV 1500 MEV 1000% 2 FR J<sub>0</sub>Y<sub>0</sub>BARRE CAD  
 Q: RELATIVE TO U-235 FISSION.  
 O: FOR FAST REACTOR CALCULATIONS.

732115 1000 EV 1000 KEV 2000% 1 UK C<sub>0</sub>G<sub>0</sub>CAMPBELL WIN  
 O: FOR FAST REACTORS.

742018 1000 KEV 1500 MEV 500% 1 GER B<sub>0</sub>GOEL KFK  
 O: FAST REACTOR DESIGN.

742107 1000 KEV 1500 MEV 300% 1 FR A<sub>0</sub>MICHAUDON BRC  
 O: FOR CRITICAL ASSEMBLIES.

STATUS-----STATUS

ORL WESTON+ - USNDC-7 179(1973), IN PROGRESS THERMAL TO 200 KEV.  
 HAR LYNN - MEASUREMENT PLANNED.  
 CCP FOMUSHKIN+ - SNP 10 529(1970), 440 KEV TO 3.6 MEV.  
 FEI SHPAK+ - INDC(CCP)-8 6(1970), 8 KEV TO 3.3 MEV.  
 KFK HINKELMANN - KFK-1186(1970), EVALUATION TO 10 MEV.

95 AMERICIUM 241 NEUTRON NEUTRONS EMITTED PER FISSION (NU BAR)

712109 1000 KEV 1000 MEV 500% 1 GER B<sub>0</sub>GOEL KFK  
 O: FOR FAST REACTOR DESIGN.

712105 5000 EV 1400 MEV 500% 2 FR J<sub>0</sub>Y<sub>0</sub>BARRE CAD  
 Q: RELATIVE TO CF-252 NU.  
 O: FOR FAST REACTOR CALCULATIONS.

742016 2503 MV 1000 KEV 1000% 2 GER B<sub>0</sub>GOEL KFK  
 O: FAST REACTOR DESIGN.

742017 1000 MEV 1000 MEV 1000% 2 GER B<sub>0</sub>GOEL KFK  
 O: FAST REACTOR DESIGN.

95 AMERICIUM 241 NEUTRON ABSORPTION RESONANCE INTEGRAL

712107 1000% 2 FR H<sub>0</sub>TELLIER SAC

95 AMERICIUM 242 NEUTRON TOTAL CROSS SECTION

671137 2503 MV 1000 KEV 1000% 2 USA F<sub>0</sub>J<sub>0</sub>MC CROSSON SRL  
 Q: NEED AM-242 AND AM-242M RESONANCE ENERGIES.  
 O: FOR PU-238 PRODUCTION.

95 AMERICIUM 242 NEUTRON CAPTURE CROSS SECTION

691341 2503 MV 1000 KEV 2 USA F<sub>0</sub>J<sub>0</sub>MC CROSSON SRL  
 Q: WANTED FOR BOTH 16 HOUR AND 152 YEAR ISOMERS.  
 THERMAL VALUE AND RI WANTED.  
 A: REQUIRED ACCURACY - 10 TO 20 PERCENT.  
 O: FOR PU-238 PRODUCTION.  
 M: SUBSTANTIAL MODIFICATIONS.

711805 2503 MV 2 CAN W<sub>0</sub>H<sub>0</sub>WALKER CRC  
 Q: FOR 16 HOUR ISOMER.  
 A: ACCURACY REQUIRED 500 B.  
 O: UNKNOWN CROSS SECTION.

95 AMERICIUM 242 NEUTRON CAPTURE CROSS SECTION (CONTINUED)

721100 25.3 MV 10.0 MEV 15.0% 2 USA E.HUTCHINS GEB  
 O: FOR SPENT FUEL SHIELDING.

721101 10.0 MV 5.00 KEV 10.0% 2 FR H.TELLIER SAC  
 Q: FOR METASTABLE STATE OF AM-242 (152 YEARS).  
 O: FOR BURN UP PHYSICS.  
 EVALUATION MAY BE SUFFICIENT.

721102 500. EV 15.0 MEV 20.0% 3 FR J.Y.BARRE CAD  
 Q: FOR METASTABLE STATE OF AM-242 (152 YEARS).  
 VALUE RELATIVE TO U-238 CAPTURE CROSS SECTION.  
 O: FOR FAST REACTOR CALCULATIONS.

752036 25.3 MV 10.0 MEV 1 JAP R.YUMOTO PNC  
 H.MATSUNOBU SAE  
 Q: WANTED FOR GROUND AND ISOMERIC STATES.  
 A: ACCURACY REQUIRED 5 TO 20 PERCENT.  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF  
 TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

-----STATUS-----STATUS

CRC HANNA+ - PR 81 853(1951).  
 LRL STREET - PR 85 135(1952).  
 LRL BOWMAN+ - PR 166 1219(1968), RESONANCE PARAMETERS TO 4 EV.  
 JUL IHLE+ - JIN 34(E) 2427(1972), PILE.

95 AMERICIUM 242 NEUTRON FISSION CROSS SECTION

651335 25.3 MV 10.0 KEV 2 USA F.J.MC CROSSON SRL  
 Q: WANTED FOR BOTH 16 HOUR AND 152 YEAR ISOMERS.  
 A: REQUIRED ACCURACY - 10 TO 20 PERCENT.  
 M: SUBSTANTIAL MODIFICATIONS.

721100 500. EV 15.0 MEV 20.0% 3 FR J.Y.BARRE CAD  
 Q: FOR METASTABLE STATE OF AM-242 (152 YEARS).  
 VALUE RELATIVE TO U-235 FISSION CROSS SECTION.  
 O: FOR FAST REACTOR CALCULATIONS.

752034 1.00 MEV 6.00 MEV 1 JAF R.YUMOTO PNC  
 H.MATSUNOBU SAE  
 Q: WANTED FOR GROUND STATE OF AM-242.  
 A: ACCURACY REQUIRED 10 TO 20 PERCENT.  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF  
 TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

752035 6.00 MEV 10.0 MEV 1 JAP R.YUMOTO PNC  
 H.MATSUNOBU SAE  
 Q: WANTED FOR GROUND AND ISOMERIC STATES.  
 A: ACCURACY REQUIRED 10 TO 20 PERCENT.  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF  
 TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

-----STATUS-----STATUS

LRL BROWNE+ - NCSAC-42 135(1971), IN PROGRESS TO 14 MEV.  
 LRL PERKINS+ - NSE 32 131(1968), DATA FROM 0.4 EV TO 4.7 MEV.

95 AMERICIUM 242 NEUTRON NEUTRONS EMITTED PER FISSION (NU BAR)

721103 500. EV 15.0 MEV 20.0% 3 FR J.Y.BARRE CAD  
 Q: FOR METASTABLE STATE OF AM-242 (152 YEARS).  
 VALUE RELATIVE TO CF-252 NU.  
 O: FOR FAST REACTOR CALCULATIONS.

95 AMERICIUM 243 NEUTRON ABSORPTION CROSS SECTION

712113 25.3 MV 5.0% 2 FR H.TELLIER SAC

721104 500. EV 15.0 MEV 20.0% 2 FR J.Y.BARRE CAD  
 O: FOR FAST REACTOR CALCULATIONS.

95 AMERICIUM 243 NEUTRON CAPTURE CROSS SECTION

711896 25.3 MV 5.0% 2 CAN W.H.WALKER CRC  
 O: DISAGREEMENT BETWEEN INTEGRAL (90 B) AND  
 DIFFERENTIAL MEASUREMENTS (180 B).

721101 10.0 MEV 10.0% 1 USA B.HUTCHINS GEB  
 A: WANT 5 TO 10 PERCENT ACCURACY IN THERMAL VALUE  
 AND RESONANCE INTEGRAL.  
 O: NEEDED FOR LONG TERM REACTIVITY CALCULATIONS AND  
 FOR SPENT FUEL SHIELDING.  
 TO DETERMINE CM-244 PRODUCTION.  
 M: SUBSTANTIAL MODIFICATIONS.



95 AMERICIUM 243 NEUTRON CAPTURE CROSS SECTION (CONTINUED)

791128 1.00 KEV 200. KEV 30.0% 1 USA P.BoHEMMIG AEC  
 Q: FOR SPENT FUEL SHIELDING.  
 M: NEW REQUEST.

752038 100. EV 10.0 MEV 1 JAP R.YUMOTO PNC  
 H.MATSUNOBU SAE  
 Q: PRODUCTION OF AM-244 AND AM-244 M WANTED.  
 A: ACCURACY REQUIRED 5 TO 20 PERCENT.  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF  
 TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

STATUS-----STATUS

ANC SIMPSON+ - ANCF-1060 (1972), DATA 0.5 EV TO 1 KEV.  
 JUL IHLE+ - JIN 34(8) 2427(1972), PILE.  
 MTR BERRETH+ - IN-1407 66(1970), RESONANCE PARAMETERS TO 25 EV.  
 BUC BOCA+ - NF/A 134 541(1969), DATA 0.3 TO 4 MEV.

95 AMERICIUM 243 NEUTRON FISSION CROSS SECTION

712111 500. EV 15.0 MEV 15.0% 2 FR J.YcEARRE CAD  
 Q: RELATIVE TO U-235 FISSION.  
 O: FOR FAST REACTOR CALCULATIONS.

752037 4.00 MEV 10.0 MEV 1 JAP R.YUMOTO PNC  
 H.MATSUNOBU SAE  
 A: ACCURACY REQUIRED 10 TO 20 PERCENT.  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF  
 TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

STATUS-----STATUS

CCP FORMLSHKIN+ - YF 5 966(1967), VALUE AT 15 MEV.  
 DUB NAD+ - JINR-F7-5162(1970), 16 MEV.  
 LAS SEEGER. - LA-4420 (1970), DATA 49 EV TO 3 MEV.

95 AMERICIUM 243 NEUTRON NEUTRONS EMITTED PER FISSION (NU BAR)

712112 500. EV 15.0 MEV 10.0% 3 FR J.YcBARRE CAD  
 Q: RELATIVE TO CF-252 NU.  
 O: FOR FAST REACTOR CALCULATIONS.

95 AMERICIUM 243 NEUTRON ABSORPTION RESONANCE INTEGRAL

712119 10.0% 2 FR H.TELLIER SAC

95 AMERICIUM 244 NEUTRON CAPTURE CROSS SECTION

752040 25.3 MV 10.0 MEV 2 JAP R.YUMOTO PNC  
 H.MATSUNOBU SAE  
 A: ACCURACY REQUIRED 10 TO 20 PERCENT.  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF  
 TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

95 AMERICIUM 244 NEUTRON FISSION CROSS SECTION

752039 25.3 MV 10.0 MEV 2 JAP R.YUMOTO PNC  
 H.MATSUNOBU SAE  
 A: ACCURACY REQUIRED 10 TO 20 PERCENT.  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF  
 TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

STATUS-----STATUS

LAS HUBLET. - WASH-1033 28(1961), THERMAL.  
 ANL VANDENBOSCH+ - JIN 23 187(1962), THERMAL.

96 CURIUM 242 NEUTRON CAPTURE CROSS SECTION

671139 25.3 MV 20.0% 2 USA F.J.MC CROSSON SRL  
 Q: TARGET HALF-LIFE 163 D.  
 O: FOR PU-238 PRODUCTION.

712118 10.0 KEV 1.00 MEV 10.0% 1 GER E.GOEL KFK  
 C: FOR CALCULATIONS OF SPONTANEOUS FISSION IN FAST  
 REACTORS.

732107 10.0 MV 5.00 KEV 10.0% 2 FR H.TELLIER SAC  
 Q: BURN UP PHYSICS.

742020 25.3 MV 100. KEV 10.0% 2 GER E. GOEL KFK  
 O: CALCULATIONS OF SPONTANEOUS FISSION IN FAST REACTORS.

742021 1.00 MEV 15.0 MEV 10.0% 2 GER E. GOEL KFK  
 O: CALCULATIONS OF SPONTANEOUS FISSION IN FAST REACTORS.

752042 25.3 MV 10.0 MEV 1 JAP R. YUMOTO PNC  
 H. MATSUNOBU SAE  
 A: ACCURACY REQUIRED 10 TO 20 PERCENT.  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

STATUS-----STATUS  
 JUL IHLE+ - JIN 34(8) 2427(1972), PILE.

96 CURIMUM 242 NEUTRON FISSION CROSS SECTION

712116 100. KEV 15.0 MEV 10.0% 1 GER E. GOEL KFK  
 O: FOR CALCULATIONS OF SPONTANEOUS FISSION IN FAST REACTORS.

732105 500. EV 15.0 MEV 30.0% 3 FR J. Y. BARRE CAD  
 Q: VALUE RELATIVE TO U-235 FISSION CROSS SECTION.  
 O: FOR FAST REACTOR CALCULATIONS.

742012 25.3 MV 100. KEV 10.0% 2 GER E. GOEL KFK  
 O: CALCULATIONS OF SPONTANEOUS FISSION IN FAST REACTORS AND CALIBRATION.

752041 25.3 MV 10.0 MEV 1 JAP R. YUMOTO PNC  
 H. MATSUNOBU SAE  
 A: ACCURACY REQUIRED 10 TO 20 PERCENT.  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

STATUS-----STATUS

CRC HANNA+ - FR 81 893(1951), THERMAL.  
 CCP FOMUSHKIN+ - YF 5 966(1967), 15 MEV.  
 JUL IHLE+ - JIN 34(8) 2427(1972), PILE.

96 CURIMUM 242 NEUTRON NEUTRONS EMITTED PER FISSION (NU BAR)

712117 100. KEV 15.0 MEV 5.0% 1 GER E. GOEL KFK  
 O: FOR CALCULATIONS OF SPONTANEOUS FISSION IN FAST REACTORS.

732106 500. EV 15.0 MEV 20.0% 3 FR J. Y. BARRE CAD  
 Q: VALUE RELATIVE TO CF-252 NU.  
 O: FOR FAST REACTOR CALCULATIONS.

742015 25.3 MV 100. KEV 10.0% 2 GER E. GOEL KFK  
 O: CALCULATIONS OF SPONTANEOUS FISSION IN FAST REACTORS.

96 CURIMUM 242 NEUTRON RESONANCE PARAMETERS

671192 25.3 MV 1.00 KEV 20.0% 3 USA G. T. ORTON RL  
 Q: ELASTIC AND GAMMA WIDTHS WANTED.  
 RADIATIVE CAPTURE AND NEUTRON WIDTHS WANTED.  
 O: FOR PU-238 PRODUCTION.  
 M: SUBSTANTIAL MODIFICATIONS.

96 CURIMUM 243 NEUTRON CAPTURE CROSS SECTION

711807 25.3 MV 2 CAN W. H. WALKER CRC  
 A: ACCURACY REQUIRED 50 B.  
 O: UNKNOWN CROSS SECTION.

752046 10.0 MV 1.00 EV 1 JAP R. YUMOTO PNC  
 H. MATSUNOBU SAE  
 Q: ENERGY DEPENDENCE WANTED.  
 A: ACCURACY REQUIRED 5 TO 10 PERCENT.  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

Z52097 20.0 EV 10.0 MEV 1 JAP R.YUMOTO PNC  
 H.MATSUNOBU SAE  
 A: ACCURACY REQUIRED 10 TO 20 PERCENT.  
 Q: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF  
 TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

-----STATUS-----

JUL IHLE+ - JIN 34(E) 2427(1972), PILE.  
 JAP o.(1975), NO EXPERIMENTAL DATA ABOVE 26 EV.

96 CURIUM 243 NEUTRON FISSION CROSS SECTION

Z52093 10.0 MV 1.00 EV 10.0X 1 JAF R.YUMOTO PNC  
 H.MATSUNOBU SAE  
 Q: ENERGY DEPENDENCE WANTED.  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF  
 TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

Z52094 20.0 EV 100. KEV 10.0X 1 JAP R.YUMOTO PNC  
 H.MATSUNOBU SAE  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF  
 TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

Z52095 3.00 MEV 10.0 MEV 1 JAP R.YUMOTO PNC  
 H.MATSUNOBU SAE  
 A: ACCURACY REQUIRED 10 TO 20 PERCENT.  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF  
 TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

-----STATUS-----

JUL IHLE+ - JIN 34(E) 2427(1972), PILE.  
 LRL BROWNE+ - NCSAC-42 135(1971), MEASUREMENT THERMAL TO 14 MEV PLANNED.  
 LAS FULLWOOD+ - LA-4420 (1970), DATA 0.11 TO 2.9 MEV.  
 LRL HULET+ - PR 1C7 1294(1957), THERMAL.  
 JAP o.(1975), NO EXPERIMENTAL DATA FROM 26 EV TO 106KEV  
 JAP o.(1975), NO EXPERIMENTAL DATA ABOVE 3 MEV.

96 CURIUM 244 NEUTRON CAPTURE CROSS SECTION

Z11192 10.0 KEV 10.0 MEV 10.0X 2 USA B.HUTCHINS GEB  
 A: ACCURACY OF 5 TO 10 PERCENT IN R<sub>1</sub>.  
 O: FOR SPENT FUEL SHIELDING  
 TO EVALUATE CF PRODUCTION.  
 M: SUBSTANTIAL MODIFICATIONS.

Z32105 10.0 MV 5.00 KEV 10.0X 2 FR H.TELLIER SAC  
 O: BURN UP PHYSICS.

Z52095 500. EV 10.0 MEV 1 JAP R.YUMOTO PNC  
 H.MATSUNOBU SAE  
 A: ACCURACY REQUIRED 10 TO 20 PERCENT.  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF  
 TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

-----STATUS-----

LAS MOORE+ - PR/C 3 1656(1971), DATA 20 EV TO 10 KEV.

96 CURIUM 244 NEUTRON FISSION CROSS SECTION

Z32108 500. EV 15.0 MEV 30.0X 3 FR J.Y.EARRE CAD  
 Q: VALUE RELATIVE TO U-235 FISSION CROSS SECTION.  
 O: FOR FAST REACTOR CALCULATIONS.

Z52098 1.00 KEV 10.0 KEV 5.0X 1 JAP R.YUMOTO PNC  
 H.MATSUNOBU SAE  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF  
 TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

-----STATUS-----

LAS MOORE+ - PR/C 3 1656(1971), DATA 20EV TO 3 MEV.  
 SRL BENJAMIN+ - NSE 47 203(1972), THERMAL CROSS SECTION AND RESONANCE INTEGRAL RELATIVE TO U-235



-----STATUS-----STATUS

CCP FORMUSHKIN+ - YF 17 24(1973).  
 SRL BENJAMIN+ - NSE 47 203(1972), THERMAL CROSS SECTION AND RESONANCE INTEGRAL RELATIVE TO U-235  
 LAS MOORE+ - PR/C 3 1656(1971), DATA 20 EV TO 3 MEV.  
 SRL THOMPSON+ - JIN 33 1553(1971), PILE.  
 SRL RUSCHE. - AAS 14 344(1971), THERMAL.  
 ORL HALPERIN+ - ORNL-4581 (1970), THERMAL.  
 SRL SMITH+ 68WASH PAPER H12 (1968), THERMAL AVERAGE.  
 LRL HULET+ PR 107 1254(1957), THERMAL.  
 ANL JAFFEY. - NSE 1 204(1956), THERMAL.  
 LRL BROWNE+ - NCSAC-42 135(1971), WORK PLANNEC.

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96 CURIUM 246 NEUTRON TCTAL CROSS SECTION

671146 25.3 MV 10.0 KEV 10.0% 2 USA F. J. MC CROSSON SRL  
 Q: SHAPE OF THERMAL CROSS SECTION ESPECIALLY IMPORTANT.  
 R: RESONANCE STRUCTURE DESIRED.  
 A: ACCURACY 10 PERCENT IN RESONANCE INTEGRAL.  
 M: SUBSTANTIAL MODIFICATIONS.

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96 CURIUM 246 NEUTRON CAPTURE CROSS SECTION

651350 25.3 MV 10.0 KEV 10.0% 1 USA F. J. MC CROSSON SRL  
 Q: RESONANCE STRUCTURE DESIRED.  
 A: NEED ACCURACY 10 PERCENT IN RESONANCE INTEGRAL.  
 O: TO EVALUATE CF PRODUCTION.

Z52056 10.0 MV 5.00 EV 10.0% 1 JAP R. YUMOTO PNC  
 H. MATSUNOBU SAE  
 Q: ENERGY DEPENDENCE WANTED.  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

Z52059 40.0 EV 10.0 MEV 20.0% 1 JAP R. YUMOTO PNC  
 H. MATSUNOBU SAE  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

-----STATUS-----STATUS

LAS MOORE+ - PR/C 3 1656(1971), DATA 80 EV TO 400 EV.  
 ORL HALPERIN+ - ORNL-4437 20(1969), THERMAL.  
 SRL FOLGER+ - 68WASH 1279, THERMAL.  
 ANL STEVENS+ - PR 54 974(1954), PILE.  
 JAP . (1975), NO EXPERIMENTAL DATA ABOVE 400 EV.

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96 CURIUM 246 NEUTRON FISSION CROSS SECTION

Z52055 10.0 MV 5.00 EV 20.0% 1 JAP R. YUMOTO PNC  
 H. MATSUNOBU SAE  
 Q: ENERGY DEPENDENCE WANTED.  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

Z52056 1.00 KEV 10.0 KEV 20.0% 1 JAP R. YUMOTO PNC  
 H. MATSUNOBU SAE  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

Z52057 3.00 MEV 10.0 MEV 20.0% 1 JAP R. YUMOTO PNC  
 H. MATSUNOBU SAE  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

-----STATUS-----STATUS

SRL THOMPSON+ - JIN 33 1553(1971), PILE.  
 LAS MOORE+ - PR/C 3 1656(1971), DATA 20 EV TO 3 MEV.  
 SRL BENJAMIN+ - NSE 47 203(1972), THERMAL CROSS SECTION AND RESONANCE INTEGRAL RELATIVE TO U-235  
 CCP FOMUSHKIN+ YF 12 24(1973), FAST SPECTRUM.

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96 CURIMUM 248      NEUTRON      FISSION CROSS SECTION
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I52064  25.3  MV      20.0  EV      20.0%  1  JAP  R.YUMOTO      PNC
                                     H.MATSUNOBU   SAE
                                     Q: ENERGY DEPENDENCE WANTED.
                                     O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF
                                       TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.
                                       NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.
                                     M: NEW REQUEST.

