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UNITED KINGDOM ATOMIC ENERGY AUTHORITY

Reactor Group

NUCLEAR DATA REQUIREMENTS FOR THE REACTOR PROGRAMME IN THE UNITED KINGDOM - MARCH 1973

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Atomic Energy Establishment, Winfrith, Dorchester, Dorset. 1974

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ABSTRACT

The lists of nuclear data requirements presented in this report are the outcome of a full review in March 1973 of the preceding nuclear data request list.

Table 1 lists the needs for new data measurements for fission reactors, while Table 2 lists the needs for evaluations of existing data; some additional data needs for fusion reactors are listed in Table 3. The work described as 'evaluation' is intended to include not only the review and assessment of available information, experimental and theoretical, but also the derivation of preferred values and their incorporation into computer data files in the standard format of the UK nuclear data library.

AEE
Winfrith

January 1974

W10659

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INTRODUCTION

The lists of nuclear data requirements presented in this report are the outcome of a complete review of those presented in the preceding edition (Ref. 1) which is now superceded.

Nuclear data requiremnts are listed for fission reactors. Some of these are also relevant to fusion reactor development, and some additional requirements for fusion reactors are listed in a separate table (Ref. 2). In general however the requirements for chemical nuclear data are not included, such as fission product yields for example; these have been separately reviewed and are listed in references 3 and 4.

Neutron reaction measurements usually take a long time to prepare and to complete, so that measurement requirements must be identified many years before need for the data becomes acute. It was for this reason that a preliminary statement of the most probable future data requirements for the UK fission reactor programme was prepared some 14 years ago. The continuing validity of the requests, the accuracy needed, and the progress of the measurements have been reviewed periodically since that time so that the revised lists presented in this report are based on several years of careful deliberation. A survey of the detailed considerations underlying the specification of nuclear data requirements for thermal neutron reactor calculations was given by Kinchin (1966), Ref. 5 and for fast reactors by Smith (1966) and by Campbell and Rowlands (1970), Refs. 6 and 7. More recently the nuclear data requirements for fusion reactor development were considered at the International Working Sessions on Fusion Reactor Technology held at Oak Ridge, from 28 June to 2 July 1971.

STRUCTURE OF THE REQUEST LIST

This report contains five tables:-

Table 1 of 'Measurements needed for fission reactors' has 67 requests.

Table 2 of 'Evaluation needed for fission reactors' has 50 requests.

Table 3 of 'Additional needs for fusion reactors' has 15 requests.

Table 4 of 'Items removed from the previous measurement request list" shows 18 removals.

Table 5 of 'Items removed from the previous evaluation request list' shows 71 removals.

A sixth table of 'High accuracy measurements' is presented as an appendix and lists, for interest, in Category 3, ten desiderata whose accuracy is at present unattainable with the existing techniques of differential measurement.

Notice in particular that present requirements for fission reactors are listed in two main tables, data measurement needs in Table 1, and data evaluation needs in Table 2. The work described as 'evaluation' is intended to include not only the review and assessment of available information, experimental and theoretical, but also the derivation of preferred values and their incorporation into computer data files in the standard format of the UK nuclear data library.

There follows a summary of the numbers of items in each of the main Tables and in each category. Each of the 67 items in the measurement list

Table No.	Category 1	Category 2	Category 3	Totals
1	26	16	25	67
2	18	17	15	50
3	0	0	15	15
4	0	2	16	18
5	4	3	64	71
Totals:	48	38	135	221

in Table 1 relates to a single parameter only, but in some instances more than one experiment may be needed to cover the energy range. Some of the 50 evaluation requirements in Table 2 contain more than one parameter, so that there are 69 items in all.

The previous measurement and evaluation request lists cited at the head of Table 4 and Table 5 are those given in reference 1. Tables 4 and 5 seem to show that the speed with which measurement and evaluation requirements are being satisfied is disappointingly small. It should be borne in mind however that in addition to requests which are completely fulfilled, and which are then transferred to Table 4 or Table 5, a good many others have been partially satisfied - over part of the energy range for example: this work can be identified only from the comments in Tables 1 and 2.

MAIN SHORTCOMINGS AMONG EXISTING DATA

A few comments may be in order on some of the main areas of inadequacy of presently available neutron reaction data:

a) Confidence in our knowledge of the energy dependencies of the spectra of fission neutrons from the principal fissile materials - U235, U238 and Pu239 - is still at a low ebb.

b) Confidence in the fast neutron fission cross-sections of the same nuclides is still rather low and further measurements in several laboratories are desirable.

c) There appears to be discrepancy of about 10 to 20% between direct measurements of the U238 (n, γ)/U235 (n,F) cross-section ratio in the range 100 to 800 keV and the ratio of absolute measurements of these two cross-sections.

d) There is still a need for improvements in the fast neutron capture cross-section data for the main structural materials. The use of separated isotopes appears necessary for resolution of the complex resonance structure.

e) There is no convenient and reliable reference standard for neutron flux calibrations in the fast neutron region above 90 keV. The fission cross-section of U235 has been much used for this purpose in the past but even the energy dependence of this cross-section seems still too uncertain for complete confidence.

ACCURACY REQUIREMENTS

The accuracy requirements for nuclear data for thermal reactors have been determined by prescribing the accuracy with which reactivity and reactivity coefficients (such as temperature and power coefficients) should be determined. The most important criterion is the reactivity accuracy of about ± 1 per cent, and it is unlikely that a substantially more stringent requirement will arise, if only because it is difficult to determine the inventory and geometry of a thermal reactor with such precision as to justify a greater degree of confidence in the predictions. No two thermal reactors are sensitive to data uncertainties in quite the same way and the nuclear data accuracies have been arrived at by considering a range of reactors with different spectrum hardness.

The fundamental accuracy requirements for nuclear data for fast reactors were first of all determined so that if the requested accuracies are attained it would be possible to calculate reactivities and breeding ratios to ± 1 per cent and ± 2 per cent respectively. Interest in the Doppler coefficient of reactivity leads to a need for more accurate knowledge of the low energy neutron spectrum than is necessary for either critical size or breeding ratio calculations.

In formulating the requirements for differential cross-section measurements, account has been taken of the use of integral measurements made in experimental reactors. These integral measurements play an important part in particular in meeting the data requirements for the calculation of reactivities, and result in a relaxation of the very high accuracy requirements for the principal reactions which are given in the appendix, to the more modest and attainable accuracies given in Tables 1 and 2.

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

Accuracy requirements for secondary neutron distributions

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

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

(i) It is not necessary to explore the scattering angular distribution in detail at each resonance; usually a poor resolution is quite adequate as was pointed out earlier by Goldstein.

(ii) At low energies the angular distribution is approximately linear; that is to say it is approximately proportional to $1 + \mu' . b(E)$ where μ' is the cosine of the scattering angle the centre of mass frame of reference. The elastic contributions to neutron transport and neutron moderation will both be adequately determined if

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

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

(iii) At higher energies the elastic angular distribution may be sharply peaked in the forward direction, so that more detailed information becomes necessary. However it is probable that the optical model can be used for interpolation if measurements are made at a few energies.

(iv) The contribution of inelastic scattering to the transport cross-section is usually smaller than the elastic component, and the anisotropy of inelastic scattering is usually small and so the contribution to neutron transport will certainly be adequately determined if

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

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

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

A minimum requirement on the cross-section data is that

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

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

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

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

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

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

Another characteristic of the fission spectrum which is closely related to the information required for reactor calculations is the fission spectrum averaged value of the U238 fission cross-section.

CATEGORIZATION OF PRIORITIES

Priorities have been assigned according to the following priority definitions:

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 program requirements[1].

PRIORITY 2

Nuclear data that will be required during the next few years in the applied nuclear energy program (for example in the design of a reactor or fuel processing plant; data needed to make the best 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.

REQUESTERS

The requesters whose names are mentioned in the list, are stationed at the following United Kingdom Atomic Energy Authority establishments:-

A.E.R.E., Harwell Didcot, Berkshire.	-	Dr R Hancox Dr B Rose Dr S B Wright
A.E.E., Winfrith Dorchester, Dorset	-	Dr J Butler Dr C G Campbell Mr J Smith Mr J G Tyror
British Nuclear Fuels Ltd., Windscale & Calder Works, Sellafield, Seascale, Cumberland.		Mr A Whittaker

[1] See next page

[1]For example, the highest priority would be given to requests for nuclear data for reactors to be built in the near future if:

These data are still necessary to predict the different reactor properties after all information from integral experiments and operating reactors has been used.

or - information on an important reactor parameter is in principle attainable through mathematical calculation from nuclear data only;

or - these data are needed for materials required in reactor physics measurements.

