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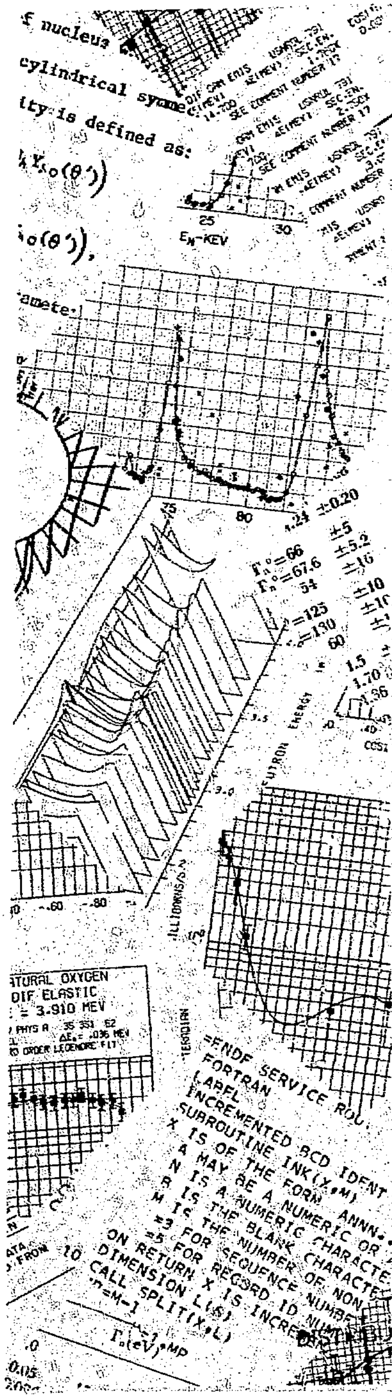

ENDF/B-IV CROSS SECTION MEASUREMENT STANDARDS

B.A. MAGURNO

August 1975

MASTER

INFORMATION ANALYSIS CENTER REPORT

NATIONAL NEUTRON CROSS SECTION CENTER
BROOKHAVEN NATIONAL LABORATORY
UPTON, NEW YORK 11973

National
Neutron
Cross
Section
Center

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(ENDF-225)
(Physics, General - TID-4500)

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BROOKHAVEN NATIONAL LABORATORY

ASSOCIATED UNIVERSITIES, INC.

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I. Introduction

This report contains a brief description of the cross sections in the Evaluated Nuclear Data File (ENDF/B) designated as standards by the Normalization and Standards Subcommittee of the Cross Section Evaluation Working Group (CSEWG). The Subcommittee met at Los Alamos Scientific Laboratory (LASL) on March 26-27, 1973 to review the status of and make recommendations regarding the measurements standards cross section to be included in Version IV. The conclusions of this meeting are reflected in the summary documentation.

In most cases, only limited documentation is available at this time. Completed documentation is referenced where available, and detailed summaries of the up-dated standards should be available from the authors in the near future. This report is intended to provide background information at this time for the recently issued library. These data are available on request from the four international neutron data centers*. Each standard described here (excepting carbon) includes at least the File 1 comments (i.e., the Hollorith description appearing on the File (MF=1 MT=451), the data listing of the reaction considered a standard, and graphical comparisons of the evaluation with selected experimental data.

Table I lists the standards cross sections, the energy range as defined by the Normalization and Standards Subcommittee, MAT number, reaction type, and responsible laboratory. The laboratory for the ${}^{235}_{92}U(n,f)$ is listed only as "Task Force", and will be explained in section II-G of this report.

*(See overleaf)

Neutron Data Centers

* Nuclear Data Section
I.A.E.A.
Karntner Ring
A-1010 Vienna
AUSTRIA

NEA Neutron Data Compilation Centre
B.P. 9
91190 Gif-sur-Yvette
FRANCE

U.S.S.R. Obninsk
Kaluga Region
Institute of Physics & Energetics

National Neutron Cross Section Center
Brookhaven National Laboratory
Associated Universities, Inc.
Upton, L.I., N.Y. 11973

TABLE I

Material	MAT#	Reaction Type	Energy Range	LAB
^{1}H	1269	$\sigma_{n,n}$	1 keV - 20 MeV	LASL
		σ_{Θ}	1 - 20 MeV	
^{3}He	1146	$\sigma_{n,p}$	1 keV - 50 keV	LASL
^{6}Li	1271	$\sigma_{n,\alpha}$	Thr - 100 keV	LASL
^{10}B	1273	$\sigma_{n,\alpha}$	Thr - 100 keV	LASL
^{12}C	1274	σ_{Θ}	1 keV - 2 MeV	ORNL
^{197}Au	1283	$\sigma_{n,\gamma}$	Thr; 10 keV -- 1 MeV	BNL
^{235}U	1261	$\sigma_{n,f}$	Thr; 100 keV - 20 MeV	Task Force

II Description of Recommended Standards

A. Hydrogen Total and Differential Elastic Scattering Cross Sections.

L. Stewart, R.J. LaBauve and P.G. Young,
Los Alamos Scientific Laboratory

MAT. No. = 1269.

Recommended Energy Range 1 keV - 20 MeV

The recommended cross section covers the energy range 1 keV-20 MeV. It is the same evaluation as ENDF/B-III, but σ_T has been regenerated to a higher precision. It should be noted that two new experiments have been carried out since the appearance of the Version-III evaluation, those of Clement et.al.(1) (R.P.I) and Heaton et.al.(2) (NBS). The Normalization and Standards Subcommittee felt that the new data did not add to the knowledge of the total cross section at the 1% accuracy level. Fig. I shows these two data sets compared with the ENDF/B-IV evaluation.

The total cross section is taken as the sum of the elastic scattering and radiative capture cross sections. The elastic scattering cross section was obtained from a theoretical analysis by Hopkins and Breit.(3) A set of phase shifts obtained by Seamon et.al.,(4) was used in this analysis.

The recommended differential elastic scattering covers the energy range 1-20 MeV and was also obtained from the Hopkins and Breit phase shifts.(3) Additional low and intermediate energy points were calculated for the Version IV data.

References

1. Clement and Stoler, Nuc. Phys/A 183, 51, 1972.
2. Heaton et.al., P.C. 1971.
   Schwartz et.al., NBS Monograph 138, 1974.
3. Hopkins and Breit, Nuc. Data A9, 137, 1971.
4. Seamon et.al., Phys. Rev. 165, 1579, 1968.

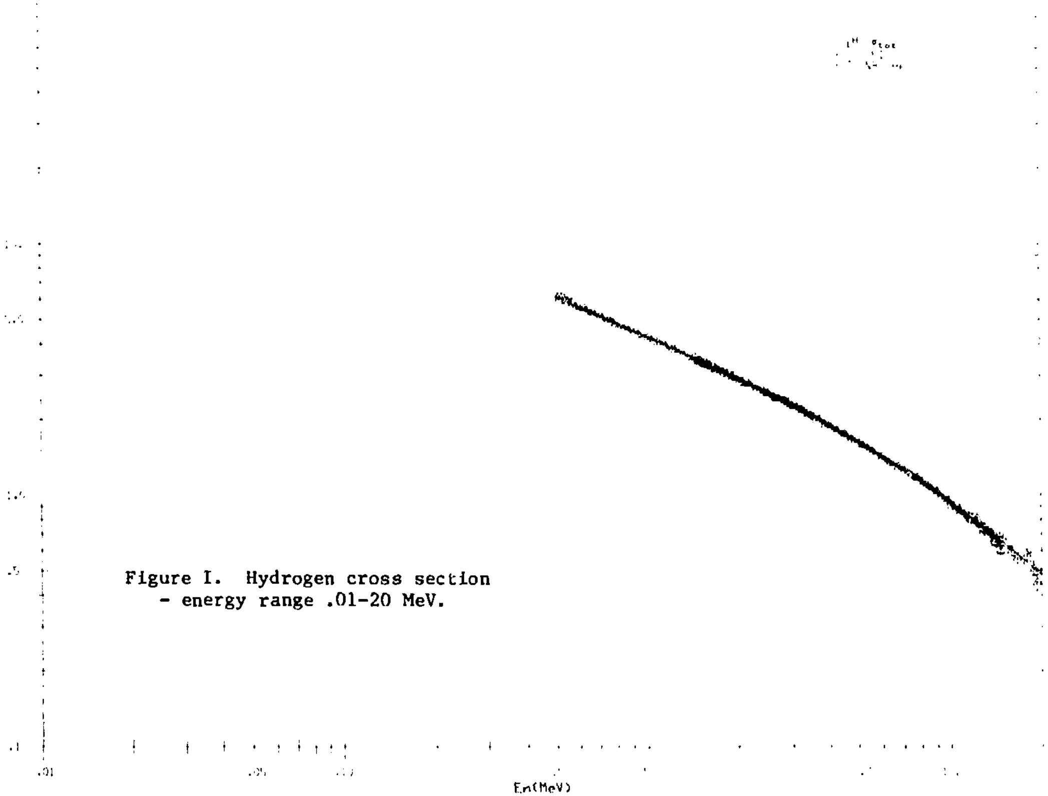


Figure I. Hydrogen cross section - energy range .01-20 MeV.

B. ## $^{3}He(n,p)$ Cross Section

L. Stewart,
Los Alamos Scientific Laboratory.

MAT. No.= 1146

Recommended Energy Range Thr-50 keV.

This material was transferred from ENDF/B-III with no modifications. The preliminary description below is extracted and reproduced from the Version-III Standards Report BNL 17188.[1]

"Although this material contains all of the cross section data for ^{3}He, only the (n,p) cross section from 1.0×10^{-5} eV to 50.0 keV represents the recommended standard cross section.

Below one keV, the (n,p) cross section was assumed to vary as 1/v and normalized to 5327 barns at 0.0253 eV. This value was obtained from the measurement by Als-Nielsen and Dietrich.[2] The thermal cross section is believed to be known to within one percent.

Between 1 keV and 50 keV, the recommended standard cross section was based on the corrected results from a measurement made by Gibbons and Macklin.[3] Below 10 keV, the recommended (n,p) is believed to be known to within 3%. Above 10 keV, the uncertainty in the recommended cross section rapidly increases beyond the desired three percent. Figure II shows the recommended cross section."

References

1. M.K. Drake, BNL 17188 (ENDF-179) July 1972.
2. Als-Nielsen and Dietrich, Phys. Rev. 133B, 925, 1964.
3. Gibbons and Macklin, Phys. Rev. 114, 571, 1959.
4. Batchelor et.al., Rev. Sci. Inst. 27, 1037, 1955.

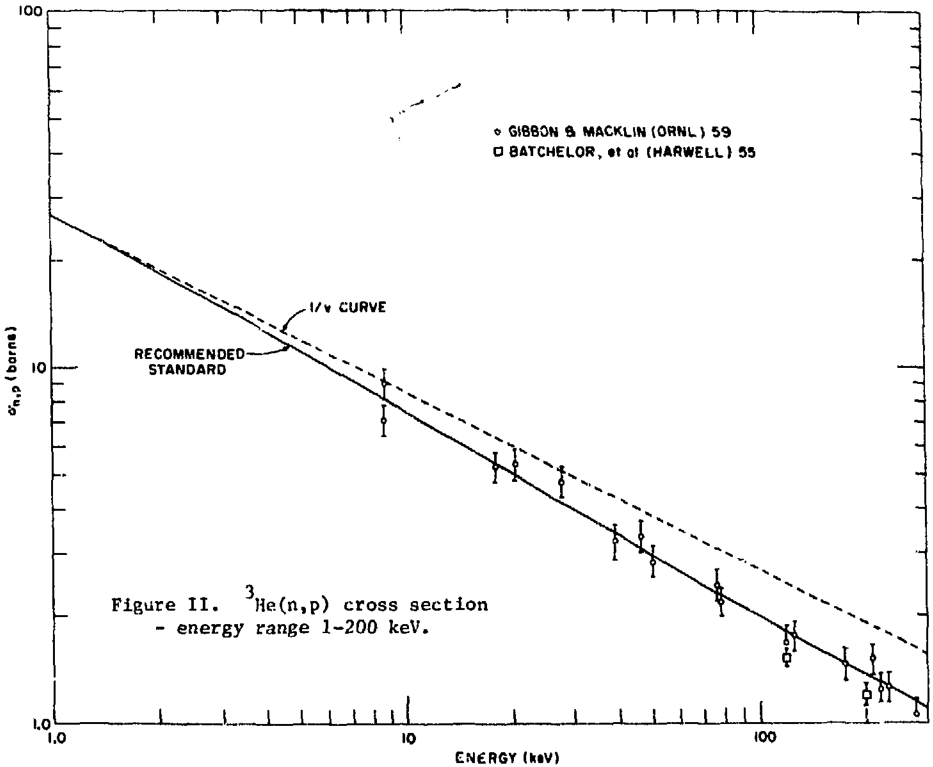


Figure II. ^{3}He(n,p) cross section - energy range 1-200 keV.

C. $^{6}Li(n,\alpha)^{3}H$ Cross Section

G. M. Hale, D. Dodder, P.G. Young, and L. Stewart,
Los Alamos Scientific Laboratory

MAT. No. = 1271

Recommended Energy Range Thr.-100 keV; σ_{2200} = 940.00 b.

The ENDF/B-IV cross section set is based on a multi-level, multi-channel R-MATRIX analysis of the total, elastic, and (n, alpha) cross sections for energies up to 2 MeV and is briefly described in the Hollorith section (MF=1, MT=451) of the Lithium-6 data set on pages 63-66 . The $\sigma_{n,\alpha}$ cross section evaluation is plotted in Fig.III, and compared to experimental data. The references are listed immediately following Fig.III. It can be seen from Fig.III, that there is excellent agreement between the experimental data and the evaluation up to 50 keV. Above 50 keV the evaluation lies between the data of Friesenhahn,[1] and the data sets of Fort,[2] and Coates.[3] The disagreement across the 243 keV resonance precludes the use of this cross section as a standard above 100 keV at this time.

References

1. Friesenhahn et.al., INTEL-RT-7011, 1974.
2. M.S. Coates, Priv. Comm., 1973.
3. Fort et.al., EANDC-(E)-148 1972.

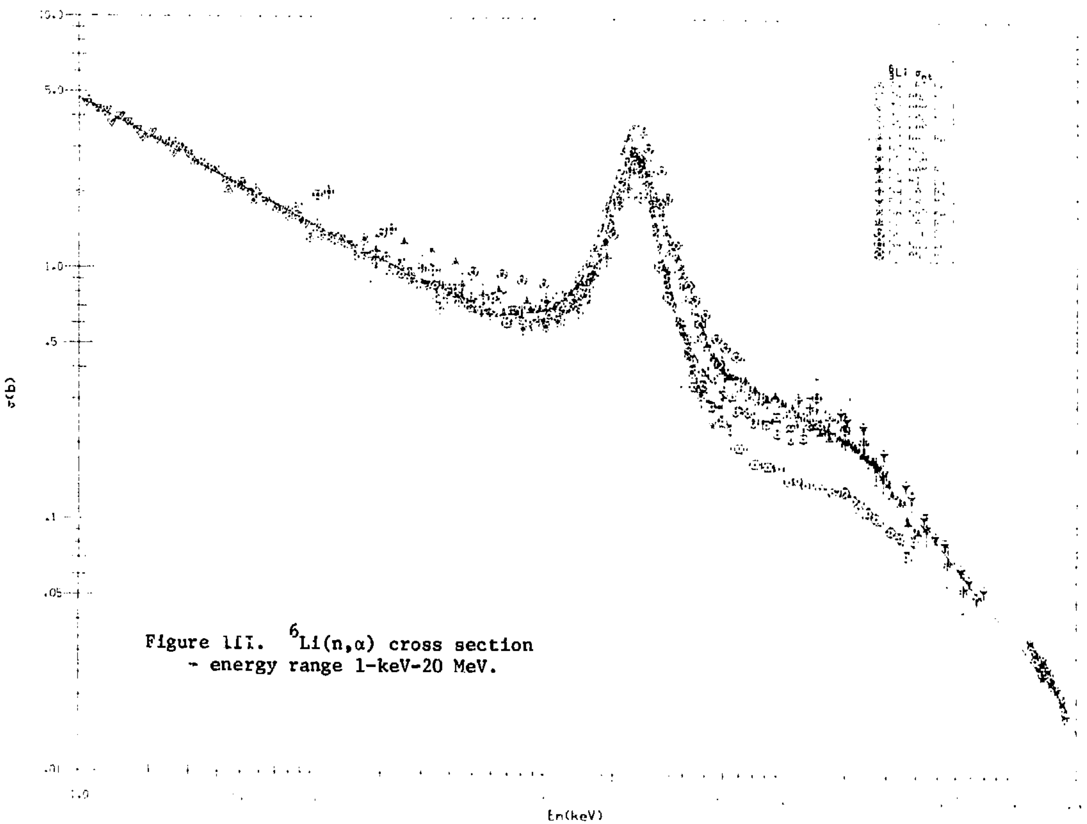


Figure III. $^{6}Li(n,\alpha)$ cross section
- energy range 1-keV-20 MeV.

REFERENCES FOR EXPERIMENTAL DATA

^{6}Li(n,t)

Yr.	Lab	Author	References
74	GRT	Friesenhahn, et al.	INTEL-RT-7011 (1974)
74	ANL	Poenitz	Priv. Comm. (1974)
73	HAR	Coates	Priv. Comm. (1973)
72	CAD	Fort, et al.	EANDC-(E)-148 (1972)
72	HAR	Clements, et al.	AERE-R-7075 (1972)
67	RBZ	Rendic, et al.	ZFK-130, 143 (1967)
67	ALD	Cox, et al.	J. Nuc. En. 21, 271 (1967)
66	ALD	Barry	Conf. Neutron Cross Sections and Tech., Washington D.S. Vol II, 763 (1966)
65	FOA	Condé, et al.	Ark. Fiz. 29, 45 (1965)
65	FOA	Schwartz, et al.	Nuc. Phys. 63, 593 (1965)
61	CCP	Mikailina, et al.	Sov. Prog. Nuc. Phys. p.185 (1961)
60	HAM	Bormann, et al.	Zeit. Nat. /A 15, 200 (1960)
60	CCP	Perelygin, et al.	At. En. 9, 488 (1960)
59	NWU	Pardo, et al.	Bull. Am. Phys. Soc. 4, 218 (1959)
59	RIC	Gabbard, et al.	Phys. Rev. 114, 201 (1959)
59	LAS	Bame, et al.	Phys. Rev. 114, 1580 (1959)
59	ORL	Murray, et al.	Phys. Rev. 115, 1707 (1959)
58	NRD	Kern, et al.	Phys. Rev. 112, 926 (1958)
57	CCP	Elpidinskii, et al.	At. En./Supp 5, 75 (1957)
56	LAS	Ribe	Phys. Rev. 103, 741 (1956)
56	CCP	Gorlov, et al.	Dok. 111, 791 (1956)
54	LAS	Frye, Jr.	Phys. Rev. 93, 1086 (1954)
54	NWU	Weddell, et al.	Phys. Rev. 95, 117 (1954)
52	LAS	Ribe	Phys. Rev. 87, 205 (1952)
50	ANL	Blair, et al.	ANL-4515, 7 (1950)

D. $^{10}B(n,\alpha),(n,\alpha_1\gamma)$ Cross Sections

G.M. Hale, R.A. Nisley and P.G. Young,
Los Alamos Scientific Laboratory

MAT. No. = 1273

Recommended Energy Range Thr.-100 keV; σ_{2200} = 3836.5 b.