I52065  1.00  KEV      10.0  KEV      20.0%  1  JAP  R.YUMOTO      PNC
                                     H.MATSUNOBU   SAE
                                     O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF
                                       TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.
                                       NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.
                                     M: NEW REQUEST.

I52066  3.00  MEV      10.0  MEV      20.0%  1  JAP  R.YUMOTO      PNC
                                     H.MATSUNOBU   SAE
                                     O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF
                                       TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.
                                       NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.
                                     M: NEW REQUEST.

STATUS-----STATUS
CCP  FORMUSHKIN+ - YF 17 24(1973).
ORL  BENJAMIN+ - USNDC-7 170(1973), IN PROGRESS.
SRL  BENJAMIN+ - NSE 47 203(1972), THERMAL CROSS SECTION AND RESONANCE INTEGRAL RELATIVE TO U-235
LAS  MOORE+ - PR/C 3 1656(1971), DATA 20 EV TO 3 MEV.
SRL  THOMPSON+ - JIN 13 1553(1971), PILE.

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96 CURIMUM 249      NEUTRON      CAPTURE CROSS SECTION
=====
I52069  25.3  MV      10.0  MEV      1  JAP  R.YUMOTO      PNC
                                     H.MATSUNOBU   SAE
                                     A: ACCURACY REQUIRED 10 TO 20 PERCENT.
                                     O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF
                                       TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.
                                       NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.
                                     M: NEW REQUEST.

STATUS-----STATUS
ANL  DIAMOND+ - ANL-7330 (1967), PILE.

=====
96 CURIMUM 249      NEUTRON      FISSION CROSS SECTION
=====
I5206E  25.3  MV      10.0  MEV      20.0%  2  JAP  R.YUMOTO      PNC
                                     H.MATSUNOBU   SAE
                                     O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF
                                       TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.
                                       NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.
                                     M: NEW REQUEST.

STATUS-----STATUS
JAP  O.(1975), NC EXPERIMENTAL DATA IN THE ENERGY RANGE FROM THERMAL TO 10 MEV.

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96 CURIMUM 250      NEUTRON      CAPTURE CROSS SECTION
=====
I52071  25.3  MV      10.0  MEV      20.0%  2  JAP  R.YUMOTO      PNC
                                     H.MATSUNOBU   SAE
                                     O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF
                                       TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.
                                       NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.
                                     M: NEW REQUEST.

STATUS-----STATUS
JAP  O.(1975), NC EXPERIMENTAL DATA IN THE ENERGY RANGE FROM THERMAL TO 10 MEV.

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96 CURIMUM 250      NEUTRON      FISSION CROSS SECTION
=====
I5207C  25.3  MV      10.0  MEV      20.0%  2  JAP  R.YUMOTO      PNC
                                     H.MATSUNOBU   SAE
                                     O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF
                                       TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.
                                       NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.
                                     M: NEW REQUEST.

STATUS-----STATUS
JAP  O.(1975), NC EXPERIMENTAL DATA IN THE ENERGY RANGE FROM THERMAL TO 10 MEV.

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97 BERKELIUM 249   NEUTRON      TOTAL CRGSS SECTION
=====
6Z1151  25.3  MV      10.0  KEV      20.0%  2  USA  F.O.J.MC CROSSON  SRL
                                     Q: RESONANCE ENERGIES WANTED.
                                     A: NEED 20 PERCENT IN RESONANCE INTEGRAL.
                                     O: TO EVALUATE CF PRODUCTION.
                                     M: SUBSTANTIAL MODIFICATIONS.
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714033 1 CCP MoNoNIKOLAEV FEI  
 A: ACCURACY NOT WORSE THAN 0.3 PERCENT.  
 MUST BE GUARANTEED BY AGREEMENT WITHIN 0.5 PERCENT  
 OF AT LEAST FOUR EXPERIMENTS CARRIED OUT BY NOT  
 LESS THAN TWO DIFFERENT METHODS.  
 O: SEE GENERAL COMMENTS IN THE INTRODUCTION.  
 FIRST PRIORITY BECAUSE IT IS DIFFICULT TO  
 RECONCILE THIS STANDARD WITH MACROSCOPIC  
 EXPERIMENTS.  
 M: SUBSTANTIAL MODIFICATIONS.

791130 0.25% 1 USA RoEHLRICH KAP  
 A: ACCURACY 1 PERCENT OR BETTER USEFUL.  
 O: FOR USE AS A STANDARD.  
 M: NEW REQUEST.

-----STATUS-----

AUA BOLDEMAN+ - INCC(SEC)-35 (1973), FINAL VALUE.  
 IAE MANERO+ - REA 10 637(1972), REVIEW.  
 NPL AXTON - BELIEVES DISCREPANCIES DUE TO DIFFERENT MEASUREMENT TECHNIQUES NO LONGER EXIST.  
 ANL SMITH. (1974), STUDYING NUER VS. ETA DISCREPANCY.  
 MHG .(1974), WORK BEING PLANNED.  
 IAE LEMMEL. 78WASH, REVIEW AND LEAST-SQUARES ANALYSIS WITH THERMAL PROPERTIES OF OTHER FISSION NUCLEI.

=====98 CALIFORNIUM 252 SPONTANEOUS ENERGY SPECTRUM OF FISSION NEUTRONS=====

712122 2.0% 1 FR PoRIBON SAC  
 Q: SECONDARY NEUTRON ENERGIES TO 14 MEV REQUIRED.  
 O: STANDARD.

721105 5.0% 1 USA Ros.CASWELL NBS  
 O: FOR USE AS A STANDARD.

732117 2.0% 1 UK BoROSE HAR  
 A: ACCURACY FOR MEAN SPECTRUM ENERGY.  
 10 PERCENT ACCURACY WANTED FOR THE NUMBER OF  
 NEUTRONS ABOVE 5 MEV AND BELOW 0.25 MEV.  
 O: STANDARD.

791131 1.0% 1 USA RoEHLRICH KAP  
 Q: MEAN SPECTRUM ENERGY TO 1 PERCENT.  
 O: FOR USE AS A STANDARD.  
 M: NEW REQUEST.

-----STATUS-----

BET GREEN+ - NSE 5C 257(1973), DATA 0.5 TO 13 MEV.  
 GEL KNITTER+ - AKE 22 84(1973), DATA 0.15 TO 15 MEV.  
 GEL KNITTER+ - NEANDC(E)-161 208(1974), PRELIMINARY DATA AVAILABLE.  
 CCP ALEKSANDROVA+ - AE 36 282(1974).  
 LRL BROWNE+ - PR/C 10 2545(1974), HAUSER-FESHEACH CALCULATION OF FISSION NEUTRON SPECTRUM.  
 HAR FERGUSON+ DATA BEING ANALYZED.  
 LAS AUCHAMPAUGH+ MEASUREMENTS COMPLETED.  
 AUA BOLDEMAN+ MEASUREMENTS PLANNED.

=====98 CALIFORNIUM 252 NEUTRON CAPTURE CROSS SECTION=====

671155 25.3 MV 10.0 KEV 10.0% 1 USA FoJo.MC CROSSON SRL  
 A: ACCURACY 10 PERCENT IN RESONANCE INTEGRAL.  
 O: TO EVALUATE CF PRODUCTION.

752084 25.3 MV 10.0 MEV 1 JAP RoYUMOTO PNC  
 HoMATSUNOBU SAE  
 A: ACCURACY REQUIRED 10 TO 20 PERCENT.  
 O: REACTOR BURN-UP CALCULATIONS AND ESTIMATION OF  
 TRANS-URANIUM NUCLIDE BUILD-UP IN SPENT FUEL.  
 NEUTRON SHIELDING OF SPENT-FUEL TRANSPORT CASK.  
 M: NEW REQUEST.

-----STATUS-----

BRK HARVEY+ - PR 55 581(1954), FILE.  
 ANL MAGNUSSON+ - PR 96 1576(1954), PILE.  
 SRL FOLGER+ - 68WASH 1279, THERMAL VALUE.  
 ORL HALPERIN+ - NSE 37 228(1969), THERMAL VALUE.  
 ORL BEMIS. - NSE 41 146(1970), PILE.  
 KFK EBERLE+ - KFK-1338 (1971), FILE.



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FISSION PRODUCTS      NEUTRON      INELASTIC CROSS SECTION
=====
754022      800. KEV      5.00 MEV      1      CCF      L0N0USACHEV      FEI
A: FROM 0.8 - 1.4 MEV ACCURACY 13 PERCENT,
  PRIORITY 2 ACCURACY 13 PERCENT.
  FROM 1.4 - 2.5 MEV ACCURACY 15 PERCENT,
  PRIORITY 2 ACCURACY 15 PERCENT.
  FROM 2.5 - 5.0 MEV ACCURACY 30 PERCENT,
  PRIORITY 2 ACCURACY 30 PERCENT.
O: NEED FOR FAST REACTOR CALCULATION.
  FOR MORE DETAIL SEE INTRODUCTION.
M: NEW REQUEST.

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FISSION PRODUCTS      NEUTRON      ABSORPTION CROSS SECTION
=====
652976      25.3 MV      5.0%      2      UK      J0G0TYROR      WIN
O: FOR THERMAL REACTORS,
  INTEGRAL REQUIREMENT FOR TOTAL FISSION PRODUCT
  POISONING IN IRRADIATED FUEL.

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-----STATUS-----STATUS
WIN      ◦INTEGRAL EXPERIMENT IN HECTOR PLANNED FOR APRIL 1975

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FISSION PRODUCTS      NEUTRON      CAPTURE CROSS SECTION
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652089      25.3 MV      100. KEV      2      AUL      J0L0SYMONDS      AUA
Q: RESONANCE PARAMETERS ALSO REQUIRED.
  S, P AND D WAVE STRENGTH FUNCTIONS NEEDED.
O: DESIRED FOR THEORETICAL PREDICTIONS OF CROSS
  SECTIONS FOR MASSES 80-160.

714036      100. EV      100. KEV      20.0%      2      CCP      M0N0NIKOLAEV      FEI
Q: AVERAGE CAPTURE CROSS SECTION FOR LUMPED FISSION
  PRODUCTS, STABLE, LONG-LIVED AND EQUILIBRIUM
  FISSION PRODUCTS
  DATA FOR FISSION PRODUCTS OF U-235, U-238,
  PU-239 AND PU-240 ARE OF GREAT INTEREST.
O: SEE GENERAL COMMENTS IN THE INTRODUCTION.

754015      5.00 KEV      10.0 MEV      1      CCP      L0N0USACHEV      FEI
A: FROM 0.5 - 100 KEV ACCURACY 8 PERCENT,
  PRIORITY 2 ACCURACY 7 PERCENT.
  FROM 0.1 - 0.8 MEV ACCURACY 15 PERCENT,
  PRIORITY 2 ACCURACY 14 PERCENT.
  FROM 0.8 - 4.5 MEV ACCURACY 48 PERCENT,
  PRIORITY 2 ACCURACY 48 PERCENT.
  ABOVE 4.5 MEV REQUIREMENTS 2 TIMES WEAKER.
O: NEED FOR FAST REACTOR CALCULATIONS.
  FOR MORE DETAIL SEE INTRODUCTION.
M: NEW REQUEST.

```

```

=====
FISSION PRODUCTS      NEUTRON      ABSORPTION RESONANCE INTEGRAL
=====
652495      0.55 EV      2.00 MEV      10.0%      2      UK      J0G0TYROR      WIN
O: FOR THERMAL REACTORS,
  INTEGRAL REQUIREMENT FOR TOTAL FISSION PRODUCT
  POISONING IN IRRADIATED FUEL.

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-----STATUS-----STATUS
WIN      ◦INTEGRAL EXPERIMENT IN HECTOR PLANNED FOR APRIL 1975

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```

=====
STEEL      NEUTRON      CAPTURE CROSS SECTION
=====
714035      500. EV      800. KEV      1      CCP      M0N0NIKOLAEV      FEI
Q: RATIOS WANTED RELATIVE TO U-235 FISSION, B-10,
  LI-6, HE-3 AND H-1 STANDARDS.
A: 10 PERCENT BELOW, 20 PERCENT ABOVE 100 KEV WANTED.
O: SEE GENERAL COMMENTS IN THE INTRODUCTION.
  ANALYSIS OF FAST CRITICAL ASSEMBLIES INDICATES
  THAT THE CAPTURE CROSS SECTION OF STAINLESS
  STEEL IS MUCH GREATER THAN CALCULATED FROM
  MICROSCOPIC DATA.
  FIRST PRIORITY BECAUSE IT IS DIFFICULT TO EVALUATE
  STEEL CAPTURE CROSS SECTION TO REQUESTED
  ACCURACY FROM MACROSCOPIC EXPERIMENTS ONLY.
M: SUBSTANTIAL MODIFICATIONS.

754016      5.00 KEV      10.0 MEV      1      CCP      L0N0USACHEV      FEI
A: FROM 0.5 - 100 KEV ACCURACY 11 PERCENT,
  PRIORITY 2 ACCURACY 11 PERCENT.
  FROM 0.1 - 0.8 MEV ACCURACY 15 PERCENT,
  PRIORITY 2 ACCURACY 15 PERCENT.
  FROM 0.8 - 4.5 MEV ACCURACY 20 PERCENT,
  PRIORITY 2 ACCURACY 20 PERCENT.
  ABOVE 4.5 MEV REQUIREMENTS 2 TIMES WEAKER.
O: NEED FOR FAST REACTOR CALCULATIONS.
  FOR MORE DETAIL SEE INTRODUCTION.
M: NEW REQUEST.

```

III. Fusion Reactor DevelopmentIII.A. Introduction

This is the second publication by the Agency of an international nuclear data request list for fusion research and reactor development. The previous publication was report INDC(NDS)-57 issued in December 1973.

The present list contains 329 data requests from five Member States - France, the Federal Republic of Germany, the Soviet Union, the United Kingdom and the United States. Since the previous publication the requests from the United States have been revised extensively, and those from the United Kingdom have been qualified by new prefacing remarks concerning priorities in their fusion programme.

Since the data request list for fusion is being produced for the first time as part of WRENDA, no lists of satisfied and withdrawn requests have been produced.

Although many of the comments in the introduction to the previous list remain valid, the new requests seem to be based on improved conceptual designs and sensitivity studies. It should be noted that some requestors specifically ask for evaluations of existing data rather than for new measurements.

III.B. Supplementary Information from Contributors

## 1. France:

In a letter appended to the data requests received from France in 1973, R. Joly cautions that the requests should be considered with prudence because without a model which permits determination of the consequences of uncertainties in nuclear data on the performance of a fusion reactor, data needs cannot be established by rigorous means.

## 2. The United Kingdom:

In a letter appended to the data requests received from the UK in 1973, B. Rose states that the requests are for information and that in many cases it is not known whether existing data might satisfy certain requests. This implies that the requests may be either for measurement or for evaluation and that it has not yet proved possible to identify each request as being for one or the other. The priority designations are based on the Agency-developed Priority Criteria of Section III.C.

The following addendum was communicated to the Agency by C.A. Uttley in April 1975 on behalf of the United Kingdom Nuclear Data Committee's Subcommittee for Fusion:

At present the requests from the UK should still not be interpreted as requests for measurements. Initial emphasis will be placed on stainless steel as the main structural material. The relevant cross sections of the components - Fe, Cr and Ni - will be evaluated as a first step in defining further data requirements.



Accepting this point of view, it is apparent that a large number of neutron data are necessary. In general various data for a large number of promising materials are required from thermal energies up to 15 MeV. A complete list of presently interesting materials and reactions has been given elsewhere.<sup>4</sup> While for most of the elements under consideration sufficiently accurate data are available from thermal values up to  $\sim 1$  MeV, there is a considerable lack of experimental information in the energy range from 1 - 15 MeV. An inspection of the lists of materials which might be used in thermonuclear reactors shows that the body of nuclear data needed for fusion purposes will presumably exceed even the data requirements for the development of fission reactors. Despite the tremendous extent of overall data needs, the present German request list contains only data requirements for five of the most important elements: Li, Be, F, Nb, Mo. The primary criteria leading to this selection arise from priority considerations elaborated in the national Memorandum on Fusion Reactor Technology. Major effort in the near future will be devoted to tests of computer codes and the reliability of microscopic neutron data. This can be achieved by comparison of experimentally determined and calculated results for the characteristic physical parameters (Tritium-breeding ratio, space-dependent neutron and power distribution etc.) of simple test blankets without any structural material. Our understanding of the present request list is, that only the needs for the next few years' programme are included. As thermonuclear research proceeds, new requests will subsequently be added in the coming years.

The present compilation is a combined list of the three Research Centers, Kernforschungszentrum Karlsruhe, Kernforschungsanlage Juelich and Max-Planck Institut fuer Plasmaphysik, Garching, which are the main laboratories involved in the national fusion reactor technology programme. Priority assignments are due to the criteria developed previously by the Agency and the International Fusion Research Council. Status information has been elaborated by S. Gierjacks and R. Meyer, Kernforschungszentrum Karlsruhe, as of June 1972.

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<sup>4</sup> M. Neve de Mevergnies and A. Paulsen in "Survey of Fusion Reactor Technology", Report EUR 4873e (1972), p. 277.



III.C. Priority Criteria

The priority criteria which appear in this section were developed by the Agency with the assistance of the International Fusion Research Council (IFRC), the INDC and many scientists engaged in fusion research. Presently they are the basis of the priority assignments for the requests from the United Kingdom and the Federal Republic of Germany.

Priority Criteria for Nuclear Data Requests  
in Controlled Fusion Research (CFR)

Priority 1

In general highest (first) priority shall be assigned to those nuclear data upon which some important aspect of CFR is immediately contingent. Specifically Priority 1 shall be assigned to requests for nuclear data which

1. are required for evaluation of the feasibility of a proposed CF reactor concept or
2. are required for immediate application of plasma phenomena in a fusion reactor context, or
3. are essential for application of a material which is of conceptual importance in CFR, or
4. are required for an important decision involving allocation of resources or redirection of research effort in CFR programmes, or
5. are necessary to develop some important aspect of current CFR programmes to a level consistent with progress in other aspects of these programmes.

Priority 2

Priority 2 shall be assigned to nuclear data which

1. are required for evaluation of materials of high potential utility in current CF reactor designs, or
2. are expected to contribute to significant progress in CFR or reactor design studies in the near future.

Priority 3

Priority 3 shall be assigned to nuclear data which

1. are of use in current design studies but are not of crucial importance, or
2. are not of immediate importance for CFR but which have probability of becoming important as CFR programmes develop.

Priority 4

Priority 4 shall be assigned to nuclear data which

1. fill out the body of information needed for fusion reactor technology, or
2. are of potential interest for CFR but which cannot be assigned more definite priority at present.

III.D. Index to Fusion List

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3 LITHIUM 6	oooooooooooooooooooo	III. 1
3 LITHIUM 7	oooooooooooooooooooo	III. 3
4 BERYLLIUM 9	oooooooooooooooooooo	III. 4
5 BORON 10	oooooooooooooooooooo	III. 5
6 CARBON	oooooooooooooooooooo	III. 5
6 CARBON 12	oooooooooooooooooooo	III. 5
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23 VANADIUM	oooooooooooooooooooo	III. 8
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### III. E. DATA REQUEST LIST FOR FUSION REACTOR DEVELOPMENT

```

=====
1 HYDROGEN 2          NEUTRON          N, 2N
=====

752094          15.0 MEV          2    FR    A.MICHAUDON    BRC
                A: ACCURACY REQUIRED TO BETTER THAN 20 PERCENT.
                M: NEW REQUEST.

=====
1 HYDROGEN 3          NEUTRON          N, 2N
=====

752095          15.0 MEV          2    FR    A.MICHAUDON    BRC
                A: ACCURACY REQUIRED TO BETTER THAN 20 PERCENT.
                M: NEW REQUEST.

=====
2 HELIUM 3           NEUTRON          N, F
=====

752096    1.00 KEV    15.0 MEV    10.0%    1    FR    A.MICHAUDON    BRC
                M: NEW REQUEST.

-----STATUS-----STATUS
GA    COSTELLO+ - NSE 39 409(1970), DATA 0.3 TO 1.1 MEV WITH 10 PERCENT ACCURACY.
GA    COSTELLO+ - 70 ANL 74(1970), REVIEW.
GEL   LISKIEN+ - 72VIENNA 135, FROM EVALUATION OF INVERSE REACTION, DATA 0.2 TO 9 MEV.

=====
2 HELIUM 3           HELIUM-3          HELIUM-3, 2P
=====

741295    100. KEV    5.00 MEV    15.0%    3    USA    J.R.MC NALLY    ORL
                Q: TO EVALUATE ADVANCED FUELS.
                EVALUATION AND MEASUREMENTS NEEDED.
                M: NEW REQUEST.

=====
3 LITHIUM 6          NEUTRON          DIFFERENTIAL ELASTIC CROSS SECTION
=====

722060    1.00 MEV    15.0 MEV    10.0%    2    GER    D.DARVAS        JUL
                H.KUESTERS        KFK
                Q: ADDITIONAL ANGULAR DISTRIBUTIONS ABOVE 6 MEV AND
                AN IMPROVEMENT IN ACCURACY BELOW 6 MEV REQUIRED.
                O: CALCULATION OF NEUTRON TRANSPORT.

722061    1.00 KEV    15.0 MEV    20.0%    3    UK     R.HANCOX        HAR
                Q: FOR SHIELDING CALCULATIONS.
                M: SUBSTANTIAL MODIFICATIONS.

724001    4.00 MEV    15.0 MEV    10.0%    2    CCP    I.N.GOLOVIN     KUR
                Q: REFINEMENT OF DATA BELOW 7 MEV AND ADDITIONAL DATA
                ABOVE 7 MEV REQUIRED.
                O: CALCULATION OF NEUTRON TRANSMISSION.

732001    14.0 MEV          10.0%    1    FR    D.BRETON        FAR
                Q: EVALUATION OF NEUTRON BALANCE.