REFERENCES

1. POPE A. L. & STORY J. S. (Oct. 1972) AEEW-M1144 = EANDC(UK)-144 AL
2. FERGUSON A. T. G. (March 1973) DIDWP(73)P4, unpublished
3. CUNINGHAME J G (July 1973) CNDC(73)P5
4. BAKER A R (Apr 1973) DIDWP(73)P6, unpublished
5. KINCHIN G H (Oct 1966) IAEA Paris Conf. on nuclear data for reactors 1, 13.
6. SMITH R D (Oct 1966) IAEA Paris Conf. on nuclear data for reactors 1, 27.
7. CAMPBELL C G & ROWLANDS J L (June 1970) IAEA Helsinki Conf. on nuclear data for reactors 2, 391.

NOMENCLATURE

REACTION CROSS-SECTIONS

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      SGACT(EG) - CROSS-SECTION FOR THE PHOTON INDUCED REACTION
                    LEADING TO A SPECIFIED RADIOACTIVE NUCLIDE
         SNA(E) - NEUTRON ABSORPTION CROSS-SECTION
       SNACT(X) - CROSS-SECTION FOR THE REACTION LEADING TO THE ACTIVE
                      ISOMER (X)
     SNALPHA(E) - CROSS-SECTION FOR (N,ALPHA) REACTIONS
    SNALPHAG(E) - CROSS-SECTION FOR (N,ALPHA GAMMA) REACTIONS
         SNF(E) - NEUTRON INDUCED FISSION CROSS-SECTION
         SNG(E) - CROSS-SECTION FOR RADIATIVE CAPTURE
     SNGT(E,EG) - DIFFERENTIAL CROSS-SECTION FOR GAMMA-RAY PRODUCTION
                      BY ALL NON-ELASTIC NEUTRON REACTIONS
   SNGT(E,EG,L) - SNGT(E,EG) WITH ANGULAR DISTRIBUTIONS FOR GAMMA-RAYS
         SNN(E) - NEUTRON ELASTIC SCATTERING CROSS-SECTIONS
       SNN(E,L) - SNN(E) WITH ANGULAR DISTRIBUTIONS FOR NEUTRONS
        SNN*(E) - INTEGRATED NEUTRON INELASTIC SCATTERING CROSS-SECTION
     SNN*(E,E*) - DIFFERENTIAL CROSS-SECTION FOR NEUTRON INELASTIC
                      SCATTERING
   SNN*(E,E*,L) - SNN*(E,E*) WITH SECONDARY ANGULAR DISTRIBUTIONS
     SNN*(E,EG) - DIFFERENTIAL CROSS-SECTION FOR GAMMA-RAY PRODUCTION
                      BY NEUTRON INELASTIC SCATTERING
   SNN*(E,EG,L) - SNN*(E,EG) WITH GAMMA-RAY ANGULAR DISTRIBUTIONS
       SNN*T(E) - CROSS-SECTION FOR (N,N*T)
     SNN*3ALPHA - CROSS-SECTION FOR (N,N*3ALPHA)
         SNP(E) - CROSS-SECTION FOR (N,P) REACTIONS
         SNT(E) - TOTAL NEUTRON CROSS-SECTION
        SN2N(E) - CROSS-SECTION FOR (N,2N) REACTIONS
     SN2N(E*,L) - SN2N WITH SECONDARY ANGULAR DISTRIBUTIONS
    TSL(E,E*,L) - THERMAL NEUTRON SCATTERING LAW

            E0  -  INCIDENT NEUTRON ENERGY OF 0.0253EV
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RESONANCE INTEGRALS - RESINTXY =INTEGRAL(SNXY(E)*DE/E)

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     RESINTXACT - ACTIVATION RESONANCE INTEGRAL
      RESINTNA  - ABSORPTION RESONANCE INTEGRAL
      RESINTNF  - FISSION RESONANCE INTEGRAL
      RESINTNG  - RADIATIVE CAPTURE RESONANCE INTEGRAL
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NOMENCLATURE (CONTINUED)

SPECTRAL DISTRIBUTIONS

G SPEC FROM = SPECTRUM OF PROMPT PHOTONS FROM FISSION INDUCED BY
NF(E,EG) NEUTRONS OF ENERGY E

G SPEC FROM = SPECTRUM OF PROMPT PHOTONS EMITTED IN ALL PROCESSES
NGT(E,EG) INDUCED BY NEUTRONS OF ENERGY E

G SPEC FROM = SPECTRUM OF PROMPT PHOTONS FROM THE INELASTIC
NN*(E,EG) SCATTERING OF NEUTRONS OF ENERGY E

N SPEC FROM = SPECTRUM OF NEUTRONS FROM THE INELASTIC
NN*(E,E*) SCATTERING OF NEUTRONS OF ENERGY E.

N SPEC FROM = SPECTRUM OF NEUTRONS FROM FISSION INDUCED BY
NF(E,E*) NEUTRONS OF ENERGY E

N SPEC FROM = SPECTRUM OF NEUTRONS FROM (N,2N) REACTIONS INDUCED BY
N2N(E,E*) NEUTRONS OF ENERGY E

OTHER PARAMETERS

ALPHA(E) = THE CAPTURE TO FISSION RATIO FOR INCIDENT NEUTRONS OF ENERGY E

ETA(E) = THE AVERAGE NUMBER OF NEUTRONS EVOLVED PER NEUTRON OF ENERGY E ABSORBED

NUBAR(E) = THE AVERAGE NUMBER OF NEUTRONS EVOLVED PER FISSION INDUCED BY NEUTRONS OF ENERGY E

TABLE 1 - MEASUREMENTS NEEDED

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE- GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
1 HE3	SNP(E)	100KEV-1MEV	2PC	2	B.ROSE-USED AS A STANDARD IN X-SECTION MEASUREMENTS. ENERGY DEPENDENCE NEEDED MORE ACCURATELY.	NO WORK PLANNED. SEE DERUYTTER NELS 1, 127(1970), AND COSTELLO ET AL. ANL 74 (1970).
2 LI6	SNALPHA(E)	500KEV-5MEV	5PC	1	B.ROSE, C.G.CAMPBELL-STANDARD FOR CROSS-SECN MEASUREMENTS AND FOR NEUTRON SPECTRUM MEASMNTS	NOTE INCREASED PRIORITY AND REDUCED ENERGY RANGE. PLANNED EARLY 1974, LYNN- AERE.
3 LI6	SNALPHA(E,L)	100KEV-5MEV	5PC	3	C.G.CAMPBELL-FLUX MONITOR FOR NEUTRON SPECTRUM MEASUREMENTS.	DISCREPANCIES ARE PARTICULARLY LARGE ABOVE 350KEV.
4 B10	SNALPHA(E) SNALPHAG(E)	100KEV-1MEV	2PC	1	B.ROSE-USED AS A STANDARD IN CAT.1 X-SECN MEASUREMENTS. ENERGY DEPENDENCE NEEDED MORE ACCURATELY.	NOTE REDUCED ENERGY RANGE. PRELIMINARY DATA AVAILABLE-COATES ET. AL.-AERE. AND SYME ET. AL. UNIV. OF GLASGLOW.
5 NA23	SIG(E)	100EV-10KEV 10-100KEV	10PC 20PC	2	C.G.CAMPBELL-FOR FAST REACTORS.	DISCREPANCY IN RADIATION WIDTH DATA AT 3KEV RES. EVALUATION NEEDED.
6 CL	SNP(E)	10KEV-2MEV	10PC	3	J.SMITH-FOR FUSED SALT REACTORS.	NO WORK PLANNED.
7 TI	SNG(E)	100EV-100KEV	20PC	1	C.G.CAMPBELL-FOR FAST REACTORS.	NEW MEASUREMENTS PLANNED AFTER THE RECALIBRATION OF IMPROVED APPARATUS COATES-AERE. THEN EVAL. NEEDED.

TABLE 1 - MEASUREMENTS NEEDED

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE- GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
8 V	SNG(E)	100EV-100KEV	10PC	1	C.G.CAMPBELL-FOR FAST REACTORS.	NEW MEASUREMENTS PLANNED AFTER THE RECALIBRATION OF IMPROVED APPARATUS COATES-AERE. THEN EVAL. NEEDED.
9 CR	SNG(E)	100EV-100KEV	20PC	1	C.G.CAMPBELL -FOR FAST REACTORS.	IN PROGRESS MOXON-AERE. NEW MEASUREMENTS PLANNED AFTER THE RECALIBRATION OF IMPROVED APPARATUS COATES-AERE. THEN EVAL. NEEDED.
10 CR	SNP	FISS.SPEC. AVERAGE	30PC	3	C.G.CAMPBELL-FOR FAST REACTORS.	AVAILABLE ESTIMATES DIFFER BY FACTOR 5. MAIN UNCERTAINTY DUE TO CR50(N,P). NO UK WORK PLANNED.
11 MN55	SNG(E)	100EV-100KEV	20PC	1	C.G.CAMPBELL-FOR FAST REACTORS.	ACCURACY REQUIREMENT NOT MET. NEW MEASUREMENTS PLANNED AFTER THE RECALIBRATION OF IMPROVED APPARATUS COATES-AERE. THEN EVAL. NEEDED.
12 FE	SNN*(E,E*,L)	THRESHOLD -4MEV 4-10MEV	5PC 5-10PC	3	C.G.CAMPBELL, J.BUTLER-FOR FAST REACTORS AND SHIELDING.	ACCURACY REQUIREMENT NOT MET.
13 FE	SNG(E)	100EV-100KEV 100KEV-1MEV	10PC 20PC	1	C.G.CAMPBELL-FOR FAST REACTORS.	EVALUATION INDICATES ABOUT 20 PER CENT UNCERTAINTY BELOW 100KEV. FURTHER MEASUREMENTS PLANNED, COATES-AERE. ALSO SNT(E) SOME DATA AVAILABLE PATTENDEN, AERE-R 7425 (APR. 1973).