The $^{10}B(n,\alpha)$ cross section (MF=3, MT=107) for ENDF/B-IV, is the sum of $^{10}B(n,\alpha_0)$ + $^{10}B(n,\alpha_1\gamma)$ (MF=3, MT=780, 781). The partial and total cross sections were derived from an R-MATRIX analysis. The analysis is described briefly in the Hollorith section (MF=1, MT=451) of the B-10 data set on pages 70 - 74. The σ_{2200} (n,α_0)=240.51 barns and the $\sigma_{2200}(n,\alpha_1\gamma)$=3596.0 barns yield the σ_{2200} value listed above. The evaluated (n,α), $(n,\alpha_1\gamma)$ cross sections are plotted in Fig. IV - V, and compared to selected experimental data. The experimental references are listed immediately following Fig. V. There is excellent agreement in the (n,α) cross section to 100 keV and then the evaluation falls between that of Bichsel(1) and Friesenhahn.(2)

References

1. Bichsel et.al., Phys. Rev. 108, 1025, 1957.
2. Friesenhahn et.al., INTEL-RT.- 7011, 1974.

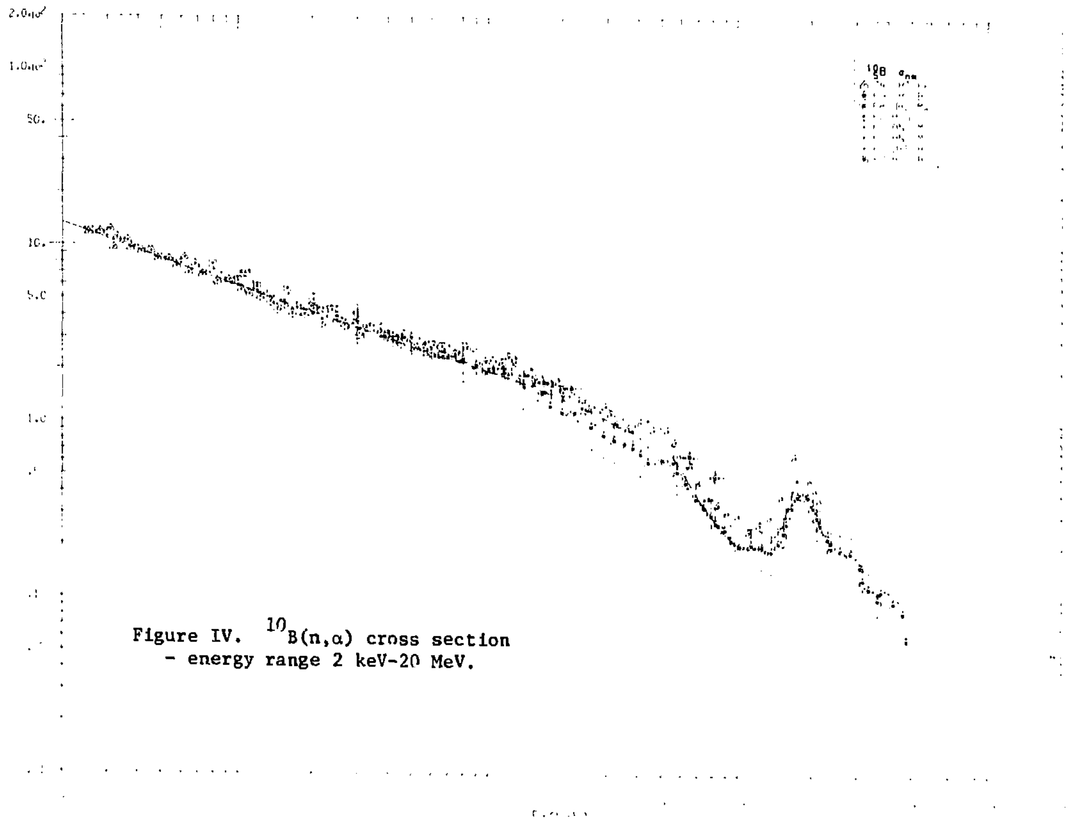


Figure IV. $^{10}B(n,\alpha)$ cross section - energy range 2 keV-20 MeV.

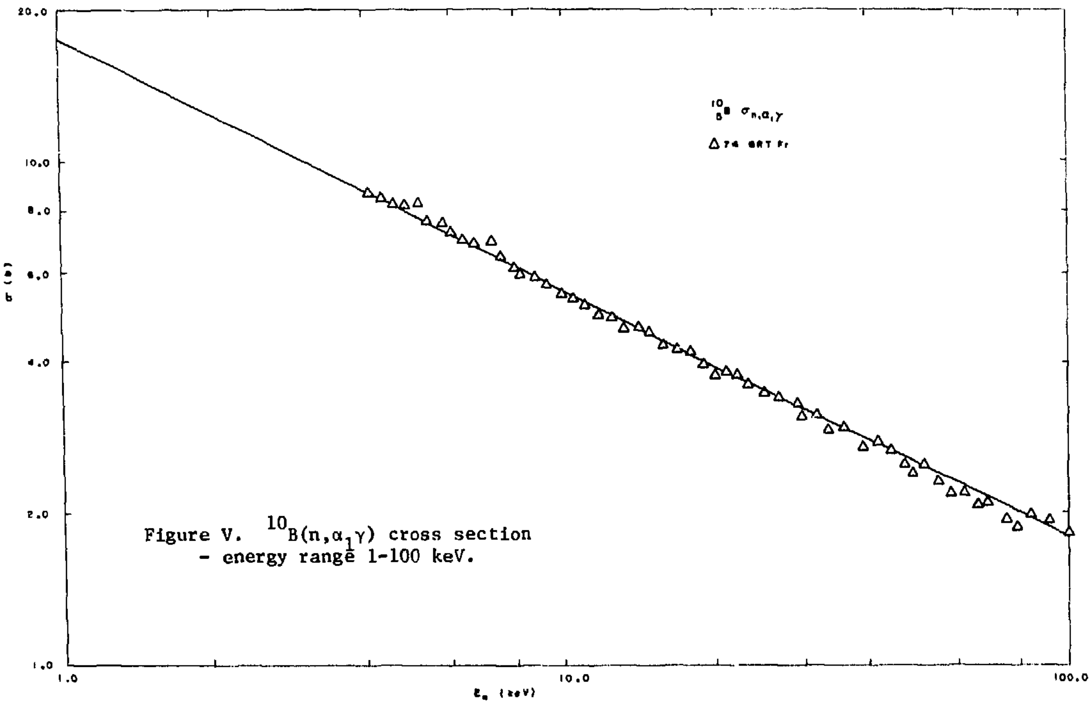


Figure V. $^{10}B(n,\alpha_1\gamma)$ cross section - energy range 1-100 keV.

REFERENCES FOR EXPERIMENTAL DATA

$^{10}B(n,\alpha)$

Yr.	Lab	Author	References
74	GRT	Friesenhahn, et al.	INTEL-AT-7011 (1974)
69	LRC	Bogart, et al.	Nuc. Phys./A 125, 463 (1969)
68	ORL	Macklin, et al.	Phys. Rev. 165, 1147 (1968)
67	ALD	Cox, et al.	J. Nuc. En. 21, 271 (1967)
65	ANL	Mooring, et al.	ANL-6877 (1965)
60	DKE	Bilpuch, et al.	An. Phys. 10, 455 (1960)
57	RIC	Bichsel, et al.	Phys. Rev. 108, 1025 (1957)

E. ^{12}C Differential Elastic Scattering Cross Section

F.G. Perey and C.Y. Fu,
Oak Ridge National Laboratory

MAT. No. - 1274

Recommended Energy Range; 1 keV - 2 MeV

The carbon-12 Differential Elastic Scattering Cross Section below 2 MeV was considered a standard for ENDF/B-III. There were only minor modifications in this energy region from Version III to Version IV. MAT. No. 1274 was incorporated in the Version IV Standards Tape (tape 413) without the scrutiny and recommendations usually afforded a standard material by the Normalization and Standards Subcommittee. Because of the bulk of the file involved, the data set does not appear in the appendices.

F. $^{197}Au(n,\gamma)$ Cross Section

M. D. Goldberg and S. F. Mughabghab
Brookhaven National Laboratory

MAT. No. = 1283

Recommended Energy Range 10 keV-1 MeV; σ_{2200} = 98.8 b

The Au evaluation has been documented and disseminated in report form; BNL 50439. The part of the evaluation dealing with the capture cross section has been extracted and the salient portion reproduced in the following eleven pages. A detailed plot of the evaluation appears in Fig.VI with selected sets of experimental data. The high energy portion of the curve has been expanded and displayed as Fig.VII. References for the data used on both plots are listed immediately after Fig. VII.

Note that the smooth cross sections in the resolved and unresolved energy regions given in Appendix E page 85 (MF=3, MT=102) are background cross sections and must be added to the cross sections generated from the resonance parameters to complete a resonance profile.

$^{197}Au(n,\gamma)^{198}Au$ Reaction for ENDF/B-IV*

M.D. Goldberg and S.F. Mughabghab

Brookhaven National Laboratory

The capture cross section in the ENDF/B-IV File below 2 keV is represented by the resonance parameters. In the energy region 2-10 keV, the capture cross section was calculated by using the average resonance parameters specified in File 2 and the code AVRAGE-4[1] which follows the method of Lane and Lynn[2] and applies width fluctuation corrections as discussed in their paper. This calculated curve is shown in Fig. 1 compared with the avail-

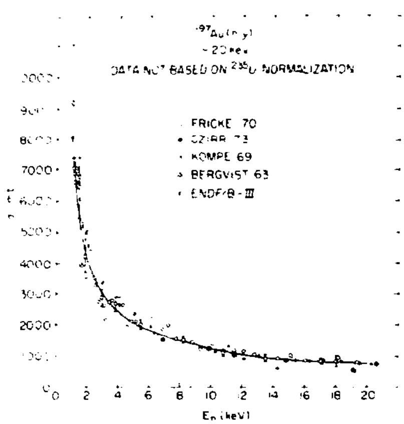


Figure 1

*Extracted from "Evaluated Neutron Cross Sections of ^{197}Au" BNL 50439 (ENDF-215) 74, S.F. Mughabghab et al.

able data in this range and with the ENDF/B-III valves between 1 and 6 keV. (The curve above 10 kev is the same as that of Fig. 4.)

For neutron energies greater than 25 keV, a reassessment of the gold capture cross section is required because of the availability of new measurements and because of a reevaluation of the ^{235}U cross section for ENDF/B-IV. Fig. 2 shows the new ^{235}U fission cross section between 25 and 100 keV. It can be immediately seen that there is considerable structure in this cross section, with fluctuations of as much as 10% or more within a kilovolt or so. Thus, its use as a standard is quite compromised unless the neutron energy and neutron energy spread are well known and accounted for. In Fig. 3 this cross section is "smeared out" by averaging points in groups of ten (effective "resolution" ∿5 keV) and compared to a similar curve for the ^{235}U fission cross section in ENDF/B-III. This plot indicates an average change in the absolute value of the cross section of 5-15%.

Since it would seem that a fluctuating cross section subject to substantial renormalization, does not make a very reliable

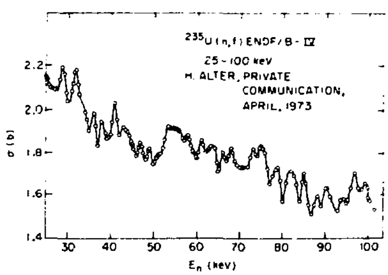


Figure 2

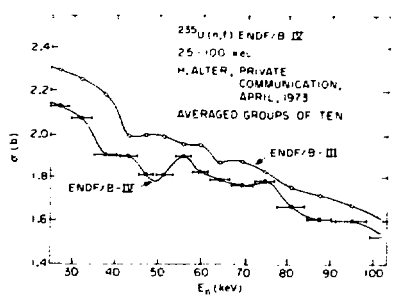


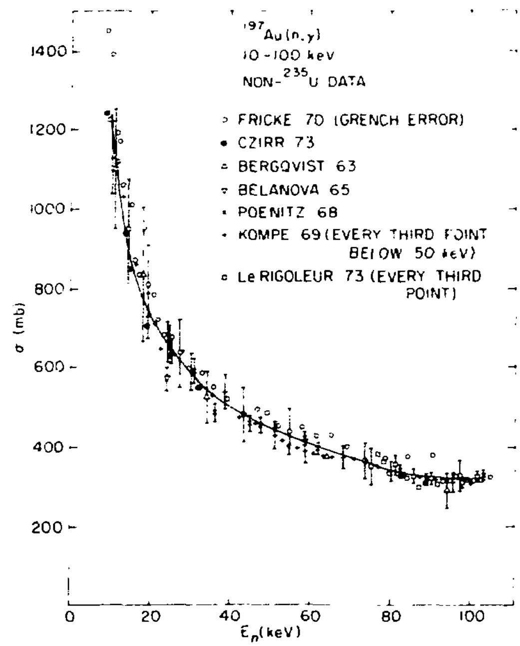
Figure 3

standard, it was decided to perform the gold capture re-evaluation with data not involving ^{235}U fission standardization. This follows the procedure adopted by Carlson[3] and by Poenitz[4] in evaluations presented at the 1970 EANDC Normalization and Standards Conference held at Argonne National Laboratory and follows the most recent recommendations of the Normalization and Standards Subcommittee of CSEWG (July 1973). Due to an abundance of excellent recent experiments, it was also arbitrarily decided that only data measured since 1960 would be considered.

The capture cross between 10-100 keV is shown in Fig. 4. The following data sets were were plotted: (1) Czirr et al.[5] (2) LeRigoleur et al.[6] (3) Fricke et al.[7] (4) Kompe[8] (5) Poenitz et al.[9] (6) Belanova et al.[10] (7) and Bergvist.[11] The data of Spitz et al.[12] Moxon et al.[13] and Bilpuch et al.[14] were not used.

The capture cross section between 100-1000 keV is shown in Fig. 5. Data sets of Refs. 6-10 were plotted, plus the data sets of Barry.[15]

Inspection of Figs. 4 and 5 show that the various data sets are in quite good agreement with each other within the quoted



^{197}Au(n,γ)
10 - 100 keV
NON-^{235}U DATA
FRICKE 70 (GRENCH ERROR)
CZIRR 73
BERGQVIST 63
BELANOVA 65
POENITZ 68
KOMPE 69 (EVERY THIRD POINT BELOW 50 keV)
Le RIGOLEUR 73 (EVERY THIRD POINT)
σ (mb)
1400
1200
1000
800
600
400
200
0
20
40
60
80
100
E_n(keV)

Figure 4

errors. There is a general tendency for the data of Fricke et al.[7] (Fig. 4) and Barry[15] (Fig. 5) to be higher than others and for the data of Bergvist[11] to be lower; but all are never more than about two standard deviations from the mean. The one point of Belanova et al.[10] is about three standard deviations low. The evaluated eye-guide in Figs. 4 and 5 was drawn with no explicit weight factors for the various experiments.

For the region above 1 MeV, the only one significant new contribution is that of Lindner.[16] These data should be considered preliminary until published and were measured relative to ^{235}U, but the lack of measured fluctuations in the ^{235}U fission cross section at these high energies made it worthwhile to see what the new data indicated for gold capture. Fig. 6 shows two independently normalized data sets from Lindner[16] between 0.5 and 3 MeV. The curve between 0.5 and 1 MeV is that of Fig. 5 and above 1 MeV is that of ENDF/B-III. The data up to 2.2 MeV are in excellent agreement with the old evaluation. The two higher energy points are low by about 15% and 20% respectively. It was felt that it was not worthwhile to give these points sufficient weight to seriously distort the ENDF/B-III curve, which represents the best curve through all previous measurements. An added inducement for not trying a serious reassessment of all of the data above 1 MeV was the implications of the effect noted by Devaney.[17] Devaney points out the importance of a multiple reactions correction for reaction cross section measurements above approximately 100 keV. The correction is particularly important for

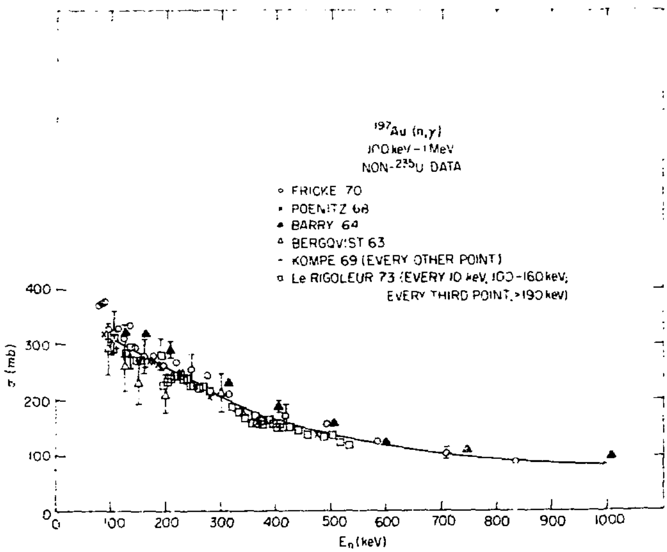


Figure 5

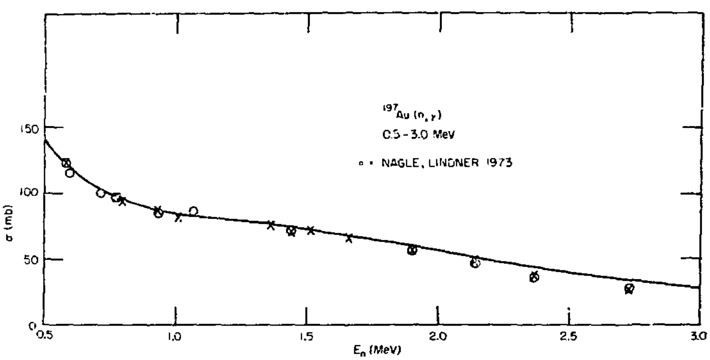


Figure 6

radiative capture, even with fairly thin samples. The relevance of this effect to specific gold capture experiments is unknown, but should be determined before the higher energy gold capture data are reevaluated again.

In conclusion, the evaluated curve of ENDF/B-III between 1 and 20 MeV, which included the evaluation of Vaughn and Grench[18] (1.0 - 5.2 MeV) and that of Bogart[27] above 5.2 MeV, are adopted for ENDF/B-IV.

It is of interest to calculate the fission spectrum averages of the capture and other reaction cross sections and compare them with experimental measurements. For this purpose, a ^{252}Cf fission spectrum was represented by a Maxwellian with a temperature of 1.39 MeV, i.e.;

$$\phi(E) = C \sqrt{E}\, e^{-E/T}$$

was used. (C is a normalizing constant.) The calculated fission spectrum average of the ENDF/B-IV (n,γ) reaction of gold is 81.8 mb. This number is to be compared with an experimental value of 95.5 ± 2.3 mb measured by Pauw and Aten.[19] Since the capture section in the whole energy range 0.100-1.5 MeV is believed to be known to better than 18%, the source of this discrepancy could be due to either the measurement and/or the inadequacy of representing the fission spectrum by a Maxwellian form at low energies. The ^{235}U fission spectrum average measurements of Fabry[20] shed some light on the former explanation. Fabry obtains a value of 88.0 ± 4.5 mb for $^{197}Au(n,\gamma)^{198}Au$ reaction. With a characteristic temperature T = 1.32 MeV for ^{235}U, we obtain a fission spectrum average of 84.9 mb which is within the stated error of Fabry.[20]

After the completion of the evaluation of the capture cross section of Au, it was found that two points had been inadvertently omitted from consideration. Both were measured with the same technique at the National Physical Laboratory in England. At 25 keV, Ryves et al.[21] measured a value of 640 ± 25 mb. This is in excellent agreement with the value of 648 mb read from Fig. 4. At 966 keV, Robertson et al.[22] measured a value of 96.2 ± 2.0 mb. This value is approximately 12% higher than the value at this energy from Fig. 5. No changes were made as a result of this discrepancy for the reasons noted above regarding the Devaney[17] multiple reaction correction effect. In addition the following data sets became available at the time of the writing of the report:

(1) Poenitz[23] data in the energy range 400 - 3500 keV. This is an absolute measurement carried out by a large liquid scintillator for the detection of prompt capture gamma rays. The Grey Neutron Detector, the Black Neutron Detector and a ^{6}Li-glass detector were employed to measure and monitor the neutron flux.

(2) Macklin et al.[24] data in the energy range from 3 to 550 keV. In this measurement a scintillation detector and a ^{6}Li neutron monitor were used. The efficiency of the detector was normalized to the 4.9 eV gold resonance by the saturation method. The ^{6}Li neutron cross section of Uttley, slightly modified, was adopted.

(3) Rimawi and Chrien[25] using the iron filtered beam,

measured the neutron capture cross section of gold at 24.5 keV by the activation method. Assuming a $^{10}B(n,\alpha\gamma)^{7}Li$ cross section of 3.487 b and a total reaction cross section of 5.9175 b for ^{10}B, they obtained a total capture cross section for ^{197}Au of 0.630 ± 0.006 b. The error indicated is only statistical and does not include the uncertainly in the normalization. These new measurements were plotted and compared with the ENDF/B-IV capture cross section in the pertinent energy regions. Good agreement is noted between the new measurements and the evaluated ENDF/B IV capture cross section.

Finally, it may be noted that preliminary results of the capture cross section of gold between 100 keV and 500 keV were reported by Fort[26] in a progress report. A $4\pi\beta\gamma$ detector was used to detect the induced activities. The data are not available at this time. Fort, however, made a comparison between his data and those of LeRigoleur and found reasonable agreement between the two measurements. These new data sets will be considered in the evaluation of the Au(n,γ) cross-section for ENDF/B-V.

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15. J.F. Barry, J. Nucl. Energy 18, 491 (1964).

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19. H. Pauw and A.H.W. Aten, Jr., J. Nucl. Energy 25, 457 (1971).

20. A. Fabry, Report BLG463, May 1972. Volume appears in contribution by W.L. Zijp to the Conf. of Nucl. Data in Sci. and Technology, Volume II, p. 271, Paris (1972).