=====
3 LITHIUM 6          NEUTRON          DOUBLE DIFFERENTIAL INELASTIC CROSS SECTION
=====

732118          15.0 MEV    20.0%    3    UK     R.HANCOX        HAR
                M: NEW REQUEST.

=====
3 LITHIUM 6          NEUTRON          TOTAL PHOTON PRODUCTION CROSS SECTION
=====

724009    9.00 MEV    15.0 MEV    15.0%    2    CCP    I.N.GOLOVIN     KUR
                Q: GAMMA RAY PRODUCTION CROSS SECTIONS AND GAMMA RAY
                SPECTRA ARE REQUIRED.
                O: GAMMA RAY HEATING AND SHIELDING CALCULATIONS.

=====
3 LITHIUM 6          NEUTRON          DOUBLE DIFFERENTIAL NEUTRON-EMISSION CROSS SECTION
=====

722064          15.0 MEV    20.0%    2    GER    D.DARVAS        JUL
                H.KUESTERS        KFK
                Q: SECONDARY ENERGY AND ANGULAR DISTRIBUTIONS WANTED.
                NEUTRON SPECTRA UP TO MAXIMUM ENERGIES ARE
                REQUIRED.
                NEUTRON ANGULAR DISTRIBUTIONS AT A FEW ENERGIES
                WOULD BE USEFUL.
                O: FOR CALCULATIONS OF NEUTRON TRANSPORT AND
                SHIELDING.
                M: NEW REQUEST.

741250    14.0 MEV          10.0%    2    USA    L.STEWART       LAS
                Q: SPECTRA AT SEVERAL ANGLES REQUIRED.
                MUST RECORD NEUTRONS DOWN TO A FEW HUNDRED KEV.
                M: NEW REQUEST.
=====

```

=====
3 LITHIUM 6 NEUTRON N,ND
=====

722151 15.0 MEV 10.0X 2 GER D.DARVAS JUL
HOKUESTERS KFK
A: ENERGY RESOLUTION OF 0.2 TO 0.5 MEV WOULD BE
SUFFICIENT.
O: FOR SHIELDING AND CALCULATION OF HEAT GENERATION.

724003 15.0 MEV 10.0X 1 CCP I.N.GOLOVIN KUR
O: NEUTRONICS CALCULATIONS AND ENERGY DEPOSITION IN
BLANKET MATERIALS.

=====
3 LITHIUM 6 NEUTRON N,T
=====

722062 300. KEV 15.0 MEV 5.0X 1 GER D.DARVAS JUL
HOKUESTERS KFK
O: TOTAL TRITIUM PRODUCTION REQUIRED.
A: ENERGY RESOLUTION SHOULD REPRODUCE TRUE SHAPE.
O: FOR DETERMINATION OF MORE ACCURATE TRITIUM
BREEDING RATIOS.

724002 100. KEV 3.00 MEV 3.0X 1 CCP I.N.GOLOVIN KUR
O: FOR TRITIUM BREEDING AND ENERGY DEPOSITION.

722002 3.00 MEV 14.0 MEV 5.0X 1 FR D.BRETON FAR
O: FOR EVALUATION OF NEUTRON BALANCE.

=====
3 LITHIUM 6 NEUTRON N,ALPHA
=====

722110 5.00 KEV 15.0 MEV 5.0X 1 GER M.KUECHLE KFK
O: STANDARD.
M: NEW REQUEST.

-----STATUS-----STATUS

- HAR UTTLEY+ - AERE-FR/NP 19 5(1972), EVALUATION.
HAR UTTLEY+ - AERE-FR/NP 20 24(1974), EVALUATION.
HAR CLEMENT+ - AERE-R-7075(1972), DATA 150 KEV TO 3.9 MEV. SANDWICH DETECTOR. LOWER THAN OTHER RECENT
DATA.
HAR COATES+ - 72VIENNA 105, DATA 1 TO 500 KEV.
HAR COATES+ - AERE-FR/NP 20 35(1974), DATA 1.5 TO 500 KEV
CAD FORT+ - 72VIENNA 113, DATA 20 KEV TO 1700 KEV. DATA REMAIN PRELIMINARY DUE TO UNCERTAINTY IN
Li-6 CONTENT OF GLASS SCINTILLATORS.
MHG STEPHANY+ - USNDC-9 129(1973), PRELIMINARY VALUE AT 964 KEV.
ANL POENITZ+ - ZP 268 359(1974), DATA 90 KEV TO 1.5 MEV
IRT FRIESENHAN. - INTEL-RT-7011-001(1974), DATA 1 TO 1500 KEV. HIGHER THAN OTHER RECENT MEASUREMENTS.
ORE OVERLEY+ - NP/A 221 573(1974), DATA 0.1 TO 1.8 MEV
HAR LYNN. - EXPERIMENT PLANNED FOR LATE 1975.
NBS LAMAZE+ - IN PROGRESS 200 KEV TO 1.5 MEV RELATIVE TO BLACK DETECTOR.
NBS MEIER+ - EXPERIMENT PLANNED NEAR RESONANCE WITH ASSOCIATED PARTICLE TECHNIQUE.

=====
3 LITHIUM 6 DEUTERON D,N
=====

721245 100. KEV 10.0 MEV 15.0X 2 USA J.R.MC NALLY ORL
O: BREAK UP INTO HE-3 AND AN ALPHA PARTICLE.
O: TO EVALUATE ADVANCED FUELS.
EVALUATION AND MEASUREMENTS NEEDED.
M: NEW REQUEST.

=====
3 LITHIUM 6 HELIUM-3 HELIUM-3,P
=====

721244 100. KEV 5.00 MEV 15.0X 2 USA J.R.MC NALLY ORL
O: BREAK UP INTO TWO ALPHAS WANTED.
O: TO EVALUATE ADVANCED FUELS.
EVALUATION AND MEASUREMENTS NEEDED.
M: NEW REQUEST.

=====
3 LITHIUM 6 LITHIUM-6 LITHIUM-6,T
=====

721246 200. KEV 5.00 MEV 15.0X 2 USA J.R.MC NALLY ORL
O: TOTAL TRITON PRODUCTION CROSS SECTION WANTED.
O: TO EVALUATE ADVANCED FUELS.
EVALUATION AND MEASUREMENTS NEEDED.
M: NEW REQUEST.

=====
3 LITHIUM 6 LITHIUM-6 LITHIUM-6,HELIUM-3
=====

721247 200. KEV 5.00 MEV 15.0X 2 USA J.R.MC NALLY ORL
O: TOTAL HE-3 PRODUCTION CROSS SECTION WANTED.
O: TO EVALUATE ADVANCED FUELS.
EVALUATION AND MEASUREMENTS NEEDED.
M: NEW REQUEST.

```

=====
3 LITHIUM 6          LITHIUM-6          LITHIUM-6,ALPHA
=====
791246  200. KEV      5.00 MEV      15.0%      2    USA  J.R.MC NALLY      ORL
                                           Q: CROSS SECTION FOR PRODUCTION OF 3 ALPHA PARTICLES.
                                           O: TO EVALUATE ADVANCED FUELS.
                                           EVALUATION AND MEASUREMENTS NEEDED.
                                           M: NEW REQUEST.
=====
3 LITHIUM 7          NEUTRON          DIFFERENTIAL ELASTIC CROSS SECTION
=====
722066  1.00 MEV        15.0 MEV        10.0%      1    GER  D.DARVAS          JUL
                                           H.KUESTERS          KFK
                                           Q: ADDITIONAL DISTRIBUTIONS BETWEEN 2 AND 14 MEV
                                           REQUIRED IN STEPS OF 0.5 TO 1 MEV.
                                           O: FOR CALCULATION OF NEUTRON TRANSPORT.
722067  1.00 KEV        15.0 MEV        15.0%      3    UK   R.HANCOX          HAR
                                           O: FOR SHIELDING CALCULATIONS.
                                           M: SUBSTANTIAL MODIFICATIONS.
729005  2.00 MEV        15.0 MEV        10.0%      1    CCP  I.N.GOLOVIN       KUR
                                           Q: REFINEMENT OF DATA BELOW 7 MEV AND ADDITIONAL DATA
                                           ABOVE 7 MEV REQUIRED.
                                           O: FOR TRITIUM BREEDING AND ENERGY DEPOSITION.
722003  14.0 MEV                10.0%      1    FR   D.BRETON          FAR
                                           O: EVALUATION OF NEUTRON BALANCE.
=====
3 LITHIUM 7          NEUTRON          INELASTIC CROSS SECTION
=====
722068  500. KEV        15.0 MEV        10.0%      2    GER  D.DARVAS          JUL
                                           H.KUESTERS          KFK
                                           Q: CROSS SECTION FOR 0.478 MEV LEVEL REQUIRED.
                                           O: FOR SHIELDING ESTIMATES AND CALCULATION OF HEAT
                                           GENERATION.
729006  15.0 MEV        15.0%      1    CCP  I.N.GOLOVIN       KUR
                                           Q: CROSS SECTION FOR 0.478 MEV LEVEL REQUIRED.
                                           O: NEUTRONICS CALCULATIONS AND ENERGY DEPOSITION.
=====
3 LITHIUM 7          NEUTRON          ENERGY DIFFERENTIAL INELASTIC CROSS SECTION
=====
722119  15.0 MEV        20.0%      3    UK   R.HANCOX          HAR
                                           M: NEW REQUEST.
=====
3 LITHIUM 7          NEUTRON          TOTAL PHOTON PRODUCTION CROSS SECTION
=====
729010  9.00 MEV        15.0 MEV        15.0%      1    CCP  I.N.GOLOVIN       KUR
                                           Q: GAMMA RAY PRODUCTION CROSS SECTIONS AND GAMMA RAY
                                           SPECTRA ARE REQUIRED.
                                           O: GAMMA RAY HEATING AND SHIELDING CALCULATIONS.
=====
3 LITHIUM 7          NEUTRON          N,2N
=====
722071  15.0 MEV        20.0%      2    GER  D.DARVAS          JUL
                                           H.KUESTERS          KFK
                                           Q: THREE OR FOUR DATA POINTS USEFUL.
                                           O: FOR ESTIMATES OF NEUTRON MULTIPLICATION.
729005  15.0 MEV        15.0%      1    CCP  I.N.GOLOVIN       KUR
                                           Q: SECONDARY ENERGY AND ANGULAR DISTRIBUTIONS AT
                                           14 TO 15 MEV REQUIRED.
                                           O: BLANKET NEUTRONICS CALCULATIONS.
=====
3 LITHIUM 7          NEUTRON          DOUBLE DIFFERENTIAL NEUTRON-EMISSION CROSS SECTION
=====
791251  14.0 MEV                10.0%      1    USA  L.STEWART         LAS
                                           Q: SPECTRA AT SEVERAL ANGLES REQUIRED.
                                           MUST RECORD NEUTRONS DOWN TO A FEW HUNDRED KEV.
                                           M: NEW REQUEST.
=====
3 LITHIUM 7          NEUTRON          N,NT
=====
722065  15.0 MEV        5.0%      1    GER  D.DARVAS          JUL
                                           H.KUESTERS          KFK
                                           A: RESOLUTION AND ENERGY STEPS OF 0.2 TO 0.5 MEV
                                           SUFFICIENT.
                                           O: DETERMINATION OF MORE ACCURATE TRITIUM BREEDING
                                           RATIOS.
729007  15.0 MEV        5.0%      1    CCP  I.N.GOLOVIN       KUR
                                           O: FOR TRITIUM BREEDING AND ENERGY DEPOSITION.

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=====
3 LITHIUM 7          NEUTRON          N,NT          (CONTINUED)
=====
729008  10.0  MEV   15.0  MEV   15.0%   1   CCP   I.O.GOLOVIN   KUR
          Q: SECONDARY ENERGY AND ANGULAR DISTRIBUTIONS
          RQUIRED.
          O: NEUTRON TRANSMISSION CALCULATIONS.
729009  3.00  MEV   14.0  MEV   5.0%   1   FR    D.BRETON     FAR
          O: EVALUATION OF NEUTRON BALANCE.
=====
3 LITHIUM 7          NEUTRON          N,ALPHA
=====
741252          15.0  MEV   10.0%   3   USA   D.DUCZIAK     LAS
          Q: EVALUATION WITH UNCERTAINTY-FILES REQUIRED.
          O: TO CALCULATE TRITIUM BREEDING - HIGH SENSITIVITY.
          UNCERTAINTY FILES NEEDED TO PERFORM CROSS-SECTION
          SENSITIVITY STUDIES FOR FUSION DEVICES.
          M: NEW REQUEST.
=====
4 BERYLLIUM 9       NEUTRON          DIFFERENTIAL ELASTIC CROSS SECTION
=====
722073  1.00  MEV   15.0  MEV   10.0%   2   GER   D.DARVAS     JUL
          S.CIERJACKS   KFK
          O: CALCULATION OF NEUTRON TRANSPORT.
729011  2.00  MEV   15.0  MEV   10.0%   2   CCP   I.O.GOLOVIN   KUR
          O: FOR NEUTRON TRANSMISSION CALCULATIONS.
=====
4 BERYLLIUM 9       NEUTRON          INELASTIC CROSS SECTION
=====
729012          15.0  MEV   15.0%   2   CCP   I.O.GOLOVIN   KUR
          O: NEUTRONICS CALCULATIONS FOR BLANKET AND SHIELD.
=====
4 BERYLLIUM 9       NEUTRON          DOUBLE DIFFERENTIAL INELASTIC CROSS SECTION
=====
722074  8.00  MEV   15.0  MEV   10.0%   2   GER   D.DARVAS     JUL
          S.CIERJACKS   KFK
=====
4 BERYLLIUM 9       NEUTRON          PHOTON PRODUCTION CROSS SECTION IN INELASTIC SCAT.
=====
722075  8.00  MEV   15.0  MEV   10.0%   2   GER   D.DARVAS     JUL
          S.CIERJACKS   KFK
          Q: ENERGY DISTRIBUTION OF GAMMA RAYS REQUIRED.
=====
4 BERYLLIUM 9       NEUTRON          TOTAL PHOTON PRODUCTION CROSS SECTION
=====
729015  3.00  MEV   15.0  MEV   15.0%   2   CCP   I.O.GOLOVIN   KUR
          Q: GAMMA RAY SPECTRA ALSO REQUIRED.
          O: GAMMA RAY HEATING AND SHIELDING CALCULATIONS.
=====
4 BERYLLIUM 9       NEUTRON          N,2N
=====
722076          15.0  MEV   20.0%   3   UK    R.HANCOX     HAR
          O: TO EVALUATE NEUTRON ECONOMY IN BREEDING
          CALCULATIONS.
          M: SUBSTANTIAL MODIFICATIONS.
722077          15.0  MEV   20.0%   2   GER   D.DARVAS     JUL
          S.CIERJACKS   KFK
          Q: ANGULAR DISTRIBUTIONS AND ENERGY SPECTRA OF
          SECONDARY NEUTRONS AND GAMMA RAYS ALSO NEEDED.
          O: RADIATION DAMAGE ESTIMATES.
729013          15.0  MEV   15.0%   2   CCP   I.O.GOLOVIN   KUR
          Q: ENERGY AND ANGULAR DISTRIBUTION OF SECONDARY
          NEUTRONS REQUIRED.
          O: USE FOR NEUTRON MULTIPLICATION AND TRANSMISSION
          CALCULATIONS.
729005  2.00  MEV   14.0  MEV   15.0%   2   FR    D.BRETON     FAR
          O: TO IMPROVE NEUTRON BALANCE CALCULATIONS.
741254          15.0  MEV   10.0%   3   USA   D.DUDZIAK     LAS
          Q: EVALUATION WITH UNCERTAINTY-FILES REQUIRED.
          O: SWELLING OF BERYLLIUM NEUTRON MULTIPLIER DUE TO
          TWO ALPHA-PARTICLE BREAK UP.
          HIGH SENSITIVITY OF TRITIUM BREEDING AND ENERGY
          PRODUCTION TO NEUTRON MULTIPLICATION.
          UNCERTAINTY FILES NEEDED TO PERFORM CROSS-SECTION
          SENSITIVITY STUDIES FOR FUSION DEVICES.
          M: NEW REQUEST.
=====

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4 BERYLLIUM 9 NEUTRON N, 2N (CONTINUED)

STATUS-----STATUS

JUL BLOSER - AKE 20 309(1973), ABSOLUTE DATA FROM 2.4 TO 3.3 MEV.

FOA HOLMBERG+ - NF/A 129 305(1969), DATA 2 TO 6.4 MEV.

4 BERYLLIUM 9 NEUTRON DOUBLE DIFFERENTIAL NEUTRON-EMISSION CROSS SECTION

741252 14.0 MEV 10.0% 1 USA L. STEWART LAS
Q: SPECTRA AT SEVERAL ANGLES REQUIRED.
MUST RECORD NEUTRONS DOWN TO A FEW HUNDRED KEV.
M: NEW REQUEST.

4 BERYLLIUM 9 NEUTRON N, ALPHA

722078 8.00 MEV 15.0 MEV 10.0% 2 GER D. DARVAS JUL
S. CIERJACKS KFK
Q: TOTAL ALPHA PRODUCTION REQUIRED.
O: CALCULATION OF NEUTRON TRANSPORT.

724014 8.00 MEV 15.0 MEV 15.0% 2 CCP I. N. GOLOVIN KUR
O: FOR HELIUM ACCUMULATION CALCULATIONS.

5 BORON 10 NEUTRON N, 2N

722006 8.00 MEV 14.0 MEV 15.0% 2 FR D. BRETON FAR
O: FOR IMPROVED CALCULATION OF NEUTRON BALANCE.

5 BORON 10 NEUTRON N, 3N

722007 10.0 MEV 14.0 MEV 15.0% 2 FR D. BRETON FAR
O: FOR IMPROVED CALCULATION OF NEUTRON BALANCE.

6 CARBON NEUTRON DOUBLE DIFFERENTIAL NEUTRON-EMISSION CROSS SECTION

741255 8.00 MEV 15.0 MEV 10.0% 2 USA V. J. ORPHAN SAI
F. G. PEREY ORL
G. HOPKINS GA
Q: SPECTRA AT SEVERAL ANGLES REQUIRED.
MUST RECORD NEUTRONS DOWN TO A FEW HUNDRED KEV.
M: NEW REQUEST.

6 CARBON 12 NEUTRON DIFFERENTIAL ELASTIC CROSS SECTION

724016 8.00 MEV 15.0 MEV 10.0% 2 CCP I. N. GOLOVIN KUR
O: NEUTRON TRANSMISSION CALCULATIONS.

6 CARBON 12 NEUTRON N, ALPHA

724017 15.0 MEV 15.0% 2 CCP I. N. GOLOVIN KUR
O: NEUTRON ABSORPTION CALCULATIONS.

6 CARBON 12 NEUTRON N, N3ALPHA

724018 15.0 MEV 15.0% 2 CCP I. N. GOLOVIN KUR
Q: SECONDARY NEUTRON ENERGY DISTRIBUTION REQUIRED
AT 14.0 MEV.
O: FOR BLANKET NEUTRONICS CALCULATIONS.

741256 15.0 MEV 10.0% 2 USA G. HOPKINS GA
V. J. ORPHAN SAI
Q: TO CALCULATE HELIUM PRODUCTION.
M: NEW REQUEST.

741258 15.0 MEV 3 USA C. DUDZIAK LAS
Q: TO CALCULATE HELIUM PRODUCTION.
M: NEW REQUEST.

6 CARBON 13 NEUTRON CAPTURE CROSS SECTION

741259 25.3 MV 3.00 MEV 25.0% 2 USA V. J. ORPHAN SAI
G. HOPKINS GA
Q: PRODUCTION OF C-14 ACTIVITY.
M: NEW REQUEST.

6 CARBON 13 NEUTRON N, ALPHA

741260 15.0 MEV 25.0% 2 USA V. J. ORPHAN SAI
G. HOPKINS GA
Q: PRODUCTION OF BE-10 ACTIVITY.
M: NEW REQUEST.



=====

9 FLUORINE 19 NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION

724022 500. KEV 15.0 MEV 15.0X 2 CCP IONOGLOVIN KUR  
 Q: GAMMA RAY SPECTRA ALSO REQUIRED.  
 O: GAMMA RAY HEATING AND SHIELDING CALCULATIONS.

=====

9 FLUORINE 19 NEUTRON N,2N

722085 15.0 MEV 20.0X 3 UK R0HANCOX HAR  
 O: TO EVALUATE NEUTRON ECONOMY IN BREEDING  
 CALCULATIONS.  
 M: SUBSTANTIAL MODIFICATIONS.

=====

9 FLUORINE 19 NEUTRON DOUBLE DIFFERENTIAL NEUTRON-EMISSION CROSS SECTION

741264 900. KEV 15.0 MEV 15.0X 3 USA F0G0PEREY ORL  
 Q: SPECTRA AT SEVERAL ANGLES REQUIRED.  
 MUST RECORD NEUTRONS DOWN TO A FEW HUNDRED KEV.  
 M: NEW REQUEST.

=====

9 FLUORINE 19 NEUTRON TOTAL PROTON PRODUCTION CROSS SECTION

741265 15.0 MEV 15.0X 1 USA F0G0PEREY ORL  
 O: CALCULATION OF HYDROGEN PRODUCTION.  
 M: NEW REQUEST.

=====

9 FLUORINE 19 NEUTRON N,ALPHA

722086 15.0 MEV 10.0X 2 GER D0DARYAS S0CIERJACKS JUL KFK  
 O: CALCULATION OF NEUTRON ABSORPTION AND TRANSMISSION RATES.

-----STATUS-----STATUS

BIR CRUMPTON+ - NIM 92 533(1971), DATA 13 TO 15 MEV.

=====

9 FLUORINE 19 NEUTRON TOTAL ALPHA PRODUCTION CROSS SECTION

741266 15.0 MEV 15.0X 1 USA F0G0PEREY ORL  
 O: CALCULATION OF HELIUM PRODUCTION.  
 M: NEW REQUEST.

=====

13 ALUMINUM 27 NEUTRON N,2N

741268 15.0 MEV 15.0X 1 USA D0DUDZIAK LAS  
 Q: EVALUATION WITH UNCERTAINTY-FILES REQUIRED.  
 O: NEEDED TO PREDICT GENERATION OF LONG-LIVED AL-26 IN PTR STRUCTURES, COILS AND ALUMINUM OXIDE INSULATORS.  
 UNCERTAINTY FILES REQUIRED TO PERFORM CROSS SECTION SENSITIVITY ANALYSIS FOR FUSION DEVICES.  
 M: NEW REQUEST.