TABLE 1 - MEASUREMENTS NEEDED

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE- GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK *
14 NI	SNN*(E,E*,L)	THRESHOLD -4MEV 4MEV-7MEV	5PC 5-10PC	3	C.G.CAMPBELL-FOR FAST REACTORS.	ACCURACY REQUIREMENT NOT MET.
15 NI	SNG(E)	100EV-100KEV 100KEV-1MEV	10PC 20PC OR 2MB.	1	C.G.CAMPBELL-FOR FAST REACTORS.	ACCURACY REQUIREMENT NOT MET BELOW ABOUT 100KEV BY MEASUREMENTS AND EVALUATION AVAILABLE MOXON-AERE. FURTHER MEASUREMENTS PLANNED PATTENDEN AND MOXON AND COATES-AERE.
16 NB93	SNG(E)	100EV-100KEV	20PC	1	C.G.CAMPBELL-FOR FAST REACTORS.	ACCURACY REQUIREMENT NOT MET. NEW MEASUREMENTS PLANNED AFTER THE RECALIBRATION OF IMPROVED APPARATUS COATES-AERE. THEN EVAL. NEEDED.
17 MO	SNG(E)	100EV-100KEV 100KEV-1MEV	10PC 20PC	1	C.G.CAMPBELL -FOR FAST RECTORS.	DATA AVAILABLE ON MO-100 NEW MEASUREMENTS PLANNED AFTER THE RECALIBRATION OF IMPROVED APPARATUS COATES AND MOXON-AERE. PRELIMINARY DATA AVAILABLE-GEEL, GRT AND KFK. EVALUATION NEEDED.
18 TC99	SNG(E)	100EV-1MEV	20PC (B-2E)	3	C.G.CAMPBELL-FOR FAST REACTORS.	NO WORK PLANNED.
19 RU101	SNG(E)	100EV-1MEV	20PC (B-2E)	3	C.G.CAMPBELL-FOR FAST REACTORS.	NO WORK PLANNED.

TABLE 1 - MEASUREMENTS NEEDED

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE-GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
20 XE131	SNA RESINTNA	THERMAL 0.55EV-2MEV	10PC	2	J.G.TYROR-FOR THERMAL REACTORS.	NO WORK PLANNED.
21 PM147	SNA RESINTNA	THERMAL 0.55EV-2MEV	10PC	2	J.G.TYROR-FOR THERMAL REACTORS.	IN PROGRESS, MACMILLAN-AERE. SEE CABELL JINC 32, 3433 (1970), AND MOWATT AND WALKER CJP 49, 108 EVALUATION NEEDED.
22 PM147	SNG(E)	100EV-1MEV	20PC (5-2E)	3	C.G.CAMPBELL-FOR FAST REACTORS.	
23 SM151	SNG(E)	100EV-1MEV	20PC (5-2E)	3	C.G.CAMPBELL-FOR FAST REACTORS.	NO WORK PLANNED.
24 EU	SNG(E)	100EV-0.5MEV	10PC	1	C.G.CAMPBELL-FOR FAST REACTORS.	NEW ITEM. MEASUREMENTS IN PROGRESS AT AERE.
25 TH232	SNG(E)	1KEV-1MEV	3PC	3	C.G.CAMPBELL-FOR FAST REACTORS.	NO WORK PLANNED.
26 U233	SNN	THERMAL	10PC	3	J.G.TYROR-FOR LONG-TERM IMPROVEMENT OF SNA.	NO WORK PLANNED.
27 U233	G SPEC FROM NGT(EG)	ABOUT 120KEV LOW RESOLUTION ADEQUATE	20PC	3	C.G.CAMPBELL-FOR STUDY OF ACTIVATION AND HEAT RELEASE IN CORE.	NO WORK PLANNED.
28 U233	SNN*(E,E*,L)	THRESHOLD -5MEV	20PC	3	C.G.CAMPBELL-FOR FAST REACTORS.	NO EXPERIMENTAL DATA AVAILABLE, NO WORK PLANNED.

TABLE 1 - MEASUREMENTS NEEDED

1 ITEM NO.& MATERIAL		2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE-GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK *
29	U233	ETA(E)/ ETA(EC)	0.01-0.2EV	0.5PC (.02EV STEPS)	2	J.G.TYROR- FOR THERMAL REACTORS.	NOTE INCREASED PRIORITY. REQUIREMENT PROBABLY NOT MET. EVALUATION NEEDED.
30	U233	ALPHA(E)	1-100KEV	2PC	3	C.G.CAMPBELL-FOR FAST REACTORS.	
31	U235	SNU	THERMAL	10PC	3	J.G.TYROR-FOR LONG-TERM IMPROVEMENT OF SNA.	NO WORK PLANNED.
32	U235	G SPEC FROM NGT(EG)	ABOUT 120KEV LOW RESOLUTION ADEQUATE	20PC	3	C.G.CAMPBELL,A.WHITTAKER- FOR STUDY OF ACTIVATION AND HEAT RELEASE IN CORE.	NO WORK PLANNED.
33	U235	SNF(E)	1-5MEV	3PC (E-2E)	1	C.G.CAMPBELL-FOR FAST REACTORS. STANDARD FOR PU CROSS-SECTIONS.	NOTE REDUCED ENERGY RANGE.ACCURACY REQUIREMENT NOT MET BY AVAILABLE EXPERIMENTAL DATA. NEW MEAS.PLANNED LYNN-AERE. THEN EVAL. NEEDED.
34	U235	ETA(E)/ ETA(EC)	0.01EV-0.2EV	0.5PC (0.02EV STEPS)	1	J.G.TYROR-FOR TEMP. COEFFICIENT WORK.	FEASIBILITY ASSESSMENT IN PROGRESS, SOWERBY AND PATTENDEN-AERE.
35	U235	ETA(E)/ ETA(EC)	0.2EV-0.4EV	0.3PC (0.05EV STEPS)	1	J.G.TYROR - FOR TEMP. COEFFICIENT WORK.	FEASIBILITY ASSESSMENT IN PROGRESS, SOWERBY AND PATTENDEN- AERE.
36	U235	ALPHA(E)	100EV-1MEV	5PC (E-2E)	2	C.G.CAMPBELL-FOR FAST REACTORS.	CURRENT DATA FILE NEEDS IMPROVEMENT BUT ACCURACY REQUIREMENT PROBABLY NOT MET BY AVAILABLE EXPERIMENTAL DATA. EVALUATION NEEDED.

TABLE 1 - MEASUREMENTS NEEDED

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATEG- GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK *
37 U235	N SPEC FROM NF(E*)	ABOUT 100KEV	2PC ON MEAN E* DN1,DN2 TO 10PC	2	C.G.CAMPBELL-FOR FAST REACTORS, A.WHITTAKER AND S.B.WRIGHT- FOR REACTION RATE ANALYSIS. (WHERE DN1=NO. OF NEUTRONS ABOVE 5MEV, AND DN2=NO. BELOW 0.25MEV).	PROVISIONAL DATA AVAILABLE, J.ROSE ET AL.-SOUTH BANK POLYTECHNIC AND AERE.
38 U238	G SPEC FROM NGT(E,EG)	BELOW 200KEV	15PC	2	C.G.CAMPBELL-FOR STUDY OF ACTIVATION AND HEAT RELEASE IN CORE.	
39 U238	SNN*(E,E*,L)	1-2.5MEV	5PC	1	C.G.CAMPBELL-FOR FAST REACTORS.	EVALUATION SHOWS REQUIREMENT NOT MET BY CURRENTLY AVAILABLE DATA. SOME NEW DATA AVAILABLE, ARMITAGE-AERE. ALSO SMITH AND GLENTHER-ANL.
40 U238	SNF	AVERAGE OVER U235 FISS SPEC	2PC	2	C.G.CAMPBELL, J.G.TYROR-FOR FAST AND THERMAL REACTORS.	
41 U238	SNF(E)/U235 SNF(E)	THRESH-5MEV	3PC	1	C.G.CAMPBELL-FOR FAST REACTORS.	NEW ITEM. IN PROGRESS COATES ET AL. AERE. EANDC(UK) 151 L P.27
42 U238	DELAYED NEUT. YIELD	ABOUT 2MEV	5PC	2	C.G.CAMPBELL, J.G. TYROR-FOR FAST AND THERMAL REACTORS.	PRELIMINARY DATA AVAILABLE, CLIFFORD-IMPERIAL COLLEGE LONDON. TOMLINSON-AERE,EVALUATION INDICATES DISCREPANCIES. NEW MEASUREMENTS IN PROGRESS, MCTAGGART-AWRE.
43 U238	NSPEC FROM NF(E*)	ABOUT 2MEV	2PC ON MEAN E* DN1,DN2 TO 10PC	3	C.G.CAMPBELL-FOR FAST REACTORS.(WHERE DN1=NO.OF NEUTRONS ABOVE 5MEV, AND DN2=NO. BELOW 0.25MEV).	