21. T.B. Ryves, J.C. Robertson, E.J. Axton, I. Goodier, and A. Williams, J. Nucl. Energy 20, 249 (1966).

22. J.C. Robertson, T.B. Ryves, E.J. Axton, I. Goodier, and A. Williams, J. Nucl. Energy 23, 205 (1969).

23. W.P. Poenitz, Private Communication (1974).

24. R.L. Macklin, J. Halperin, and R.R. Winters, Private Communication (1974). To be published in Phys. Rev.

25. K. Rimawi and R.E. Chrien, Private Communication (1974).

26. E. Fort EANDC(E), 157U, Vol. II, 29 (1973).

27. B. Bogart, "Proc. of Neutron Cross Sections and Technology Conference, 486, Washington (1966).

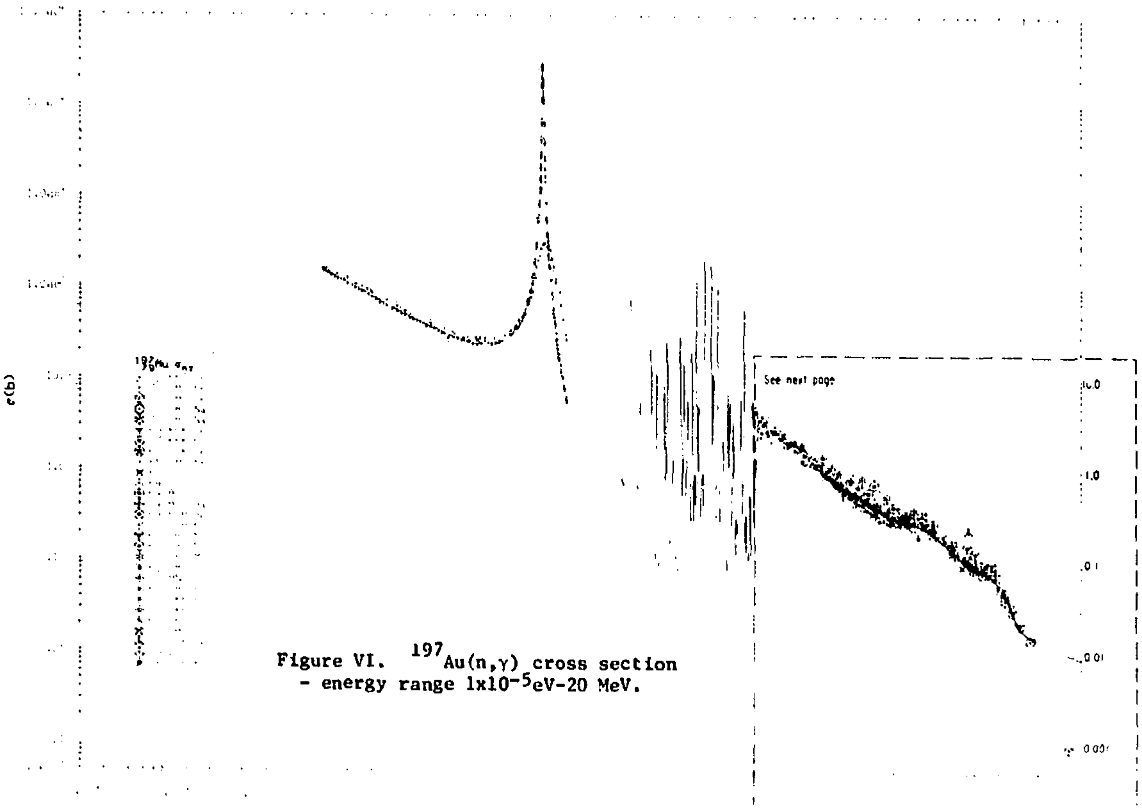

Figure VI. $^{197}Au(n,\gamma)$ cross section
- energy range $1x10^{-5}$eV-20 MeV.

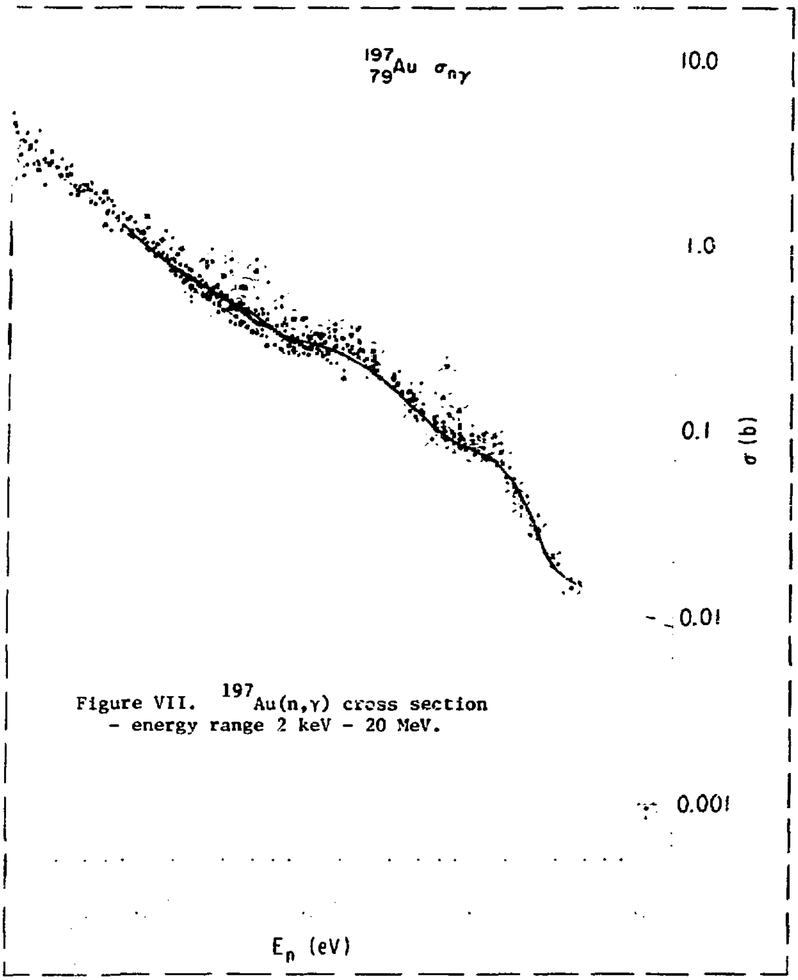

Figure VII. $^{197}Au(n,\gamma)$ cross section - energy range 2 keV - 20 MeV.

REFERENCES FOR EXPERIMENTAL DATA

$^{197}Au(n,\gamma)$

Yr.	Lab	Author	References
7?	FEI	Chelnakov, et al.	Jad. Fiz. Iss. 13, 6 (1972)
71	GA	Fricke, et al.	Third Conf. Neutron Cross Sections & Tech., Knoxville, Tenn. Vol. I, 252 (1972)
71	LRL	Nagle, et al.	Third Conf. Neutron Cross Sections & Tech., Knoxville, Tenn. Vol. II, 251 (1971)
71	LAS	Drake, et al.	Phys. Lett/B 36, 557 (1971)
71	WWA	Brzosko, et al.	Acta Phys. Pol/B 2, 489 (1971)
69	KFK	Kompe	Nuc. Phys./A 133, 513 (1969)
68	GA	Friesenhahn, et al.	J. Nuc. En. 22, 191 (1968)
67	DEB	Peto, et al.	J. Nuc. En. 21, 797 (1967)
67	ORL	Macklin, et al.	Phys. Rev. 159, 1007 (1967)
67	KFK	Poenitz	Fast Reactor Phys. Symp. Karlsruhe, Vol I, 67 (1967)
66	KFK	Poenitz	J. Nuc. En. 20, 825 (1966)
66	KFK	Poenitz	Int. Conf. Nuc. Phys. Paris Vol I, 295 (1966)
65	MUA	Chaubey, et al.	Nuc. Phys. 66, 267 (1965)
65	LOK	Grench, et al.	EANDC-(US) 79, 72 (1965)
65	GA	Friesenhahn, et al.	GA-6832 (1965)
65	LOK	Harris, et al.	Nuc. Phys. 69, 37 (1965)
64	GA	Haddad, et al.	Nuc. Inst. & Meth. 36, 125 (1964)
64	ANL	Cox	Phys. Rev./B 133, 378 (1964)
64	ALD	Barry	J. Nuc. En. 18, 491 (1964)
63	FOA	Bergqvist	Ark. Fiz. 23, 425 (1963)
63	ORL	Macklin, et al	Nuc. Phys. 43, 353 (1963)
63	LEB	Konks, et al.	Zhur Ex. & Theor. Fiz. 46, 80 (1963)

REFERENCES FOR EXPERIMENTAL DATA

$^{197}Au(n,\gamma)$ cont'd

Yr.	Lab	Author	References
62	LRL	Miskel, et al.	Phys. Rev. 128, 2717 (1962)
61	ANL	Meadows, et al.	Nuc. Sci. & Eng. 9, 132 (1961)
61	ORL	Gibbons, et al	Phys. Rev. 122, 182 (1961)
61	ANL	Cox	Phys. Rev. 122, 1280 (1961)
61	ORL	Weston, et al.	Phys. Rev. 123, 948 (1961)
61	ORL	Block, et al.	Neut. T.O.F. Conf. Saclay, p. 203 (1961)
60	DKE	Bilpuch, et al.	An. Phys. 10, 455 (1960)
60	ORL	Schmitt, et al.	Nuc. Phys. 20, 202 (1960)
60	LAS	Diven, et al.	Phys. Rev. 120, 556 (1960)
60	CCP	Belanova	At. En. 8, 549 (1960)
59	LAS	Bame, et al.	Phys. Rev. 113, 256 (1959)
59	ORL	Lyon, et al.	Phys. Rev. 114, 1619 (1959)
59	WIS	Johnsrud, et al.	Phys. Rev. 116, 927 (1959)
59	HAR	Ferguson, et al.	J. Nuc. En. 10, 19 (1959)
58	LRL	Booth, et al.	Phys. Rev. 112, 226 (1958)
58	CCP	Kononov, et al.	At. En. 5, 564 (1958)

G. ^{235}U(n,f) Cross Section

Task Force

MAT. No. = 1261

Recommended Energy Range; Thr, 100 keV-20 MeV; σ_{2200}(n,f)= 585.4b.

The ^{235}U evaluation (one of 5 isotopes considered) stems from the joint effort of experimenters, reactor physicists, and evaluators who met at Brookhaven National Laboratory February 13-15, 1973 (The Big 3 + 2 Task Force Meeting*). Guide lines for Version IV cross sections, developed by this Task Force, were meshed with suggestions from the Normalization and Standards Subcommittee of CSEWG to produce the existing ^{235}U evaluated data set. While many people were involved, the principal investigators of concern were J.R. Smith, (Aerojet Nuclear Corp.), B.R. Leonard Jr. (Battelle Northwest), and G. DeSaussure (Oak Ridge National Laboratory) for ^{235}U(n,f) cross sections with energies less than 10 keV and L. Stewart, (Los Alamos Scientific Laboratory), H. Alter+ (Atomics International), A. Carlson (National Bureau of Standards) and W. Poenitz (Argonne National Laboratory) for ^{235}U(n,f) cross sections with energies between 10 keV and 3.5 MeV. Above 3.5 MeV, the evaluation and data input were the responsibility of L. Stewart (Los Alamos Scientific Laboratory).

The experimental data for ^{235}U(n,f) and the methods used for the evaluation are described briefly in the Hollorith section (MF=1, MT=451) of Appendix F pages 86-91. The errors assigned to the cross sections are taken from File 1 and listed in Table II. Fig. VIII compares the evaluated cross section with experimental data.

* Notes from Big 3 + 2 Task Force kindly supplied by A. Carlson NBS.

\+ Present Address U.S. Energy and Development Administration, Washington, D.C. 20545.

The high energy portion of the curve has been expanded and is shown in Fig. IX. References for the experimental data sets follow Fig. IX. Note that the smooth cross sections in the resolved and unresolved energy regions given in Appendix F pages 109-111, (MF=3, MT=18) are background cross sections to be added to those generated from the resonance parameters in order to complete the resonance profile.

TABLE II

Energy Range (MeV)	Assigned Error
.25 - 1.0	4%
1.0 - 1.5	5%
1.5 - 2.0	3%
2.0 - 5.0	4%
5.0 - 7.5	7%

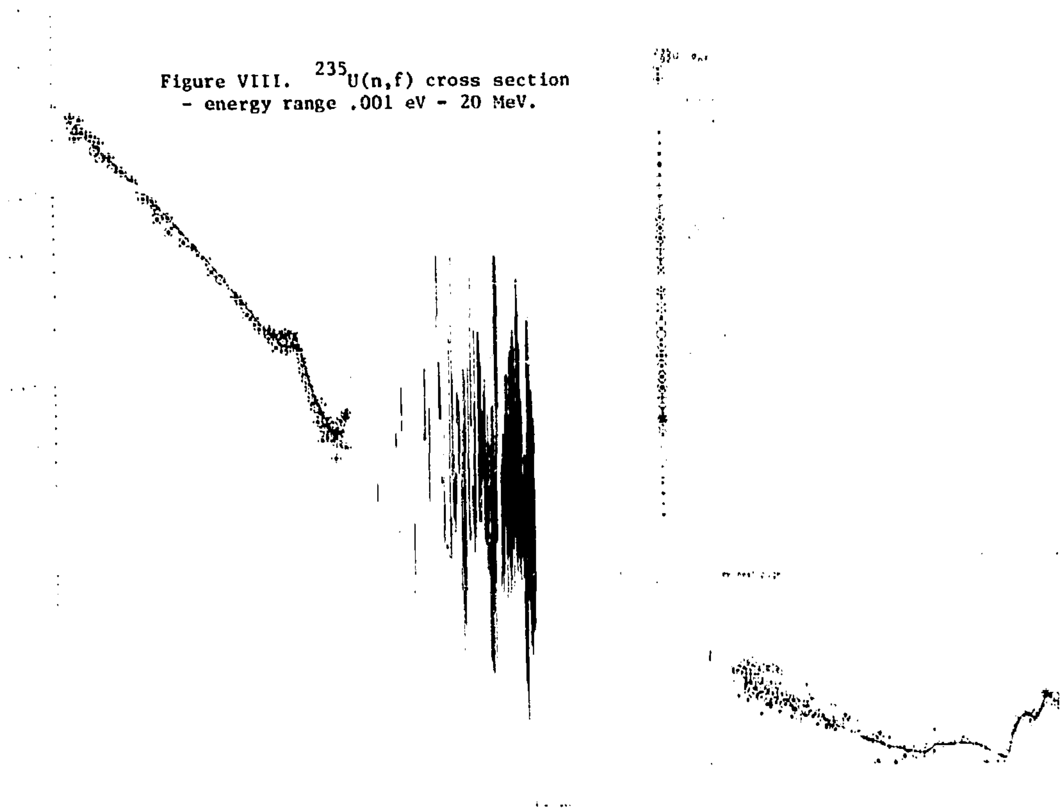

Figure VIII. $^{235}U(n,f)$ cross section - energy range .001 eV - 20 MeV.

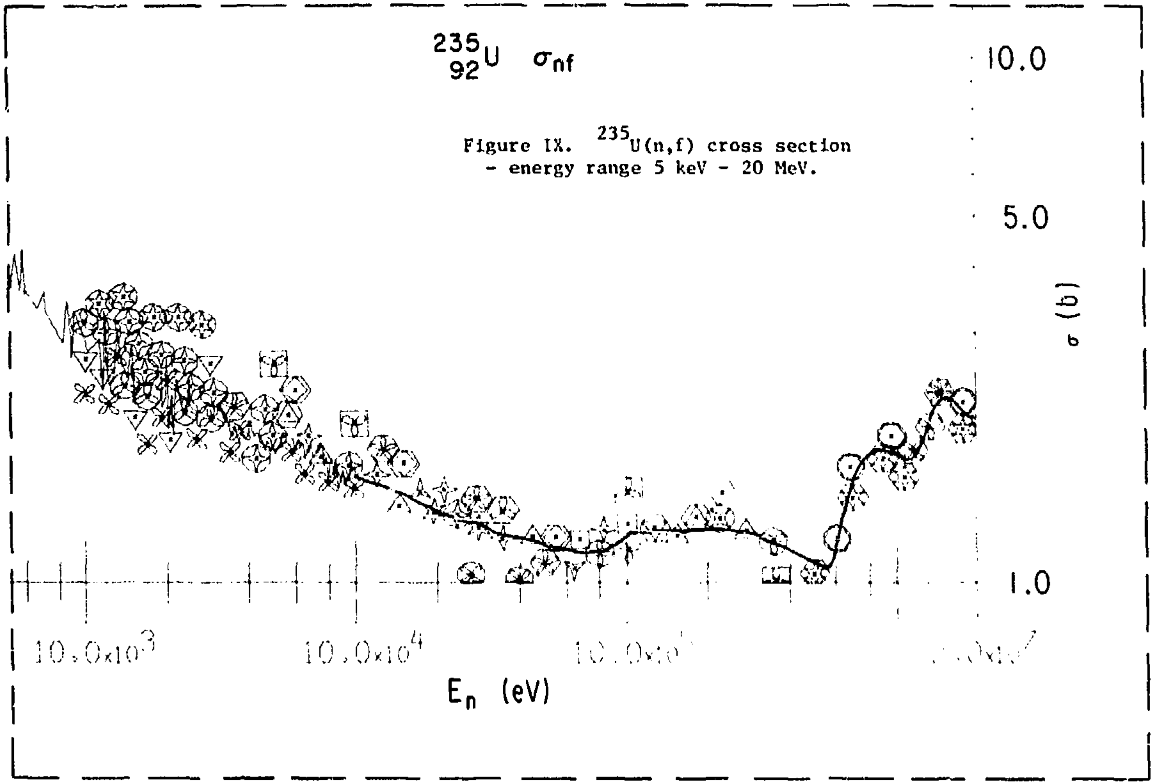

Figure IX. $^{235}U(n,f)$ cross section - energy range 5 keV - 20 MeV.

REFERENCES FOR EXPERIMENTAL DATA

$^{235}U(n,f)$

Yr.	Lab	Author	References
74	ANL	Poenitz	Nuc. Sci. & Eng. 53, 370 (1974)
73	KFK	Kaeppeler	KFK 1772 (1973)
73	SAC	Blons	Nuc. Sci. & Eng. 51, 130 (1973)
72	GEL	Knitter, et al.	Z. Physik. 257, 108 (1972)
72	BUC	Mihailescu	I.F.A.-NR-41 (1972)
72	CAD	Szabo, et al.	Private Comm. (1972)
71	LAS	Lemley, et al.	Nuc. Sci. & Eng. 43, 281 (1971)
71	GEL	Deruytter, et al.	J. Nuc. En. 25, 263 (1971)
71	CAD	Szabo, et al.	Third Conf. Neutron Cross Sections and Tech., Knoxville, Tenn. Vol. II, 573 (1971)
70	LAS	Cramer	LA 4420, 45 (1970)
70	ANL	Poenitz	Neutron Standards & Flux Normalization Symp. Argonne Nat. Lab, p. 281 (1970)
70	CAD	Szabo, et al.	Neutron Standards & Flux Normalization Symp. Argonne Nat. Lab, p. 257 (1970)
70	HAR	Patrick	J. Nuc. En. 24, 269 (1970)
68	ANL	Poenitz	Second Conf. Neutron Cross Sections & Tech., Washington, D.C. Vol. I, 503 (1968)
67	KUR	Mostovaya	I.A.E. 1302 (1967)
66	LAS	Brown, et al.	Conf. Neutron Cross Sections & Tech., Washington, D.C., Vol. II, 971 (1966)
66	LRL	Bowman, et al.	Conf. Neutron Cross Sections & Tech., Washington, D.C., Vol. II, 1004 (1966)
65	ALD	White	J. Nuc. En. 19, 325 (1965)
65	ISP	Fraysse, et al.	Phys. & Chem. of Fission, Salzburg Austria, Vol. I, 255 (1965)
65	DUB	Wang, et al.	Phys. & Chem. of Fission, Salzburg Austria, Vol. I, 287 (1965)

REFERENCES FOR EXPERIMENTAL DATA

$^{235}U(n,f)$

Yr.	Lab	Author	References
65	SAC	Michaudon, et al.	Nuc. Phys. 69, 545 (1965)
64	HAR	Brooks, et al.	Priv. Comm. (1964)
63	LRL	Bowman	Phys. Rev. 130, 1482 (1963)
63	CCP	Pankratov	At. En. 14, 177 (1963)
62	CCP	Smirenken, et al.	At. En. 13, 366 (1962)
61	MOL	Deruytter, et al.	J. Nuc. En. A/B 15, 165 (1961)
61	ALD	Moat	J. Nuc. En. 14, 85 (1961)
60	CCP	Pankratov, et al.	At. En. 9, 399 (1960)
59	CCP	Gorlov, et al.	At. En. 6, 453 (1959)
58	ANL	Bollinger, et al.	Priv. Comm. (1958)
58	COL	Melkonian, et al.	Nuc. Sci. & Eng. 3, 435 (1958)
58	CCP	Berezin, et al.	At. En. 5, 659 (1958)
57	LAS	Smith, et al.	Bull. Am. Phys. Soc. 2, 196 (1957)
57	LAS	Henkel	LA-2122 (1957)
57	HAN	Seppi, et al.	HW-53492, 22 (1957)
57	LAS	Diven	Phys. Rev. 105, 1350 (1957)
57	HAR	Allen, et al.	Proc. Phys. Soc./A 70, 573 (1957)
56	SAC	Ballini, et al.	Priv. Comm. from Netter (1956)
55	SAC	Auclair, et al.	Int. Peaceful Uses of At. En. Conf. Geneva, Vol. IV, 235 (1955)
55	SAC	Szteinsznaider, et al.	Int. Peaceful Uses of At. En. Conf. Geneva, Vol. IV, 245 (1955)
55	CCP	Adamchuk, et al.	Int. Peaceful Uses of At. En. Conf. Geneva, Vol. IV, 216 (1955)
54	HAN	Leonard	HW-33384, 33 (1954)
54	KAP	Yeater, et al.	KAPL-1109 (1954)
44	LAS	Williams	LA-150 (1944)

III. Acknowledgements

I would like to express my thanks to P.G. Young and L., Stewart of Los Alamo Scientific Laboratory, and to B.R. Leonard, Jr., of Batelle Northwest Laboratory for their criticisms and recommendations concerning this report.