=====

13 ALUMINUM 27 NEUTRON DOUBLE DIFFERENTIAL NEUTRON-EMISSION CROSS SECTION

741269 14.0 MEV 10.0X 2 USA P0G0YOUNG LAS  
 Q: SPECTRA AT SEVERAL ANGLES REQUIRED.  
 MUST RECORD NEUTRONS DOWN TO A FEW HUNDRED KEV.  
 M: NEW REQUEST.

=====

13 ALUMINUM 27 NEUTRON N,P

741267 15.0 MEV 15.0X 2 USA D0DUDZIAK LAS  
 Q: EVALUATION WITH UNCERTAINTY FILES REQUIRED.  
 O: NEEDED TO CALCULATE HEAT GENERATION IN AL STRUCTURES DUE TO SHORT-LIVED TRANSUTANTS (MG-27) SHORTLY AFTER SHUTDOWN.  
 HIGH AFTERHEAT POWER DENSITY MAY CAUSE AL STRUCTURES TO MELT IN CASE OF LOSS-OF-COOLANT ACCIDENT.  
 FERF APPLICATIONS.  
 UNCERTAINTY FILES REQUIRED TO PERFORM CROSS SECTION SENSITIVITY ANALYSIS FOR FUSION DEVICES.  
 M: NEW REQUEST.

-----STATUS-----STATUS

NDC SCHETT+ - EANDC-55 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.

ANL SMITH+ - ANL/KDM-10 (1975), MEASUREMENTS AND EVALUATION FROM 2.8 TO 10 MEV.

=====

13 ALUMINUM 27 NEUTRON TOTAL PROTON PRODUCTION CROSS SECTION

741276 15.0 MEV 15.0X 2 USA C0DUDZIAK LAS  
 Q: EVALUATION WITH UNCERTAINTY-FILES REQUIRED.  
 O: EVALUATION OF RADIATION DAMAGE IN AL COILS AND STRUCTURES.  
 UNCERTAINTY FILES REQUIRED TO PERFORM CROSS SECTION SENSITIVITY ANALYSIS FOR FUSION DEVICES.  
 M: NEW REQUEST.

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13 ALUMINUM 27      NEUTRON      TOTAL PROTON PRODUCTION CROSS SECTION      (CONTINUED)
=====
741277      15.0 MEV      15.0%      2      USA      R. HAIGHT      LRL
              O: HYDROGEN PRODUCTION REQUIRED.
              M: NEW REQUEST.
=====
13 ALUMINUM 27      NEUTRON      TOTAL ALPHA PRODUCTION CROSS SECTION
=====
741274      15.0 MEV      15.0%      2      USA      R. HAIGHT      LRL
              O: HELIUM PRODUCTION REQUIRED.
              M: NEW REQUEST.
741275      15.0 MEV      15.0%      2      USA      D. DUDZIAK      LAS
              O: EVALUATION WITH UNCERTAINTY-FILES REQUIRED.
              O: EVALUATION OF RADIATION DAMAGE IN AL COILS AND
              STRUCTURES.
              UNCERTAINTY FILES REQUIRED TO PERFORM CROSS
              SECTION SENSITIVITY ANALYSIS FOR FUSION DEVICES.
              M: NEW REQUEST.
=====
14 SILICON          NEUTRON      DOUBLE DIFFERENTIAL NEUTRON-EMISSION CROSS SECTION
=====
741278      8.00 MEV      15.0 MEV      10.0%      2      USA      G. HOPKINS      GA
              V. J. ORPHAN      SAI
              O: MUST RECORD NEUTRONS DOWN TO A FEW HUNDRED KEV.
              M: NEW REQUEST.
=====
14 SILICON          NEUTRON      TOTAL ALPHA PRODUCTION CROSS SECTION
=====
741280      15.0 MEV      15.0%      2      USA      G. HOPKINS      GA
              V. J. ORPHAN      SAI
              O: HELIUM PRODUCTION REQUIRED.
              M: NEW REQUEST.
=====
18 ARGON 40        NEUTRON      N, 2N
=====
741282      15.0 MEV      15.0%      2      USA      D. DUDZIAK      LAS
              O: EVALUATION REQUIRED.
              O: TO EVALUATE AR-39 PRODUCTION IN AIR AROUND FUSION
              TEST REACTORS.
              M: NEW REQUEST.
=====
22 TITANIUM        NEUTRON      INELASTIC CROSS SECTION
=====
732009      3.00 MEV      14.0 MEV      10.0%      3      FR      D. BRETON      FAR
              O: POTENTIAL CONSTITUENT OF CONTAINMENT VESSEL.
=====
22 TITANIUM        NEUTRON      N, 2N
=====
732010      14.0 MEV      10.0%      3      FR      D. BRETON      FAR
              O: POTENTIAL CONSTITUENT OF CONTAINMENT VESSEL.
=====
22 TITANIUM        NEUTRON      N, F
=====
732011      14.0 MEV      10.0%      3      FR      D. BRETON      FAR
              O: POTENTIAL CONSTITUENT OF CONTAINMENT VESSEL.
=====
22 TITANIUM        NEUTRON      N, ALPHA
=====
732012      14.0 MEV      10.0%      3      FR      D. BRETON      FAR
              O: POTENTIAL CONSTITUENT OF CONTAINMENT VESSEL.
=====
23 VANADIUM        NEUTRON      ELASTIC CROSS SECTION
=====
749023      2.00 MEV      15.0 MEV      10.0%      1      CCP      I. N. GOLOVIN      KUR
              O: POTENTIAL USE AS STRUCTURAL MATERIAL.
              FOR DETERMINATION OF NEUTRON TRANSMISSION.
=====
23 VANADIUM        NEUTRON      INELASTIC CROSS SECTION
=====
732013      3.00 MEV      14.0 MEV      10.0%      2      FR      D. BRETON      FAR
              O: POTENTIAL CONSTITUENT OF CONTAINMENT VESSEL.
=====
23 VANADIUM        NEUTRON      ENERGY DIFFERENTIAL INELASTIC CROSS SECTION
=====
749024      2.00 MEV      15.0 MEV      15.0%      1      CCP      I. N. GOLOVIN      KUR
              O: NEUTRONICS CALCULATIONS FOR BLANKET AND SHIELD.
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23 VANADIUM NEUTRON ENERGY DIFFERENTIAL INELASTIC CROSS SECTION (CONTINUED)

STATUS-----STATUS  
 AE ALMEN+ - 70 HELSINKI 2 349(1970), 15 LEVELS FROM 2 TO 4.5 MEV  
 ANL SMITH+ - USNDC-7 9(1973), WRK IN PROGRESS TO 4 MEV.

23 VANADIUM NEUTRON CAPTURE CROSS SECTION

724021 1.00 KEV 2.00 MEV 15.0% 1 CCP I<sub>0</sub>N<sub>0</sub>GOLOVIN KUR  
 O: NEUTRON ABSORPTION, GAMMA RAY HEATING, AND PRODUCTION OF HIGHER ISOTOPES.  
 724028 14.0 MEV 15.0% 1 CCP I<sub>0</sub>N<sub>0</sub>GOLOVIN KUR  
 O: NEUTRON ABSORPTION, GAMMA RAY HEATING, AND PRODUCTION OF HIGHER ISOTOPES.

STATUS-----STATUS  
 RPI STIEGLITZ - NF/A 163 592(1971), DATA 100 EV TO 200 KEV.  
 ORL MACKLIN+ - LSND-3 148(1972), DATA 3 TO 500 KEV IN PROGRESS.  
 HAR COATES - MEASUREMENT PLANNED FOR LATE 1975.

23 VANADIUM NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION

724025 300. KEV 15.0 MEV 15.0% 1 CCP I<sub>0</sub>N<sub>0</sub>GOLOVIN KUR  
 O: GAMMA RAY SPECTRUM ALSO WANTED.  
 O: GAMMA RAY HEATING CALCULATIONS.  
 741224 8.00 MEV 15.0 MEV 15.0% 3 USA F<sub>0</sub>G<sub>0</sub>PEREY ORL  
 M: NEW REQUEST.

23 VANADIUM NEUTRON N,2N

724025 2.00 MEV 15.0 MEV 15.0% 1 CCP I<sub>0</sub>N<sub>0</sub>GOLOVIN KUR  
 O: NEUTRON BLANKET CALCULATIONS.  
 724026 14.0 MEV 15.0% 1 CCP I<sub>0</sub>N<sub>0</sub>GOLOVIN KUR  
 O: ENERGY AND ANGULAR DEPENDENCE OF SECONDARY NEUTRONS REQUIRED.  
 O: NEUTRON BLANKET CALCULATIONS.  
 732014 14.0 MEV 10.0% 2 FR D<sub>0</sub>BRETON FAR  
 O: POTENTIAL CONSTITUENT OF CONTAINMENT VESSEL.

23 VANADIUM NEUTRON DOUBLE DIFFERENTIAL NEUTRON-EMISSION CROSS SECTION

741283 8.00 MEV 15.0 MEV 15.0% 3 USA F<sub>0</sub>G<sub>0</sub>PEREY ORL  
 O: MUST RECORD NEUTRONS DOWN TO A FEW HUNDRED KEV.  
 M: NEW REQUEST.

23 VANADIUM NEUTRON N,P

724030 15.0 MEV 15.0% 1 CCP I<sub>0</sub>N<sub>0</sub>GOLOVIN KUR  
 O: FOR HYDROGEN ACCUMULATION CALCULATIONS.  
 732015 14.0 MEV 10.0% 2 FR D<sub>0</sub>BRETON FAR  
 O: POTENTIAL CONSTITUENT OF CONTAINMENT VESSEL.

23 VANADIUM NEUTRON TOTAL PROTON PRODUCTION CROSS SECTION

741284 15.0 MEV 15.0% 3 USA F<sub>0</sub>G<sub>0</sub>PEREY ORL  
 O: HYDROGEN PRODUCTION.  
 M: NEW REQUEST.

23 VANADIUM NEUTRON N,ALPHA

724031 15.0 MEV 15.0% 1 CCP I<sub>0</sub>N<sub>0</sub>GOLOVIN KUR  
 O: HELIUM ACCUMULATION CALCULATIONS.  
 732016 14.0 MEV 10.0% 2 FR D<sub>0</sub>BRETON FAR  
 O: POTENTIAL CONSTITUENT OF CONTAINMENT VESSEL.

23 VANADIUM NEUTRON TOTAL ALPHA PRODUCTION CROSS SECTION

741285 15.0 MEV 15.0% 3 USA F<sub>0</sub>G<sub>0</sub>PEREY ORL  
 O: HELIUM PRODUCTION.  
 M: NEW REQUEST.

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24 CHROMIUM	NEUTRON	TOTAL CROSS SECTION	
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**Z41225** 1.00 MEV 15.0 MEV 1 USA D.DUDZIAK LAS

Q: EVALUATION WITH UNCERTAINTY-FILES REQUIRED.  
 O: UNCERTAINTY FILES NEEDED TO PERFORM CROSS SECTION SENSITIVITY ANALYSIS FOR NEAR-TERM FUSION DEVICES.  
 M: NEW REQUEST.

-----STATUS-----

KFK SCHATZ - KFK-1668 (1972), REVIEW.  
 TUD TRAN UNG+ - ZFK-243(1972), DATA 3.1 MEV.  
 BET GREEN+ - WAPD-TM-1073(1973), DATA 0.5 TO 10 MEV.  
 ANL WHALEN - CATA TC 1.5 MEV WITH 2-KEV RESOLUTION.

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24 CHROMIUM	NEUTRON	INELASTIC CROSS SECTION	
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**Z32017** 3.00 MEV 14.0 MEV 10.0% 3 FR D.BRETON FAR

O: POTENTIAL CONSTITUENT OF CONTAINMENT VESSEL.

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24 CHROMIUM	NEUTRON	ABSORPTION CROSS SECTION	
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**Z41226** 1.00 MEV 15.0 MEV 1 USA D.DUDZIAK LAS

Q: EVALUATION WITH UNCERTAINTY-FILES REQUIRED.  
 O: UNCERTAINTY FILES NEEDED TO PERFORM CROSS SECTION SENSITIVITY ANALYSIS FOR NEAR-TERM FUSION DEVICES.  
 M: NEW REQUEST.

=====

24 CHROMIUM	NEUTRON	TOTAL PHOTON PRODUCTION CROSS SECTION	
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**Z41230** 1.00 KEV 20.0 MEV 20.0% 2 USA M.BHAT BNL

M: NEW REQUEST.

-----STATUS-----

CCP DEGTJAREV+ - IZV 35 2341(1971), DATA 1 TO 3.4 MEV.

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24 CHROMIUM	NEUTRON	N, 2N	
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=====

**Z32018** 14.0 MEV 10.0% 3 FR D.BRETON FAR

O: POTENTIAL CONSTITUENT OF CONTAINMENT VESSEL.

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24 CHROMIUM	NEUTRON	DOUBLE DIFFERENTIAL NEUTRON-EMISSION CROSS SECTION	
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=====

**Z41227** 14.0 MEV 15.0% 2 USA R.HAIGHT LRL

Q: SPECTRA AT SEVERAL ANGLES REQUIRED.  
 M: NEW REQUEST.

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24 CHROMIUM	NEUTRON	N, P	
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**Z32019** 14.0 MEV 10.0% FR D.BRETON FAR

O: POTENTIAL CONSTITUENT OF CONTAINMENT VESSEL.

-----STATUS-----

UK UKNDC - AVAILABLE ESTIMATES OF FISSION SPECTRUM AVERAGE DIFFER BY A FACTOR OF 5, MAINLY DUE TO UNCERTAINTY IN CR-50(N,P).

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24 CHROMIUM	NEUTRON	TOTAL PROTON PRODUCTION CROSS SECTION	
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**Z41228** 15.0 MEV 15.0% 2 USA R.HAIGHT LRL

O: HYDROGEN PRODUCTION REQUIRED.  
 M: NEW REQUEST.

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24 CHROMIUM	NEUTRON	N, ALPHA	
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**Z32020** 14.0 MEV 10.0% 3 FR D.BRETON FAR

O: POTENTIAL CONSTITUENT OF CONTAINMENT VESSEL.

-----STATUS-----

AE WEITMAN+ - ANS 13 558(1970), HE PRODUCTION IN A FISSION SPECTRUM.  
 ALO FREEMAN+ - JNE 23 713(1969), FISSION SPECTRUM AVERAGE.

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24 CHROMIUM	NEUTRON	TOTAL ALPHA PRODUCTION CROSS SECTION	
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**Z41229** 15.0 MEV 15.0% 2 USA R.HAIGHT LRL

O: HELIUM PRODUCTION REQUIRED.  
 M: NEW REQUEST.

=====  
24 CHROMIUM 52 NEUTRON N,F  
=====

741231 20.0 MEV 25.0% 2 USA M,BHAT BNL  
O: NEEDED FOR EVALUATION.  
M: NEW REQUEST.

-----STATUS-----

JYV HOLMBERG+ - JIN 36 715(1974), DATA AT 14.7 MEV.

=====  
24 CHROMIUM 52 NEUTRON N,ALPHA  
=====

741232 20.0 MEV 25.0% 2 USA M,BHAT BNL  
O: NEEDED FOR EVALUATION.  
M: NEW REQUEST.

=====  
25 MANGANESE 55 NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION  
=====

741237 1.00 KEV 20.0 MEV 20.0% 2 USA M,BHAT BNL  
M: NEW REQUEST.

=====  
25 MANGANESE 55 NEUTRON N,2N  
=====

741232 20.0 MEV 15.0% 1 USA D,DUDZIAK LAS  
O: EVALUATION WITH UNCERTAINTY-FILE IS REQUIRED.  
O: TO EVALUATE LONG-LIVED ACTIVATION OF CAPACITORS  
AND MAGNETIC MATERIALS IN THETA-PINCH FTR  
AND STEEL STRUCTURES IN NEAR-TERM FUSION DEVICES  
RADIATION DAMAGE ANALYSIS.  
M: NEW REQUEST.

741236 15.0 MEV 15.0% 2 USA R,HAIGHT LRL  
O: EVALUATION REQUESTED.  
O: NEEDED FOR FERF DESIGN.  
M: NEW REQUEST.

-----STATUS-----

NDC SCHETT+ - EANDC-95 (1974), CCMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.

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26 IRON NEUTRON INELASTIC CROSS SECTION  
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722102 15.0 MEV 20.0% 3 UK R,HANCOX HAR  
O: FOR BLANKET HEATING CALCULATIONS.

722021 3.00 MEV 14.0 MEV 10.0% 2 FR D,BRETON FAR  
O: POTENTIAL CONSTITUENT OF CONTAINMENT VESSEL.

=====  
26 IRON NEUTRON ENERGY DIFFERENTIAL INELASTIC CROSS SECTION  
=====

652100 8.00 MEV 15.0 MEV 20.0% 2 GER B,GOEL KFK  
A: ENERGY RESOLUTION 500 KEV FOR INCIDENT NEUTRONS  
AND 200 KEV FOR SECONDARY NEUTRONS  
M: NEW REQUEST.

-----STATUS-----

ORL KINNEY+ - GFNL+4515 (1970), DATA 4 TO 8.5 MEV.

AE ALMEN+ - INDC(SEC)-31 39(1973), DATA 2 TO 4.5 MEV.

CSE LINDOW+ - NCSAC-31 (1970), DATA 5 TO 5.5 MEV.

ANL SMITH (1974), DATA TO 4 MEV.

USA USNDC (1974), CONSIDERS DATA WITH 10 PERCENT ACCURACY PROBABLY AVAILABLE UP TO 4 MEV.

=====  
26 IRON NEUTRON PHOTON PRODUCTION CROSS SECTION IN INELASTIC SCAT.  
=====

722103 15.0 MEV 20.0% 3 UK R,HANCOX HAR  
O: FOR BLANKET HEATING CALCULATIONS.

=====  
26 IRON NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION  
=====

722120 15.0 MEV 10.0% 3 UK R,HANCOX HAR  
O: ENERGY AND ANGULAR DISTRIBUTION OF GAMMA RAYS  
WANTED.  
M: NEW REQUEST.

26 IRON NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION (CONTINUED)

STATUS-----STATUS

ORL DICKENS - PR/C 5 100(1972), DATA FROM 5.3 TO 9 MEV.  
 CCP KRAVCOV+ - 72 KIEV (1972).  
 GA ORPHAN+ - GULF-RT-10743 (1971), DATA FROM .9 TO 16.7 MEV.  
 KFK VOSS+ - 71 KNOXVILLE 218(1971), DATA .8 TO 13 MEV.  
 IRT HARRIS+ - WCRK IN PROGRESS 4 TO 15 MEV AT 125 DEGREES.

26 IRON NEUTRON N, 2N

722106 15.0 MEV 10.0% 3 UK R. HANCOX HAR  
 O: FOR NEUTRON ECONOMY CALCULATIONS.  
 732022 14.0 MEV 10.0% 2 FR D. BRETON FAR  
 O: POTENTIAL CONSTITUENT OF CONTAINMENT VESSEL.

26 IRON NEUTRON ENERGY DIFFERENTIAL NEUTRON-EMISSION CROSS SECTION

741288 8.00 MEV 15.0 MEV 15.0% 2 USA F. G. PEREY ORL  
 O: MUST RECORD NEUTRONS DOWN TO A FEW HUNDRED KEV.  
 M: NEW REQUEST.

26 IRON NEUTRON N, F

722107 15.0 MEV 20.0% 3 UK R. HANCOX HAR  
 O: FOR HYDROGEN GAS PRODUCTION RATES.  
 732023 14.0 MEV 10.0% 2 FR D. BRETON FAR  
 O: POTENTIAL CONSTITUENT OF CONTAINMENT VESSEL.

26 IRON NEUTRON N, ALPHA

722108 15.0 MEV 20.0% 3 UK R. HANCOX HAR  
 O: FOR HELIUM GAS PRODUCTION RATES.  
 732024 14.0 MEV 10.0% 2 FR D. BRETON FAR  
 O: POTENTIAL CONSTITUENT OF CONTAINMENT VESSEL.

STATUS-----STATUS

AE WEITMAN+ - ANS 13 558(1970), HE PRODUCTION IN A FISSION SPECTRUM.  
 ALD FREEMAN+ - JNE 23 713(1969), FISSION SPECTRUM AVERAGE.

26 IRON NEUTRON TOTAL ALPHA PRODUCTION CROSS SECTION

741289 15.0 MEV 15.0% 2 USA R. HAIGHT LRL  
 O: HYDROGEN PRODUCTION REQUIRED.  
 M: NEW REQUEST.  
 741290 15.0 MEV 15.0% 2 USA R. HAIGHT LRL  
 O: HELIUM PRODUCTION REQUIRED.  
 M: NEW REQUEST.

26 IRON 54 NEUTRON N, F

741291 15.0 MEV 15.0% 2 USA J. D. LEE LRL  
 O: PRODUCTION OF MN-54.  
 M: NEW REQUEST.

STATUS-----STATUS

GEL PAULSEN+ - 71CANTERBY 129(1971), DATA 1 TO 17 MEV.  
 JUL QAIM+ - 71CANTERBY 121(1971), DATA AT 15 MEV.  
 NDC SCHETT+ - EANDC-95 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.  
 ANL SMITH+ - ANL/NDM-10 (1975), MEASUREMENTS AND EVALUATION FROM 1.9 TO 10 MEV.

26 IRON 58 NEUTRON CAPTURE CROSS SECTION

741292 15.0 MEV 15.0% 2 USA J. D. LEE LRL  
 O: PRODUCTION OF FE-59.  
 M: NEW REQUEST.

STATUS-----STATUS

RPI HOCKENBURY+ - USNDC-3 155(1972), WORK IN PROGRESS 0.1 TO 200 KEV.  
 KFK BEER+ - EANDC(E)-157 (1973), EXPERIMENT PLANNED.





741298 15.0 MEV 15.0X 2 USA R. HAIGHT LRL  
 Q: EVALUATION REQUESTED.  
 O: NEEDED FOR LLL FERF DESIGN.  
 M: NEW REQUEST.