TABLE 1 - MEASUREMENTS NEEDED

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE- GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
44 U238	SNG(E)	0.005-6EV	0.03 BARNS	1	J.G.TYROR- FOR THERMAL REACTORS.	MOXON-AERE. PROVISIONAL DATA AVAIL.
45 U238	SNG(E)	10KEV-2MEV	3PC (6-2E)	1	C.G.CAMPBELL-FOR FAST REACTORS.	NOTE REDUCED ENERGY RANGE. DATA REQUESTED BELOW 10KEV. NOW COVERED BY FURTHER REQUEST. IN PROGRESS AT AERE. SOME DATA AVAILABLE. RYVES NPL. EANDC(UK) 151 L P.54
46 U238	RESONANCE PARAMETERS	6EV-10KEV	3PC (6-2E)	1	C.G.CAMPBELL-FOR FAST REACTORS-TO GIVE SHIELDED X-SECTIONS TO 3PC, AND DOPPLER CHANGE TO 5PC FOR TEMPERATURES (300K-2000K)	NEW ITEM. BROAD RESOLUTION MEASUREMENTS COULD SUFFICE. FEASIBILITY STUDY IN PROGRESS-SOWERBY ET AL. AERE.
47 NP237	SGACT (PU236)	AVERAGE FOR CAPTURE GAMMAS FROM MG, C, ZIRCALOY AND SS(20/25)	20PC	3	A.WHITTAKER-FOR ISOTOPE PRODUCTION.	NOTE CHANGED PARAMETER AND REDUCED PRIORITY. SIMILAR METHOD TO AHFELD-TANS 14, 807.
48 PU239	SNN	THERMAL	10PC	3	J.G.TYROR-FOR LONG-TERM IMPROVEMENT OF SNA.	NO WORK PLANNED.
49 PU239	G SPEC FROM NGT(EG)	ABOUT 120KEV LOW RESOLUTION ADEQUATE	20PC	2	C.G.CAMPBELL-FOR STUDY OF ACTIVATION AND HEAT RELEASE IN CORE.	NOTE INCREASED PRIORITY.
50 PU239	SNF(E) OR SNF(E)/U235 SNF(E)	1-5MEV	3PC (6-2E)	1	C.G.CAMPBELL-FOR FAST REACTORS.	NOTE REDUCED ENERGY RANGE AND ALTERNATE PARAMETER. DATA BELOW 1MEV. AVAILABLE GAYTHER-AERE. MEASUREMENTS PLANNED 1-5MEV. LYNN-AERE.

TABLE 1 - MEASUREMENTS NEEDED

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE- GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
51 PU239	DELAYED NEUT. YIELD	ABOUT 100KEV	5PC	2	C.G.CAMPBELL-FOR FAST REACTORS.	NEW ITEM.
52 PU239	ETA(E)/ ETA(EO)	0.01EV-0.5EV	0.75PC (0.020EV STEPS)	1	J.G.TYROR-FOR TEMPERATURE COEFFICIENT WORK.	FEASIBILITY ASSESSMENT IN PROGRESS, SOWERBY AND PATTENDEN-AERE.
53 PU239	ALPHA(E)	20-100KEV	10PC (5-2E)	3	C.G.CAMPBELL-FOR FAST REACTORS.	NOTE REDUCED ENERGY RANGE. DATA EVALUATION COMPLETED, SOWERBY AND KONSHIN AT.EN.REV. 10, 4, 453. ADEQUATE BELOW 20KEV.
54 PU239	N SPEC FROM NF(E*)	ABOUT 100KEV	2PC ON MEAN E* DN1,DN2 TO 10PC	1	C.G.CAMPBELL-FOR FAST REACTORS, A.WHITTAKER AND S.B.WRIGHT-FOR REACTION RATE ANALYSIS. (WHERE DN1 = NO. OF NEUTRONS ABOVE 5MEV, AND DN2=NO. BELOW 0.25MEV).	NOTE INCREASED PRIORITY. INTEGRAL AND DIFFERENTIAL DATA ARE DISCREPANT. PROVISIONAL DATA AVAILABLE, J.ROSE ET AL. SOUTH BANK POLYTECHNIC AND AERE.
55 PU240	G SPEC FROM NGT(EG)	ABOUT 120KEV LOW RESOLUTION ADEQUATE	20PC	3	C.G.CAMPBELL-FOR STUDY OF ACTIVATION AND HEAT RELEASE IN CORE.	
56 PU240	SNN*(E,E*,L)	THRESHOLD -4MEV	40PC	2	C.G.CAMPBELL-FOR FAST REACTORS.	SOME DATA AVAILABLE, A.B.SMITH ET AL.-ANL. EVALUATION NEEDED.
57 PU240	NUBAR(E)	THRESHOLD -5MEV	2PC	3	C.G.CAMPBELL-FOR FAST REACTORS.	ACCURACY REQUIREMENT NOT MET, BUT PRELIMINARY DATA AVAILABLE FREHAUT GRUYERE LE CHATTEL.

TABLE 1 - MEASUREMENTS NEEDED

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE- GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
58 PU241	G SPEC FROM NGT(EG)	ABOUT 120KEV LOW RESOLUTION ADEQUATE	20PC	3	C.G.CAMPBELL-FOR STUDY OF ACTIVATION AND HEAT RELEASE IN CORE.	
59 PU241	SNA(E)	15EV-300EV 1KEV-2KEV	8PC (B-2E) 20PC (B-2E)	3	J.G.TYROR -FOR THERMAL REACTORS.	RIBON EVALUATION (DFN 403) MAY SUFFICE
60 PU241	SNF(E)	0.1-150KEV	5PC (B-2E)	2	C.G.CAMPBELL-FOR FAST REACTORS.	RIBON EVALUATION (DFN 403) MAY SUFFICE.
61 PU241	ETA(E)/ ETA(EO)	0.01-1EV 1-15 EV	2PC 6PC	2	J.G.TYROR-FOR THERMAL REACTORS.	EVALUATION SHOWS ACCURACY NOT MET MEASUREMENT FEASIBILITY STUDY IN PROGRESS, SOWERBY-AERE.
62 PU241	ALPHA(E)	10'EV-1MEV	20PC (B-2E)	3	C.G.CAMPBELL-FOR FAST REACTORS.	
63 AM241	SNF(E)	100EV-100KEV	20PC	1	C.G.CAMPBELL-FOR FAST REACTORS.	NEW ITEM. PLANNED AWAITING SAMPLES LYNN-AERE.
64 AM241	SNG(E)	100EV-100KEV	20PC	1	C.G.CAMPBELL-FOR FAST REACTORS	PLANNED, AWAITING SAMPLE, COATES-AERE
65 AM241	AM242 ISOMER RATIO FROM SNG.	PFR AND FISS. SPEC.AVERAGES	10PC	1	C.G.CAMPBELL-FOR FAST REACTORS. A.WHITTAKER-FOR REPROCESSING FUEL.	NEW ITEM.
66 CF252	NSPEC FROM SPONT.FISS.		2PC ON MEAN E- DN1,DN2 TO 10PC	1	B.ROSE-FOR STANDARDS. (WHERE DN1-NO.OF NEUTRONS ABOVE 5MEV, AND DN2-NO. BELOW 0.25MEV).	NEW ITEM. PROVISIONAL DATA AVAIL. J.ROSE ET AL SOUTH BANK POLYTECHNIC AND AERE.

TABLE 1 - MEASUREMENTS NEEDED

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE-GORY	6 REQUESTERS NAME & COMMENTS *	7 STATUS OF WORK
67 FISPROD	SNA RESINTNA	THERMAL 0.55EV-2MEV	5PC 10PC	2	J.G.TYROP-ICR THERMAL REACTORS.	

TABLE 2-EVALUATIONS NEEDED.