Appendix A

Hydrogen - MAT. No. 1269

ENTRY BY L. STEWART, R.J. LABAUVE, AND P.G. YOUNG
LOS ALAMOS SCIENTIFIC LABORATORY
LOS ALAMOS, NEW MEXICO 87544
OCTOBER 20, 1970

MF=1

MT=451, ATOMIC MASS=1.007825

MF=2

MT=151, SCATTERING LENGTH=1.27565E-12 CM.

MF=3

MT= 1, TOTAL CROSS SECTIONS --- THE TOTAL CROSS SECTIONS ARE OBTAINED BY ADDING THE ELASTIC SCATTERING AND RADIATIVE CAPTURE CROSS SECTIONS AT ALL ENERGIES.
1.0E-05 EV TO 20 MEV.

MT= 2, ELASTIC SCATTERING --- FROM AN EXTENSIVE THEORETICAL TREATMENT OF FAST NEUTRON MEASUREMENTS BY J. C. HOPKINS(LASL) AND G. BREIT(STATE UNIVERSITY OF NEW YORK), SEE N.D. A9, 145(1971).
1.0E-05 EV TO 20 MEV.

MT=102, RADIATIVE CAPTURE --- THESE CROSS SECTIONS ARE TAKEN FROM THE PUBLICATION OF A. HORLEY WHERE A VALUE OF 332 MB WAS ADOPTED FOR THE THERMAL VALUE. SEE N.D. A2, 243(1966) ALSO P.C.
1.0E-05 EV TO 20 MEV.

MT=251, AVERAGE VALUE OF COSINE OF SCATTERING ANGLE IN LAB SYSTEM (PROVIDED BY BNL).
1.0E-05 EV TO 20 MEV.

MT=252, AVERAGE LOGARITHMIC ENERGY CHANGE PEP COLLISON, TAKEN AS 1, FROM 1.0E-05 EV TO 20 MEV. (PROVIDED BY BNL).

MT=253, GAMMA, TAKEN AS 1, FROM 1.0E-05 EV TO 20 MEV. (PROVIDED BY BNL).

MF=4

MT= 2, NEUTRON ELASTIC SCATTERING ANGULAR DISTRIBUTIONS IN THE CENTER OF MASS SYSTEM--GIVEN AS NORMALIZED POINTWISE PROBABILITIES.

MF=7

MT= 4, .00001 TO 5 EV FREE GAS SIGMA=20.449 BARNS.

MF=12

MT=102, GAMMA RAY MULTIPLICITIES --- MULTIPLICITY, (REFERRED TO MT=102, MF=3), IS UNITY AT ALL NEUTRON ENERGIES. LP=2 NOW IMPLEMENTED. THEREFORE ALL GAMMA ENERGIES MUST BE CALCULATED.

MF=14

MT=102, GAMMA RAY ANGULAR DISTRIBUTION --- ASSUMED ISOTROPIC AT ALL NEUTRON ENERGIES.

1- H- 1 LASL EVAL-AUG70 L.STEWART,R.J.LABAUVE,P.G.YOUNG
LA-4574 (1971) DIST-MAY74

***************** DNA 4148 MOD 2 **************************

AUGUST 1973 COMMENTS AND CHANGES

1. RECENT TOTAL MEASUREMENTS BY CLEMENT AND STOLER (RPI) AND BY HEATON ET AL. (NBS) DO NOT INDICATE THE NEED FOR CHANGES AT THIS TIME.
2. THE LP=2 FLAG HAS BEEN IMPLEMENTED IN MF=12, MT=102 IN VERSION IV.
3. A NEW LISTING HAS BEEN GENERATED FOR THE TOTAL CROSS SECTION TO INSURE THAT THE SUMMATION OF THE PARTIALS IS CONSERVED TO HIGHER PRECISION.
4. THE NORMALIZATION AND STANDARDS SUBCOMMITTEE OF CSEWG REVIEWED THIS FILE IN MARCH, 1973 AND RECOMMENDED NO CHANGES TO THE SCATTERING CROSS SECTION FOR VERSION IV.

***************** DNA 4148 MOD 1 **************************

THIS MODIFICATION WAS MADE TO ENABLE THE CURRENT DNA LIBRARY TO CONFORM TO THE ENDF/B-III LIBRARY AND TO ADD PHOTON INTERACTION DATA

THE DATA CORRESPONDS TO THE ENDF/B-III EVALUATION WITH THE MAT NUMBER HAVING THE SAME LAST 3 DIGITS.

****

CROSS SECTION STANDARD HYDROGEN SCATTERING CROSS SECTION

THE SCATTERING CROSS SECTION HAS BEEN RECOMMENDED AS A STANDARD BY THE CSEWG NORMALIZATION AND STANDARDS SUBCOMMITTEE FOR THE ENERGY RANGE FROM 1 KEV TO 20 MEV

HYDROGEN FREE ATOM CROSS SECTIONS AS GIVEN IN LA-4574

HYDROGEN-1

TABLE OF CONTENTS
GENERAL INFORMATION

ENDF/B MATERIAL NO. 1269

DATA TYPE	REACTION	CARDS
GENERAL INFORMATION	COMMENTS	118
	TABLE OF CONTENTS	12
RESONANCE PARAMETERS	RESONANCE DATA	4
NEUTRON CROSS SECTION	TOTAL	48
	ELASTIC	48
	(N,GAMMA)	48
	MU BAR	8
	XI	4
	GAMMA	4
SECONDARY NEUTRON ANGULAR DISTRIBUTIONS	ELASTIC	88
THERMAL NEUTRON SCATTERING LAWS	INELASTIC	4
PHOTON MULTIPLICITIES-NEUTRON INDUCED	(N,GAMMA)	4
PHOTON ANGULAR DISTRIBUTIONS-NEUTRON INDUCED	(N,GAMMA)	1

HYDROGEN-1 | RESONANCE DATA
RESONANCE PARAMETERS | ENDF/B MATERIAL NO. 1269

ISOTOPE----------------------HYDROGEN-1
FRACTIONAL ABUNDANCE---------- 1.0000E+00
NUMBER OF ENERGY RANGES------ 1

ENERGY RANGE NUMBER----------- 1 RESOLVED SINGLE-LEVEL BREIT-WIGNER PARAMETERS
LOWER ENERGY LIMIT (EV)------ 1.0000E-05
UPPER ENERGY LIMIT (EV)------ 1.0000E+05
NUCLEAR SPIN----------------- 5.0000E-01
SPIN SCATTERING LENGTH (A+)-- 1.2757E+00
NUMBER OF L STATES----------- 0

NO RESONANCE PARAMETERS GIVEN FOR THIS MATERIAL

HYDROGEN-1 | TOTAL
NEUTRON CROSS SECTION | ENDF/B MATERIAL NO. 1269

INTERPOLATION LAW BETWEEN ENERGIES

RANGE	DESCRIPTION
1 TO 134	LN Y LINEAR IN LN X

NEUTRON CROSS SECTIONS

INDEX,	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS
1	1.0000E-05	3.7140E+01	2.0000E-05	3.2257E+01	5.0000E-05	2.7917E+01	1.0000E-04	2.5730E+01	2.0000E-04	2.4183E+01
6	5.0000E-04	2.2811E+01	1.0000E-03	2.2119E+01	2.0000E-03	2.1630E+01	5.0000E-03	2.1196E+01	1.0000E-02	2.0977E+01
11	2.5300E-02	2.0781E+01	1.0000E+02	2.0454E+01	1.0000E+03	2.0331E+01	2.0000E+03	2.0199E+01	3.0000E+03	2.0069E+01
16	4.0000E+03	1.9942E+01	5.0000E+03	1.9816E+01	6.0000E+03	1.9692E+01	8.0000E+03	1.9449E+01	1.0000E+04	1.9213E+01
21	1.5000E+04	1.8651E+01	2.0000E+04	1.8126E+01	2.5000E+04	1.7634E+01	3.0000E+04	1.7172E+01	3.5000E+04	1.6737E+01
26	4.0000E+04	1.6327E+01	4.5000E+04	1.5941E+01	5.0000E+04	1.5575E+01	5.5000E+04	1.5228E+01	6.0000E+04	1.4900E+01
31	6.5000E+04	1.4587E+01	7.0000E+04	1.4291E+01	7.5000E+04	1.4008E+01	8.0000E+04	1.3738E+01	8.5000E+04	1.3481E+01
36	9.0000E+04	1.3235E+01	9.5000E+04	1.2999E+01	1.0000E+05	1.2774E+01	1.1000E+05	1.2351E+01	1.2000E+05	1.1964E+01
41	1.3000E+05	1.1607E+01	1.4000E+05	1.1275E+01	1.5000E+05	1.0965E+01	1.6000E+05	1.0673E+01	1.7000E+05	1.0398E+01
46	1.8000E+05	1.0140E+01	1.9000E+05	9.8981E+00	2.0000E+05	9.6711E+00	2.2000E+05	9.2581E+00	2.4000E+05	8.8921E+00
51	2.6000E+05	8.5620E+00	2.8000E+05	8.2620E+00	3.0000E+05	7.9870E+00	3.2000E+05	7.7340E+00	3.4000E+05	7.5010E+00
56	3.6000E+05	7.2840E+00	3.8000E+05	7.0830E+00	4.0000E+05	6.8970E+00	4.2000E+05	6.7250E+00	4.4000E+05	6.5650E+00
61	4.6000E+05	6.4190E+00	4.8000E+05	6.2750E+00	5.0000E+05	6.1430E+00	5.5000E+05	5.8450E+00	6.0000E+05	5.5840E+00
66	6.5000E+05	5.3540E+00	7.0000E+05	5.1483E+00	7.5000E+05	4.9640E+00	8.0000E+05	4.7970E+00	8.5000E+05	4.6450E+00
71	9.0000E+05	4.5060E+00	9.5000E+05	4.3786E+00	1.0000E+06	4.2610E+00	1.1000E+06	4.0510E+00	1.2000E+06	3.8680E+00
76	1.3000E+06	3.7060E+00	1.4000E+06	3.5610E+00	1.5000E+06	3.4290E+00	1.6000E+06	3.3090E+00	1.7000E+06	3.1980E+00
81	1.8000E+06	3.0970E+00	1.9000E+06	3.0030E+00	2.0000E+06	2.9150E+00	2.2000E+06	2.7590E+00	2.4000E+06	2.6220E+00
86	2.6000E+06	2.5010E+00	2.8000E+06	2.3920E+00	3.0000E+06	2.2930E+00	3.2000E+06	2.2030E+00	3.4000E+06	2.1200E+00
91	3.6000E+06	2.0430E+00	3.8000E+06	1.9730E+00	4.0000E+06	1.9070E+00	4.2000E+06	1.8450E+00	4.4000E+06	1.7880E+00
96	4.6000E+06	1.7340E+00	4.8000E+06	1.6830E+00	5.0000E+06	1.6350E+00	5.2000E+06	1.5890E+00	5.4000E+06	1.5470E+00
101	5.6000E+06	1.5060E+00	5.8000E+06	1.4670E+00	6.0000E+06	1.4300E+00	6.2000E+06	1.3950E+00	6.4000E+06	1.3620E+00
106	6.6000E+06	1.3290E+00	6.8000E+06	1.2990E+00	7.0000E+06	1.2690E+00	7.5000E+06	1.2010E+00	8.0000E+06	1.1390E+00
111	8.5000E+06	1.0630E+00	9.0000E+06	1.0320E+00	9.5000E+06	9.8593E-01	1.0000E+07	9.4323E-01	1.0500E+07	9.0353E-01
116	1.1000E+07	8.6653E-01	1.1500E+07	8.3233E-01	1.2000E+07	8.0053E-01	1.2500E+07	7.7103E-01	1.3000E+07	7.4333E-01
121	1.3500E+07	7.1733E-01	1.4000E+07	6.9293E-01	1.4500E+07	6.6983E-01	1.5000E+07	6.4803E-01	1.5500E+07	6.2743E-01
126	1.6000E+07	6.0783E-01	1.6500E+07	5.8933E-01	1.7000E+07	5.7173E-01	1.7500E+07	5.5493E-01	1.8000E+07	5.3903E-01
131	1.8500E+07	5.2383E-01	1.9000E+07	5.0933E-01	1.9500E+07	4.9553E-01	2.0000E+07	4.8233E-01		

HYDROGEN-1

ELASTIC
NEUTRON CROSS SECTION

ENDF/B MATERIAL NO. 1269

INTERPOLATION LAW BETWEEN ENERGIES

RANGE	DESCRIPTION
1 TO 134	LN Y LINEAR IN LN X

NEUTRON CROSS SECTIONS

INDEX,	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS
1	1.0000E-05	2.0449E+01	2.0000E-05	2.0449E+01	5.0000E-05	2.0449E+01	1.0000E-04	2.0449E+01	2.0000E-04	2.0449E+01
6	5.0000E-04	2.0449E+01	1.0000E-03	2.0449E+01	2.0000E-03	2.0449E+01	5.0000E-03	2.0449E+01	1.0000E-02	2.0449E+01
11	2.5300E-02	2.0449E+01	1.0000E+02	2.0449E+01	1.0000E+03	2.0320E+01	2.0000E+03	2.0190E+01	3.0000E+03	2.0060E+01
16	4.0000E+03	1.9941E+01	5.0000E+03	1.9815E+01	6.0000E+03	1.9691E+01	8.0000E+03	1.9440E+01	1.0000E+04	1.9213E+01
21	1.5000E+04	1.8651E+01	2.0000E+04	1.8126E+01	2.5000E+04	1.7634E+01	3.0000E+04	1.7172E+01	3.5000E+04	1.6737E+01
26	4.0000E+04	1.6327E+01	4.5000E+04	1.5941E+01	5.0000E+04	1.5575E+01	5.5000E+04	1.5228E+01	6.0000E+04	1.4900E+01
31	6.5000E+04	1.4587E+01	7.0000E+04	1.4291E+01	7.5000E+04	1.4008E+01	8.0000E+04	1.3738E+01	8.5000E+04	1.3481E+01
36	9.0000E+04	1.3235E+01	9.5000E+04	1.2999E+01	1.0000E+05	1.2774E+01	1.1000E+05	1.2351E+01	1.2000E+05	1.1964E+01
41	1.3000E+05	1.1607E+01	1.4000E+05	1.1275E+01	1.5000E+05	1.0965E+01	1.6000E+05	1.0673E+01	1.7000E+05	1.0398E+01
46	1.8000E+05	1.0140E+01	1.9000E+05	9.8980E+00	2.0000E+05	9.6710E+00	2.2000E+05	9.2580E+00	2.4000E+05	8.8920E+00
51	2.6000E+05	8.5620E+00	2.8000E+05	8.2620E+00	3.0000E+05	7.9870E+00	3.2000E+05	7.7340E+00	3.4000E+05	7.5010E+00
56	3.6000E+05	7.2840E+00	3.8000E+05	7.0830E+00	4.0000E+05	6.8972E+00	4.2000E+05	6.7290E+00	4.4000E+05	6.5690E+00
61	4.6000E+05	6.4150E+00	4.8000E+05	6.2750E+00	5.0000E+05	6.1430E+00	5.5000E+05	5.8450E+00	6.0000E+05	5.5840E+00
66	6.5000E+05	5.3540E+00	7.0000E+05	5.1480E+00	7.5000E+05	4.9640E+00	8.0000E+05	4.7970E+00	8.5000E+05	4.6450E+00
71	9.0000E+05	4.5060E+00	9.5000E+05	4.3780E+00	1.0000E+06	4.2610E+00	1.1000E+06	4.0510E+00	1.2000E+06	3.8680E+00
76	1.3000E+06	3.7060E+00	1.4000E+06	3.5610E+00	1.5000E+06	3.4290E+00	1.6000E+06	3.3090E+00	1.7000E+06	3.1980E+00
81	1.8000E+06	3.0970E+00	1.9000E+06	3.0030E+00	2.0000E+06	2.9150E+00	2.2000E+06	2.7590E+00	2.4000E+06	2.6220E+00
86	2.6000E+06	2.5010E+00	2.8000E+06	2.3920E+00	3.0000E+06	2.2930E+00	3.2000E+06	2.2030E+00	3.4000E+06	2.1200E+00
91	3.6000E+06	2.0430E+00	3.8000E+06	1.9730E+00	4.0000E+06	1.9070E+00	4.2000E+06	1.8450E+00	4.4000E+06	1.7880E+00
96	4.6000E+06	1.7340E+00	4.8000E+06	1.6830E+00	5.0000E+06	1.6350E+00	5.2000E+06	1.5890E+00	5.4000E+06	1.5470E+00
101	5.6000E+06	1.5060E+00	5.8000E+06	1.4670E+00	6.0000E+06	1.4300E+00	6.2000E+06	1.3950E+00	6.4000E+06	1.3620E+00
106	6.6000E+06	1.3290E+00	6.8000E+06	1.2990E+00	7.0000E+06	1.2690E+00	7.5000E+06	1.2010E+00	8.0000E+06	1.1390E+00
111	8.5000E+06	1.0830E+00	9.0000E+06	1.0320E+00	9.5000E+06	9.8590E-01	1.0000E+07	9.4320E-01	1.0500E+07	9.0350E-01
116	1.1000E+07	8.6650E-01	1.1500E+07	8.3230E-01	1.2000E+07	8.0050E-01	1.2500E+07	7.7120E-01	1.3000E+07	7.4330E-01
121	1.3500E+07	7.1730E-01	1.4000E+07	6.9290E-01	1.4500E+07	6.6990E-01	1.5000E+07	6.4820E-01	1.5500E+07	6.2740E-01
126	1.6000E+07	6.0780E-01	1.6500E+07	5.8930E-01	1.7000E+07	5.7170E-01	1.7500E+07	5.5490E-01	1.8000E+07	5.3980E-01
131	1.8500E+07	5.2380E-01	1.9000E+07	5.0930E-01	1.9500E+07	4.9550E-01	2.0000E+07	4.8230E-01		