STATUS-----STATUS

IRK WAGNER+ - AFA 37 288(1973), DATA 2 TO 20 MEV.  
 GEL PAULSEN+ - EANDC(E)-150 (1972), MEASUREMENT IN PROGRESS.  
 NDC SCHETT+ - EANDC-95 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.  
 ANL SMITH+ - ANL/NDP-10 (1975), MEASUREMENTS AND EVALUATION FROM 0.4 TO 10 MEV.

28 NICKEL 58 NEUTRON N,P

741299 15.0 MEV 15.0X 2 USA R. HAIGHT LRL  
 Q: TOTAL PRODUCTION OF CO-57 REQUIRED (INCLUDING (N,D) REACTION).  
 EVALUATION REQUESTED.  
 M: NEW REQUEST.

28 NICKEL 60 NEUTRON N,ALPHA

741301 20.0 MEV 20.0X 2 USA M. BHAT BNL  
 M: NEW REQUEST.

29 COPPER NEUTRON TOTAL CROSS SECTION

741302 1.00 MEV 15.0 MEV 1 USA C. DUDZIAK LAS  
 Q: EVALUATION WITH UNCERTAINTY-FILES REQUIRED.  
 O: UNCERTAINTY FILES NEEDED TO PERFORM CROSS-SECTION SENSITIVITY ANALYSIS FOR NEAR-TERM FUSION DEVICES.  
 M: NEW REQUEST.

29 COPPER NEUTRON ELASTIC CROSS SECTION

741303 8.00 MEV 15.0 MEV 10.0X 2 CCP I. N. GOLOVIN KUR  
 O: NEUTRON TRANSMISSION CALCULATIONS.

29 COPPER NEUTRON ABSORPTION CROSS SECTION

741304 1.00 MEV 15.0 MEV 1 USA C. DUDZIAK LAS  
 Q: EVALUATION WITH UNCERTAINTY-FILES REQUIRED.  
 O: UNCERTAINTY FILES NEEDED TO PERFORM CROSS-SECTION SENSITIVITY ANALYSIS FOR NEAR-TERM FUSION DEVICES.  
 M: NEW REQUEST.

29 COPPER NEUTRON PHOTON PRODUCTION CROSS SECTION IN INELASTIC SCAT.

741305 15.0 MEV 15.0X 2 CCP I. N. GOLOVIN KUR  
 O: NEUTRONICS CALCULATIONS FOR BLANKET AND SHIELD.

29 COPPER NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION

741306 500. KEV 15.0 MEV 15.0X 2 CCP I. N. GOLOVIN KUR  
 Q: GAMMA RAY SPECTRA ALSO WANTED.  
 O: GAMMA RAY HEATING AND SHIELDING CALCULATIONS.

741307 1.00 MEV 15.0 MEV 15.0X 2 USA V. J. ORPHAN SAI  
 Q: EVALUATION ONLY TO INCORPORATE NEW DATA.  
 O: FOR CALCULATING GAMMA-RAY HEATING IN COILS.  
 M: NEW REQUEST.

29 COPPER NEUTRON N,P

741308 15.0 MEV 15.0X 2 CCP I. N. GOLOVIN KUR  
 O: HYDROGEN ACCUMULATION CALCULATIONS.

29 COPPER NEUTRON N,ALPHA

741309 15.0 MEV 15.0X 2 CCP I. N. GOLOVIN KUR  
 O: HELIUM ACCUMULATION CALCULATIONS.

29 COPPER 63 NEUTRON CAPTURE CROSS SECTION

741307 25.3 MV 2.00 MEV 15.0X 2 USA J. D. LEE LRL  
 Q: ACTIVATION REQUIRED.  
 EVALUATION ONLY.  
 O: PRODUCTION OF CU-64.  
 M: NEW REQUEST.

STATUS-----STATUS

HAR MCXON+ - AERE-PR/NP13 (1968), MEASUREMENTS IN PROGRESS TO 100 KEV.  
 ORL MACKLIN+ - NCSAC-42 185(1971), MEASUREMENTS IN PROGRESS TO 500 KEV.  
 RPI PANDY+ - DATA BEING ANALYZED.

=====

29 COPPER 63 NEUTRON N,P  
 =====  
 741305 15.0 MEV 15.0% 1 USA D.DUDZIAK LAS  
 Q: ACTIVATION REQUIRED.  
 EVALUATION WITH UNCERTAINTY-FILES REQUIRED.  
 O: TO CALCULATE LONG-TERM ACTIVATION OF COPPER COILS  
 IN FUSION DEVICES (NI-63, HALF-LIFE = 100  
 YEARS).  
 RADIATION DAMAGE ANALYSIS.  
 M: NEW REQUEST.

=====

29 COPPER 63 NEUTRON N,ALPHA  
 =====  
 741306 15.0 MEV 15.0% 1 USA D.DUDZIAK LAS  
 Q: ACTIVATION REQUIRED.  
 EVALUATION WITH UNCERTAINTY-FILES REQUIRED.  
 O: TO CALCULATE LONG-TERM ACTIVATION OF COPPER COILS  
 IN FUSION DEVICES (CO-60, HALF-LIFE = 5.3 YEARS)  
 RADIATION DAMAGE ANALYSIS.  
 M: NEW REQUEST.

STATUS-----STATUS

GEL LISKIEN+ - JNE 27 39(1973), DATA AT 8.1 MEV.  
 HAM BORNANN+ - NP/A 186 65(1972), DATA AT 14 MEV.  
 NDC SCHETT+ - EANDC-95 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.

=====

30 ZINC 66 NEUTRON N,2N  
 =====  
 741308 15.0 MEV 15.0% 2 USA R.HAIGHT LRL  
 Q: PRODUCTION OF ZN-65 REQUIRED.  
 EVALUATION REQUESTED.  
 M: NEW REQUEST.

=====

40 ZIRCONIUM NEUTRON ELASTIC CROSS SECTION  
 =====  
 724937 5.00 MEV 15.0 MEV 10.0% 2 CCP I.N.GOLOVIN KUR  
 O: NEUTRON TRANSMISSION CALCULATIONS.

=====

40 ZIRCONIUM NEUTRON ENERGY DIFFERENTIAL INELASTIC CROSS SECTION  
 =====  
 724938 15.0 MEV 15.0% 2 CCP I.N.GOLOVIN KUR  
 O: NEUTRONICS CALCULATIONS FOR BLANKET AND SHIELD.

=====

40 ZIRCONIUM NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION  
 =====  
 724939 15.0 MEV 15.0% 2 CCP I.N.GOLOVIN KUR  
 O: GAMMA RAY HEATING AND SHIELDING CALCULATIONS.

=====

40 ZIRCONIUM NEUTRON N,2N  
 =====  
 724940 15.0 MEV 15.0% 2 CCP I.N.GOLOVIN KUR  
 O: FOR NEUTRON MULTIPLICATION CALCULATIONS.

=====

40 ZIRCONIUM NEUTRON N,P  
 =====  
 724941 15.0 MEV 15.0% 2 CCP I.N.GOLOVIN KUR  
 O: HYDROGEN ACCUMULATION CALCULATIONS.

=====

40 ZIRCONIUM NEUTRON N,ALPHA  
 =====  
 724942 15.0 MEV 15.0% 2 CCP I.N.GOLOVIN KUR  
 O: HELIUM ACCUMULATION CALCULATIONS.

=====

41 NIOBIUM 93 NEUTRON DIFFERENTIAL ELASTIC CROSS SECTION  
 =====  
 722125 1.00 MEV 15.0 MEV 10.0% 2 GER D.DARVAS JUL  
 H.KUESTERS KFK  
 Q: ANGULAR DISTRIBUTIONS AT A FEW SELECTED ENERGIES  
 WOULD BE SUFFICIENT.  
 O: RADIATION DAMAGE ESTIMATES.

=====

724943 3.00 MEV 15.0 MEV 10.0% 1 CCP I.N.GOLOVIN KUR  
 O: NEUTRON TRANSMISSION CALCULATIONS.

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41 NIOBIUM 93      NEUTRON      INELASTIC CROSS SECTION
=====

722126      15.0 MEV      10.0%      2      GER      D.DARVAS      JUL
              H.KUESTERS      KFK
              Q: FORMATION OF 13.6 YEAR ISOMER WANTED.
              O: CALCULATION OF HEAT GENERATION AND RADIOACTIVE
                AFTERHEAT.

STATUS-----STATUS
ALD      COLES - AERE/C-66/71, DATA 1 TO 5 MEV.
AE       ETEMAD. - AE-481 (1973), DATA 2.0 TO 4.6 MEV.
NDC      SCHETT+ - EANDC-95 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.
=====
41 NIOBIUM 93      NEUTRON      ENERGY DIFFERENTIAL INELASTIC CROSS SECTION
=====

724044      15.0 MEV      15.0%      1      CCP      I.N.GOLOVIN      KUR
              O: NEUTRON CALCULATIONS FOR BLANKET AND SHIELD.
=====
41 NIOBIUM 93      NEUTRON      DOUBLE DIFFERENTIAL INELASTIC CROSS SECTION
=====

722129      1.00 MEV      15.0 MEV      20.0%      2      GER      D.DARVAS      JUL
              H.KUESTERS      KFK
              O: RADIATION DAMAGE ESTIMATES.
=====
41 NIOBIUM 93      NEUTRON      CAPTURE CROSS SECTION
=====

724045      10.0 MEV      15.0 MEV      15.0%      1      CCP      I.N.GOLOVIN      KUR
              O: HEAVIER ISOTOPE ACCUMULATION CALCULATIONS.

STATUS-----STATUS
ORL      MACKLIN. - (1974), DATA TO 700 KEV.
ANL      POENITZ. - ANL/NDM-8 (1974), DATA 0.3 TO 2.5 MEV.
HAR      COATES - MEASUREMENT PLANNED.
=====
41 NIOBIUM 93      NEUTRON      PHOTON PRODUCTION CROSS SECTION IN INELASTIC SCAT.
=====

722130      1.00 MEV      15.0 MEV      20.0%      GER      D.DARVAS      JUL
              H.KUESTERS      KFK
              Q: ENERGY AND ANGULAR DISTRIBUTION OF GAMMA RAYS.
                REQUIRED.
              O: RADIATION DAMAGE ESTIMATES.
=====
41 NIOBIUM 93      NEUTRON      TOTAL PHOTON PRODUCTION CROSS SECTION
=====

724046      15.0 MEV      15.0%      1      CCP      I.N.GOLOVIN      KUR
              O: GAMMA RAY HEATING AND SHIELDING CALCULATIONS.

STATUS-----STATUS
ORL      DICKENS+ - NCSAC-42 195(1971), IN PROGRESS.
=====
41 NIOBIUM 93      NEUTRON      N,2N
=====

722134      15.0 MEV      10.0%      2      GER      D.DARVAS      JUL
              H.KUESTERS      KFK
              Q: A MEASUREMENT COUNTING THE OUTCOMING NEUTRONS
                WOULD BE PREFERRED TO CLARIFY THE SITUATION OF
                HITHERTO UNOBSERVED DECAY MODES.
              O: FOR RADIATION DAMAGE ESTIMATES.

724047      15.0 MEV      10.0%      1      CCP      I.N.GOLOVIN      KUR
              Q: ENERGY AND ANGULAR DEPENDENCE OF SECONDARY
                NEUTRONS REQUIRED.
              O: FOR NEUTRON MULTIPLICATION AND RADIATION DAMAGE
                ESTIMATES.

STATUS-----STATUS
KFK      KUESTERS. - (1973), PRESENT RESULTS OBTAINED BY COUNTING 0.93 MEV GAMMA RAYS FROM Zr-92
              FOLLOWING DECAY OF 10.2-DAY NB-92. A 3.2-HOUR NB-92 ISOMER IS ALSO REPORTED. SYSTEMATICS AND
              STATISTICAL THEORY INDICATE TOO LOW CROSS SECTION PERHAPS DUE TO UNOBSERVED DECAY.
HAR      BLOW. - JNE 26 9(1972), DISCUSSION OF DISCREPANCY BETWEEN THEORY AND EXPERIMENT.
NDC      SCHETT+ - EANDC-95 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.
ANL      SMITH+ - ANL/NDM-6 (1974), EVALUATION FROM 12 TO 20 MEV.
=====
41 NIOBIUM 93      NEUTRON      N,2N NEUTRON SPECTRA
=====

741212      20.0 MEV      15.0%      2      USA      D.DUDZIAK      LAS
              Q: EVALUATION REQUIRED.
              O: RECOIL SPECTRUM IMPORTANT FOR RADIATION DAMAGE.
                NB-92 AND NB-92M IMPORTANT IN RADIOACTIVITY AND
                AFTER-HEAT FOR SYSTEMS STUDIES.
              M: NEW REQUEST.
=====

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42 MOLYBDENUM NEUTRON TOTAL PHOTON PRODUCTION CROSS SECTION (CONTINUED)

741313 8.00 MEV 15.0 MEV 15.0% 3 USA F.G.PEREY ORL  
M: NEW REQUEST.

42 MOLYBDENUM NEUTRON N,2N

722146 15.0 MEV 10.0% 2 GER D.DARVAS JUL  
S.CIERJACKS KFK  
Q: COUNTING OF OUTGOING NEUTRONS TO DETERMINE  
NEUTRON MULTIPLICATION BY TRANSMISSION IS  
REQUIRED, SINCE ACTIVITY IS PRODUCED BY MO-92  
AND MO-100 ONLY.  
O: CALCULATION OF NEUTRON MULTIPLICATION AND  
RADIATION DAMAGE.

724954 15.0 MEV 15.0% 1 CCP I.N.GOLOVIN KUR  
Q: SECONDARY ENERGY SPECTRUM REQUIRED AT 14.0 MEV.  
O: NEUTRON MULTIPLICATION CALCULATIONS.

732930 15.0 MEV 10.0% 3 FR D.BRETON FAR  
O: POTENTIAL CONSTITUENT OF CONTAINMENT VESSEL.

STATUS-----STATUS

KFK CIERJACKS. - (1573). PRESENT EVALUATIONS RELY ON NUCLEAR SYSTEMATICS AND 14-MEV DATA FOR MO,  
MO-92 AND MO-100. PRESENT ACCURACY 20 TO 30 PERCENT.

42 MOLYBDENUM NEUTRON N,P

722148 1.50 MEV 15.0 MEV 20.0% 2 GER D.DARVAS JUL  
S.CIERJACKS KFK  
O: RADIATION DAMAGE ESTIMATES, CALCULATION OF  
TRANSMUTATION RATES AND RADIOACTIVE AFTERHEAT.

724955 15.0 MEV 15.0% 1 CCP I.N.GOLOVIN KUR  
O: HYDROGEN ACCUMULATION CALCULATIONS.

732931 14.0 MEV 10.0% 3 FR D.BRETON FAR  
O: POTENTIAL CONSTITUENT OF CONTAINMENT VESSEL.

742111 14.0 MEV 10.0% 2 GER F.WELLER KFK  
O: FOR RADIATION DAMAGE CALCULATIONS.  
NO DATA AVAILABLE.  
M: NEW REQUEST.

STATUS-----STATUS

KFK CIERJACKS. - (1573). 14-MEV DATA POINTS FOR MO-92,-94,-96,-97 AND FISSION-SPECTRUM-AVERAGED  
DATA ONLY. PRESENT ACCURACY 30 TO 50 PERCENT.

42 MOLYBDENUM NEUTRON N,ALPHA

722149 5.00 MEV 15.0 MEV 20.0% 2 GER D.DARVAS JUL  
S.CIERJACKS KFK  
O: RADIATION DAMAGE ESTIMATES, CALCULATION OF  
TRANSMUTATION RATES AND RADIOACTIVE AFTERHEAT.

724956 15.0 MEV 15.0% 1 CCP I.N.GOLOVIN KUR  
O: HELIUM ACCUMULATION CALCULATIONS.

732932 14.0 MEV 10.0% 3 FR D.BRETON FAR  
O: POTENTIAL CONSTITUENT OF CONTAINMENT VESSEL.

STATUS-----STATUS

KFK CIERJACKS. - (1573). 14-MEV DATA FOR MO-92,-98,-100 AND FISSION-SPECTRUM-AVERAGED DATA FOR MO  
ONLY. ESTIMATED ACCURACY 30 TO 50 PERCENT.

47 SILVER 109 NEUTRON CAPTURE CROSS SECTION

741314 25.3 MV 1.00 MEV 15.0% 2 USA R.HAIGHT LRL  
O: PRODUCTION OF AG-110M REQUIRED.  
EVALUATION REQUESTED.  
M: NEW REQUEST.

STATUS-----STATUS

NPG IJIMA+ (1575). THERE ARE 37 DATA POINTS BELOW 6 MEV, BUT A SYSTEMATIC DISCREPANCY IS OBSERVED  
BETWEEN WESTON'S DATA AND KONONOV'S DATA.

74 TUNGSTEN NEUTRON INELASTIC CROSS SECTION

732933 3.00 MEV 14.0 MEV 10.0% 3 FR D.BRETON FAR  
O: POTENTIAL CONSTITUENT OF CONTAINMENT VESSEL.

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=====
74 TUNGSTEN          NEUTRON          N,2N
=====
I22029          14.0 MEV      10.0%      3   FR   D.BRETON      FAR
                                Q: POTENTIAL CONSTITUENT OF CONTAINMENT VESSEL.
STATUS-----STATUS
JUL   QAIM. - NF/A 242 317(1975), DATA AT 14.7 MEV FOR ENRICHED ISOTOPES.
=====
74 TUNGSTEN          NEUTRON          N,P
=====
I22035          14.0 MEV      10.0%      3   FR   D.BRETON      FAR
                                Q: POTENTIAL CONSTITUENT OF CONTAINMENT VESSEL.
STATUS-----STATUS
JUL   QAIM. - NF/A 242 317(1974), DATA AT 14.7 MEV FOR ENRICHED ISOTOPES.
=====
74 TUNGSTEN          NEUTRON          N,ALPHA
=====
I22037          14.0 MEV      10.0%      3   FR   D.BRETON      FAR
                                Q: POTENTIAL CONSTITUENT OF CONTAINMENT VESSEL.
STATUS-----STATUS
JUL   QAIM. - NF/A 242 317(1974), DATA AT 14.7 MEV FOR ENRICHED ISOTOPES.
=====
82 LEAD             NEUTRON          TOTAL CROSS SECTION
=====
I41315          25.3 MV       15.0 MEV          1   USA   D.DUDZIAK      LAS
                                Q: EVALUATION WITH UNCERTAINTY-FILES REQUIRED.
                                Q: UNCERTAINTY FILES NEEDED TO PERFORM CROSS-SECTION
                                  SENSITIVITY ANALYSIS FOR NEAR-TERM FUSION
                                  DEVICES.
                                M: NEW REQUEST.
=====
82 LEAD             NEUTRON          ABSORPTION CROSS SECTION
=====
I41316          25.3 MV       15.0 MEV          1   USA   D.DUDZIAK      LAS
                                Q: EVALUATION WITH UNCERTAINTY-FILES REQUIRED.
                                Q: UNCERTAINTY FILES NEEDED TO PERFORM CROSS-SECTION
                                  SENSITIVITY ANALYSIS FOR NEAR-TERM FUSION
                                  DEVICES.
                                M: NEW REQUEST.
=====
82 LEAD             NEUTRON          TOTAL PHOTON PRODUCTION CROSS SECTION
=====
I24057          25.3 MV       15.0 MEV      15.0%      2   CCP   I.N.GOLOVIN    KUR
                                Q: GAMMA RAY SPECTRA REQUIRED.
                                Q: GAMMA RAY HEATING AND SHIELDING CALCULATIONS.
=====
82 LEAD             NEUTRON          N,2N
=====
I24058          15.0 MEV      15.0%      2   CCP   I.N.GOLOVIN    KUR
                                Q: POSSIBLE USE AS NEUTRON MULTIPLIER.
=====
82 LEAD 204        NEUTRON          N,2N
=====
I41317          15.0 MEV      15.0%      2   USA   R.HAIGHT       LRL
                                Q: EVALUATION REQUESTED.
                                Q: PRODUCTION OF PB-203.
                                M: NEW REQUEST.
STATUS-----STATUS
WMA   DECDWSKI+ - NF/A 204 121(1973), DATA 13 TO 18 MEV.
=====
83 BISMUTH 209     NEUTRON          TOTAL PHOTON PRODUCTION CROSS SECTION
=====
I24059          25.3 MV       15.0 MEV      15.0%      2   CCP   I.N.GOLOVIN    KUR
                                Q: GAMMA RAY SPECTRA REQUIRED.
                                Q: GAMMA RAY HEATING AND SHIELDING CALCULATIONS.
=====
83 BISMUTH 209     NEUTRON          N,2N
=====
I24060          15.0 MEV      15.0%      2   CCP   I.N.GOLOVIN    KUR
                                Q: POSSIBLE USE AS NEUTRON MULTIPLIER.
STATUS-----STATUS
BRC   FREHAUT+ - CEA-R-4627 (1974), DATA FROM THRESHOLD TO 14 MEV.
=====
90 THORIUM 232     NEUTRON          N,2N
=====
I24061          15.0 MEV      15.0%      2   CCP   I.N.GOLOVIN    KUR
                                Q: POSSIBLE USE AS NEUTRON MULTIPLIER.
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90 THORIUM 232 NEUTRON N,3N
   
=====

729062 15.0 MEV 15.0% 2 CCP I.N.GOLOVIN KUR
   
O: POSSIBLE USE AS NEUTRON MULTIPLIER.

=====
   
92 URANIUM 238 NEUTRON N,2N
   
=====

729063 15.0 MEV 15.0% 2 CCP I.N.GOLOVIN KUR
   
O: POSSIBLE USE AS NEUTRON MULTIPLIER.

741319 15.0 MEV 15.0% 2 USA J.D.LEE LRL
   
Q: EVALUATION REQUESTED.
   
O: PRODUCTION OF U-237.
   
M: NEW REQUEST.

-----STATUS-----STATUS

ALD MATHER+ - AWRE/O-72/72, DATA 7.0 TO 12 MEV.
   