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE- GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
1 LI6	SNALPHA(E)	10-350KEV 350KEV-5MEV	2PC 5PC	1	C.G.CAMPBELL-FLUX MONITOR FOR NEUTRON SPECTRUM MEASUREMENTS.	NOTE INCREASED PRIORITY. EVALUATION IN PROGRESS UTTLEY ET AL.-AERE. EANDC(UK) 151 L P.10
2 BE9	TSL(E,E*,L)	THERMAL (200-1200C)		3	J.G.TYROR- FOR THERMAL REACTORS.	NO WORK PLANNED.
3 B10	SNA(E)	0.2-1MEV 1-5MEV	5PC 10PC	3	C.G.CAMPBELL-FOR FAST REACTORS.	NEW ITEM. REQUIRED ACCURACY AVAILABLE, SEE SYME ET AL. EANDC(UK) 151 L P.59 ALSO GULF-RT-A12210.
4 B11	SNT(E) SNN(E,L)	0.5-5MEV	10PC	2	C.G.CAMPBELL-FOR FAST REACTORS.	EXPERIMENTAL DATA AVAILABLE,2-5MEV, PORTER-AWRE C-45/70. SEE ALSO SYME ET AL. EANDC(UK) 151 L P.59
5 NA23	SNG(E)	100EV-10KEV 10-100KEV	10PC 20PC	2	C.G.CAMPBELL-FOR FAST REACTORS.	DISCREPANCY IN RADIATION WIDTH DATA AT 3KEV RES. EVALUATION NEEDED.
6 SI	SNN(E,L) SNN*(E,E*)	1-4MEV THRESH-4MEV 4-10MEV 10-14MEV	10PC 10PC 5PC 10PC	3	J.BUTLER-FOR REACTOR SHIELDING.	EXPERIMENTAL DATA MAY BE OF REQUIRED ACCURACY. NO WORK PLANNED. ENDF/B3 FILE MAY SUFFICE,KINSEY-BNL ALSO DATA AVAILABLE FROM CRAWFORD ET AL. AND FROM HALL ET AL.-UNIV. OF GLASGLOW. EANDC(UK) 151 L P.58

TABLE 2-EVALUATIONS NEEDED.

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE-GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK *
7 SI	SNG(E)	THERMAL -200KEV	10PC	3	J.G.TYROR- FOR THERMAL REACTORS.	THERMAL CAPTURE AND RESINT DATA REVIEWED, STORY AEEW-M933(9/69).NEW RESONANCE DATA AVAILABLE, MOXON AERE-PR/NP16, 11 (8/69). NO WORK PLANNED.
8 CL	SNN(E,L) SNN*(E,E*,L) SNG(E) SNP(E) SNALPHA(E)	THERMAL-15MEV THRESH-15MEV THERMAL-1MEV THRESH-15MEV THRESH-15MEV	20PC 30PC 20PC OR 1MB 2MB 5MB	2	J.SMITH-FOR FUSED SALT REACTORS.	NEW ITEM.
9 CL37	SNN(E,L) SNN*(E,E*,L) SNG(E) SNP(E) SNALPHA(E)	THERMAL-15MEV THRESH-15MEV THERMAL-1MEV THRESH-15MEV THRESH-15MEV	20PC 30PC 20PC OR 1MB 2MB 5MB	3	J.SMITH-FOR FUSED SALT REACTORS.	
10 CA	SNN*(E,E*)	4MEV-10MEV	5PC	3	J.BUTLER- FOR REACTOR SHIELDING.	GGA EVALUATION MAY SUFFICE, BUT NOT FULLY IN UK FORMAT-GARRISON + DRALE GA-7829 (2/67). ENDF/B3 FILE MAY BE PREFERRED, PEREY-ORNL.

TABLE 2-EVALUATIONS NEEDED.

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE-GORY	6 REQUESTERS NAME & COMMENTS *	7 STATUS OF WORK
11 TI	SNG(E)	100EV-100KEV	20PC	1	C.G.CAMPBELL- FOR FAST REACTORS.	CURRENT DATA FILE NEEDS IMPROVEMENT BUT ACCURACY REQUIREMENT PROBABLY NOT MET BY AVAILABLE EXPERIMENTAL DATA, SO NEW EVALUATION REQUIRED TO TAKE ACCOUNT OF MEASUREMENTS NOW PLANNED MOXON-AERE.
12 V	SNG(E)	100EV-100KEV	10PC	1	C.G.CAMPBELL-FOR FAST REACTORS.	CONVERSION OF ENDF/B EVALUATION TO UK FORMAT DFN 952-CAMERON AWRE. BUT ACCURACY PROBABLY NOT MET, SO NEW EVALUATION REQUIRED TO TAKE ACCOUNT OF MEASUREMENTS NOW PLANNED MOXON AND COATES-AERE.
13 CR	SNG(E)	100EV-100KEV	20PC	1	C.G.CAMPBELL -FOR FAST REACTORS.	CURRENT DATA FILE NEEDS IMPROVEMENT BUT ACCURACY REQUIREMENT PROBABLY NOT MET BY AVAILABLE EXPERIMENTAL DATA. EVALUATION IN PROGRESS, MOXON AERE, AND MEASUREMENTS REQUESTED ALSO.
14 MN55	SNG(E)	100EV-100KEV	20PC	1	C.G.CAMPBELL-FOR FAST REACTORS.	ENDF/B EVALUATION AVAILABLE IN UK FORMAT, BUT ACCURACY REQUIREMENT PROBABLY NOT MET, SO MEASUREMENTS REQUESTED ALSO. NEW EVALUATION REQUIRED WHEN NEW DATA BECOMES AVAILABLE.

TABLE 2-EVALUATIONS NEEDED.

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE- GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
15 FE	SNN*(E,E*,L)	THRESHOLD -4MEV 4-10MEV	5PC 5-10PC	1	C.G.CAMPBELL AND J.BUTLER -FOR FAST REACTORS AND SHIELDING.	ENDF/B FILE MAT-1124 CONVERTED TO UK FORMAT AS DFN-950, BUT ACCURACY REQUIREMENT PROBABLY NOT MET BY AVAILABLE EXPERIMENTAL DATA, SO MEASUREMENTS REQUESTED ALSO. FURTHER STUDY NEEDED.
16 FE	SNG(E)	100EV-100KEV 100KEV-1MEV	10PC 20PC	1	C.G.CAMPBELL-FOR FAST REACTORS.	IMPROVED DATA FILE DFN908 AVAILABLE ACCURACY REQUIREMENT NOT MET BY AVAILABLE EXPERIMENTAL DATA, SO MEASUREMENT REQUESTED ALSO. NEW EVALUATION REQUIRED WHEN NEW DATA BECOMES AVAILABLE.
17 NI	SNN*(E,E*,L)	THRESHOLD -4MEV 4MEV-7MEV	5PC 5-10PC	1	C.G.CAMPBELL-FOR FAST REACTORS.	IMPROVED FILE (DFN 907) AVAILABLE. ACCURACY REQUIREMENT MAY NOT BE MET BY AVAILABLE EXPERIMENTAL DATA, SO MEASUREMENT REQUESTED. NEW EVALUATION REQUIRED WHEN NEW DATA BECOMES AVAILABLE.
18 NI	SNG(E)	100EV-100KEV 100KEV-1MEV	10PC 20PC OR 2MB.	1	C.G.CAMPBELL-FOR FAST REACTORS.	IMPROVED FILE (DFN 907) AVAILABLE. EVALUATION AVAILABLE, MOXON-AERE. ACCURACY REQUIREMENT NOT MET BY AVAILABLE EXPERIMENTAL DATA, SO MEASUREMENTS REQUESTED ALSO. NEW EVALUATION REQUIRED TO TAKE ACCOUNT OF MEASUREMENTS NOW PLANNED
19 NI58	SNP(E)	THRESH-10MEV	5PC ON SHAPE	1	J.G.TYROR-FOR THERMAL REACTORS	UNLIKELY TO BE MET.

TABLE 2-EVALUATIONS NEEDED.

ITEM NO.& MATERIAL (1)	PARAMETER (2)	ENERGY RANGE (3)	ERROR (4)	CATE-GORY (5)	REQUESTERS NAME & COMMENTS (6)	STATUS OF WORK (7)
20 NB93	SNG(E)	100EV-100KEV	20PC	1	C.G.CAMPBELL-FOR FAST REACTORS.	ENDF/B FILE AVAILABLE IN UK FORMAT, BLOW AERE-M2230(6/69), AS DFN 79. ACCURACY REQUIREMENT NOT MET BY AVAILABLE DATA, SO MEAS. REQUESTED. NEW EVALUATION REQUIRED WHEN NEW DATA BECOMES AVAILABLE.
21 MO	SNN*(E,E*,L) SNG(E)	1.5-5MEV 100EV-100KEV 100KEV-1MEV	10PC 10PC 20PC	1	C.G.CAMPBELL-FOR FAST REACTORS.	EVALUATION OF FAST NEUTRON SCATTER IN PROGRESS, AND ENDF/B2 FILE MAT-1111 TO BE CONVERTED TO UK FORMAT, DOUGLAS-AWRE. CAPTURE MEASUREMENTS PLANNED ALSO, COATES-AERE. NEW EVALUATION REQUIRED WHEN NEW DATA BECOMES AVAILABLE.
22 RH103	SNACT(E) (57MIN RH103)	THRESH-10MEV	5PC ON SHAPE	1	J.G.TYROR-FOR THERMAL REACTORS.	UNLIKELY TO BE MET.
23 IN	SNN(E) AND SNG(E)	THERMAL -10MEV	10PC	3	J.G.TYROR-FOR THERMAL REACTORS.	NO WORK PLANNED.
24 PM147	SNA RESINTNA	THERMAL 0.55EV-2MEV	10PC 10PC	2	J.G.TYROR-FOR THERMAL REACTORS.	DFN 903 MAY SUFFICE.
25 HF	SNN(E) SNG(E)	THERMAL -10MEV	10PC	3	J.G.TYROR-FOR THERMAL REACTORS.	ENDF/B FILE MAY BE ADEQUATE BUT NOT IN UK FORMAT. NO WORK PLANNED. REYNOLDS ET AL. KAPL-3327(8/67).