REACTION Q VALUE 2.2246E+06 EV

INTERPOLATION LAW BETWEEN ENERGIES

RANGE DESCRIPTION

1 TO 134 LN Y LINEAR IN LN X

NEUTRON CROSS SECTIONS

INDEX	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS
1	1.0000E-05	1.6699E+01	2.0000E-05	1.1808E+01	5.0000E-05	7.4682E+00	1.0000E-04	5.2808E+00	2.0000E-04	3.7341E+00
6	5.0000E-04	2.3616E+00	1.0000E-03	1.6699E+00	2.0000E-03	1.1808E+00	5.0000E-03	7.4682E-01	1.0000E-02	5.2808E-01
11	2.5300E-02	3.3200E-01	1.0000E+02	5.2770E-03	1.0000E+03	1.6590E-03	2.0000E+03	1.1926E-03	3.0000E+03	9.7080E-04
16	4.0000E+03	8.3290E-04	5.0000E+03	7.3747E-04	6.0000E+03	6.6619E-04	8.0000E+03	5.6518E-04	1.0000E+04	4.9580E-04
21	1.5000E+04	3.8782E-04	2.0000E+04	3.2386E-04	2.5000E+04	2.8064E-04	3.0000E+04	2.4939E-04	3.5000E+04	2.2248E-04
26	4.0000E+04	2.0553E-04	4.5000E+04	1.8970E-04	5.0000E+04	1.7646E-04	5.5000E+04	1.6518E-04	6.0000E+04	1.5544E-04
31	6.5000E+04	1.4693E-04	7.0000E+04	1.3942E-04	7.5000E+04	1.3273E-04	8.0000E+04	1.2673E-04	8.5000E+04	1.2132E-04
36	9.0000E+04	1.1640E-04	9.5000E+04	1.1191E-04	1.0000E+05	1.0780E-04	1.1000E+05	1.0019E-04	1.2000E+05	9.3717E-05
41	1.3000E+05	8.8131E-05	1.4000E+05	8.3296E-05	1.5000E+05	7.8940E-05	1.6000E+05	7.5142E-05	1.7000E+05	7.1729E-05
46	1.8000E+05	6.8645E-05	1.9000E+05	6.5853E-05	2.0000E+05	6.3310E-05	2.2000E+05	5.9051E-05	2.4000E+05	5.5591E-05
51	2.6000E+05	5.2731E-05	2.8000E+05	5.0350E-05	3.0000E+05	4.8290E-05	3.2000E+05	4.6538E-05	3.4000E+05	4.5018E-05
56	3.6500E+05	4.3691E-05	3.8000E+05	4.2523E-05	4.0000E+05	4.1490E-05	4.2000E+05	4.0637E-05	4.4000E+05	3.9820E-05
61	4.6000E+05	3.9138E-05	4.8000E+05	3.8525E-05	5.0000E+05	3.7980E-05	5.5000E+05	3.7396E-05	6.0000E+05	3.6870E-05
66	6.5000E+05	3.6163E-05	7.0000E+05	3.5520E-05	7.5000E+05	3.5167E-05	8.0000E+05	3.4840E-05	8.5000E+05	3.4742E-05
71	9.0000E+05	3.4650E-05	9.5000E+05	3.4552E-05	1.0000E+06	3.4460E-05	1.1000E+06	3.4440E-05	1.2000E+06	3.4410E-05
76	1.3000E+06	3.4490E-05	1.4000E+06	3.4360E-05	1.5000E+06	3.4340E-05	1.6000E+06	3.4310E-05	1.7000E+06	3.4290E-05
81	1.8000E+06	3.4270E-05	1.9000E+06	3.4290E-05	2.0000E+06	3.4230E-05	2.2000E+06	3.4520E-05	2.4000E+06	3.4810E-05
86	2.6000E+06	3.5100E-05	2.8000E+06	3.5390E-05	3.0000E+06	3.5680E-05	3.2000E+06	3.5800E-05	3.4000E+06	3.5910E-05
91	3.6000E+06	3.6030E-05	3.8000E+06	3.6140E-05	4.0000E+06	3.6260E-05	4.2000E+06	3.6290E-05	4.4000E+06	3.6320E-05
96	4.6000E+06	3.6360E-05	4.8000E+06	3.6390E-05	5.0000E+06	3.6420E-05	5.2000E+06	3.6290E-05	5.4000E+06	3.6160E-05
101	5.6000E+06	3.6040E-05	5.8000E+06	3.5910E-05	6.0000E+06	3.5790E-05	6.2000E+06	3.5670E-05	6.4000E+06	3.5560E-05
106	6.6000E+06	3.5450E-05	6.8000E+06	3.5340E-05	7.0000E+06	3.5230E-05	7.5000E+06	3.4590E-05	8.0000E+06	3.3940E-05
111	8.5000E+06	3.3640E-05	9.0000E+06	3.3330E-05	9.5000E+06	3.2960E-05	1.0000E+07	3.2590E-05	1.0500E+07	3.2210E-05
116	1.1000E+07	3.1820E-05	1.1500E+07	3.1450E-05	1.2000E+07	3.1080E-05	1.2500E+07	3.0630E-05	1.3000E+07	3.0180E-05
121	1.3500E+07	3.0010E-05	1.4000E+07	2.9630E-05	1.4500E+07	2.9400E-05	1.5000E+07	2.8960E-05	1.5500E+07	2.8630E-05
126	1.6000E+07	2.8300E-05	1.6500E+07	2.7880E-05	1.7000E+07	2.7450E-05	1.7500E+07	2.7360E-05	1.8000E+07	2.7260E-05
131	1.8500E+07	2.6730E-05	1.9000E+07	2.6280E-05	1.9500E+07	2.6120E-05	2.0000E+07	2.6040E-05		

HYDROGEN-1 MU BAR ENDF/B MATERIAL NO. 1269

NEUTRON CROSS SECTION

INTERPOLATION LAW BETWEEN ENERGIES

RANGE	DESCRIPTION
1 TO 14	Y LINEAR IN LN X

NEUTRON CROSS SECTIONS

INDEX,	ENERGY EV	DATA	ENERGY EV	DATA	ENERGY EV	DATA	ENERGY EV	DATA	ENERGY EV	DATA
1	1.0000E-05	6.6521E-01	2.0000E+05	6.6521E-01	5.0000E+05	6.6490E-01	1.0000E+06	6.6462E-01	2.0000E+06	6.6419E-01
6	4.0000E+06	6.6335E-01	6.0000E+06	6.6263E-01	8.0000E+06	6.6202E-01	1.0000E+07	6.6134E-01	1.2000E+07	6.6104E-01
11	1.4000E+07	6.6045E-01	1.6000E+07	6.5993E-01	1.8000E+07	6.5954E-01	2.0000E+07	6.5920E-01		

HYDROGEN-1 XI ENDF/B MATERIAL NO. 1269

NEUTRON CROSS SECTION

INTERPOLATION LAW BETWEEN ENERGIES

RANGE	DESCRIPTION
1 TO 2	Y LINEAR IN X

NEUTRON CROSS SECTIONS

INDEX,	ENERGY EV	DATA	ENERGY EV	DATA
1	1.0000E-05	1.0000E+00	2.0000E+07	1.0000E+00

HYDROGEN-1 GAMMA ENDF/B MATERIAL NO. 1269

NEUTRON CROSS SECTION

INTERPOLATION LAW BETWEEN ENERGIES

RANGE	DESCRIPTION
1 TO 2	Y LINEAR IN X

NEUTRON CROSS SECTIONS

INDEX,	ENERGY EV	DATA	ENERGY EV	DATA
1	1.0000E-05	1.0000E+00	2.0000E+07	1.0000E+00

HYDROGEN-1 ELASTIC ENDF/B MATERIAL NO. 1269

SECONDARY NEUTRON ANGULAR DISTRIBUTIONS

INTERPOLATION LAW BETWEEN ENERGIES

RANGE	DESCRIPTION
1 TO 14	Y LINEAR IN X

HYDROGEN-1 ELASTIC SECONDARY NEUTRON ANGULAR DISTRIBUTIONS ENDF/B MATERIAL NO. 1269

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 11	Y LINEAR IN X

TABULATED DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 1,0000E-11 MEV IS ISOTROPIC

HYDROGEN-1 ELASTIC SECONDARY NEUTRON ANGULAR DISTRIBUTIONS ENDF/B MATERIAL NO. 1269

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 11	Y LINEAR IN X

TABULATED DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 1,0000E-01 MEV IS ISOTROPIC

HYDROGEN-1 ELASTIC SECONDARY NEUTRON ANGULAR DISTRIBUTIONS ENDF/B MATERIAL NO. 1269

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 11	Y LINEAR IN X

TABULATED ANGULAR DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 5,0000E+01 MEV

INDEX	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)
1	-1,0000E+00	5,0117E-01	-8,0000E-01	5,0097E-01	-6,0000E-01	5,0066E-01	-4,0000E-01	5,0049E-01	-2,0000E-01	5,0025E-01
6	0,0000E+00	5,0005E-01	2,0000E-01	4,9974E-01	4,0000E-01	4,9953E-01	6,0000E-01	4,9933E-01	8,0000E-01	4,9902E-01
11	1,0000E+00	4,9882E-01								

HYDROGEN-1 ELASTIC SECONDARY NEUTRON ANGULAR DISTRIBUTIONS ENDF/B MATERIAL NO. 1269

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 11	Y LINEAR IN X

TABULATED ANGULAR DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 1,0000E+02 MEV

INDEX	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)
1	-1,0000E+00	5,0218E-01	-8,0000E-01	5,0176E-01	-6,0000E-01	5,0131E-01	-4,0000E-01	5,0089E-01	-2,0000E-01	5,0044E-01
6	0,0000E+00	5,0002E-01	2,0000E-01	4,9957E-01	4,0000E-01	4,9913E-01	6,0000E-01	4,9869E-01	8,0000E-01	4,9823E-01
11	1,0000E+00	4,9779E-01								

HYDROGEN-1　　　ELASTIC　　　ENDF/B MATERIAL NO. 1269

SECONDARY NEUTRON ANGULAR DISTRIBUTIONS

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 11	Y LINEAR IN X

TABULATED ANGULAR DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 2.0000E+00 MEV

INDEX	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)
1	-1.0000E+00	5.0387E-01	-8.0000E-01	5.0311E-01	-6.0000E-01	5.0234E-01	-4.0000E-01	5.0158E-01	-2.0000E-01	5.0081E-01
6	0.0000E+00	5.0003E-01	2.0000E-01	4.9925E-01	4.0000E-01	4.9846E-01	6.0000E-01	4.9766E-01	8.0000E-01	4.9687E-01
11	1.0000E+00	4.9598E-01								

HYDROGEN-1　　　ELASTIC　　　ENDF/B MATERIAL NO. 1269

SECONDARY NEUTRON ANGULAR DISTRIBUTIONS

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 11	Y LINEAR IN X

TABULATED ANGULAR DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 4.0000E+00 MEV

INDEX	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)
1	-1.0000E+00	5.0677E-01	-8.0000E-01	5.0542E-01	-6.0000E-01	5.0407E-01	-4.0000E-01	5.0275E-0.	-2.0000E-01	5.0143E-01
6	0.0000E+00	5.0011E-01	2.0000E-01	4.9875E-01	4.0000E-01	4.9734E-01	6.0000E-01	4.9589E-01	8.0000E-01	4.9441E-01
11	1.0000E+00	4.9283E-01								

HYDROGEN-1　　　ELASTIC　　　ENDF/B MATERIAL NO. 1269

SECONDARY NEUTRON ANGULAR DISTRIBUTIONS

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 11	Y LINEAR IN X

TABULATED ANGULAR DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 6.0000E+00 MEV

INDEX	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)
1	-1.0000E+00	5.0999E-01	-8.0000E-01	5.0779E-01	-6.0000E-01	5.0560E-01	-4.0000E-01	5.0302E-01	-2.0000E-01	5.0177E-01
6	0.0000E+00	4.9995E-01	2.0000E-01	4.9680E-01	4.0000E-01	4.9628E-01	6.0000E-01	4.9439E-01	8.0000E-01	4.9246E-01
11	1.0000E+00	4.9040E-01								

HYDROGEN-1　　　ELASTIC　　　ENDF/B MATERIAL NO. 1269

SECONDARY NEUTRON ANGULAR DISTRIBUTIONS

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 11	Y LINEAR IN X

TABULATED ANGULAR DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 8.0000E+00 MEV

INDEX	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)
1	-1.0000E+00	5.1200E-01	-8.0000E-01	5.0902E-01	-6.0000E-01	5.0476E-01	-4.0000E-01	5.0454E-01	-2.0000E-01	5.0207E-01
6	0.0000E+00	4.9987E-01	2.0000E-01	4.9766E-01	4.0000E-01	4.9546E-01	6.0000E-01	4.9314E-01	8.0000E-01	4.9077E-01
11	1.0000E+00	4.9018E-01								

HYDROGEN-1 ELASTIC SECONDARY NEUTRON ANGULAR DISTRIBUTIONS ENDF/B MATERIAL NO. 1269

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 11	Y LINEAR IN X

TABULATED ANGULAR DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 1.0000E+01 MEV

INDEX	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)
1	-1.0000E+00	5.1727E-01	-8.0000E-01	5.1201E-01	-6.0000E-01	5.0794E-01	-4.0000E-01	5.0401E-01	-2.0000E-01	5.0168E-01
6	0.0000E+00	4.9986E-01	2.0000E-01	4.9669E-01	4.0000E-01	4.9435E-01	6.0000E-01	4.9282E-01	8.0000E-01	4.9069E-01
11	1.0000E+00	4.8716E-01								

HYDROGEN-1 ELASTIC SECONDARY NEUTRON ANGULAR DISTRIBUTIONS ENDF/B MATERIAL NO. 1269

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 12	Y LINEAR IN X

TABULATED ANGULAR DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 1.2000E+01 MEV

INDEX	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)
1	-1.0000E+00	5.2272E-01	-9.0000E-01	5.1829E-01	-8.0000E-01	5.1464E-01	-6.0000E-01	5.0890E-01	-4.0000E-01	5.0479E-01
6	-2.0000E-01	5.0129E-01	0.0000E+00	4.9853E-01	2.0000E-01	4.9596E-01	4.0000E-01	4.9313E-01	6.0000E-01	4.9069E-01
11	8.0000E-01	4.8868E-01	1.0000E+00	4.8694E-01						

HYDROGEN-1 ELASTIC SECONDARY NEUTRON ANGULAR DISTRIBUTIONS ENDF/B MATERIAL NO. 1269

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 12	Y LINEAR IN X

TABULATED ANGULAR DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 1.4000E+01 MEV

INDEX	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)
1	-1.0000E+00	5.2823E-01	-9.0000E-01	5.2180E-01	-8.0000E-01	5.1678E-01	-6.0000E-01	5.0982E-01	-4.0000E-01	5.0456E-01
6	-2.0000E-01	5.0048E-01	0.0000E+00	4.9703E-01	2.0000E-01	4.9431E-01	4.0000E-01	4.9199E-01	6.0000E-01	4.9009E-01
11	8.0000E-01	4.8833E-01	1.0000E+00	4.8688E-01						

HYDROGEN-1 ELASTIC SECONDARY NEUTRON ANGULAR DISTRIBUTIONS ENDF/B MATERIAL NO. 1269

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 12	Y LINEAR IN X

TABULATED ANGULAR DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 1.6000E+01 MEV

INDEX	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)
1	-1.0000E+00	5.3633E-01	-9.0000E-01	5.2979E-01	-8.0000E-01	5.1924E-01	-6.0000E-01	5.1024E-01	-4.0000E-01	5.0484E-01
6	-2.0000E-01	4.9939E-01	0.0000E+00	4.9567E-01	2.0000E-01	4.9288E-01	4.0000E-01	4.9081E-01	6.0000E-01	4.8936E-01
11	8.0000E-01	4.8853E-01	1.0000E+00	4.8635E-01						

HYDROGEN-1 ELASTIC ENDF/B MATERIAL NO. 1269
SECONDARY NEUTRON ANGULAR DISTRIBUTIONS

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 12	Y LINEAR IN X

TABULATED ANGULAR DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 1.8000E+01 MEV

INDEX	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)
1	-1.0000E+00	5.4092E-01	-9.0000E-01	5.2962E-01	-8.0000E-01	5.2134E-01	-6.0000E-01	5.1038E-01	-4.0000E-01	5.0327E-01
6	-2.0000E-01	4.9802E-01	0.0000E+00	4.9406E-01	2.0000E-01	4.9126E-01	4.0000E-01	4.8943E-01	6.0000E-01	4.8905E-01
11	8.0000E-01	4.8940E-01	1.0000E+00	4.9091E-01						

HYDROGEN-1 ELASTIC ENDF/B MATERIAL NO. 1269
SECONDARY NEUTRON ANGULAR DISTRIBUTIONS

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 12	Y LINEAR IN X

TABULATED ANGULAR DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 2.0000E+01 MEV

INDEX	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)
1	-1.0000E+00	5.4807E-01	-9.0000E-01	5.3348E-01	-8.0000E-01	5.2332E-01	-6.0000E-01	5.1029E-01	-4.0000E-01	5.0221E-01
6	-2.0000E-01	4.9635E-01	0.0000E+00	4.9218E-01	2.0000E-01	4.8958E-01	4.0000E-01	4.8840E-01	6.0000E-01	4.8866E-01
11	8.2000E-01	4.9975E-01	1.0000E+00	4.9466E-01						

HYDROGEN-1 INELASTIC ENDF/B MATERIAL NO. 1269
THERMAL NEUTRON SCATTERING LAWS

INDEX	TYPE OF MODEL	TOTAL FREE ATOM CROSS SECTION	EFFECTIVE MASS
1	TABULATED	0.0000E+00	0.0000E+00

HYDROGEN-1 (N,GAMMA) ENDF/B MATERIAL NO. 1269
PHOTON MULTIPLICITIES-NEUTRON INDUCED

PHOTON ENERGY DISTRIBUTION LAW = DISCRETE

INTERPOLATION LAW BETWEEN ENERGIES

RANGE	DESCRIPTION
1 TO 2	Y LINEAR IN X

PHOTON ENERGY 2.2246E+00 MEV LEVEL ENERGY 0.0000E+00 MEV

INDEX	ENERGY EV	PHOTONS	ENERGY EV	PHOTONS
1	1.0000E-05	1.0000E+00	2.0000E+07	1.0000E+00

HYDROGEN-1 (N,GAMMA) ENDF/B MATERIAL NO. 1269
PHOTON ANGULAR DISTRIBUTIONS-NEUTRON INDUCED

PHOTONS ARE ISOTROPIC

Appendix - B

Helium - 3 MAT. No. - 1146

```
 2-HE-  3 LASL        EVAL-1968  L,STEWART
                      DIST-APR74
THIS FILE TRANSFERED FROM ENDF/B-III WITH NO MODIFICATIONS.
*      *      *      *      *      *      *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                           *
* CROSS SECTION STANDARD          HE-3   (N,P)              *
*                                                           *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                           *
* THE HE-3 (N,P) CROSS SECTION FOR THIS MATERIAL IS RECOMMENDED
*                                                           *
* AS A STANDARD FOR NEUTRON ENERGIES FROM THERMAL TO 50 KEV
*                                                           *
*      *      *      *      *      *      *                 *

HELIUM-3  FROM AN UNPUBLISHED EVALUATION BY L.STEWART (LASL-1968)

THIS EVALUATION OF HE-3 WAS RECOMMENDED BY THE STANDARDS
SUBCOMMITTEE (CSEWG) FOR INCLUSION IN ENDF/B AT THE OCT. 1970
MEETING OF CSEWG.

DATA CONVERTED TO ENDF/B FORMAT BY M.DRAKE(BNL) AND R.LABAUVE
(LASL) AUG1971.

 MF=1

   MT=451, ATOMIC MASS=3.0160

 MF=2

   MT=151, SCATTERING LENGTH=0.2821E-12 CM.

 MF=3

   MT=  1, TOTAL CROSS SECTIONS --- FROM .00001 EV TO 10.8 KEV
           MT1 TAKEN AS SUM MT2 + MT103.  FROM 10.8 KEV TO 20.0
           MEV MT1 EVALUATED USING EXPERIMENTAL DATA FROM REF.6.

   MT=  2, ELASTIC SCATTERING CROSS SECTIONS --- FROM .00001 EV
           TO 10.8 KEV MT2 TAKEN AS CONSTANT=1.0 B.  FROM 10.8
           KEV TO 20.0 MEV MT2=MT1-MT103-MT104 WITH EXPERIMENTAL
           DATA FROM REF.9 AND 11 AS CHECK.  NOTE TWO REACTIONS
           MISSING FROM THIS EVALUATION, NAMELY N,N-PRIME,P AND
           N,2N,2P.  EXP. DATA AT 15.0MEV INDICATES NON-ZERO
           CROSS SECTIONS FOR THESE.  INCLUDED IN MT2 THIS EVAL.

   MT=103, N-P CROSS SECTIONS --- FROM .00001 EV TO 1.42 KEV
           MT103 TAKEN AS ONE-OVER-V(5327B AT .0253EV)FROM
           REF.13.  FROM 1.42KEV TO 20.0MEV MT 103 IS EVALUATED
```

USING EXPERIMENTAL DATA FROM REFS,1,4,5,8,10,11,12,
14,15,16 COVERING ENERGY RANGES AS FOLLOWS -
REF.1 - .12 MEV TO 1.2 MEV
REF.4 - 5.8 MEV TO 11. MEV
REF.5 - 5.0 KEV TO 4.2 MEV
REF.8 - .48 MEV TO 4.5 MEV
REF.10- 3.1 MEV TO 11. MEV
REF.11- .95 MEV
REF.12- 4.0 MEV TO 12. MEV
REF.14- 5.0 KEV TO 4.2 MEV
REF.15- 5.0 KEV TO 4.2 MEV
REF.16- 14. MEV
DATA EXTRAPOLATED TO 20.MEV.