BNW WOLKENHAUER+ - 73PARIS 1 39, REVIEW THRESHOLD TO 16 MEV.
   
LRL LIANDRUM+ - PR/C 8 1938(1973), DATA 14 TO 15 MEV.
   
DUB BELDV+ - IJF 47 232(1973), WGRK AT 15 MEV.
   
BRC FREHAUT+ - CEA-R-4627 (1974), WORK THRESHOLD TO 15 MEV.

=====
   
92 URANIUM 238 NEUTRON N,3N
   
=====

729069 15.0 MEV 15.0% 2 CCP I.N.GOLOVIN KUR
   
O: POSSIBLE USE AS NEUTRON MULTIPLIER.

741320 15.0 MEV 15.0% 2 USA J.D.LEE LRL
   
Q: EVALUATION REQUESTED.
   
O: PRODUCTION OF U-236.
   
M: NEW REQUEST.

=====
   
92 URANIUM 238 NEUTRON DCUBLE DIFFERENTIAL NEUTRON-EMISSION CROSS SECTION
   
=====

741318 14.0 MEV 15.0% 2 USA J.D.LEE LRL
   
Q: SPECTRA AT SEVERAL ANGLES REQUIRED.
   
MUST RECORD NEUTRONS DOWN TO A FEW HUNDRED KEV.
   
M: NEW REQUEST.
   
=====



IV. Nuclear Safeguards and AccountabilityIV.A. Introduction

The Nuclear Data Request List for Safeguards Development Purposes has been thoroughly revised in both content and format since its previous publication as INDC(NDS)-50 (March 1973). The changes are summarized in the following table:

	Japanese List	FRG List	US List	USSR List
Withdrawn Requests	-	26	38	17
Continued or modified Requests	-	7	12	22
New Requests	59	9	19	2
Date of Submission to NDS	October 73	May 1974	January 75	July 1974

The list contains 130 requests from four countries - the Federal Republic of Germany, Japan, the Soviet Union and the United States. The few requests from France and the United Kingdom which may be related to safeguards are included in the Fission-Reactor Request List.

IV.B. Priority Criteria\*

Used in Assigning Priorities to Nuclear Data Requests for Safeguards Purposes

First Priority - (1)

First priority shall be given to those requests for nuclear data that

1. are necessary for the refinement of an existing technique in order to bring its accuracy to within acceptable limits for safeguards purposes, or
2. are essential for the development of a new and promising technique for the nondestructive assay and control of nuclear material in amounts that are significant to the safeguards system.

Second Priority - (2)

Second priority shall be given to those requests for nuclear data that

1. are essential for the use or interpretation of an existing or proposed technique for nondestructive assay and that are now obtained either by extrapolation or by an empirical method but for which experimental confirmation is desirable, or
2. are necessary for the development of a technique for non-destructive assay that may reasonably be expected to be useful for safeguards purposes.

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\* These priority criteria were recommended for use by the International Nuclear Data Committee (INDC).

Third Priority - (3)

Third priority shall be given to those requests for nuclear data that

1. may be needed for the nondestructive assay of materials not now included in the safeguards system but that are likely to be in the future, or
2. are necessary for the assessment or elimination of minor sources of error in the assay of nuclear material, or
3. are needed for the exploration of new techniques for non-destructive assay for future applications, or
4. may be needed for the development of new techniques for non-destructive assay for which the required technology does not now exist but which may reasonably be expected to in the future.

IV.C. Index to Safeguards Request List

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IV. D. DATA REQUEST LIST FOR NUCLEAR SAFEGUARDS DEVELOPMENT





55 CESIUM 134 SPONTANEOUS TOTAL GAMMA RAY YIELD (CONTINUED)

STATUS-----STATUS  
 AE FORSYTH+ - 70 KARLSRUHE VOL.1 P.521, IAEA.  
 MHG RAESIDE+ - NP/A 98 54(1967).  
 PTN ABDUL-MALEK+ - NP/A 106 225(1968).  
 THD HOFMANN+ - ZP 230 37(1970).

55 CESIUM 134 NEUTRON CAPTURE CROSS SECTION

704008 25.3 MV 3.0% 2 CCP S.A. SKVORTSOV KUR  
 O.A. MILLER KUR  
 Q: ALSO WANTED FOR 0.06 EV INCIDENT NEUTRONS.  
 O: FOR ASSAY OF U AND PU IN FUEL ELEMENTS FROM FISSION PRODUCT GAMMA RADIATION.  
 722022 25.3 MV 3.0% 1 JAP H. OKASHITA JAE  
 Q: RESONANCE INTEGRAL ALSO WANTED.  
 O: FOR BURN UP CALCULATION FROM NON-DESTRUCTIVE MEASUREMENT.  
 M: NEW REQUEST.

STATUS-----STATUS

SAC RIBON - 73BOLCGNA 1 235, REVIEW.

55 CESIUM 137 NEUTRON CAPTURE CROSS SECTION

704013 25.3 MV 10.0% 2 CCP S.A. SKVORTSOV KUR  
 O.A. MILLER KUR  
 Q: ALSO WANTED FOR 0.06 EV INCIDENT NEUTRONS.  
 O: FOR ASSAY OF U AND PU IN FUEL ELEMENTS FROM FISSION PRODUCT GAMMA RADIATION.

56 BARIUM 140 NEUTRON CAPTURE CROSS SECTION

704015 25.3 MV 5.0% 3 CCP S.A. SKVORTSOV KUR  
 O.A. MILLER KUR  
 Q: ALSO WANTED FOR 0.06 EV INCIDENT NEUTRONS.  
 O: FOR ASSAY OF U AND PU IN FUEL ELEMENTS FROM FISSION PRODUCT GAMMA RADIATION.

STATUS-----STATUS

SAC RIBON - 73BOLCGNA 1 235, REVIEW.

57 LANTHANUM 140 SPONTANEOUS TOTAL GAMMA RAY YIELD

704016 1.0% 2 CCP S.A. SKVORTSOV KUR  
 O.A. MILLER KUR  
 Q: YIELD OF GAMMA QUANTA PER BETA DECAY EVENT WANTED FOR 328.8 AND 815.8 KEV GAMMAS.  
 O: FOR ASSAY OF U AND PU IN FUEL ELEMENTS FROM FISSION PRODUCT GAMMA RADIATION.  
 722009 1.0% 1 JAP N. SASAMOTO JAE  
 Q: YIELD PER DISINTEGRATION OF 328.8, 487.0, 815.8, AND 2522.0 KEV GAMMA RAYS REQUIRED.  
 O: FOR BURN UP CALCULATION FROM NON-DESTRUCTIVE MEASUREMENT.  
 M: NEW REQUEST.  
 722010 3.0% 1 JAP N. SASAMOTO JAE  
 Q: YIELD PER DISINTEGRATION OF 432.6 KEV GAMMA RAY REQUIRED.  
 O: FOR BURN UP CALCULATION FROM NON-DESTRUCTIVE MEASUREMENT.  
 M: NEW REQUEST.

STATUS-----STATUS

CCP GUSEV - PROTECTION AGAINST GAMMA RADIATION FROM FISSION PRODUCTS, 'ATOMIZDAT, MOSCOW (1968).  
 RUM ARDISSON+ - RRF 16 1045(1971).  
 CCP KALINNIKOV+ - IZV 34 916(1970).  
 ORL MARTIN+ - ND/A 1(1970).  
 GRE BLACHOT+ - CEA-N-1526(1972).

58 CERIUM 144 SPONTANEOUS TOTAL GAMMA RAY YIELD

704014 1.0% 2 CCP S.A. SKVORTSOV KUR  
 O.A. MILLER KUR  
 Q: YIELD OF GAMMA QUANTA PER BETA DECAY EVENT WANTED FOR 133.5 KEV GAMMA.  
 O: FOR ASSAY OF U AND PU IN FUEL ELEMENTS FROM FISSION PRODUCT GAMMA RADIATION.  
 722011 1.0% 2 JAP H. OKASHITA JAE  
 Q: YIELD PER DISINTEGRATION OF 133.5 KEV GAMMA RAY REQUIRED.  
 O: FOR BURN UP CALCULATION FROM NON-DESTRUCTIVE MEASUREMENT.  
 M: NEW REQUEST.



=====  
 STATUS-----STATUS  
 CCP GUSEV - PROTECTION AGAINST GAMMA RADIATION FROM FISSION PRODUCTS, ATOMIZDAT, MOSCOW (1968).  
 SRE HILLER - KT 12 425(1970).  
 DEB BERENYI - 73 PARIS VOL.1 P.269.  
 MGT POTNIS+ - JPJ 25 539(1970).  
 HLS ANTTILA+ - ZP 237 126(1970).  
 ORL MARTIN+ - ND/A 8 1(1970).  
 DEB BERENYI - 73 PARIS 1 269.  
 GRE BLACHOT+ - CEA-N-1526(1972).  
 CURRENTLY KNOWN TO ABOUT 5 PERCENT.

=====  
 59 PRASEODYMIUM 141 NEUTRON CAPTURE CROSS SECTION  
 =====

Z22023 25.3 MV 14.0 MEV 3.0% 1 JAP H. OKASHITA JAE  
 Q: RESONANCE INTEGRAL ALSO WANTED.  
 O: FOR BURN UP CALCULATION FROM DESTRUCTIVE MEASUREMENT.  
 M: NEW REQUEST.

STATUS-----STATUS  
 DEB CSIKAI+ - NF/A 55 229(1968).  
 DEB PETO+ - JNE 21 797(1967).  
 ANL STUPEGIA+ - JNE 22 267(1968).  
 ORL MACKLIN+ - (1974), PRELIMINARY DATA 2.5 TO 500 KEV

=====  
 59 PRASEODYMIUM 144 SPONTANEOUS TOTAL GAMMA RAY YIELD  
 =====

Z22012 1.0% 1 JAP H. OKASHITA JAE  
 Q: YIELD PER DISINTEGRATION OF 696.5, 1498.1, AND 2185.7 KEV GAMMA RAYS REQUIRED.  
 O: FOR BURN UP CALCULATION FROM NON-DESTRUCTIVE MEASUREMENT.  
 M: NEW REQUEST.

STATUS-----STATUS  
 ORL MARTIN+ - NC/A 8 1(1970).  
 MIT FASHING+ - PR/C 1 1126(1970).  
 ORL RAMAN - NF/A 1C7 402(1968).  
 CURRENTLY KNOWN TO 3 - 7 PERCENT.

=====  
 60 NEODYMIUM 142 NEUTRON CAPTURE CROSS SECTION  
 =====

Z22024 25.3 MV 2.0% 1 JAP H. OKASHITA JAE  
 O: FOR BURN UP CALCULATION FROM DESTRUCTIVE MEASUREMENT.  
 M: NEW REQUEST.

STATUS-----STATUS  
 HAR CABELL+ - JIN 30 897(1968)

=====  
 60 NEODYMIUM 142 NEUTRON CAPTURE RESONANCE INTEGRAL  
 =====

Z22025 25.0% 1 JAP H. OKASHITA JAE  
 O: FOR BURN UP CALCULATION FROM DESTRUCTIVE MEASUREMENT.  
 M: NEW REQUEST.

=====  
 60 NEODYMIUM 143 NEUTRON CAPTURE CROSS SECTION  
 =====

Z22026 25.3 MV 2.0% 1 JAP H. OKASHITA JAE  
 O: FOR BURN UP CALCULATION FROM DESTRUCTIVE MEASUREMENT.  
 M: NEW REQUEST.

STATUS-----STATUS  
 SAC RIBON. - 73BOLCNA 1 235, EVALUATION FROM 0.025 EV TO 30 KEV. ALSO FISSION NEUTRON SPECTRUM AVERAGE  
 HAR CABELL+ - JIN 30 897(1968). PILE SPECTRA AVERAGES.  
 NPG IIJIMA+ - (1975). NO EXPERIMENTAL DATA BETWEEN 100 EV AND 400 KEV.

=====  
 60 NEODYMIUM 143 NEUTRON CAPTURE RESONANCE INTEGRAL  
 =====

Z22027 25.0% 1 JAP H. OKASHITA JAE  
 O: FOR BURN UP CALCULATION FROM DESTRUCTIVE MEASUREMENT.  
 M: NEW REQUEST.



=====

62 SAMARIUM 152                    NEUTRON                    CAPTURE CROSS SECTION

=====

Z22036    25.3 MV            14.0 MEV            10.0%            1    JAP    YONAITO            JAE

Q: RESONANCE INTEGRAL ALSO WANTED.  
 O: FOR BURN UP CALCULATION FROM NON-DESTRUCTIVE  
    MEASUREMENT.  
 M: NEW REQUEST.

-----STATUS-----

DEB    PETO+ - JNE 21 757(1967), AT 3.0 MEV RELATIVE TO GOLD CAPTURE, 15 PERCENT ERROR.  
 MUA    CHAUBY+ - PR 152 1055(1966), AT 24.0 KEV RELATIVE TO INDIUM CAPTURE, 10 PERCENT ERROR.  
 ORL    MACKLIN - NAT 157 370(1963), AT 30 KEV TO 17 PERCENT.  
 HAR    CABELL - JIN 24 749(1962), THERMAL VALUE.

=====

62 SAMARIUM 153                    NEUTRON                    CAPTURE CROSS SECTION

=====

Z22037    25.3 MV            14.0 MEV            25.0%            1    JAP    HOKASHITA            JAE

O: FOR BURN UP CALCULATION FROM NON-DESTRUCTIVE  
    MEASUREMENT.  
 M: NEW REQUEST.

=====

63 EUROPIUM 153                    NEUTRON                    CAPTURE CROSS SECTION

=====

Z22038    25.3 MV            14.0 MEV            5.0%            1    JAP    HOKASHITA            JAE

Q: RESONANCE INTEGRAL ALSO WANTED.  
 O: FOR BURN UP CALCULATION FROM NON-DESTRUCTIVE  
    MEASUREMENT.  
 M: NEW REQUEST.

-----STATUS-----

RPI    KNOX+ - USDC-11 220(1974), IN PROGRESS 20 EV TO 100 KEV.  
 LAS    HARLOW+ - 68WASHINGTON P.837(1968), 25 EV TO 10KEV  
 DUB    KONKS+ - SNP 7 310(1968), 1 EV TO 50 KEV.  
 WUR    WIDDER - PRECISE DATA FROM 0.01 TO 10 EV, TO BE PUBLISHED IN NSE.  
        ERROR AT THERMAL 15 PERCENT, AT LEAST 8 PERCENT IN REST OF ENERGY RANGE.

=====

63 EUROPIUM 154                    HALF LIFE

=====

Z22018                                    1.0%            1    JAP    HOKASHITA            JAE

O: DIFFERENT VALUES ARE QUOTED IN THE LITERATURE.  
 FOR BURN UP CALCULATION FROM NON-DESTRUCTIVE  
    MEASUREMENT.  
 M: NEW REQUEST.

-----STATUS-----

ANL    KARRAKER - PR 67 901(1952)  
 ORL    EMERY+ - NSE 48 319(1972)

=====

63 EUROPIUM 154                    SPONTANEOUS                    TOTAL GAMMA RAY YIELD

=====

Z22013                                    1.0%            2    JAP    HOKASHITA            JAE

Q: YIELDS PER DISINTEGRATION OF 123, 248, 592, 723,  
    757, 873, 996, 1005, AND 1274 KEV GAMMA RAYS  
    REQUIRED.  
 O: FOR BURN UP CALCULATION FROM NON-DESTRUCTIVE  
    MEASUREMENT.  
 M: NEW REQUEST.

Z22014                                    3.0%            2    JAP    HOKASHITA            JAE

Q: YIELD PER DISINTEGRATION OF 692 AND 1597 KEV  
    GAMMA RAYS REQUIRED.  
 O: FOR BURN UP CALCULATION FROM NON-DESTRUCTIVE  
    MEASUREMENT.  
 M: NEW REQUEST.

-----STATUS-----

LRL    MEYER - PR 170 1089(1968).  
 ORL    RIEDINGER+ - PR/C 2 2358(1970).  
 BUQ    NAGPAL+ - CJP 50 2688(1972).  
 CCP    STOYANOVICH+ - IZV 34 419(1970).

=====

63 EUROPIUM 154                    NEUTRON                    CAPTURE CROSS SECTION

=====

Z22039    25.3 MV                                    5.0%            1    JAP    HOKASHITA            JAE

Q: RESONANCE INTEGRAL ALSO WANTED.  
 O: FOR BURN UP CALCULATION FROM NON-DESTRUCTIVE  
    MEASUREMENT.  
 M: NEW REQUEST.

-----STATUS-----

ANL    HAYDEN+ - PR 75 1500(1949), THERMAL VALUE WITH 15 PERCENT ERROR.



Z22051 1.0X 2 JAP HOOKASHITA JAE  
 Q: FISSION YIELD OF SM-152, AND SM-153 WANTED.  
 DATA WANTED FOR THERMAL NEUTRONS, FAST REACTOR  
 NEUTRONS(80-800 KEV), FISSION SPECTRUM NEUTRONS  
 AND HIGH ENERGY NEUTRONS(14-15 MEV).  
 O: FOR BURN UP CALCULATION FROM DESTRUCTIVE AND  
 NON-DESTRUCTIVE CALCULATIONS.  
 M: NEW REQUEST.

-----STATUS-----STATUS

KUR MILLER+ - SJA 27 281(1968).  
 SRE HILLER - KT 12 485(1970)  
 CCP GRECHUSHKINA - TABLES SHOWING THE COMPOSITION OF PROMPT FISSION PRODUCTS FROM U-235, U-238, AND  
 PU-239 FISSION, ATOMIZDAT, MOSCCW(1964).  
 AE FORSYTH+ - 70 KARLSRUHE VGL.1 P.521.  
 CCP GUSEV - PROTECTION AGAINST GAMMA RADIATION FROM FISSION PRODUCTS, ATOMIZDAT, MOSCOW(1968).  
 SGA LAMMER+ - 73 PARIS PAPER 13, EVALUATION.  
 HAR CROUCH - 73 PARIS PAPER 94, EVALUATION.  
 GRE DEVILLERS+ - 73 PARIS PAPER 63, EVALUATION.  
 CRC WALKER - 73 PARIS PAPER 34, EVALUATION.  
 GEV MEEK+ - NEDO-12154, EVALUATION.  
 ANL GLENDENIN+ - WORK IN PROGRESS.

=====92 URANIUM 236 NEUTRON CAPTURE CROSS SECTION=====

Z22040 25.3 MV 14.0 MEV 1 JAP YONAITO JAE  
 A: ACCURACY REQUIRED AT THERMAL IS 3 PERCENT, 10  
 PERCENT ABOVE.  
 O: FOR BURN UP CALCULATION OF A PU LOADED THERMAL  
 REACTOR.  
 M: NEW REQUEST.

-----STATUS-----STATUS

GA CARLSON+ - NP/A 141 577(1970), DATA THERMAL TO 20 KEV.  
 GEL ROHR+ - EANDC(E)-157 (1973), IN PROGRESS 5 EV TO 2 KEV.  
 SGA EDER+ - 73 PARIS PAPER 12, COMPILATION.  
 HAR CABELL+ - AERE-R-6761(1971), THERMAL.  
 SRL BAUMANN+ - NSE 32 265(1968), 8 PERCENT AT THERMAL.

=====92 URANIUM 236 NEUTRON DELAYED NEUTRONS EMITTED PER FISSION=====

Z01032 3.00 MEV 10.0X 1 USA RCB WALTON LAS  
 Q: ALSO FOR 14 MEV, NEUTRONS.  
 O: BACKGROUND CORRECTION IN U-235 SPENT FUEL ASSAY.

=====92 URANIUM 236 NEUTRON ENERGY SPECTRUM OF FISSION NEUTRONS=====

Z01031 10.0X 2 USA RCB WALTON LAS  
 Q: ONE ENERGY ABOVE FISSION THRESHOLD.  
 O: BACKGROUND CORRECTIONS IN U-235 SPENT FUEL ASSAY.

=====92 URANIUM 238 NEUTRON DELAYED NEUTRONS EMITTED PER FISSION=====

Z01035 5.00 MEV 14.0 MEV 5.0X 2 USA RCB WALTON LAS  
 O: DATA DESIRED FOR EXTRAPOLATION TO 15 MEV.  
 CALCULATIONS OF MODERATING ASSEMBLIES FOR U ASSAY.

-----STATUS-----STATUS

A1 TUTTLE. - NSE 56 37(1975), REVIEW WITH RECOMMENDED VALUES.  
 HFA SHALEV+ - NSE 51 52(1973), FAST REACTOR SPECTRUM.  
 IAE MANERO+ - REA 10 637(1972), REVIEW 0.1 TO 15 MEV.  
 LAS EVANS+ - USNDC-3 127(1972), REVISED DATA AT 3.1 AND 15 MEV.  
 ANL COX. ANL/NCM-5(1974), MEASUREMENT AND EVALUATION, 2 TO 15 MEV.  
 ALD MCTAGGART - EANDC(UK)-151(1973), FAST REACTOR SPEC MEASUREMENT IN PROGRESS.

=====92 URANIUM 238 NEUTRON FISSION PRODUCT MASS YIELD SPECTRUM=====

Z22052 1.0X 2 JAP HOOKASHITA JAE  
 Q: FISSION YIELD OF RU-106, XE-133, SM-152, SM-153,  
 CE-141, CE-144, ND-143, ND-144, ND-145, ND-146,  
 ND-147, ND-148, ND-150 AND CS-137 WANTED.  
 DATA WANTED FOR FISSION SPECTRUM NEUTRONS AND  
 HIGH ENERGY NEUTRONS(14 - 15 MEV).  
 O: FOR BURN UP CALCULATION FROM DESTRUCTIVE AND  
 NON-DESTRUCTIVE MEASUREMENT.  
 M: NEW REQUEST.

722053 50.0% 2 JAF H<sub>0</sub>DKASHITA JAE  
 O: FISSION YIELD OF CS-134, PR-142 AND EU-154 WANTED.  
 DATA WANTED FOR FISSION SPECTRUM NEUTRONS AND HIGH ENERGY NEUTRONS(14 - 15 MEV).  
 O: FOR BURN UP CALCULATION FROM DESTRUCTIVE AND NON-DESTRUCTIVE MEASUREMENT.  
 M: NEW REQUEST.