TABLE 2-EVALUATIONS NEEDED.

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE-GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
26 PB	SNN*(E,E*) SN2N(E)	6MEV-10MEV THRESHOLD -14MEV	5PC 10PC	3	J.BUTLER-FOR REACTOR SHIELDING.	CURRENT DATA FILE NEEDS IMPROVEMENT BUT ACCURACY REQUIREMENT MAY NOT BE MET BY AVAILABLE EXPERIMENTAL DATA. NO WORK PLANNED, BUT ENDF/B3 FILE MAY SUFFICE, PEREY-ORNL.
27 TH232	SNF(E)	THRESHOLD -5MEV	5PC	3	C.G.CAMPBELL-FOR FAST REACTORS.	ACCURACY REQUIREMENT MAY NOT BE MET BY AVAILABLE EXPERIMENTAL DATA.
28 U233	ETA(E)/ ETA(EC)	0.01-0.2EV	0.5PC (.02EV STEPS)	2	J.G.TYROR- FOR THERMAL REACTORS.	CURRENT DATA FILE NEEDS IMPROVEMENT BUT ACCURACY REQUIREMENT MAY NOT BE MET BY AVAILABLE EXPERIMENTAL DATA, SO
29 U235	SNN*(E,E*,L)	THRESHOLD -4MEV	20PC	2	C.G.CAMPBELL-FOR FAST REACTORS.	CURRENT DATA FILE NEEDS REVISION. AVAILABLE EXPERIMENTAL DATA ARE PROBABLY ADEQUATE.
30 U235	SNF(E)	100EV-5MEV	3PC	1	C.G.CAMPBELL-FOR FAST REACTORS. THIS EVALUATION WILL BE USED TO OBTAIN U238 FISSION DATA FROM RELATIVE MEASUREMENTS.	NEW ITEM. SOWERBY ET AL.-AERE/R7273 CURRENTLY UNDER REVISION.EVALUATION BELOW 25KEV BY JAMES ET AL.-AEEW, EANDC(UK) 151 L P.42 NEW EVALUATION REQUIRED TO TAKE ACCOUNT OF MEASUREMENTS RECENTLY COMPLETED.

TABLE 2-EVALUATIONS NEEDED.

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE-GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
31 U235	ALPHA(E)	100EV-1MEV	5PC (B-2E)	2	C.G.CAMPBELL-FOR FAST REACTORS.	CURRENT DATA FILE NEEDS IMPROVEMENT BUT ACCURACY REQUIREMENT PROBABLY NOT MET BY AVAILABLE EXPERIMENTAL DATA, SO MEASUREMENTS REQUESTED.
32 U238	SNF(E)	THRESH-5MEV	3PC	1	C.G.CAMPBELL-FOR FAST REACTORS. SUBSEQUENT TO THE EVALUATION FOR U235 FISSION DATA.	NEW ITEM. SOWERBY ET AL.-AERE/R7273 CURRENTLY UNDER REVISION NEW EVALUATION REQUIRED TO TAKE ACCOUNT OF MEASUREMENTS RECENTLY COMPLETED.
33 U238	G SPEC FROM NGT(E,EG)	0.025EV -5MEV	20PC	3	C.G.CAMPBELL-ACTIVATION AND HEAT RELEASE IN CORE	RESONANCE DATA AVAILABLE TO ABOUT 300EV, THOMAS-AERE. EVALUATION NEEDED, BUT ACCURACY REQUIREMENT PROBABLY NOT MET BY AVAILABLE EXPERIMENTAL DATA. NO WORK PLANNED.
34 NP237	SNF(E)	THERMAL -5MEV	5PC	2	C.G.CAMPBELL, J.G.TYROR-DETECTOR APPLICATIONS.	NOTE REDUCED PRIORITY. DISCREPANCIES BETWEEN HART EVAL. AND ENDF/B2 MAT1048 HAVE YET TO BE RESOLVED.
35 PU239	SNA(E)	0.01-0.8EV	1PC (B-1.5E)	1	J.G.TYROR-FOR THERMAL REACTORS.	NOTE REDUCED ENERGY RANGE. DATA AVAILABLE ABOVE 0.8EV.PATRICK -AERE AND MATHER-AWRE,AERE-R7273.
36 PU239	SNF(E)	100EV-5MEV	3PC	1	C.G.CAMPBELL-FOR FAST REACTORS.	NEW ITEM. SOWERBY ET AL.-AERE/R7273 CURRENTLY UNDER REVISION . NEW EVALUATION REQUIRED TO TAKE ACCOUNT OF MEASUREMENTS RECENTLY COMPLETED.

TABLE 2-EVALUATIONS NEEDED.

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE-GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
37 PU239	ALPHA(E)	0.1-100KEV	10PC (E-2E)	3	C.G.CAMPBELL-FOR FAST REACTORS.	NEW ITEM.
38 PU240	SNU+(E,E*,L)	THRESHOLD -4MEV	40PC	2	C.G.CAMPBELL-FOR FAST REACTORS.	SOME DATA AVAILABLE, A.B.SMITH ET AL.-ANL. EVALUATION NEEDED.
39 PU240	SNG(E)	100EV-40KEV	8PC (E-2E)	2	C.G.CAMPBELL-FOR FAST REACTORS.	NEW ITEM.
40 PU240	SNG(E) OR ALPHA(E)	40KEV-1MEV	10PC	3	C.G.CAMPBELL-FOR FAST REACTORS.	NEW ITEM. DISCREPANCIES RESOLVED, MOXON-AERE. NEW EVALUATION REQUIRED.
41 PU241	ETA(E)/ ETA(E0)	0.01-1EV 1-15EV	2PC 6PC	2	J.G.TYROR -FOR THERMAL REACTORS.	CURRENT DATA FILE NEEDS IMPROVEMENT BUT ACCURACY REQUIREMENT IS NOT MET BY AVAILABLE EXPERIMENTAL DATA, SO MEASUREMENTS REQUESTED.
42 PU242	SNG(E)	0.01-4.0EV	10PC	2	J.G.TYROR-FOR STUDIES OF PLUTONIUM RECYCLE	NO WORK PLANNED.
43 AM241	SNA RESINTNA	THERMAL 0.55EV-2MEV	10PC 10PC	2	J.G.TYROR-FOR STUDIES OF PLUTONIUM RECYCLE	THERMAL DATA AVAILABLE (590+/-50 B) SOWERBY ET AL.EANDC(UK) 151 L P.29
44 AM242	SNA RESINTNA	THERMAL 0.55EV-2MEV	10PC 10PC	2	J.G.TYROR-FOR STUDIES OF PLUTONIUM RECYCLE	SOME DATA AVAILABLE, SOWERBY ET AL. AERE. EANDC(UK)151 L P.29.
45 AM242	SNF RESINTNF	THERMAL 0.55EV-2MEV	10PC 10PC	2	J.G.TYROR-FOR STUDIES OF PLUTONIUM RECYCLE	THERMAL DATA AVAILABLE 955C+/-110CB SOWERBY ET AL. EANDC(UK)151 L P.293

TABLE 2-EVALUATIONS NEEDED.