MT=104, N-D CROSS SECTIONS --- THRESHOLD=4.35MEV.
Q=-3.2684 MEV. EVALUATION FROM A DETAILED BALANCE
CALCULATION(REF.13) AND EXPERIMENTAL DATA(REF.11).

MT=251, AVERAGE VALUE OF COSINE OF ELASTIC SCATTERING ANGLE,
LABORATORY SYSTEM, OBTAINED FROM DATA MF=4,MT=2.

MT=252, VALUES OF XI, OBTAINED FROM DATA MF=4,MT=2

MT=253, VALUES OF GAMMA,OBTAINED FROM DATA MF=4,MT=2

MF=4

MT= 2, ANGULAR DISTRIBUTION OF SECONDARY NEUTRONS FROM
ELASTIC SCATTER. EVALUATED FROM EXPERIMENTAL DATA
FROM REFS.2,7,9,11,16,17 COVERING INCIDENT ENERGIES
AS FOLLOWS -

INCIDENT ENERGY	REFERENCES
1.E-5EV	(ISOTROPIC)
0.5 MEV	(ISOTROPIC)
1.0 MEV	9
2.0 MEV	9
2.6 MEV	11
3.5 MEV	9
5.0 MEV	11
6.0 MEV	9,7(FROM P+T ELASTIC SCATT)
8.0 MEV	11,7(FROM P+T ELASTIC SCATT)
14.5 MEV	16,17(FROM P+T ELASTIC SCATT)
17.5 MEV	11
20.0 MEV	2(FROM P+T ELASTIC SCATT)

REFERENCES

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	ELASTIC	32
	(N,P)	30
	(N,D)	13
	NU BAR	7
	XI	7
	GAMMA	7
SECONDARY NEUTRON ANGULAR DISTRIBUTIONS	ELASTIC	121

HELIUM-3 RESONANCE DATA RESONANCE PARAMETERS ENDF/B MATERIAL NO, 1146

ISOTOPE---------------------HELIUM-3
FRACTIONAL ABUNDANCE--------- 1,0000E+00
NUMBER OF ENERGY RANGES------ 1

ENERGY RANGE NUMBER---------- 1 RESOLVED SINGLE-LEVEL BREIT-WIGNER PARAMETERS
LOWER ENERGY LIMIT (EV)------ 2,5000E-02
UPPER ENERGY LIMIT (EV)------ 1,0000E+06
NUCLEAR SPIN----------------- 5,0000E-01
SPIN SCATTERING LENGTH (A+)-- 2,8210E-01
NUMBER OF L STATES----------- 0

NO RESONANCE PARAMETERS GIVEN FOR THIS MATERIAL

HELIUM-3 TOTAL NEUTRON CROSS SECTION ENDF/B MATERIAL NO, 1146

INTERPOLATION LAW BETWEEN ENERGIES
RANGE DESCRIPTION
1 TO 81 LN Y LINEAR IN LN X

NEUTRON CROSS SECTIONS

INDEX,	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS
1	1,0000E-05	2,6795E+05	1,0000E-04	8,4733E+04	2,5300E-02	5,3200E+03	1,8700E+02	6,2790E+01	2,8000E+02	5,1290E+01
6	4,2000E+02	4,2070E+01	6,3100E+02	3,4510E+01	1,0000E+03	2,7600E+01	1,4200E+03	2,3370E+01	2,1300E+03	1,9220E+01
11	3,1000E+03	1,5400E+01	4,7900E+03	1,2450E+01	4,7910E+03	1,2449E+01	7,1800E+03	1,0102E+01	7,1810E+03	1,0099E+01
16	1,0000E+04	8,2200E+00	1,6200E+04	6,8070E+00	2,4200E+04	5,6850E+00	3,6300E+04	4,6080E+00	5,4500E+04	4,1670E+00
21	8,1700E+04	3,7440E+00	8,2000E+04	3,7420E+00	1,0000E+05	3,6700E+00	2,0000E+05	3,2300E+00	3,0000E+05	3,0280E+00
26	3,5000E+05	2,9600E+00	4,0000E+05	2,9100E+00	4,5000E+05	2,8600E+00	5,0000E+05	2,8400E+00	5,5000E+05	2,8000E+00
31	6,0000E+05	2,7700E+00	6,5000E+05	2,7600E+00	7,0000E+05	2,7500E+00	7,5000E+05	2,7600E+00	8,0000E+05	2,7700E+00
36	8,5000E+05	2,8000E+00	9,0000E+05	2,8200E+00	9,5000E+05	2,8500E+00	1,0000E+06	2,8700E+00	1,1000E+06	2,9400E+00
41	1,2000E+06	3,0000E+00	1,3000E+06	3,0500E+00	1,4000E+06	3,1000E+00	1,5000E+06	3,1000E+00	1,6000E+06	3,2000E+00
46	1,7000E+06	3,2200E+00	1,8000E+06	3,2300E+00	1,9000E+06	3,2200E+00	2,0000E+06	3,2000E+00	2,5000E+06	3,0900E+00
51	3,0000E+06	2,9500E+00	3,5000E+06	2,7900E+00	4,0000E+06	2,6500E+00	4,3500E+06	2,5590E+00	4,3600E+06	2,5510E+00
56	4,5000E+06	2,5197E+00	5,0000E+06	2,4000E+00	5,5000E+06	2,2800E+00	6,0000E+06	2,1800E+00	6,5000E+06	2,0802E+00
61	7,0000E+06	1,9805E+00	7,5000E+06	1,9002E+00	8,0000E+06	1,8201E+00	8,5000E+06	1,7400E+00	9,0000E+06	1,6700E+00
66	9,5000E+06	1,6205E+00	1,0000E+07	1,5505E+00	1,0500E+07	1,4904E+00	1,1000E+07	1,4300E+00	1,1500E+07	1,3855E+00
71	1,2000E+07	1,3398E+00	1,2500E+07	1,2955E+00	1,3000E+07	1,2501E+00	1,3500E+07	1,2101E+00	1,4000E+07	1,1700E+00
76	1,5000E+07	1,1120E+00	1,6000E+07	1,0500E+00	1,7000E+07	9,9200E-01	1,8000E+07	9,4000E-01	1,9000E+07	8,9300E-01
81	2,0000E+07	8,5100E-01								

HELIUM-3 ELASTIC NEUTRON CROSS SECTION ENDF/B MATERIAL NO. 1146

INTERPOLATION LAW BETWEEN ENERGIES

RANGE	DESCRIPTION
1 TO 81	LN Y LINEAR IN LN X

NEUTRON CROSS SECTIONS

INDEX,	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS
1	1.0000E-05	1.0000E+00	1.0000E-04	1.0000E+00	2.5300E-02	1.0000E+00	1.0700E+02	1.0000E+00	2.0000E+02	1.0000E+00
6	4.2000E+02	1.0000E+00	6.3100E+02	1.0000E+00	1.0000E+03	1.0000E+00	1.4200E+03	1.0000E+00	2.1300E+03	1.0000E+00
11	3.1900E+03	1.0000E+00	4.7900E+03	1.0000E+00	4.7900E+03	1.0000E+00	7.1000E+03	1.0000E+00	7.1000E+03	1.0000E+00
16	1.0000E+04	1.0000E+00	1.6200E+04	1.0070E+00	2.4200E+04	1.1490E+00	3.6300E+04	1.2180E+00	5.4000E+04	1.3270E+00
21	8.1700E+04	1.4900E+00	8.2000E+04	1.4920E+00	1.0000E+05	1.6200E+00	2.0000E+05	1.9100E+00	3.0000E+05	1.9200E+00
26	3.5000E+05	1.9100E+00	4.0000E+05	1.9200E+00	4.5000E+05	1.9890E+00	5.0000E+05	1.9100E+00	5.5000E+05	1.8790E+00
31	6.0000E+05	1.8510E+00	6.5000E+05	1.8490E+00	7.0000E+05	1.8410E+00	7.5000E+05	1.8530E+00	8.0000E+05	1.8690E+00
36	8.5000E+05	1.9010E+00	9.0000E+05	1.9250E+00	9.5000E+05	1.9590E+00	1.0000E+06	1.9910E+00	1.1000E+06	2.0590E+00
41	1.2000E+06	2.1200E+00	1.3000E+06	2.1710E+00	1.4000E+06	2.2250E+00	1.5000E+06	2.3100E+00	1.6000E+06	2.3300E+00
46	1.7000E+06	2.3650E+00	1.8000E+06	2.3690E+00	1.9000E+06	2.3850E+00	2.0000E+06	2.3750E+00	2.5000E+06	2.3400E+00
51	3.0000E+06	2.2900E+00	3.5000E+06	2.2320E+00	4.0000E+06	2.1820E+00	4.3500E+06	2.1260E+00	4.3600E+06	2.1230E+00
56	4.5000E+06	2.0990E+00	5.0000E+06	2.0100E+00	5.5000E+06	1.9130E+00	6.0000E+06	1.8340E+00	6.5000E+06	1.7540E+00
61	7.0000E+06	1.6660E+00	7.5000E+06	1.5090E+00	8.0000E+06	1.5320E+00	8.5000E+06	1.4629E+00	9.0000E+06	1.4030E+00
66	9.5000E+06	1.3640E+00	1.0000E+07	1.3020E+00	1.0500E+07	1.2510E+00	1.1000E+07	1.1970E+00	1.1520E+07	1.1600E+00
71	1.2000E+07	1.1210E+00	1.2500E+07	1.0825E+00	1.3000E+07	1.0430E+00	1.3500E+07	1.0079E+00	1.4000E+07	9.7190E-01
76	1.5000E+07	9.2400E-01	1.6000E+07	8.7100E-01	1.7000E+07	8.2340E-01	1.8000E+07	7.8190E-01	1.9000E+07	7.4500E-01
81	2.0000E+07	7.1300E-01								

HELIUM-3 (N,P) NEUTRON CROSS SECTION ENDF/B MATERIAL NO. 1146

REACTION Q VALUE 7.6449E+05 EV

INTERPOLATION LAW BETWEEN ENERGIES

RANGE	DESCRIPTION
1 TO 81	LN Y LINEAR IN LN X

NEUTRON CROSS SECTIONS

INDEX,	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS
1	1.0000E-05	2.6795E+05	1.0000E-04	8.4732E+04	2.5300E-02	5.3270E+03	1.0700E+02	8.1790E+01	2.0000E+02	5.8290E+01
6	4.2000E+02	4.1070E+01	6.3100E+02	3.3510E+01	1.0000E+03	2.6600E+01	1.4200E+03	2.2370E+01	2.1300E+03	1.8220E+01
11	3.1900E+03	1.4400E+01	4.7900E+03	1.1450E+01	4.7910E+03	1.1449E+01	7.1800E+03	9.1000E+00	7.1810E+03	9.0994E+00
16	1.0000E+04	7.2200E+00	1.6200E+04	5.7100E+00	2.4200E+04	4.5400E+00	3.6300E+04	3.5900E+00	5.4000E+04	2.8400E+00
21	8.1700E+04	2.2560E+00	8.2000E+04	2.2573E+00	1.0000E+05	2.0500E+00	2.0000E+05	1.3200E+00	3.0000E+05	1.1000E+00
26	3.5000E+05	1.0500E+00	4.0000E+05	9.8500E-01	4.5000E+05	9.5100E-01	5.0000E+05	9.3000E-01	5.5000E+05	9.2100E-01
31	6.0000E+05	9.1900E-01	6.5000E+05	9.1100E-01	7.0000E+05	9.0000E-01	7.5000E+05	9.0500E-01	8.0000E+05	9.0100E-01
36	8.5000E+05	8.9900E-01	9.0000E+05	8.9500E-01	9.5000E+05	8.9100E-01	1.0000E+06	8.7900E-01	1.1000E+06	8.8100E-01
41	1.2000E+06	8.8000E-01	1.3000E+06	8.7900E-01	1.4000E+06	8.7500E-01	1.5000E+06	8.7000E-01	1.6000E+06	8.6200E-01
46	1.7000E+06	8.5500E-01	1.8000E+06	8.4500E-01	1.9000E+06	8.3900E-01	2.0000E+06	8.2500E-01	2.5000E+06	7.5000E-01
51	3.0000E+06	6.6000E-01	3.5000E+06	5.5800E-01	4.0000E+06	4.6800E-01	4.3500E+06	4.3300E-01	4.3600E+06	4.3000E-01
56	4.5000E+06	4.1600E-01	5.0000E+06	3.7200E-01	5.5000E+06	3.3400E-01	6.0000E+06	3.0300E-01	6.5000E+06	2.7500E-01
61	7.0000E+06	2.5700E-01	7.5000E+06	2.3900E-01	8.0000E+06	2.2200E-01	8.5000E+06	2.0000E-01	9.0000E+06	1.9600E-01
66	9.5000E+06	1.8400E-01	1.0000E+07	1.7500E-01	1.0500E+07	1.6500E-01	1.1000E+07	1.5800E-01	1.1500E+07	1.5000E-01
71	1.2000E+07	1.4300E-01	1.2500E+07	1.3700E-01	1.3000E+07	1.3100E-01	1.3500E+07	1.2600E-01	1.4000E+07	1.2200E-01
76	1.5000E+07	1.1200E-01	1.6000E+07	1.0400E-01	1.7000E+07	9.7600E-02	1.8000E+07	9.1800E-02	1.9000E+07	8.6600E-02
81	2.0000E+07	8.2000E-02								

HELIUM-3 (N,D) NEUTRON CROSS SECTION ENDF/B MATERIAL NO. 1146

REACTION Q VALUE -3,2[illegible]

INTERPOLATION LAW BETW[illegible]

RANGE	DESCRIP[illegible]	RANGE	DESCRIPTION
1 TO 2	Y LINE[illegible]	2 TO 28	LN Y LINEAR IN LN X

NEUTRON CROSS SECTIO[illegible]

INDEX,	ENERGY EV	CR[illegible]ON	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS
1	4,3500E+06	[illegible]	4,3000E+06	1,0000E-03	4,5000E+06	2,7000E-03	5,0000E+06	1,0000E-02	5,5000E+06	3,3000E-02
6	6,0000E+06	[illegible]	6,5000E+06	5,1200E-02	7,0000E+06	5,7500E-02	7,5000E+06	6,2200E-02	8,0000E+06	6,6100E-02
11	8,5000E+06	[illegible]	9,0000E+06	7,1000E-02	9,5000E+06	7,2500E-02	1,0000E+07	7,3500E-02	1,0500E+07	7,4400E-02
16	1,1000E+07	[illegible]	1,1500E+07	7,5500E-02	1,2000E+07	7,5000E-02	1,2500E+07	7,6000E-02	1,3000E+07	7,6100E-02
21	1,3500E+07	[illegible]	1,4000E+07	7,6100E-02	1,5000E+07	7,6000E-02	1,6000E+07	7,4200E-02	1,7000E+07	7,1000E-02
26	1,8000E+07	6,6[illegible]	1,9000E+07	6,1400E-02	2,0000E+07	5,6000E-02				

HELIUM-3 MU BAR NEUTRON CROSS SECTION ENDF/B MATERIAL NO. 1146

INTERPOLATION LAW BETWEEN ENERGIES

RANGE	DESCRIPTION
1 TO 12	Y LINEAR IN X

NEUTRON CROSS SECTIONS

INDEX,	ENERGY EV	DATA	ENERGY EV	DATA	ENERGY EV	DATA	ENERGY EV	DATA	ENERGY EV	DATA
1	1,0000E-05	2,2296E-01	5,0000E+05	2,2296E-01	1,0000E+06	2,3629E-02	2,0000E+06	2,1171E-01	2,6000E+06	2,9618E-01
6	3,5000E+06	3,9839E-01	5,0000E+06	5,0184E-01	6,0000E+06	5,3204E-01	8,0000E+06	5,8019E-01	1,5000E+07	6,6642E-01
11	1,7500E+07	7,1735E-01	2,0000E+07	6,5305E-01						

HELIUM-3 XI NEUTRON CROSS SECTION ENDF/B MATERIAL NO. 1146

INTERPOLATION LAW BETWEEN ENERGIES

RANGE	DESCRIPTION
1 TO 12	Y LINEAR IN X

NEUTRON CROSS SECTIONS

INDEX,	ENERGY EV	DATA	ENERGY EV	DATA	ENERGY EV	DATA	ENERGY EV	DATA	ENERGY EV	DATA
1	1,0000E-05	5,3931E-01	5,0000E+05	5,3931E-01	1,0000E+06	6,5778E-01	2,0000E+06	5,3269E-01	2,6000E+06	4,7587E-01
6	3,5000E+06	4,0762E-01	5,0000E+06	3,3619E-01	6,0000E+06	3,1464E-01	8,0000E+06	2,8153E-01	1,5000E+07	2,2116E-01
11	1,7500E+07	1,8764E-01	2,0000E+07	2,3011E-01						

HELIUM-3 GAMMA NEUTRON CROSS SECTION ENDF/B MATERIAL NO. 1146

INTERPOLATION LAW BETWEEN ENERGIES

RANGE	DESCRIPTION
1 TO 12	Y LINEAR IN X

NEUTRON CROSS SECTIONS

INDEX.	ENERGY EV	DATA	ENERGY EV	DATA	ENERGY EV	DATA	ENERGY EV	DATA	ENERGY EV	DATA
1	1.0000E-05	4.0577E-01	5.0000E+05	4.0577E-01	1.0000E+06	4.5885E-01	2.0000E+06	4.5463E-01	2.6000E+06	4.3728E-01
6	3.5000E+06	4.2620E-01	5.0000E+06	3.9044E-01	6.0000E+06	3.8451E-01	8.0000E+06	3.7447E-01	1.5000E+07	3.1476E-01
11	1.7500E+07	2.9167E-01	2.0000E+07	3.2475E-01						

HELIUM-3 ELASTIC SECONDARY NEUTRON ANGULAR DISTRIBUTIONS ENDF/B MATERIAL NO. 1146

TRANSFORMATION MATRIX FROM CENTER OF MASS TO LAB SYSTEM

P(E,L,LAB)=(SUM OVER M) U(L,M)*F(E,M,C.M.)