-----STATUS-----

GRE DEVILLERS+ - 73 PARIS PAPER 63, EVALUATION  
 GEV MEEK+ - NEDO-12154, EVALUATION.

93 NEPTUNIUM 237 NEUTRON CAPTURE CROSS SECTION

722125 1.00 MV 1.00 KEV 1 GER P<sub>0</sub>MCGRATH KFK  
 O: NEUTRON AND CAPTURE WIDTHS UP TO 1 KEV NEEDED.  
 A: ACCURACY 3 PERCENT NEEDED TO 10 EV, 10 PERCENT ABOVE.  
 ACCURACY 5 PERCENT IN NEUTRON WIDTH AND 10 PERCENT IN CAPTURE WIDTH.  
 O: FOR BURN UP CALCULATIONS.  
 M: NEW REQUEST.

722126 1.00 KEV 5.00 MEV 10.0% 2 GER P<sub>0</sub>MCGRATH KFK  
 O: FOR BURN UP CALCULATIONS.  
 M: NEW REQUEST.

-----STATUS-----

LRL NAGLE+ - 71 KNCXVILLE 259, DATA 100 KEV TO 3 MEV.  
 GEL THEOBALD+ - EANDC(E)-157 (1973), IN PROGRESS TO 300 EV.  
 ANC SMITH+ - IN-1182(1969), EVALUATION TO 15 MEV.

93 NEPTUNIUM 237 NEUTRON N,2N

722127 10.0 MEV 10.0% 2 GER P<sub>0</sub>MCGRATH KFK  
 O: FOR BURN UP CALCULATION AND CONTAMINATION BY PU-236.  
 M: NEW REQUEST.

-----STATUS-----

ALD PERKIN+ JNE/AB 14 69(1961), DATA AT 19.5 MEV.

93 NEPTUNIUM 237 NEUTRON FISSION CROSS SECTION

722064 1.00 KEV 200 KEV 10.0% 2 GER P<sub>0</sub>MCGRATH KFK  
 O: FOR BURN UP CALCULATIONS.  
 M: MODIFIED (PARTIALLY WITHDRAWN).

-----STATUS-----

KTO KOBAYASHI+ - EANDC(J)-26 (1972), DATA 4.3 TO 4.8 MEV.  
 LAS JIACOLETTI+ - LA-4763 (1971), DATA 20 EV TO 7.7 MEV.  
 GEL THEOBALD+ - EANDC(E)-150 (1972), IN PROGRESS 1 EV TO 1 KEV.  
 NBS BOWMAN+ - WORK PLANNED 10 KEV TO 2 MEV.  
 CCP GAVRILOV+ - AE 28 362(1970), DATA TO 1 KEV.  
 LAS BROWN+ - NP/A 156 609(1970), BGMB DATA.  
 IAE BAK+ - KNS 3 77(1971), EVALUATION TO 19 MEV.  
 SAC PAYA+ - EANDC(E)-127U(1970), TO 2 KEV.  
 NDC SCHETT+ - EANDC-95 (1974), COMPILATION OF EXPERIMENTAL DATA AVAILABLE AS OF JANUARY 1974.  
 NBS BOWMAN+ - MEASUREMENTS PLANNED FOR 1975.

94 PLUTONIUM 238 SPONTANEOUS FISSION HALF LIFE

741146 0.1% 2 USA W<sub>0</sub>W:STROHM MND  
 O: FOR ACCURATE CALORIMETRIC ASSAY OF PU.  
 M: NEW REQUEST.

94 PLUTONIUM 238 SPONTANEOUS FISSION HALF LIFE

741143 2 USA E<sub>0</sub>V<sub>0</sub>WEINSTOCK BNL  
 A: REQUESTED ACCURACY - 1 TO 2 PERCENT.  
 O: TO REDUCE ERRORS IN THE ASSAY OF HIGH-BURNUP PU.  
 M: NEW REQUEST.

741151 1.0% 2 USA N<sub>0</sub>S<sub>0</sub>BEYER ANL  
 A: ACCURACY 3-5 PERCENT USEFUL IN SHORT TERM.  
 O: FOR CALCULATION OF THE EFFECTIVE PU-240 FOR SPONTANEOUS FISSION MEASUREMENTS OF PU IN NUCLEAR MATERIALS SAFEGUARDS.  
 M: NEW REQUEST.

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=====
94 PLUTONIUM 238      SPONTANECUS      NEUTRONS EMITTED PER FISSION (NU BAR)
=====

741145                1.0%      2      USA      E. V. WEINSTOCK      BNL
                                O: TO REDUCE ERRORS IN THE ASSAY OF HIGH-BURNUP PU.
                                M: NEW REQUEST.

741154                1.0%      2      USA      N. S. BEYER          ANL
                                A: ACCURACY 3-5 PERCENT USEFUL IN SHORT TERM.
                                O: FOR CALCULATION OF THE EFFECTIVE PU-240 FOR
                                  SPONTANEOUS FISSION MEASUREMENTS OF PU IN
                                  NUCLEAR MATERIALS SAFEGUARDS.
                                M: NEW REQUEST.

=====
94 PLUTONIUM 238      GAMMA      TOTAL NEUTRON YIELD
=====

719944                10.0 MEV  10.0%      2      CCF      V. K. MARKOV        GAC
                                O: PHOTONUCLEAR ASSAY OF PU.

=====
94 PLUTONIUM 238      GAMMA      FISSION CROSS SECTION
=====

719944                10.0 MEV  10.0%      2      CCF      V. K. MARKOV        GAC
                                O: FOR PHOTONUCLEAR ASSAY OF PU.

=====
94 PLUTONIUM 238      GAMMA      FISSION PRODUCT MASS YIELD SPECTRUM
=====

719945                10.0 MEV  10.0%      2      CCP      V. K. MARKOV        GAC
                                O: PHOTONUCLEAR ASSAY OF PU.

=====
94 PLUTONIUM 238      NEUTRON   CAPTURE CROSS SECTION
=====

702066      25.3 MV      10.0 MEV  10.0%      2      GER      P. MCGRATH          KFK
                                O: FOR BURN UP CALCULATIONS.

-----STATUS-----
LAS      SILBERT+ - LA-EC24 (1972), DATA 18 EV TO 200 KEV.
KFK      HINKELMANN - KFK-1186(1970), EVALUATION TO 10 MEV.

=====
94 PLUTONIUM 238      NEUTRON   CAPTURE CROSS SECTION
=====

702065      1.00 MEV      10.0 MEV  10.0%      2      GER      P. MCGRATH          KFK
                                O: FOR BURN UP CALCULATIONS.

-----STATUS-----
ALD      MOAT - AWRE/O-13/72, DATA 17 EV TO 1 MEV.
LAS      SILBERT - LA-4674 (1971), DATA 18 EV TO 3 MEV.
LAS      DRAKE+ - LA-4420(1970), DATA TO 2.6 MEV.

=====
94 PLUTONIUM 239      NEUTRON   HALF LIFE
=====

741147                0.2%      2      USA      W. W. STROHM        MND
                                O: FOR ACCURATE CALORIMETRIC ASSAY OF PU.
                                M: NEW REQUEST.

=====
94 PLUTONIUM 239      NEUTRON   CAPTURE CROSS SECTION
=====

722041      25.3 MV      14.0 MEV                1      JAP      Y. NAITO            JAE
                                A: ACCURACY REQUIRED AT THERMAL IS 3 PERCENT, 10
                                  PERCENT ABOVE.
                                O: FOR BURN UP CALCULATION OF A PU LOADED THERMAL
                                  REACTOR.
                                M: NEW REQUEST.

-----STATUS-----
FEI      CHELNOKOV+ - YFI-13 6(1972), DATA 200 EV TO 12 KEV.
ORL      GWIN+ - NSE 45 25(1971), DATA THERMAL TO 30 KEV.
ORL      WESTON+ - USNDC-3 149(1972), WORK IN PROGRESS.
HAR      SCHOMBERG+ - 70HELSINKI 1 315, 100 EV TO 30 KEV.

=====
94 PLUTONIUM 239      NEUTRON   CAPTURE GAMMA RAY SPECTRUM
=====

701044      25.3 MV      100. EV      20.0%      3      USA      R. B. WALTON        LAS
                                O: FOR GAMMA RAY ENERGIES ABOVE 1.2 MEV.
                                A: GAMMA RESOLUTION OF 2.5 KEV AT 1.2 MEV.
                                O: DEVELOPMENT OF NEW PU ASSAY TECHNIQUE.

741138      25.3 MV                20.0%      2      USA      R. B. WALTON        LAS
                                O: ABSOLUTE SPECTRUM REQUIRED.
                                O: FOR DEVELOPMENT OF NONDESTRUCTIVE ASSAY METHODS.
                                M: NEW REQUEST.
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94 PLUTONIUM 239                    NEUTRON                    CAPTURE TO FISSION RATIO (ALPHA)

=====

Z22046    25.3 MV            14.0 MEV            1    JAP    YONAITO            JAE

A: ACCURACY REQUIRED AT THERMAL IS 1 PERCENT, 5 PERCENT ABOVE.  
 O: FOR BURN UP CALCULATION OF A PU LOADED THERMAL REACTOR.  
 M: NEW REQUEST.

-----STATUS-----

FEI    CHELNOKOV+ - YFI-13 6(1972), DATA 200 EV TO 12 KEV.  
 FEI    KONONOV+ - AE 32 85(1972), DATA 10 KEV TO 1 MEV.  
 KUR    VOROTNIKOV+ - 73KIEV 4 42, DATA 3 TO 200 KEV.  
 DUB    BOLOTSKII+ - 73 KIEV 4 49, DATA THERMAL TO 30 KEV.  
 ORL    WESTON+ - USNDC-7 179(1973), IN PROGRESS THERMAL TO 20 KEV.  
 KFK    BANDL+ - EANDC(E)-157 (1973), IN PROGRESS 8.1 TO 60 KEV.  
 ORL    GWIN+ - NCSAC-42 199(1971), THERMAL TO 400 KEV.  
 ANL    KATO+ - NSE 45.37(1971), FAST REACTOR SPECTRUM.  
 KAP    EILAND+ - NSE 44 180(1971), PILE SPECTRUM.

=====

94 PLUTONIUM 239                    NEUTRON                    NEUTRONS EMITTED PER FISSION (NU BAR)

=====

Z22048    25.3 MV                    0.5%            1    JAP    YONAITO            JAE

Q: DATA WANTED FOR EPI-THERMAL NEUTRONS ALSO.  
 O: FOR BURN UP CALCULATION OF A PU LOADED THERMAL REACTOR.  
 M: NEW REQUEST.

-----STATUS-----

IAE    MANERO+ - REA 10 637(1972), REVIEW.  
 CCP    VOLODIN+ - AE 33 901(1972), DATA TO 1.6 MEV.  
 BRC    FREHAUT+ - EANDC(E)-150(1972), IN PROGRESS 7 EV TO 40 KEV.  
 LRL    HOWE+ - USNDC-7 105(1973), IN PROGRESS THERMAL TO 15 MEV.  
 RPI    REED+ - USNDC-7 202(1973), IN PROGRESS THERMAL TO 100 EV.  
 ORL    WESTON+ - PRAC 10 1402(1974), DATA FOR RESOLVED RESONANCES IN RANGE 10 TO 170 EV.

=====

94 PLUTONIUM 239                    NEUTRON                    DELAYED NEUTRONS EMITTED PER FISSION

=====

Z01042    3.00 MEV            14.0 MEV            10.0%            2    USA    ROBERT WALTON            LAS

O: DATA DESIRED FOR EXTRAPOLATION TO 15 MEV. CALCULATIONS OF MODERATING ASSEMBLIES FOR PU ASSAY.

-----STATUS-----

AI    TUTTLE. - NSE 56 37(1975), REVIEW WITH RECOMMENDED VALUES.  
 ANL    COX. - ANL/NDM-5 (1974), MEASUREMENTS AND REVIEW, 2 TO 15 MEV.  
 FEI    TARASKO+ - YF 17 1149(1973), IN THERMAL AND FISSION SPECTRUM.  
 HFA    SHALEV+ - NSE 51 52(1973), THERMAL.  
 KFK    FIEG - EANDC(E)-157(1973), AT 14 MEV. IN PROGRESS.  
 LAS    EVANS+ - USNDC-3 127(1972), 0.1 TO 15 MEV, REVISED  
 LAS    KRICK+ - NSE 47 311(1972), 0.1 TO 1.8 MEV.  
 FEI    MAKJUTENKO+ - YFI-10 27(1971), 18 TO 21 MEV.  
 IAE    MANERO+ - REA 10 637(1972), REVIEW.

=====

94 PLUTONIUM 239                    NEUTRON                    SPECTRUM OF PROMPT GAMMA RAYS EMITTED IN FISSION

=====

Z39002    25.3 MV            14.0 MEV            2.0 %            3    CCP    S. S. KOVALENKO            RI

Q: YIELD AND SPECTRA WANTED FOR 5 TO 15 MEV GAMMAS.  
 A: 10.0 KEV GAMMA RESOLUTION WANTED.  
 O: FOR ASSAY OF PU IN FUEL ELEMENTS FROM PROMPT GAMMAS.  
 M: NEW REQUEST.

=====

94 PLUTONIUM 239                    NEUTRON                    DELAYED GAMMA SPECTRUM FROM FISSION PRODUCTS

=====

Z01043    25.3 MV                    15.0%            2    USA    ROBERT WALTON            LAS

Q: FISSION PRODUCT GAMMA RAY ENERGIES FROM 0.25 TO 5.0 MEV.  
 DELAY TIME FROM 1 MILLISECOND TO 12 HOURS.  
 ASSOCIATE GAMMA RAYS WITH FISSION PRODUCTS IF POSSIBLE.  
 A: GE(LI) RESOLUTION AT 1.2 MEV SHOULD BE 2.5 KEV.  
 ACCURACY FOR ABSOLUTE GAMMA RAY YIELDS.  
 O: NON-DESTRUCTIVE ASSAY OF PU-239

-----STATUS-----

LAS    WALTON+ - PR 178 1894(1969).  
 LAS    FISHER+ - PRAB 134 796(1964).  
 ORL    MAIENSCHN - 58 GENEVA VOL.15 366.  
 BNL    CHRIEN - HAS DATA FOR PU-239.





=====
   
94 PLUTONIUM 240 NEUTRON CAPTURE GAMMA RAY SPECTRUM
   
=====

Z91135 2503 MV 2000% 2 USA R0B:WALTON LAS
   
Q: ABSOLUTE SPECTRA REQUIRED.
   
O: FOR DEVELOPMENT OF NONDESTRUCTIVE ASSAY METHOD.
   
M: NEW REQUEST.

=====
   
94 PLUTONIUM 240 NEUTRON DELAYED NEUTRONS EMITTED PER FISSION
   
=====

Z01045 7500 KEV 1400 MEV 2000% 2 USA R0B:WALTON LAS
   
O: DATA DESIRED FOR EXTRAPOLATION TO 15 MEV.
   
CALCULATIONS OF MODERATING ASSEMBLIES FOR PU
   
ASSAY.

-----STATUS-----

AI TUTTLE - NSE 56 37(1975), REVIEW WITH RECOMMENDED VALUES.
   
IAE MANERO+ - REA 10 637(1972), REVIEW.

=====
   
94 PLUTONIUM 240 MISC
   
=====

Z02075 003% 2 GER V0SCHNEIDER ALK
   
Q: SPECIFIC DECAY HEAT IN WATTS/GRAM REQUIRED.
   
PERCENTAGE OF HEAT CARRIED OFF BY LONG RANGE
   
PARTICLES (X-RAYS, GAMMA RAYS) USEFUL.
   
O: FOR CALORIMETRIC PU DETERMINATION.

-----STATUS-----

THE DECAY HEAT IS DETERMINED BY 2 METHODS =
   
1) FROM HALF-LIFE (6620 +- 50 YR) AND ALPHA ENERGY (5255.5 +- 0.7 KEV), ONE OBTAINS =
   
7.0088 +- 0.0530 MILLIWATTS/GRAMME.
   
2) FROM CALORIMETRIC MEASUREMENT ONE OBTAINS = 7.1046 +- 0.0150 MILLIWATTS/GRAMME.
   
RESOLUTION OF DISCREPANCY (1.37 PERCENT) BETWEEN THE 2 METHODS (QUOTED UNCERTAINTIES 0.76
   
PERCENT AND 0.21 PERCENT) DESIRABLE.

CCP DOKUCHAEV - AE 6 74(1959) AND JNE/A 11 195(1960), HALF-LIFE GIVEN.
   
PAR LEANG - CR 25E 3155(1962), ALPHA ENERGY GIVEN.
   
DRF OETTING - STI/PUB/162 55 (1968), THERMODYNAMICS OF NUCLEAR MATERIALS, (PROC. SYMP. VIENNA, 1967)
   
IAEA, VIENNA, 1968. CALORIMETRIC MEASUREMENT OF DECAY HEAT AND HALF LIFE.
   
KFK WEITKAMP+ - 73PARIS 1 197, REVIEW OF DISCREPANCIES AND RE-EVALUATION OF OETTING'S DATA.

=====
   
94 PLUTONIUM 241 HALF LIFE
   
=====

Z91145 100% 2 USA W0W:STROHM MND
   
O: FOR ACCURATE CALORIMETRIC ASSAY OF PU.
   
M: NEW REQUEST.

=====
   
94 PLUTONIUM 241 GAMMA TOTAL NEUTRON YIELD
   
=====

Z14095 1000 MEV 1000% 2 CCP V0K:MARKOV GAC
   
O: FOR PHOTONUCLEAR ASSAY OF PU.

=====
   
94 PLUTONIUM 241 GAMMA FISSION CROSS SECTION
   
=====

Z14097 1000 MEV 1000% 2 CCP V0K:MARKOV GAC
   
O: FOR PHOTONUCLEAR ASSAY OF PU.

=====
   
94 PLUTONIUM 241 GAMMA FISSION PRODUCT MASS YIELD SPECTRUM
   
=====

Z14098 1000 MEV 1000% 2 CCP V0K:MARKOV GAC
   
O: FOR PHOTONUCLEAR ASSAY OF PU.

=====
   
94 PLUTONIUM 241 NEUTRON CAPTURE CROSS SECTION
   
=====

Z22092 2503 MV 1400 MEV 2 JAP Y0NAITO JAE
   
A: ACCURACY REQUIRED AT THERMAL IS 2 PERCENT, 5
   
PERCENT ABOVE.
   
O: FOR BURN UP CALCULATION OF A PU LOADED THERMAL
   
REACTOR.
   
M: NEW REQUEST.

-----STATUS-----

ORL WESTON+ - LSND-3 149(1972), WORK IN PROGRESS THERMAL TO 30 KEV.
   
SOR CANER+ - IA-1276(1973), EVALUATION TO 15 MEV

=====
   
94 PLUTONIUM 241 NEUTRON CAPTURE GAMMA RAY SPECTRUM
   
=====

Z41140 2503 MV 2000% 2 USA R0B:WALTON LAS
   
Q: ABSOLUTE SPECTRA REQUIRED.
   
O: FOR DEVELOPMENT OF NONDESTRUCTIVE ASSAY METHODS.
   
M: NEW REQUEST.



=====

94 PLUTONIUM 242 SPONTANECUS NEUTRONS EMITTED PER FISSION (NU BAR)

=====

741156 1.0X 2 USA NoS:BEYER ANL

A: ACCURACY 3-5 PERCENT USEFUL IN SHORT TERM,  
 O: FOR CALCULATION OF THE EFFECTIVE PU-242 FOR  
 SPONTANEOUS FISSION MEASUREMENTS OF PU IN  
 NUCLEAR MATERIALS SAFEGUARDS,  
 M: NEW REQUEST:

=====

94 PLUTONIUM 242 NEUTRON CAPTURE CROSS SECTION

=====

722093 25.3 MV 14.0 MEV 1 JAP YcNAITO JAE

A: ACCURACY REQUIRED AT THERMAL IS 5 PERCENT, 10  
 PERCENT ABOVE,  
 O: FOR BURN UP CALCULATION OF A PU LOADED THERMAL  
 REACTOR,  
 M: NEW REQUEST:

732128 25.3 MV 10.0 MEV 2 GER P.MCGRATH KFK

A: ACCURACY 3 PERCENT FOR THERMAL AND 10 PERCENT  
 ABOVE THERMAL,  
 O: FOR BURN UP CALCULATION AND PRODUCTION OF  
 CM-ISOTOPEs,  
 M: NEW REQUEST:

-----STATUS-----STATUS

GEL POORTMANS+ - NF/A 207 342(1973), DATA 2 EV TO 1.3 KEV;  
 RPI SANISLO+ - USNDC-11 220(1974), KEV TIME-OF-FLIGHT DATA BEING ANALYZED;  
 ORL WESTONc - (1974), DATA TC 200 KEV;  
 SOR CANER+ - IA-1275 (1973), EVALUATION TO 15 MEV;  
 MTR YOUNG+ - IN-1407 63(1970), THERMAL VALUE  
 CRC DURHAM+ - CJP 48 716(1970), THERMAL VALUE

=====

94 PLUTONIUM 242 NEUTRON CAPTURE GAMMA RAY SPECTRUM

=====

741191 25.3 MV 20.0X 2 USA RoB:WALTON LAS

Q: ABSOLUTE SPECTRA REQUIRED,  
 O: FOR DEVELOPMENT OF NONDESTRUCTIVE ASSAY METHODS,  
 M: NEW REQUEST:

=====

94 PLUTONIUM 242 NEUTRON FISSION CROSS SECTION

=====

732129 25.3 MV 10.0 MEV 2 GER P.MCGRATH KFK

A: ACCURACY 3 PERCENT FOR THERMAL AND 10 PERCENT  
 ABOVE THERMAL,  
 O: FOR BURN UP CALCULATIONS,  
 M: NEW REQUEST:

=====

94 PLUTONIUM 242 NEUTRON DELAYED NEUTRONS EMITTED PER FISSION

=====

701097 3.00 MEV 20.0X 3 USA RoB:WALTON LAS

Q: ALSO REQUIRED FOR 14 MEV INCIDENT NEUTRONS,  
 O: CALCULATIONS OF MODERATING ASSEMBLIES FOR PU  
 ASSAYS,

=====

95 AMERICIUM 241 HALF LIFE

=====

741150 0.2X 2 USA WoW:STROHM MND

O: FOR ACCURATE CALORIMETRIC ASSAY OF PU,  
 M: NEW REQUEST:

=====

95 AMERICIUM 241 GAMMA TOTAL NEUTRON YIELD

=====

714052 10.0 MEV 10.0X 2 CCP VoK:MARKOV GAC

O: FOR PHOTONUCLEAR ASSAY OF PU,

=====

95 AMERICIUM 241 GAMMA FISSION CROSS SECTION

=====

714051 10.0 MEV 10.0X 2 CCP VoK:MARKOV GAC

O: FOR PHOTONUCLEAR ASSAY OF PU,

-----STATUS-----STATUS

SAS KATZ+ - 58 GENEVA VOL.15 P.188.  
 CCP GANGRSKY+ - SNF 11 54(1970).