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE- GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
46 AM243	SNA RESINTNA	THERMAL 0.55EV-2MEV	10PC 10PC	2	J.G.TYROR-FOR STUDIES OF PLUTONIUM RECYCLE	
47 CM242	SN2N SNF SNG	THRESH-15MEV THRESH-15MEV THRESH-15MEV	30PC 30PC 30PC	1	C.G.CAMPBELL- FOR FAST REACTORS.	DATA FILE DFN 1004 GIVES FISS. AND CAPTURE DATA FROM 1KEV TO 10KEV, SOWERBY ET AL. EANDC(UK)151 L P.29.
48 H2O	TSL(E,E*,L)	THERMAL (20-600 DEG.C)		3	J.G.TYROR -FOR THERMAL REACTORS.	EVALUATION AVAILABLE, BUTLAND-AEEW-R814. AWAITING COMPARISON WITH CHALK RIVER MEASUREMENTS. SEE ALSO EANDC(UK)151 L P.47.
49 D2O	TSL(E,E*,L)	THERMAL (20-600 DEG.C)		3	J.G.TYROR-FOR THERMAL REACTORS.	EVALUATION OF CURRENT WIMS GROUP-DATA, BUTLAND AEEW-R685. EXTENSION OF PRESENT WIMS-HONECK MODEL TO HIGHER TEMPERATURES IN PROGRESS, BUTLAND-AEEW.
50 UO2	TSL(E,E*,L)	THERMAL (20-2800 DEG. C)		2	J.G.TYROR-FOR THERMAL REACTORS.	AVAILABLE EXPERIMENTAL DATA PROBABLY ADEQUATE WITH HELP OF THEORY. PRELIMINARY WORK AVAILABLE, TO BE PUBLISHED BUTLAND-AEEW.

THE PREVIOUS EDITION OF THE UK REQUEST LIST INCLUDED IN THE SAME TABLE BOTH FISSION AND FUSION REQUIREMENTS. THIS PROCEEDURE APPEARS TO HAVE BEEN SOMEWHAT PRECIPITATE IN VIEW OF THE UNDEFINED NATURE OF THOSE PROBLEMS ASSCCIATED WITH FUSION REACTORS. ACCORDINGLY, IT WAS DECIDED TO PRESENT THE FUSION REQUIREMENTS AS A SEPARATE TABLE, AND AFTER SOME DELIBERATION, THE LIST OF FUSION REQUESTS HAS BEEN SUBSTANTIALLY REVISED.

THE CURRENT LIST IS PRESENTED AS TABLE 3 OF THIS REPORT. SOME PAINS WERE TAKEN TO IDENTIFY THE MORE IMPORTANT NUCLEAR REQUIREMENTS,HOWEVER THE AVAILABLE DATA SHOULD BE FULLY ASSESSED IN EACH CASE BEFORE ASSERTING THAT EXPERIMENTAL MEASUREMENTS ARE ESSENTIAL.

TABLE 3 - REQUIREMENTS FOR FUSION REACTORS.

1 ITEM NO.& MATERIAL		2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE-GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
1	LI6	SNN(E,L)	1KEV-15MEV	20PC	3	R.HANCOX-FOR CTR WORK.	
2	LI6	SNN*(E*,L)	THRESH-15MEV	20PC	3	R.HANCOX-FOR CTR WORK.	
3	LI6	N SPEC FROM NN*(E,E*)	THRESH-15MEV	20PC	3	R.HANCOX-FOR CTR WORK#	
4	LI7	SNN(E,L)	1KEV-15MEV	15PC	3	R.HANCOX-FOR CTR WORK.	
5	LI7	N SPEC FROM NN*(E,E*)	THRESH-15MEV	20PC	3	R.HANCOX-FOR CTR WORK.	
6	BE9	SN2N(E)	THRESH-15MEV	20PC	3	R.HANCOX-FOR CTR WORK.	
7	F19	SNA(E)	THERMAL-15MEV	10PC	3	R.HANCOX-FOR CTR WORK.	
8	F19	SNN*(E)	10-15MEV	20PC	3	R.HANCOX-FOR CTR WORK.	
9	F19	SN2N(E)	THRESH-15MEV	20PC	3	R.HANCOX-FOR CTR WORK.	
10	FE	SNN*(E,E*,L)	THRESH-15MEV	20PC	3	R.HANCOX-FOR CTR WORK.	

TABLE 3 - REQUIREMENTS FOR FUSION REACTORS.

1 ITEM NO.& MATERIAL		2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE-GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
11	FE	SNN*(E,EG,L)	THRESH-15MEV	20PC	3	R.HANCOX-FOR CTR WORK.	
12	FE	SNGT(E,EG,L)	THERMAL-15MEV	10PC	3	R.HANCOX-FOR CTR WORK.	
13	FE	SN2N(E)	THRESH-15MEV	10PC	3	R.HANCOX-FOR CTR WORK.	
14	FE	SNP(E)	THRESH-15MEV	20PC	3	R.HANCOX-FOR CTR WORK.	
15	FE	SNALPHA(E)	THRESH-15MEV	20PC	3	R.HANCOX-FOR CTR WORK.	

TABLE 4 - ITEMS REMOVED FROM PREVIOUS MEASUREMENT REQUEST LIST.

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE-GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
1 LI6	SNN*(E*,L)	14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
2 LI6	N SPEC FROM NN*(E,E*)	THRESH-14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
3 LI7	N SPEC FROM NN*(E,E*)	THRESH-14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
4 B10	SNA(E)	0.2-1MEV 1-5MEV	5PC 10PC	3	C.G.CAMPBELL-FOR FAST REACTORS.	REQUIREMENT MET, SEE GULF-RT-A1221
5 F19	SNN*(E)	10-14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
6 F19	SNA(E)	THERMAL-14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
7 NB93	SN2N(E*,L)	14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
8 NB94	SNG	14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
9 MO	G SPEC FROM NN*(EG)	14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
10 MO	SN2N(E*,L)	14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.

TABLE 4 - ITEMS REMOVED FROM PREVIOUS MEASUREMENT REQUEST LIST.

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE- GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
11 MO	SNG(E)	THERMAL-14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
12 MO	G SPEC FROM NGT(EG)	14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
13 MO	SNP(E)	THRESH-14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
14 MO	SNALPHA(E)	THRESH-14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
15 RH103	SNACT (2.6DAY RH102) (2.9YR RH102)	FISS.SPEC. AVERAGE	10PC	2	A.WHITTAKER-FOR DOSE RATE ESTIMATES.	WITHDRAWN. DATA BY FRANCOIS ET AL. JINC 35, 389 (1973) ARE ADEQUATE.
16 U233	NUBAR(E)	10KEV-5MEV	1PC	3	C.G.CAMPBELL-FOR FAST REACTORS.	REQUIREMENT MET,SEE MANERO AND KONSHIN-INDC(NDS)-34/G
17 PU240	SNG(E)	10MEV-40KEV	8PC (E-2E)	2	C.G.CAMPBELL-FOR FAST REACTORS.	WITHDRAWN. DISCREPANCY RESOLVED, MOXON-AERE.
18 PU240	SNG(E) OR ALPHA(E)	40KEV-1MEV	10PC	3	C.G.CAMPBELL-FOR FAST REACTORS.	DISCREPANCIES RESOLVED, MOXON-AERE. NEW EVALUATION REQUIRED.

TABLE 5 - ITEMS REMOVED FROM PREVIOUS EVALUATION REQUEST LIST.

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE- GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
1 LI6	SNN(E,L)	5-14MEV	15PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
2 LI6	SNN*(E,E*)	THRESH-14MEV	15PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
3 LI6	SNALPHA(E)	THERMAL-14MEV	1-5PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
4 LI7	SNN(E,L)	THERMAL-14MEV	15PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
5 LI7	SNN*T(E)	3-14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
6 LI7	SNN*T(E,L)	THRESH-14MEV	15PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
7 BE9	SN2N(E)	THRESH-14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
8 C	SNN*3ALPHA(E)	THRESH-14MEV	20PC	3	S.BLOW FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
9 C	TSL(E,E*,L)	THERMAL (20-3000 DEG.C)		1	J.G.TYROR-TO IMPROVE GCR MARK 3 TEMP. COEFFICIENT CALCULATIONS.	REQUIREMENT MET, BUTLAND-AEEW. SEE DFN-922.
10 N	SNN(E,L) SNN*(E,E*,L)	UP TO 14MEV	10PC 5PC	3	J.BUTLER- AIR SCATTERING CALCULATIONS.	REQUIREMENT MET. ENDF/B3 MAT-1133 CONVERTED TO UKNDL FORMAT DFN-962.

TABLE 5 - ITEMS REMOVED FROM PREVIOUS EVALUATION REQUEST LIST.

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE- GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
11 F19	SNN*(E)	10-14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
12 F19	SNA(E)	THERMAL-14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
13 NA23	SNN(E,L) SNN*(E,E*,L)	0.4-1MEV THRESHOLD -10MEV	20PC	2	C.G.CAMPBELL-FOR FAST REACTORS.	REQUIREMENT MET-ENDF/B2 MAT-1059 CONVERTED TO UKNDL FORMAT DFN-93 BY MACDOUGALL-AEEW.
	SNG(E)	100EV-10KEV	10PC			
		10-100KEV	20PC			
14 NA23	SNN(E,L)	40EV-10MEV	10PC	3	J.BUTLER, C.G.CAMPBELL-FAST REACTOR SHIELDING.	REQUIREMENT MET. ENDF/B2 MAT-1059 CONVERTED TO UKNDL FORMAT DFN-93 BY MACDOUGALL-AEEW.
15 NA23	SNN*(E,E*)	40EV-10MEV	5PC	3	J.BUTLER- FOR REACTOR SHIELDING.	REQUIREMENT MET. ENDF/B2 MAT-1059 CONVERTED TO UKNDL FORMAT DFN-93 BY MACDOUGALL-AEEW.
16 AL27	G SPEC FROM NGT(EG)	14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
17 AL27	G SPEC FROM NN*(EG)	14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
18 AL27	SN2N(E*,L)	14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
19 AL27	SNG(E)	THERMAL-14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.