L/M	0	1	2	3	4	5	6	7	8	9
0	1.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
1	2.2296E-01	9.3289E-01	-2.0150E-01	6.0159E-02	-1.9093E-02	6.1964E-03	-2.0325E-03	6.7057E-04	-2.2203E-04	7.3464E-05
2	2.2741E-02	3.0825E-01	8.2071E-01	-3.3362E-01	1.2767E-01	-4.7483E-02	1.7334E-02	-6.2462E-03	2.2209E-03	-7.8863E-04
3	-6.8092E-09	7.6696E-02	5.2345E-01	6.8164E-01	-4.2090E-01	2.0024E-01	-8.6251E-02	3.5195E-02	-1.3874E-02	5.3322E-03
4	0.0000E+00	7.3543E-03	1.5330E-01	6.1994E-01	5.0396E-01	-4.6207E-01	2.6940E-01	-1.3330E-01	6.0480E-02	-2.6001E-02
5	0.0000E+00	3.5513E-04	2.5832E-02	2.4051E-01	0.0000E+00	3.1165E-01	-4.5906E-01	3.2693E-01	-1.8477E-01	9.2092E-02
6	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	1.0750E-02	2.3836E-01	-4.4462E-01	3.7324E-01	-2.3846E-01
7	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	3.9732E-03	6.0646E-02	1.9404E-01	-4.0616E-01	4.0257E-01
8	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	-7.0713E-04	1.1030E-02	8.8639E-02	6.9612E-02	-3.4740E-01
9	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	6.3080E-04	-3.0920E-04	2.4701E-02	0.0000E+00	-8.2510E-03
10	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	-8.5596E-06

L/M	10
0	0.0000E+00
1	-2.4493E-05
2	2.7232E-04
3	-2.0200E-03
4	1.0749E-02
5	-4.3426E-02
6	1.3199E-01
7	-2.8939E-01
8	4.1171E-01
9	-2.7300E-01
10	-5.6879E-02

INTERPOLATION LAW BETWEEN ENERGIES

RANGE	DESCRIPTION
1 TO 12	Y LINEAR IN X

HELIUM-3 ELASTIC SECONDARY NEUTRON ANGULAR DISTRIBUTIONS ENDF/B MATERIAL NO. 1146

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 2	Y LINEAR IN X

TABULATED DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 1.0000E-11 MEV IS ISOTROPIC

HELIUM-3 ELASTIC SECONDARY NEUTRON ANGULAR DISTRIBUTIONS ENDF/B MATERIAL NO. 1146

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 2	Y LINEAR IN X

TABULATED DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 5.0000E-01 MEV IS ISOTROPIC

HELIUM-3 ELASTIC SECONDARY NEUTRON ANGULAR DISTRIBUTIONS ENDF/B MATERIAL NO. 1146

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 21	Y LINEAR IN X

TABULATED ANGULAR DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 1.0000E+00 MEV

INDEX	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)
1	-1.0000E+00	9.3470E-01	-9.0000E-01	8.6430E-01	-8.0000E-01	7.9390E-01	-7.0000E-01	7.2340E-01	-6.0000E-01	6.5940E-01
6	-5.0000E-01	5.9660E-01	-4.0000E-01	5.4420E-01	-3.0000E-01	4.9940E-01	-2.0000E-01	4.5460E-01	-1.0000E-01	4.2250E-01
11	0.0000E+00	3.9058E-01	1.0000E-01	3.7130E-01	2.0000E-01	3.5850E-01	3.0000E-01	3.5210E-01	4.0000E-01	3.5210E-01
16	5.0000E-01	3.5850E-01	6.0000E-01	3.6810E-01	7.0000E-01	3.8090E-01	8.0000E-01	4.0010E-01	9.0000E-01	4.1930E-01
21	1.0000E+00	4.4170E-01								

HELIUM-3 ELASTIC SECONDARY NEUTRON ANGULAR DISTRIBUTIONS ENDF/B MATERIAL NO. 1146

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 21	Y LINEAR IN X

TABULATED ANGULAR DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 2.0000E+00 MEV

INDEX	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)
1	-1.0000E+00	8.8350E-01	-9.0000E-01	7.6310E-01	-8.0000E-01	6.5270E-01	-7.0000E-01	5.9730E-01	-6.0000E-01	4.6690E-01
6	-5.0000E-01	2.9410E-01	-4.0000E-01	3.3090E-01	-3.0000E-01	3.0120E-01	-2.0000E-01	2.7610E-01	-1.0000E-01	2.7110E-01
11	0.0000E+00	2.8110E-01	1.0000E-01	2.9870E-01	2.0000E-01	3.2630E-01	3.0000E-01	3.5890E-01	4.0000E-01	4.0670E-01
16	5.0000E-01	4.7350E-01	6.0000E-01	5.4720E-01	7.0000E-01	6.4760E-01	8.0000E-01	7.6560E-01	9.0000E-01	9.0070E-01
21	1.0000E+00	1.0446E+00								

HELIUM-3 ELASTIC ENDF/B MATERIAL NO. 1146

SECONDARY NEUTRON ANGULAR DISTRIBUTIONS

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 21	Y LINEAR IN X

TABULATED ANGULAR DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 2.0000E+00 MEV

INDEX	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)
1	-1.0000E+00	7.6190E-01	-9.0000E-01	6.3930E-01	-8.0000E-01	5.4340E-01	-7.0000E-01	4.6620E-01	-6.0000E-01	3.9960E-01
6	-5.0000E-01	3.4100E-01	-4.0000E-01	2.9970E-01	-3.0000E-01	2.5040E-01	-2.0000E-01	2.3100E-01	-1.0000E-01	2.2300E-01
11	0.0000E+00	2.5310E-01	1.0000E-01	2.9570E-01	2.0000E-01	3.4630E-01	3.0000E-01	4.1020E-01	4.0000E-01	4.8400E-01
16	5.0000E-01	5.7540E-01	6.0000E-01	6.6600E-01	7.0000E-01	7.6720E-01	8.0000E-01	8.7370E-01	9.0000E-01	9.9100E-01
21	1.0000E+00	1.1130E+00								

HELIUM-3 ELASTIC ENDF/B MATERIAL NO. 1146

SECONDARY NEUTRON ANGULAR DISTRIBUTIONS

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 21	Y LINEAR IN X

TABULATED ANGULAR DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 3.5000E+00 MEV

INDEX	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)
1	-1.0000E+00	6.9650E-01	-9.0000E-01	5.7200E-01	-8.0000E-01	4.6250E-01	-7.0000E-01	3.7110E-01	-6.0000E-01	2.9040E-01
6	-5.0000E-01	2.2050E-01	-4.0000E-01	1.8200E-01	-3.0000E-01	1.6130E-01	-2.0000E-01	1.6130E-01	-1.0000E-01	1.8200E-01
11	0.0000E+00	2.2050E-01	1.0000E-01	2.7430E-01	2.0000E-01	3.4150E-01	3.0000E-01	4.2400E-01	4.0000E-01	5.1630E-01
16	5.0000E-01	6.1850E-01	6.0000E-01	7.3950E-01	7.0000E-01	8.8470E-01	8.0000E-01	1.0621E+00	9.0000E-01	1.2460E+00
21	1.0000E+00	1.4151E+00								

HELIUM-3 ELASTIC ENDF/B MATERIAL NO. 1146

SECONDARY NEUTRON ANGULAR DISTRIBUTIONS

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 21	Y LINEAR IN X

TABULATED ANGULAR DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 5.0000E+00 MEV

INDEX	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)
1	-1.0000E+00	5.8940E-01	-9.0000E-01	4.4210E-01	-8.0000E-01	3.3070E-01	-7.0000E-01	2.5540E-01	-6.0000E-01	1.9320E-01
6	-5.0000E-01	1.6050E-01	-4.0000E-01	1.3420E-01	-3.0000E-01	1.3100E-01	-2.0000E-01	1.3100E-01	-1.0000E-01	1.4000E-01
11	0.0000E+00	1.7020E-01	1.0000E-01	2.1940E-01	2.0000E-01	3.0450E-01	3.0000E-01	4.1910E-01	4.0000E-01	5.4030E-01
16	5.0000E-01	7.0730E-01	6.0000E-01	8.8410E-01	7.0000E-01	1.0640E+00	8.0000E-01	1.2440E+00	9.0000E-01	1.4310E+00
21	1.0000E+00	1.6050E+00								

HELIUM-3 ELASTIC ENDF/B MATERIAL NO. 1146

SECONDARY NEUTRON ANGULAR DISTRIBUTIONS

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 21	Y LINEAR IN X

TABULATED ANGULAR DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 6.0000E+00 MEV

INDEX	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)
1	-1.0000E+00	5.6910E-01	-9.0000E-01	4.1100E-01	-8.0000E-01	3.0090E-01	-7.0000E-01	2.1690E-01	-6.0000E-01	1.5410E-01
6	-5.0000E-01	1.1740E-01	-4.0000E-01	8.0100E-02	-3.0000E-01	7.3400E-02	-2.0000E-01	8.0700E-02	-1.0000E-01	1.1740E-01
11	0.0000E+00	1.6000E-01	1.0000E-01	2.4950E-01	2.0000E-01	3.5960E-01	3.0000E-01	4.9170E-01	4.0000E-01	6.3120E-01
16	5.0000E-01	7.7000E-01	6.0000E-01	9.2400E-01	7.0000E-01	1.0860E+00	8.0000E-01	1.2480E+00	9.0000E-01	1.4090E+00
21	1.0000E+00	1.6221E+00								

HELIUM-3 ELASTIC ENDF/B MATERIAL NO. [illegible]

SECONDARY NEUTRON ANGULAR DISTRIBUTIONS

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 21	Y LINEAR IN X

TABULATED ANGULAR DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 8.0000E+00 MEV

INDEX	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)
1	-1.0000E+00	5.1520E-01	-9.0000E-01	3.78[illegible]E-01	-8.0000E-01	2.6420E-01	-7.0000E-01	1.7170E-01	-6.0000E-01	1.1010E-01
6	-5.0000E-01	6.6100E-02	-4.0000E-01	5.2800E-02	-3.0000E-01	6.1700E-02	-2.0000E-01	7.9300E-02	-1.0000E-01	1.1450E-01
11	0.0000E+00	1.6290E-01	1.0000E-01	2.2900E-01	2.0000E-01	3.1260E-01	3.0000E-01	4.1390E-01	4.0000E-01	5.5040E-01
16	5.0000E-01	7.2220E-01	6.0000E-01	9.2910E-01	7.0000E-01	1.1670E+00	8.0000E-01	1.4130E+00	9.0000E-01	1.6470E+00
21	1.0000E+00	1.7921E+00								

HELIUM-3 ELASTIC ENDF/B MATERIAL NO. 1146

SECONDARY NEUTRON ANGULAR DISTRIBUTIONS

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 21	Y LINEAR IN X

TABULATED ANGULAR DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 1.5000E+01 MEV

INDEX	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)
1	-1.0000E+00	2.9400E-01	-9.0000E-01	2.1330E-01	-8.0000E-01	1.4050E-01	-7.0000E-01	1.0330E-01	-6.0000E-01	8.1500E-02
6	-5.0000E-01	6.5000E-02	-4.0000E-01	5.7900E-02	-3.0000E-01	6.6700E-02	-2.0000E-01	8.0200E-02	-1.0000E-01	1.2460E-01
11	0.0000E+00	1.6940E-01	1.0000E-01	2.1940E-01	2.0000E-01	2.8080E-01	3.0000E-01	3.6550E-01	4.0000E-01	4.7600E-01
16	5.0000E-01	6.3310E-01	6.0000E-01	9.2340E-01	7.0000E-01	1.2529E+00	8.0000E-01	1.5729E+00	9.0000E-01	1.9079E+00
21	1.0000E+00	2.2709E+00								

HELIUM-3 ELASTIC ENDF/B MATERIAL NO. 1146

SECONDARY NEUTRON ANGULAR DISTRIBUTIONS

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 21	Y LINEAR IN X

TABULATED ANGULAR DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 1.7500E+01 MEV

INDEX	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)
1	-1.0000E+00	2.3560E-01	-9.0000E-01	1.3650E-01	-8.0000E-01	9.6300E-02	-7.0000E-01	7.6500E-02	-6.0000E-01	7.1000E-02
6	-5.0000E-01	7.0190E-02	-4.0000E-01	7.2000E-02	-3.0000E-01	7.7600E-02	-2.0000E-01	8.7900E-02	-1.0000E-01	1.0300E-01
11	0.0000E+00	1.2900E-01	1.0000E-01	1.6640E-01	2.0000E-01	2.1070E-01	3.0000E-01	2.9730E-01	4.0000E-01	4.1410E-01
16	5.0000E-01	5.8140E-01	6.0000E-01	8.1320E-01	7.0000E-01	1.1311E+00	8.0000E-01	1.5797E+00	9.0000E-01	2.2154E+00
21	1.0000E+00	3.0847E+00								

HELIUM-3 ELASTIC ENDF/B MATERIAL NO. 1146

SECONDARY NEUTRON ANGULAR DISTRIBUTIONS

INTERPOLATION LAW BETWEEN COSINES

RANGE	DESCRIPTION
1 TO 21	Y LINEAR IN X

TABULATED ANGULAR DISTRIBUTION IN THE CENTER OF MASS SYSTEM AT 2.0000E+01 MEV

INDEX	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)	MU	F(MU)
1	-1.0000E+00	3.8990E-01	-9.0000E-01	2.3430E-01	-8.0000E-01	1.4610E-01	-7.0000E-01	9.4100E-02	-6.0000E-01	8.3600E-02
6	-5.0000E-01	4.4800E-02	-4.0000E-01	9.6200E-02	-3.0000E-01	6.9900E-02	-2.0000E-01	9.5000E-02	-1.0000E-01	1.2820E-01
11	0.0000E+00	1.7210E-01	1.0000E-01	2.2940E-01	2.0000E-01	3.0470E-01	3.0000E-01	4.0690E-01	4.0000E-01	5.3600E-01
16	5.0000E-01	6.9910E-01	6.0000E-01	9.1420E-01	7.0000E-01	1.1562E+00	8.0000E-01	1.4699E+00	9.0000E-01	1.8464E+00
21	1.0000E+00	2.2856E+00								

Appendix - C

Lithium - 6 MAT No. - 1271

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3-LI- 6 LASL        EVAL-APR74 G,M,HALE, D,DODDER, P,YOUNG +
                    DIST-MAY74
********************************************************************
*                                                                  *
*    TOTAL, ELASTIC, AND (N,ALPHA) CROSS SECTIONS AND ELASTIC      *
* ANGULAR DISTRIBUTIONS REPLACED FOR NEUTRON ENERGIES BELOW        *
  2,0 MEV BY G.M.HALE, D,DODDER, P,YOUNG, AND L,STEWART AT LASL,*
  APR.,1974. THE NEW DATA RESULT FROM A COUPLED-CHANNEL            *
* R-MATRIX ANALYSIS THAT IS BRIEFLY DESCRIBED BELOW.               *
*    THE (N,GAMMA) CROSS SECTION FOR THERMAL NEUTRONS WAS ALSO     *
* REPLACED, AS DESCRIBED BELOW.                                    *
*                                                                  *
*    THE THERMAL CROSS SECTIONS ARE AS FOLLOWS,                    *
*          TOTAL       MT=1     SIGMA =  940,76 BARNS              *
*          ELASTIC     MT=2     SIGMA = 0,72124 BARNS              *
*          (N,GAMMA)   MT=102   SIGMA = 0,03850 BARNS              *
*          (N,ALPHA)   MT=107   SIGMA =  940,00 BARNS              *
*                                                                  *
********************************************************************
 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
                                                                  *
      PHOTON PRODUCTION ADDED BY LABAUVE AND STEWART AT            *
                      LASL, OCT, 1972,                            *
                                                                  *
 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
LI-6      LASL        EVAL-AUG71 M,E,BATTAT AND R,J.LABAUVE
                      DIST-JAN72
*         *           *          *          *          *          *

* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                                  *
* CROSS SECTION STANDARD -- LI-6 (N,ALPHA)                          *
*                                                                  *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
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F = 2   RESONANCE PARAMETERS

MT = 151, SCATTERING RADIUS ONLY.

F = 3   SMOOTH CROSS SECTIONS

MT=1, TOTAL. BELOW 1.5 MEV, THE DATA ARE BASED ON A COUPLED-CHANNEL R-MATRIX ANALYSIS OF THE TOTAL CROSS SECTION MEASUREMENTS OF REF. 2, THE (N,ALPHA) MEASUREMENTS OF REF.14 BELOW 400 KEV AND REF.15 AT HIGHER ENERGIES, AND VARIOUS MEASUREMENTS OF N-6LI AND ALPHA-T ELASTIC SCATTERING. THE TOTAL WAS MATCHED BETWEEN 1.5 AND 2.0 MEV TO A CURVE BASED PRIMARILY ON THE DATA OF FOSTER AND GLASGOW (REF.4) WHICH EXTEND

TO 15 MEV. EXTRAPOLATION TO 20 MEV IS BASED ON THE DATA OF PETERSON (REF.5).

MT=2,ELASTIC. BELOW 1.5 MEV, PREDICTIONS OF THE R-MATRIX ANALYSIS DESCRIBED UNDER MT=1 WERE USED. THESE PREDICTIONS ARE CONSISTENT WITH THE DATA OF REF.16 (BUT SUBSTANTIALLY HIGHER THAN THOSE OF REF.9) BELOW 200 KEV. ABOVE 200 KEV, THEY AGREE WITH THE DATA OF REF.9 AND REF.3. MATCHED BETWEEN 1.5 AND 2 MEV TO A CURVE BASED PRIMARILY ON THE HOPKINS EVALUATION (REF.6) BETWEEN 4 AND 10 MEV. AT 14 MEV, A VALUE OF .880 BARNS INSTEAD OF .865 BARNS (REF.1) WAS USED.

MT = 4, TOTAL INELASTIC. SUM OF MT = 52 AND MT = 91.

MT =24, (N,2N)ALPHA-P. EVALUATION OF REF. 1 TO 15 MEV. EXTRAPOLATED TO 20 MEV.

MT =52, (N,N PRIME)GAMMA. DATA OF PRESSER (REF. 7) TO 7 MEV. CONSTANT CROSS SECTION OF 5 MILLIBARN ASSUMED ABOVE 7 MEV.

MT = 91, (N.N PRIME)ALPHA-D. REF. 1 UP TO ABOUT 3 MEV. HOPKINS EVALUATION (REF. 6) CONSIDERED BETWEEN 4 AND 10 MEV. A SOMEWHAT HIGHER VALUE - 433 VERSUS 403 MILLIBARN - THAN IN REF. 1 WAS USED AT 14 MEV. EXTRAPOLATION TO 20 MEV USING DIFFERENCE BETWEEN TOTAL AND OTHER PARTIAL CROSS SECTIONS. THIS CROSS SECTION IS HIGHER THAN THE ROSEN AND STEWART DATA AT ALL ENERGIES WITH THE 14 MEV. POINT 433 MB INSTEAD OF THE MEASURED VALUE OF 315 MB.

MT=102, (N,GAMMA). BELOW 15 KEV, BASED ON A NEW THERMAL MEASUREMENT BY JURNEY (REF.19) OF 38.5 +/- 3 MB. AT HIGHER ENERGIES, BASED ON THE EVALUATION OF REF. 1.

MT = 103, (N,P). DATA OF PRESSER (REF. 7) TO 7 MEV. REF. 1 FROM 7 TO 15 MEV. EXTRAPOLATED TO 20 MEV.

MT=107, (N,ALPHA). BELOW 1.5 MEV, BASED ON THE R-MATRIX ANALYSIS DESCRIBED UNDER MT=1. THE EVALUATION AGREES BELOW 50 KEV WITH THE DATA OF REF.14, AND WITH THE RATIO MEASUREMENT OF REF.18, CONVERTED WITH THE VERSION 4 10B(N,ALPHA) CROSS SECTION. BETWEEN 50 AND 300 KEV, THE EVALUATED CROSS SECTION IS SUBSTANTIALLY HIGHER THAN THE DATA OF REF.14 (BUT NOT AS HIGH AS THOSE OF REF.12). THE HIGHER (N,ALPHA) CROSS SECTION SEEMS TO BE REQUIRED TO FIT THE TOTAL CROSS SECTION DATA OF REF.2, AND THE ALPHA-T ELASTIC SCATTERING DATA OF REF.17. ABOVE 400 KEV, THE EVALUATION AGREES REASONABLY WELL WITH THE DATA OF REF.13 AND REF.15. MATCHED BETWEEN 1.5 AND 2 MEV TO THE (N,ALPHA) CROSS SECTION EVALUATION BETWEEN 2 AND 15 MEV OF REF.1. EXTRAPOLATION TO 20 MEV IS BASED ON THE KERN AND KREGER DATA (REF.8) BETWEEN 15 AND 18 MEV.

MT = 251, 252, 253 (MUBAR, XI, GAMMA). CALCULATED USING ELASTIC ANGULAR DISTRIBUTIONS GIVEN IN FILE 4.

MF = 4 SECONDARY ANGULAR DISTRIBUTIONS

MT=2, ELASTIC. LEGENDRE COEFFICIENTS DETERMINED AS FOLLOWS. BELOW 1.5 MEV, BASED ON THE R-MATRIX ANALYSIS DESCRIBED UNDER MT=1. THESE COEFFICIENTS ARE CONSISTENT WTIH ANGULAR DISTRIBUTIONS OF LANE (REF.9) AND KNITTER (REF.3). MATCHED BETWEEN 1.5 AND 2.5 MEV TO FITS OF THE LANE DATA (REF.9). BETWEEN 4.83 AND 7.5 MEV, FIT OF HOPKINS DATA (REF. 7) WAS USED. BASED ON 14-MEV ELASTIC SCATTERING DATA GIVEN IN BNL-400, OPTICAL MODEL CALCULATIONS (ABACUS CODE) WERE USED TO INFER LEGENDRE COEFFICIENTS BETWEEN 10 AND 20 MEV.

MT = 24, (N,2N)ALPHA-P. EVALUATION OF REF. 1. ISOTROPIC IN LAB SYSTEM.

MT = 52, (N,N PRIME)GAMMA. TABULATED DISTRIBUTION. ISOTROPIC IN CM SYSTEM.

MT = 91. (N,N PRIME)ALPHA D. TABULATED DISTRIBUTION (L SYSTEM) OF REF. 1. CONTAINS NEUTRONS FROM FIRST LEVEL (DISCRETE) IN LI-6. EXTRAPOLATED TO 20 MEV.

MF = 5 SECONDARY ENERGY DISTRIBUTIONS

MT = 24, (N,2N)ALPHA D. DISTRIBUTIONS GIVEN IN REF. 1 APPROXIMATED BY ENDF/B LAW 9 WITH THETA EQUAL 0.21 * SQRT(E).

MT = 91, (N,N PRIME)ALPHA-D, DISTRIBUTIONS GIVEN IN REF. 1 APPROXIMATED BY ENDF/B LAW 9. THETA VALUES OBTAINED BY LINEAR INTERPOLATION BETWEEN FOLLOWING POINTS - - -

E = 1.718 MEV, THETA = 0.05 MEV
E = 4.1 MEV, THETA = 0.75 MEV
E =20.0 MEV, THETA = 8.40 MEV

THESE DISTRIBUTIONS CONTAIN ONE DISCRETE LEVEL AND DO NOT ALWAYS CONSERVE ENERGY.

MF=12

MT=52. THE FIRST LEVEL IN LI-6 DECAYS BY PARTICLE EMISSION AND IS THEREFORE INCLUDED IN MT=91. THE SECOND LEVEL IS A GAMMA EMITTER THEREFORE THE ENERGY AND MULTIPLICITY WERE TAKEN FROM REFERENCE 1.