=====

95 AMERICIUM 241 GAMMA FISSION PRODUCT MASS YIELD SPECTRUM

=====

714050 10.0 MEV 10.0X 2 CCP VoK:MARKOV GAC

O: FOR PHOTONUCLEAR ASSAY OF PU,



=====
95 AMERICIUM 243 NEUTRON CAPTURE CROSS SECTION
=====

732132 25.3 MV 10.0 MEV 10.0% 1 GER P. MCGRATH KFK
O: FOR PRODUCTION OF CM-244.
M: NEW REQUEST.

-----STATUS-----

ANC SIMPSON+ - ANCR-1060 (1972), DATA 0.5 EV TO 1 KEV.
JUL IHLE+ - JIN 34(6) 2427(1972), PILE.
MTR BERRETH+ - IN-1407 66(1970), RESONANCE PARAMETERS TO 25 EV.
BUC BOCA+ - NP/A 134 541(1969), DATA 0.3 TO 4 MEV.

=====
95 AMERICIUM 244 NEUTRON CAPTURE CROSS SECTION
=====

732132 25.3 MV 10.0 MEV 10.0% 1 GER P. MCGRATH KFK
O: FOR NEUTRON SOURCE CALCULATIONS.
M: NEW REQUEST.

## APPENDICES

LIST OF COUNTRY CODES

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ARG	ARGENTINA
AUL	AUSTRALIA
AUS	AUSTRIA
BAN	BANGLA DESH
BLG	BELGIUM
BLL	BULGARIA
BZL	BRAZIL
CAN	CANADA
CCP	SOVIET UNION
DDR	GERMAN DEMOCRATIC REPUBLIC
DEN	DENMARK
EUR	COMMISSION OF THE EUROPEAN COMMUNITIES
FR	FRANCE
GER	FEDERAL REPUBLIC OF GERMANY
HUN	HUNGARY
IND	INDIA
ISL	ISRAEL
ITY	ITALY
JAP	JAPAN
NED	NETHERLANDS
NOR	NORWAY
POL	POLAND
ROM	ROMANIA
SAF	REPUBLIC OF SOUTH AFRICA
SF	FINLAND
SWD	SWEDEN
SWT	SWITZERLAND
TUR	TURKEY
UK	UNITED KINGDOM
UNO	UNITED NATIONS ORGANIZATION
USA	UNITED STATES
YUG	YUGOSLAVIA
ZZZ	INTERNATIONAL ORGANIZATION



## LIST OF LABORATORY CODES

APPENDIX B

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ABD	US ARMY ABERDEEN RESEARCH AND DEVEL. CENT., ABERDEEN, MD.	USA
AE	AKTIEBOLAGET ATOMENERGI, STUDSVIK	SWD
AEC	UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, DC	USA
AI	ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA	USA
ALD	UK AWRE, ALDERMASTON	UK
ALG	ALGERIA	ALG
ALK	ALKEM GMBH, LEOPOLDSHAFEN	GER
ANC	AEROJET NUCLEAR CORP., IDAHO FALLS, IDAHO	USA
ANL	ARGONNE NATIONAL LABORATORY, LEMONT, ILLINOIS	USA
ARL	AEROSPACE RES. LABS, WRIGHT-PATTERSON AIR-FORCE BASE, OHIO	USA
ATI	ATOMINST. DER OESTERREICHISCHEN HOCHSCHULEN, VIENNA	AUS
AUA	AUSTRALIAN AEC RESEARCH ESTABLISHMENT, LUCAS HEIGHTS	AUL
AUB	AUBURN UNIVERSITY, ALABAMA	USA
AUW	ANDRAH U., NUCLEAR RESEARCH LAB., WALT AIR	IND
BAC	BULGARIAN ACADEMY OF SCIENCES, SOFIA	BUL
BET	WESTINGHOUSE, BETTIS ATOMIC POWER LAB., PITTSBURGH, PA.	USA
BIR	UNIVERSITY OF BIRMINGHAM, ENGLAND	UK
BNL	BROOKHAVEN NATIONAL LABORATORY, UPTON, NEW YORK	USA
BNW	BATTELLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON	USA
BOL	COMISION NACIONAL DE ENERGIA ATOMICA, BOLOGNA	ITY
BOR	BORDEAUX UNIVERSITY	FR
BRC	CEN BRUYERE LE CHATEL	FR
BRK	UNIVERSITY OF CALIFORNIA, LAWRENCE BERKELEY LAB. BERKELEY	USA
BUC	INSTITUTE FOR ATOMIC PHYSICS, BUCHAREST	RUM
BUQ	BISHOP'S UNIVERSITY, QUEBEC	CAN
CAD	CADARACHE, BOUCHES-DU-RHONE	FR
CAS	CENTRO DI STUDI NUCLEARI DELLA CASACCIA, ROME	ITY
CCP	SOVIET UNION	CCP
CNA	CEKMECE NUCLEAR RESEARCH CENTER, ISTANBUL	TUK
COL	COLUMBIA UNIVERSITY, NEW YORK CITY, NEW YORK	USA
CRC	CHALK RIVER NUCLEAR LABORATORIES, ONTARIO	CAN
CSE	CASE INSTITUTE OF TECHNOLOGY, CLEVELAND, OHIO	USA
DEB	ATOMMAG KUTATO INTEZET, DEERECEN	HUN
DKE	DUKE UNIVERSITY, DURHAM, NORTH CAROLINA	USA
DRF	DOW CHEMICAL COMPANY, ROCKY FLATS, COLORADO	USA
DUB	JOINT INSTITUTE FOR NUCLEAR RESEARCH, DUBNA	ZZZ
FAR	CEA FONTENAY-AUX-ROSES, SEINE	FR
FE	FUJI ELECTRIC	JAP
FEI	FIZIKO-ENERGETICHESKIJ INSTITUT, OBNINSK	CCP
FOA	RESEARCH INSTITUTE OF NATIONAL DEFENSE, STOCKHOLM	SWD
FRK	Jo Wo GOETHE UNIVERSITY, FRANKFURT	GER
GA	GENERAL ATOMIC, SAN DIEGO, CALIFORNIA	USA
GAC	INSTITUTE FOR GEO- AND ANALYTIC CHEMISTRY, MOSCOW	CCP
GEB	GENERAL ELECTRIC, BRDO, SUNNYVALE, CALIF.	USA
GEL	B.C.M.No. EURATOM, GEEL	EUR
GEV	GENERAL ELECTRIC CO., VALLECITOS, CALIF.	USA
GIT	GEORGIA INSTITUTE OF TECHNOLOGY, ATLANTA, GEORGIA	USA
GLS	UNIVERSITY OF GLASGOW, SCOTLAND	UK
GOE	UNIVERSITY OF GOETTINGEN	GER
GRE	CÉA AND UNIVERSITY, GRENOBLE	FR
GRT	GULF RADIATION TECHNOLOGY, SAN DIEGO, CALIFORNIA	USA
HAM	INSTITUT FUER EXPERIMENTALPHYSIK, HAMBURG	GER
HAR	UK ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL	UK
HED	HANFORD ENGINEERING DEVELOPMENT LAB., RICHLAND, WASH.	USA
HFA	TECHNION HAIFA	ISL
HLS	UNIVERSITY OF HELSINKI	SF
HRV	HARVARD UNIVERSITY, CAMBRIDGE, MASS	USA
IAE	INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA	UNO
IEN	INSTITUTO DE ENGENHARIA NUCLEAR, RIO DE JANEIRO	BZL
IFU	INSTITUT FIZIKI AN UKRAINSKOI SSR, KIEV	CCP

## LIST OF LABORATORY CODES

IIT	ILLINOIS INSTITUTE OF TECHNOLOGY, CHICAGO, ILLINOIS	USA
IJI	INSTITUT JADERNYKH ISSLEDOVANIJ, KIEV	CCP
IRK	INSTITUT FUER RADIUMFORSCHUNG UND KERNPHYSIK, VIENNA	AUS
IRT	INTELCOM RADIATION TECHNOLOGY, SAN DIEGO, CALIF.	USA
JAE	JAPAN ATOMIC ENERGY RESEARCH INSTITUTE, TOKAI	JAP
JAF	JAPAN	JAP
JUL	KERNFORSCHUNGSANLAGE, JUELICH	GER
JYV	JYVAESKYLAE UNIVERSITY	SF
KAP	KNOLLS ATOMIC POWER LABORATORY, SCHENECTADY, NEW YORK	USA
KFK	KERNFORSCHUNGSZENTRUM, KARLSRUHE	GER
KGU	GOSUDARSTVENNYJ UNIVERSITY, KIEV	CCP
KIG	GKSS, GEESTHACHT	GER
KIL	UNIVERSITY OF KIEL	GER
KOS	KOSSUTH UNIVERSITY, DEBRECEN	HUN
KTC	KYOTO UNIVERSITY	JAP
KTY	UNIVERSITY OF KENTUCKY, LEXINGTON, KENTUCKY	USA
KUR	I <sub>0</sub> V <sub>0</sub> KURCHATOV ATOMIC ENERGY INST., MOSCOW	CCP
KYU	KYUSHU UNIVERSITY, FUKUOKA	JAP
LAS	LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO	USA
LOU	UNIVERSITY OF LODZ, LODZ	POL
LRL	LAWRENCE LIVERMORE LABORATORY, LIVERMORE, CALIFORNIA	USA
LTI	LOWELL TECHNOLOGICAL INSTITUTE, LOWELL, MASS.	USA
MCM	MCMASTER UNIVERSITY, HAMILTON, ONTARIO	CAN
MGT	MICHIGAN TECHNOLOGICAL UNIVERSITY	USA
MHG	UNIVERSITY OF MICHIGAN	USA
MIT	MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MASS.	USA
MND	MOUND LABORATORY, MIAMISBURG, OHIO	USA
MOL	C <sub>0</sub> E <sub>0</sub> N <sub>0</sub> , MOL	BLG
MTR	IDAHO NUCLEAR CORP., IDAHO FALLS, IDAHO	USA
MUA	MUSLIM UNIVERSITY, ALIGARH	IND
MUN	TECH. HOCHSCHULE, MUENCHEN	GER
NBS	NATIONAL BUREAU OF STANDARDS, WASHINGTON, D.C.	USA
NDC	NEA NUCLEAR DATA COMPILATION CENTER, SACLAY, FRANCE	ZZZ
NEL	U <sub>0</sub> S <sub>0</sub> ARMY NUCLEAR EFFECTS LABORATORY, ABERDEEN, MARYLAND	USA
NEC	UNIVERSITY OF NEUCHATEL	SWT
NPG	NIPPON ATOMIC POWER INDUSTRY GROUP	JAP
NPL	NATIONAL PHYSICAL LABORATORY, TECDINGTON	UK
NRD	U <sub>0</sub> S <sub>0</sub> NAVAL RADIOLOGICAL DEFENSE LAB., SAN FRANCISCO	USA
NYL	NEW YORK UNIVERSITY, NEW YORK CITY	USA
OHO	OHIO UNIVERSITY, ATHENS, OHIO	USA
ORE	UNIVERSITY OF OREGON, EUGENE, OREGON	USA
ORL	CAK RIDGE NATIONAL LABORATORY, TENNESSEE	USA
OSL	UNIVERSITY OF OSLO	NOR
PAC	UNIVERSITY OF PADUA	ITY
PAR	UNIVERSITY OF PARIS (INCL. CRSAY) PARIS	FR
PEL	AE BOARD, PELINDABA, PRETORIA	SAF
PNC	POWER REACTOR AND NUCLEAR FUEL DEV. CORP., TOKAI-MURA	JAP
PTN	PRINCETON UNIVERSITY, PRINCETON, N.J.	USA
RAM	ATOMIC ENERGY CENTRE, RAMNA, DACCA	BAN
RCN	REACTOR CENTRUM NEDERLAND, PETTEN	NED
REH	REHOVOTH LAB., ISRAEL AEC.	ISL
RI	KHLOPIN RADIUM INSTITUTE, LENINGRAD	CCP
RIS	RISO, ROSKILDE	DEN
RL	RICHLAND OPERATIONS OFFICE, RICHLAND, WASHINGTON	USA
ROS	ROSSENDORF BEI DRESDEN	DDR
RPI	RENNSELAER POLYTECHNIC INSTITUTE, TROY, NEW YORK	USA
RUM	ROMANIA	RUM
SAC	C <sub>0</sub> E <sub>0</sub> N <sub>0</sub> SACLAY, GIF-SUR-YVETTE	FR
SAE	SUMITOMO ATOMIC ENERGY INDUSTRIES, LTD., TOKYO	JAP
SAI	SCIENTIFIC APPLICATIONS INC., LA JOLLA, CALIFORNIA	USA

## LIST OF LABORATORY CODES

APPENDIX B

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SAS	UNIV. OF SASKATCHEWAN, SASKATOON	CAN
SGA	OEST. STUDIENGES. F. ATOMENERGIE, VIENNA	AUS
SOR	SOREQ RESEARCH CENTER, YAVNE	ISL
SRE	SIEMENS REAKTORENTWICKLUNG, ERLANGEN	GER
SRL	SAVANNAH RIVER LABORATORIES, AIKEN, S.C.	USA
SUN	SOUTHERN UNIVERSITIES NUCLEAR INST., FAURE, CAPE PROV.	SAF
THD	TECH. HOCHSCHULE, DARMSTADT	GER
TNC	TEXAS NUCLEAR CORPORATICN, AUSTIN, TEXAS	USA
TRM	BHABHA ATOMIC RESEARCH CENTRE, TROMBAY	IND
TUD	DRESDEN, TECHNICAL UNIVERSITY AT DRESDEN AND PIRNA	DDR
UK	UNITED KINGDOM	UK
UKW	WINDSCALE REACTOR DEVELOPMENT LABS., UKAEA	UK
UMK	UNIGN MINIERE DU HAUT KATANGA, BRUSSELS	BLG
UPP	UNIVERSITY OF UPPSALA	SWD
USA	UNITED STATES OF AMERICA	USA
USP	UNIVERSITY OF SAO PAULO, SAO PAULO	BZL
VDN	CENTRAL BUREAU DER V.D.O.E.N., ARNHEM	NED
WIN	UK ATOMIC ENERGY ESTABLISHMENT, WINFRITH	UK
WIS	UNIVERSITY OF WISCONSON, MADISON, WISCONSON	USA
WMU	WESTERN MICHIGAN UNIVERSITY	USA
WUR	EIDG. INSTITUT FUER REAKTORFORSCHUNG, WUERENLINGEN	SWT
WWA	WARSAW UNIVERSITY	POL
YAL	YALE UNIVERSITY, NEW HAVEN, CONNECTICUT	USA
YOK	RIKKYO UNIVERSITY, YOKOSUKA	JAP

LIST OF CONFERENCE REFERENCES  
-----

- 55 GENEVA FIRST INTERNATIONAL CONFERENCE ON THE PEACEFUL USES OF ATOMIC ENERGY, GENEVA 1955
- 58 GENEVA SECOND UN CONFERENCE ON THE PEACEFUL USES OF ATOMIC ENERGY, GENEVA 1958
- 68 WASHINGTON SECOND CONFERENCE ON NEUTRON CROSS SECTIONS AND TECHNOLOGY, WASHINGTON 1968, (NBS-299)
- 69 VIENNA SECOND IAEA SYMPOSIUM ON THE PHYSICS AND CHEMISTRY OF FISSION, VIENNA 1969, (STI/PUB/234)
- 70 ANL EANDC SYMPOSIUM ON NEUTRON STANDARDS AND FLUX NORMALIZATION, ARGONNE 1970, (CONF-701002)
- 70 HELSINKI SECOND IAEA CONFERENCE ON NUCLEAR DATA FOR REACTORS, HELSINKI 1970, (STI/PUB/259)
- 70 KARLSRUHE IAEA SYMPOSIUM ON PROGRESS IN SAFEGUARDS TECHNIQUES, KARLSRUHE 1970, (STI/PUB/260)
- 71 CANTERBY CONFERENCE ON CHEMICAL NUCLEAR-DATA MEASUREMENTS AND APPLICATIONS, CANTERBURY 1971
- 71 KIEV ALL USSR NEUTRON PHYSICS CONFERENCE, KIEV 1971, (NEJTRONNAYA FIZIKA, KIEV 1972)
- 71 KNOXVILLE THIRD CONFERENCE ON NEUTRON CROSS SECTIONS AND TECHNOLOGY, KNOXVILLE 1971, (CONF-710301)
- 72 BUDAPEST CONFERENCE ON NUCLEAR STRUCTURE AND STUDY WITH NEUTRONS, BUDAPEST 1972
- 72 KIEV 22ND CONFERENCE ON NUCLEAR SPECTROSCOPY AND NUCLEAR STRUCTURE, KIEV 1972
- 72 VIENNA IAEA PANEL ON NEUTRON STANDARD REFERENCE DATA, VIENNA 1972, (STI/PUB/371)
- 73 BOLOGNA IAEA PANEL ON FISSION-PRODUCT NUCLEAR DATA, BOLOGNA 1973, (IAEA-169)
- 73 KIEV CONFERENCE ON NEUTRON PHYSICS, KIEV 1973
- 73 PARIS IAEA SYMPOSIUM ON APPLICATIONS OF NUCLEAR DATA IN SCIENCE AND TECHNOLOGY, PARIS 1973, (STI/PUB/343)
- 75 WASH CONFERENCE ON NUCLEAR CROSS SECTIONS AND TECHNOLOGY, WASHINGTON 1975

## LIST OF JOURNAL REFERENCES

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AC	ANALYTICAL CHEMISTRY
AE	ATCMNAJA ENERGIJA
AF	ARKIV FOER FYSIK
AKE	ATCMKERNENERGIE
ANE	ANNALS OF NUCLEAR SCIENCE AND ENGINEERING
ANS	TRANSACTIONS OF THE AMERICAN NUCLEAR SOCIETY
APA	ACTA PHYSICA AUSTRIACA
AUJ	AUSTRALIAN JOURNAL OF PHYSICS
BAP	BULLETIN OF THE AMERICAN PHYSICAL SOCIETY
CJP	CANADIAN JOURNAL OF PHYSICS
CR	COMPTES RENDUS
DA/B	DISSERTATION ABSTRACTS INTERNATIONAL B
HP	HEALTH PHYSICS
HPA	HELVETICA PHYSICA ACTA
IJP	INDIAN JOURNAL OF PHYSICS
IZV	IZVESTIYA AKADEMII NAUK SSSR
JIN	JOURNAL OF INORGANIC AND NUCLEAR CHEMISTRY
JNE	JOURNAL OF NUCLEAR ENERGY
JPJ	JOURNAL OF THE PHYSICAL SOCIETY OF JAPAN
KNS	JOURNAL OF THE KOREAN NUCLEAR SOCIETY
KT	KERNTECHNIK
NAT	NATURE
NC/A	NUOVO CIMENTO SECTION A
NC/B	NUOVO CIMENTO SECTION B
ND/A	NUCLEAR DATA TABLES
ND/B	NUCLEAR DATA SHEETS
NIM	NUCLEAR INSTRUMENTS AND METHODS
NP/A	NUCLEAR PHYSICS SECTION A
NSE	NUCLEAR SCIENCE AND ENGINEERING
NUC	NUCLEONICS
PL/B	PHYSICS LETTERS SECTION B
PR	PHYSICAL REVIEW
PR/B	PHYSICAL REVIEW PART B
PR/C	PHYSICAL REVIEW PART C
PRL	PHYSICAL REVIEW LETTERS
PS	PHYSICA SCRIPTA
RCA	RADIOCHIMICA ACTA
REA	ATOMIC ENERGY REVIEW
RRP	REVUE ROMAINE DE PHYSIQUE
SCF	STUDI SI CERCETARI DE FIZICA
SJA	SOVIET ATOMIC ENERGY
SNP	SOVIET JOURNAL OF NUCLEAR PHYSICS
YF	YADERNAYA FIZIKA
ZP	ZIETSCHRIFT FUER PHYSIK

LIST OF LABORATORY REPORTS  
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AAEC/PR-	AUSTRALIAN AEC PROGRESS REPORTS
AD-	U.S. DEPARTMENT OF DEFENCE REPORTS
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DEPARTMENT 4  
S-104 50 STOCKHOLM 80  
SWEDEN

LIST OF ELEMENTS  
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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	BOFON	ZR	40	ZIRCCNIUM	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	NECN	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	ALLMINUM	CD	48	CADMIUM	BI	83	BISMUTH
SI	14	SILICON	IN	49	INDIUM	PO	84	POLONIUM
P	15	PHOSPHCRUS	SN	50	TIN	AT	85	ASTATINE
S	16	SULFUR	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	XENON	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	CHRCMIUM	PR	59	PRASEODYMIUM	PU	94	PLUTONIUM
MN	25	MANGANESE	ND	60	NEODYMIUM	AM	95	AMERICIUM
FE	26	IRGN	PM	61	PROMETHIUM	CM	96	CURIUM
CO	27	COBALT	SM	62	SAMARIUM	BK	97	BERKELIUM
NI	28	NICKEL	EU	63	EUROPIUM	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	LR	103	LAWRENCIUM
SE	34	SELENIUM	TM	69	THULIUM	KU	104	KURCHATOVIIUM
BR	35	BRCMINE	YB	70	YTTERBIUM			