TABLE 5 - ITEMS REMOVED FROM PREVIOUS EVALUATION REQUEST LIST.

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATEGORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
20 AL27	SNP(E)	THRESH-14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
21 AL27	SNALPHA(E)	THRESH-14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
22 V	G SPEC FROM NGT(EG)	14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
23 V	SNN(E) SNN*(E,E*)	100EV-5MEV THRESH-5MEV	10PC 20PC	1	C.G.CAMPBELL- FOR FAST REACTORS.	REQUIREMENT MET. ENDF/B2 MAT-1017 CONVERTED TO UKNDL FORMAT DFN-952 CAMERON AWRE.
24 V	G SPEC FROM NN*(EG)	14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
25 V	SN2N(E*,L)	14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
26 V	SNG(E)	THERMAL-14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
27 V	SNP(E)	THRESH-14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
28 V	SNALPHA(E)	THRESH-14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
29 CR	G SPEC FROM NGT(EG)	14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
30 CR	G SPEC FROM NN*(EG)	14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.

TABLE 5 - ITEMS REMOVED FROM PREVIOUS EVALUATION REQUEST LIST.

1 ITEM NO.& MATERIAL		2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE-GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
31	CR	SN2N(E*,L)	14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
32	CR	SNG(E)	THERMAL-14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
33	CR	SNP(E)	THRESH-14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
34	CR	SNALPHA(E)	THRESH-14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
35	FE	G SPEC FROM NGT(EG)	14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
36	FE	G SPEC FROM NN*(EG)	14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
37	FE	SN2N(E*,L)	14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
38	FE	SNG(E)	THERMAL-14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
39	FE	SNP(E)	THRESH-14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
40	FE	SNALPHA(E)	THRESH-14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
41	NI	G SPEC FROM NGT(EG)	14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.

TABLE 5 - ITEMS REMOVED FROM PREVIOUS EVALUATION REQUEST LIST.

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE-GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
42 NI	G SPEC FROM NN*(EG)	14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
43 NI	SN2N(E*,L)	14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
44 NI	SNG(E)	THERMAL-14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
45 NI	SNP(E)	THRESH-14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
46 NI	SNALPHA(E)	THRESH-14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT FUSION REQUIREMENTS. SEE TA
47 CU	G SPEC FROM NGT(EG)	14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
48 CU	G SPEC FROM NN*(EG)	14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
49 CU	SN2N(E*,L)	14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
50 CU	SNG(E)	THERMAL-14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
51 CU	SNP(E)	THRESH-14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
52 CU	SNALPHA(E)	THRESH-14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.

TABLE 5 - ITEMS REMOVED FROM PREVIOUS EVALUATION REQUEST LIST.

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE-GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
53 NB93	G SPEC FROM NGT(EG)	14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
54 NB93	G SPEC FROM NN*(EG)	14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
55 NB93	SN2N(E*,L)	14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
56 NB93	SNG(E)	THERMAL-14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
57 NB93	SNP	THRESH-14MEV	20PC	3	S.BLOW FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
58 NB93	SNALPHA	THRESH-14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
59 NB94	SNG	14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
60 MO	G SPEC FROM NGT(EG)	14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
61 MO	G SPEC FROM NN*(EG)	14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
62 MO	SN2N(E*,L)	14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
63 MO	SNG(E)	THERMAL-14MEV	10PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.

TABLE 5 - ITEMS REMOVED FROM PREVIOUS EVALUATION REQUEST LIST.

1 ITEM NO.& MATERIAL		2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE- GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
64	MO	SNP(E)	THRESH-14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
65	MO	SNALPHA(E)	THRESH-14MEV	20PC	3	S.BLOW-FOR CTR WORK.	WITHDRAWN AFTER REASSESSMENT OF FUSION REQUIREMENTS. SEE TABLE 3.
66	DY164	RESONANCE AND SNG(E)	BELOW 100EV -10MEV	BEST	3	J.G.TYROR-FOR THERMAL REACTORS.	REQUIREMENT MET. ENDF/B3 MAT-1138 AND MAT-1139 CONVERTED TO UKNDL FORMAT DFN-973 AND DFN-974.
67	DY164	PARAMETERS		AVAIL.	0	REACTORS.(DETECTOR)	REQUIREMENT MET. ENDF/B3 MAT 1031.
68	LU176	RESONANCE PARAMETERS	BELOW 200EV	BEST AVAIL.	2	J.G.TYROR-FOR THERMAL REACTORS.(DETECTOR)	WITHDRAWN. ENDF/B3 MAT 1032 ADEQUAT
69	PU241	SNN*(E,E*,L)	THRESHOLD -4MEV	40PC	2	C.G.CAMPBELL FOR FAST REACTORS.	REQUIREMENT MET. DFN-402,RIBON-SACLAY.
70	AM241	SN2N SNF SNG	THRESH-15MEV THRESH-15MEV THERMAL-15MEV	20PC 20PC 20PC	1	C.G.CAMPBELL- FOR FAST REACTORS.	REQUIREMENT MET. ENDF/B2 MAT CONVERTED TO UKNDL FORMAT DFN-956 CAMERON-AWRE.
71	AM242	SN2N SNF SNG	THRESH-15MEV THRESH-15MEV THERMAL-15MEV	30PC 30PC 30PC	1	C.G.CAMPBELL- FOR FAST REACTORS.	REQUEST SHOULD HAVE BEEN FOR AM243, HOWEVER THAT REQUIREMENT HAS BEEN MET BY CONVERTING ENDF/B2 MAT- TO UKNDL FORMAT DFN-957.

APPENDIX

FUNDAMENTAL ACCURACY REQUIREMENTS FOR FAST NEUTRON REACTORS

SOME INDICATION OF THE ACCURACIES WHICH WOULD BE NEEDED FOR BASING FAST REACTOR CALCULATIONS SOLELY ON DIFFERENTIAL MEASUREMENTS IS GIVEN IN THE FOLLOWING LIST. THESE ACCURACIES ARE UNOBTAINABLE WITH EXISTING MEASUREMENT TECHNIQUES, AND THE DESIRED ACCURACY OF CALCULATION IS PRESENTLY OBTAINED ONLY BY ADJUSTMENT OF DATA AFTER COMPARISON WITH INTEGRAL MEASUREMENTS.

HIGH ACCURACY REQUIREMENTS.

1 ITEM NO.& MATERIAL		2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE- GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
1	FE	SNN*(E,E*,L)	THRESH-4MEV	3PC	3	FOR FAST REACTORS	SEE REMARKS AT HEAD OF APPENDIX.
2	U235	SNF(E)	40KEV-1MEV	0.5PC	3	FOR FAST REACTORS.	SEE REMARKS AT HEAD OF APPENDIX.
3	U235	ALPHA(E)	1KEV-40KEV	2PC (6-2E)	3	FOR FAST REACTORS.	SEE REMARKS AT HEAD OF APPENDIX.
4	U238	SNN*(E,E*,L)	THRESH-4MEV	3PC	3	FOR FAST REACTORS	SEE REMARKS AT HEAD OF APPENDIX.
5	U238	SNF(E)	THRESH-3MEV	1PC	3	FOR FAST REACTORS	SEE REMARKS AT HEAD OF APPENDIX.
6	U238	NUBAR(E)	THRESH-5MEV	0.5PC	3	FOR FAST REACTORS	SEE REMARKS AT HEAD OF APPENDIX.
7	U238	SNG(E)	40KEV-1MEV	1PC	3	FOR FAST REACTORS.	SEE REMARKS AT HEAD OF APPENDIX.

HIGH ACCURACY REQUIREMENTS.

1 ITEM NO.& MATERIAL	2 PARAMETER	3 ENERGY RANGE	4 ERROR	5 CATE- GORY	6 REQUESTERS NAME & COMMENTS	7 STATUS OF WORK
8 PU239	SNF(E)	1KEV-40KEV 40KEV-1MEV 1MEV-5MEV	0.5-3PC (E-2E) 0.5PC (E-2E) 0.5-5PC (E-2E)	3	FOR FAST REACTORS.	SEE REMARKS AT HEAD OF APPENDIX.
9 PU239	ALPHA(E)	1KEV-40KEV	2PC (E-2E)	3	FOR FAST REACTORS.	SEE REMARKS AT HEAD OF APPENDIX.
10 PU239	NUBAR(E)	40KEV-4MEV	0.5PC	3	FOR FAST REACTORS	SEE REMARKS AT HEAD OF APPENDIX.

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