MT=102 THE ENERGIES AND TRANSITION ARRAYS FOR RADIATIVE CAPTURE WERE TAKEN FROM REFERENCE 11. NOTE THAT THESE ARE DIFFERENT FROM THOSE ATTACHED TO VERSION III AND PREVIOUSLY CIRCULATED.

THE LP FLAG WAS USED TO DESCRIBE THE MT=102 PHOTONS

MF=14

MT=52 THE GAMMA IS ASSUMED ISOTROPIC.

MT=102 THE TWO HIGH-ENERGY GAMMAS ARE ASSUMED ISOTROPIC. DATA ON THE 477 KEV GAMMA INDICATE ISOTROPY.

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RESONANCE PARAMETERS

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ISOTOPE---------------------------LITHIUM-6
FRACTIONAL ABUNDANCE---------- 1.0000E+00
NUMBER OF ENERGY RANGES------          1

ENERGY RANGE NUMBER----------          1   RESOLVED SINGLE-LEVEL BREIT-WIGNER PARAMETERS
LOWER ENERGY LIMIT (EV)------ 1.0000E-05
UPPER ENERGY LIMIT (EV)------ 1.0000E+05
NUCLEAR SPIN----------------- 1.0000E+00
SPIN SCATTERING LENGTH (A*)-- 2.3974E-01
NUMBER OF L STATES-----------          0
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NO RESONANCE PARAMETERS GIVEN FOR THIS MATERIAL

LITHIUM-6 (N,ALPHA) NEUTRON CROSS SECTION ENDF/C MATERIAL NO. 1271

REACTION Q VALUE 4.7860E+06 EV

INTERPOLATION LAW BETWEEN ENERGIES

RANGE	DESCRIPTION	RANGE	DESCRIPTION
1 TO 24	LN Y LINEAR IN LN X	24 TO 177	Y LINEAR IN X

NEUTRON CROSS SECTIONS

INDEX,	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS
1	1.0000E-05	4.7284E+04	1.0000E-02	1.4952E+03	2.5300E-02	9.4000E+02	1.0000E-01	4.7282E+02	1.0000E+00	1.4951E+02
6	1.0000E+01	4.7266E+01	1.0000E+02	1.4936E+01	4.0000E+02	7.4631E+00	1.0000E+03	4.7188E+00	2.0000E+03	3.3380E+00
11	4.0000E+03	2.3647E+00	6.5000E+03	1.8610E+00	1.0000E+04	1.5085E+00	1.5000E+04	1.2429E+00	2.0000E+04	1.0875E+00
16	2.5000E+04	9.8309E-01	3.0000E+04	9.0949E-01	3.5000E+04	8.5359E-01	4.0000E+04	8.1036E-01	4.5000E+04	7.7634E-01
21	5.0000E+04	7.4934E-01	6.0000E+04	7.1184E-01	7.0000E+04	6.8849E-01	8.0000E+04	6.7831E-01	9.0000E+04	6.7901E-01
26	1.0000E+05	6.9028E-01	1.1000E+05	7.1274E-01	1.2000E+05	7.4791E-01	1.3000E+05	7.9831E-01	1.4000E+05	8.6768E-01
31	1.5000E+05	9.6140E-01	1.6000E+05	1.0870E+00	1.7000E+05	1.2545E+00	1.8000E+05	1.4767E+00	1.9000E+05	1.7676E+00
36	2.0000E+05	2.1366E+00	2.0500E+05	2.3487E+00	2.1000E+05	2.5742E+00	2.1500E+05	2.8041E+00	2.1600E+05	2.8497E+00
41	2.1700E+05	2.8949E+00	2.1800E+05	2.9396E+00	2.1900E+05	2.9835E+00	2.2000E+05	3.0267E+00	2.2100E+05	3.0690E+00
46	2.2200E+05	3.1101E+00	2.2300E+05	3.1501E+00	2.2400E+05	3.1886E+00	2.2500E+05	3.2256E+00	2.2600E+05	3.2610E+00
51	2.2700E+05	3.2945E+00	2.2800E+05	3.3261E+00	2.2900E+05	3.3556E+00	2.3000E+05	3.3829E+00	2.3100E+05	3.4079E+00
56	2.3200E+05	3.4304E+00	2.3300E+05	3.4504E+00	2.3400E+05	3.4677E+00	2.3500E+05	3.4823E+00	2.3600E+05	3.4941E+00
61	2.3700E+05	3.5031E+00	2.3800E+05	3.5093E+00	2.3900E+05	3.5126E+00	2.4000E+05	3.5130E+00	2.4100E+05	3.5105E+00
66	2.4200E+05	3.5052E+00	2.4300E+05	3.4971E+00	2.4400E+05	3.4863E+00	2.4500E+05	3.4728E+00	2.4600E+05	3.4567E+00
71	2.4700E+05	3.4382E+00	2.4800E+05	3.4172E+00	2.4900E+05	3.3940E+00	2.5000E+05	3.3686E+00	2.5100E+05	3.3412E+00
76	2.5200E+05	3.3120E+00	2.5300E+05	3.2809E+00	2.5400E+05	3.2483E+00	2.5500E+05	3.2141E+00	2.5600E+05	3.1786E+00
81	2.5700E+05	3.1419E+00	2.5800E+05	3.1041E+00	2.5900E+05	3.0654E+00	2.6000E+05	3.0258E+00	2.6100E+05	2.9856E+00
86	2.6200E+05	2.9448E+00	2.6300E+05	2.9035E+00	2.6400E+05	2.8619E+00	2.6500E+05	2.8200E+00	2.6600E+05	2.7779E+00
91	2.6700E+05	2.7358E+00	2.6800E+05	2.6937E+00	2.6900E+05	2.6517E+00	2.7000E+05	2.6098E+00	2.7500E+05	2.4051E+00
96	2.8000E+05	2.2119E+00	2.8500E+05	2.0335E+00	2.9000E+05	1.8713E+00	2.9500E+05	1.7252E+00	3.0000E+05	1.5949E+00
101	3.0500E+05	1.4779E+00	3.1000E+05	1.3740E+00	3.2000E+05	1.1991E+00	3.4000E+05	9.4784E-01	3.6000E+05	7.8239E-01
106	3.8000E+05	6.6872E-01	4.0000E+05	5.8745E-01	4.2500E+05	5.1470E-01	4.5000E+05	4.6246E-01	4.7500E+05	4.2353E-01
111	5.0000E+05	3.9362E-01	5.5000E+05	3.5113E-01	6.0000E+05	3.2279E-01	6.5000E+05	3.0284E-01	7.0000E+05	2.8824E-01
116	8.0000E+05	2.6886E-01	9.0000E+05	2.5732E-01	1.0000E+06	2.5046E-01	1.1000E+06	2.4676E-01	1.2000E+06	2.4547E-01
121	1.3000E+06	2.4624E-01	1.4000E+06	2.4896E-01	1.5000E+06	2.5364E-01	1.6000E+06	2.6000E-01	1.7000E+06	2.6400E-01
126	1.7180E+06	2.6300E-01	1.8000E+06	2.5900E-01	1.9000E+06	2.5100E-01	2.0000E+06	2.4100E-01	2.1000E+06	2.3100E-01
131	2.2000E+06	2.2000E-01	2.3000E+06	2.1000E-01	2.4000E+06	1.9700E-01	2.5000E+06	1.8500E-01	2.6000E+06	1.7000E-01
136	2.7000E+06	1.6800E-01	2.8000E+06	1.5800E-01	3.0000E+06	1.4500E-01	3.1000E+06	1.3900E-01	3.1920E+06	1.3600E-01
141	3.3000E+06	1.3200E-01	3.4000E+06	1.2800E-01	3.5000E+06	1.2500E-01	3.6000E+06	1.2100E-01	3.8000E+06	1.1400E-01
146	4.0000E+06	1.0700E-01	4.1500E+06	1.0200E-01	4.2000E+06	1.0100E-01	4.4000E+06	9.6000E-02	4.7000E+06	8.9000E-02
151	5.0000E+06	8.3000E-02	5.3000E+06	7.9000E-02	5.6000E+06	7.3000E-02	6.0000E+06	6.8000E-02	6.4000E+06	6.3000E-02
156	6.6140E+06	6.1000E-02	7.0000E+06	5.7000E-02	7.2000E+06	5.5000E-02	7.6000E+06	5.2000E-02	8.0000E+06	4.9000E-02
161	8.5000E+06	4.6000E-02	9.0000E+06	4.3000E-02	9.5000E+06	4.0000E-02	1.0000E+07	3.8000E-02	1.0500E+07	3.6000E-02
166	1.1000E+07	3.4000E-02	1.1500E+07	3.3000E-02	1.2000E+07	3.1000E-02	1.2500E+07	2.9000E-02	1.3000E+07	2.8000E-02
171	1.3500E+07	2.7000E-02	1.4000E+07	2.6000E-02	1.4500E+07	2.5000E-02	1.5000E+07	2.4000E-02	1.6000E+07	2.2500E-02
176	1.8000E+07	1.8500E-02	2.0000E+07	1.5000E-02						

Appendix - D

Boron - 10 MAT. No. - 1273

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5-B - 10 LASL          EVAL-NOV73 G.M.HALE, R.A.NISLEY, P.G.YOUNG
                       DIST-MAY74

B-10 FREE ATOM EVAL., NOV. 1973, G.M.HALE, R.A.NISLEY, P.G.YOUNG
                       LOS ALAMOS SCIENTIFIC LABORATORY

MF=2 --------- RESONANCE PARAMETERS ---------------------------

  MT=151  EFFECTIVE SCATTERING RADIUS = 0.40937E-12 CM


MF=3 --------- SMOOTH CROSS SECTIONS --------------------------

    THE 2200 M/S CROSS SECTIONS ARE AS FOLLOWS,
        MT=1     SIGMA = 3838.6    BARNS
        MT=2     SIGMA = 2.105R    BARNS
        MT=103   SIGMA = 0.000566  BARNS
        MT=107   SIGMA = 3836.5    BARNS
        MT=113   SIGMA = 0.000566  BARNS
        MT=700   SIGMA = 0.000566  BARNS
        MT=780   SIGMA = 240.51    BARNS
        MT=781   SIGMA = 3596.0    BARNS

  MT=1          TOTAL CROSS SECTION
    0 TO 1 MEV, CALCULATED FROM R-MATRIX PARAMETERS OBTAINED BY
        FITTING SIMULTANEOUSLY DATA FROM THE REACTIONS B10(N,N)
        B10(N,ALPHA0), B10(N,ALPHA1), LI7(ALPHA,ALPHA0), AND
        LI7(ALPHA,ALPHA1), TOTAL NEUTRON CROSS SECTION MEASURE-
        MENTS INCLUDED IN THE FIT ARE THOSE OF DI67. THE
        LI7+ALPHA DATA USED IN THE FIT ARE FROM CU67 AND BI57.
    1 TO 20 MEV, SMOOTH CURVE THROUGH MEASUREMENTS OF DI67,BO52.
        TS62,FO61,CO52, AND CO54, CONSTRAINED TO MATCH
        R-MATRIX FIT AT 1 MEV.

  MT=2       ELASTIC SCATTERING CROSS SECTION
    0 TO 1 MEV, CALCULATED FROM THE R-MATRIX PARAMETERS
        DESCRIBED FOR MT=1. EXPERIMENTAL ELASTIC SCATTERING DAT/
        INCLUDED IN THE FIT ARE THOSE OF AS70 AND LA71.
    1 TO 7 MEV, SMOOTH CURVE THROUGH MEASUREMENTS OF LA71, PO70,
        AND HO69, CONSTRAINED TO BE CONSISTENT WITH TOTAL AND
        REACTION CROSS SECTION MEASUREMENTS.
    7 TO 14 MEV, SMOOTH CURVE THROUGH MEASUREMENTS OF HO69,CO69,
        TE62,VA70, AND VA65.
    14 TO 20 MEV, OPTICAL MODEL EXTRAPOLATION FROM 14 MEV DATA

  MT=4       INELASTIC CROSS SECTION
    THRES.TO 20 MEV, SUM OF MT=51-85

 MT=51-61 INELASTIC CROSS SECTIONS TO DISCRETE STATES
    MT=51 Q=-0.717 MEV    MT=55 Q=-4.774 MEV    MT=59 Q=-5.923 MEV
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      52   -1.740            56   -5.114            60   -6.029
      53   -2.154            57   -5.166            61   -6.133
      54   -3.585            58   -5.183
   THRES.TO 20 MEV, BASED ON (N,NPRIME) MEASUREMENTS OF PO70,
        CO69,HO69, AND VA70, AND THE (N,XGAMMA) MEASUREMENTS OF
        DA56,DA60, AND NE70 USING A GAMMA-RAY DECAY SCHEME
        DEDUCED FROM LA66,AL66,SE66A, AND SE66B. HAUSER-FESHBACH
        CALCULATIONS WERE USED TO ESTIMATE SHAPES AND RELATIVE
        MAGNITUDES WHERE EXPERIMENTAL DATA WERE LACKING

MT=62-85 INELASTIC CROSS SECTIONS TO GROUPS OF LEVELS IN
         0.5-MEV WIDE BANDS CENTERED ABOUT THE Q-VALUES GIVEN
         BELOW (USED IN LIEU OF MT=91 AND FILE 5)
   MT=62 Q=-6.5 MEV      MT=70 Q=-10.5 MEV     MT=78 Q=-14.5 MEV
      63    -7.0              71    -11.0            79    15.0
      64    -7.5              72    -11.5            80    15.5
      65    -8.0              73    -12.0            81    16.0
      66    -8.5              74    -12.5            82    16.5
      67    -9.0              75    -13.0            83    17.0
      68    -9.5              76    -13.5            84    17.5
      69   -10.0              77    -14.0            85    18.0
   THRES, TO 20 MEV, INTEGRATED CROSS SECTION OBTAINED BY SUB-
        TRACTING THE SUM OF MT=2,51-61,103,104,107,AND 113 FROM
        MT=1.  CROSS SECTION DISTRIBUTED AMONG THE BANDS WITH
        AN EVAPORATION MODEL USING A NUCLEAR TEMPERATURE GIVEN
        BY T=0.9728*SQRT(EN) IN MEV,TAKEN FROM IR67.

MT=103   (N,P) CROSS SECTION
   THRES.TO 20 MEV, SUM OF MT=700-703

MT=104   (N,D) CROSS SECTION
   THRES, TO 20 MEV, BASED ON BE9(D,N)B11 MEASUREMENTS OF SI65
        AND BA60, AND THE (N,D) MEASUREMENT OF VA65.

MT=107   (N,ALPHA) CROSS SECTION
   0 TO 20 MEV, SUM OF MT=720,721.

MT=113   (N,T2ALPHA) CROSS SECTION
   0 TO 2.3 MEV, BASED ON A SINGLE-LEVEL FIT TO THE RESONANCE
        MEASURED AT 2 MEV BY DA61, ASSUMING L=0 INCOMING NEU-
        TRONS AND L=2 OUTGOING TRITONS.
   2.3 TO 20 MEV, SMOOTH CURVE THROUGH MEASUREMENTS OF FR56
        AND WY58, FOLLOWING GENERAL SHAPE OF DA61 MEASUREMENT
        FROM 4 TO 9 MEV.

MT=700-703   (N,P) CROSS SECTION TO DISCRETE LEVELS
   0 TO 20 MEV,  CRUDELY ESTIMATED FROM THE CALCULATIONS
        OF PO70 AND THE (N,XGAMMA) MEASUREMENTS OF NE70. CROSS
        SECTION FOR MT=700 ASSUMED IDENTICAL TO MT=113 BELOW
        1 MEV.  GAMMA-RAY DECAY SCHEME FOR BE-10 FROM LA66.
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MT=780      (N,ALPHA0) CROSS SECTION
   0 TO 1 MEV, CALCULATED FROM THE R-MATRIX PARAMETERS
       DESCRIBED FOR MT=1. EXPERIMENTAL (N,ALPHA0) DATA INPUT
       TO THE FIT WERE THOSE OF MA68 AND DA61. IN ADDITION, TH
       ANGULAR DISTRIBUTIONS OF VA72 FOR THE INVERSE REACTION
       WERE INCLUDED IN THE ANALYSIS.
   1 TO 20 MEV, BASED ON DA61 MEASUREMENTS, WITH SMOOTH EXTRA-
       POLATION FROM 8 TO 20 MEV. DA61 MEASUREMENT ABOVE
       APPROXIMATELY 2 MEV WAS RENORMALIZED BY FACTOR OF 1.4.

MT=781      (N,ALPHA1) CROSS SECTION
   0 TO 1 MEV, CALCULATED FROM THE R-MATRIX PARAMETERS
       DESCRIBED FOR MT=1. EXPERIMENTAL (N,ALPHA1) DATA IN-
       CLUDED IN THE FIT ARE THOSE OF FR72.
   1 TO 20 MEV, SMOOTH CURVE THROUGH MEASUREMENTS OF DA61 AND
       NE70, WITH SMOOTH EXTRAPOLATION FROM 15 TO 20 MEV. THE
       DA61 DATA ABOVE APPROXIMATELY 2 MEV WERE RENORMALIZED
       BY A FACTOR OF 1.4.

MF=4---------- NEUTRON ANGULAR DISTRIBUTIONS ------------------

  MT=2   ELASTIC ANGULAR DISTRIBUTIONS
   0 TO 1 MEV, CALCULATED FROM THE R-MATRIX PARAMETERS
       DESCRIBED FOR MF=1,MT=1. EXPERIMENTAL ANGULAR DISTRI-
       BUTIONS INPUT TO THE FIT FOR BOTH THE ELASTIC SCATTER-
       ING CROSS SECTION AND POLARIZATION WERE OBTAINED FROM
       THE MEASUREMENTS OF LA71. ASSIGNMENTS FOR RESONANCES
       ABOVE THE NEUTRON THRESHOLD ARE BASED ON LA71.
   1 TO 14 MEV, SMOOTHED REPRESENTATION OF LEGENDRE COEFFI-
       CIENTS DERIVED FROM THE MEASUREMENTS OF LA71, HA73,
       PO70, HO69, CO69, VA69, AND VA65, CONSTRAINED TO MATCH
       THE R-MATRIX CALCULATIONS AT EN=1 MEV.
   14 TO 20 MEV, OPTICAL MODEL EXTRAPOLATION OF 14-MEV DATA

  MT=51-85  INELASTIC ANGULAR DISTRIBUTIONS
   THRES. TO 20 MEV, ASSUMED ISOTROPIC IN CENTER OF MASS


MF=12 -------- GAMMA RAY MULTIPLICITIES ----------------------

  MT=781  0.4776-MEV PHOTON FROM THE (N,ALPHA1) REACTION
   0 TO 20 MEV, MULTIPLICITY OF 1.0 AT ALL ENERGIES


MF=13 -------- GAMMA-RAY PRODUCTION CROSS SECTIONS ------------

  MT=4   (N,NGAMMA) CROSS SECTION
   THRES. TO 20 MEV, OBTAINED FROM MT=51-61 USING B-10 DECAY
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SCHEME DEDUCED FROM LA66,AL66,SE66A, AND SE66B.

MT=103 (N,PGAMMA) CROSS SECTIONS
THRES. TO 20 MEV, OBTAINED FROM MT=701-705 USING BE-10
DECAY SCHEME DEDUCED FROM LA66.

MF=14 -------- GAMMA RAY ANGULAR DISTRIBUTIONS ---------------

MT=4 (N,NGAMMA) ANGULAR DISTRIBUTIONS
THRES. TO 20 MEV, ASSUMED ISOTROPIC

MT=103 (N,PGAMMA) ANGULAR DISTRIBUTIONS
THRES. TO 20 MEV, ASSUMED ISOTROPIC

MT=781 (N,ALPHA1/GAMMA) ANGULAR DISTRIBUTION
0 TO 20 MEV, ASSUMED ISOTROPIC

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RESONANCE PARAMETERS

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ISOTOPE---------------------------BORON-10
FRACTIONAL ABUNDANCE---------- 1.8340E-01
NUMBER OF ENERGY RANGES------           1

ENERGY RANGE NUMBER-----------          1   RESOLVED SINGLE-LEVEL BREIT-WIGNER PARAMETERS
LOWER ENERGY LIMIT (EV)------ 1.0000E-05
UPPER ENERGY LIMIT (EV)------ 1.0000E+04
NUCLEAR SPIN----------------- 3.0000E+00
SPIN SCATTERING LENGTH (A+)-- 4.0937E-01
NUMBER OF L STATES-----------           0

NO RESONANCE PARAMETERS GIVEN FOR THIS MATERIAL
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BORON-10

(N,ALPHA)
NEUTRON CROSS SECTION

ENDF/B MATERIAL NO. 1273

REACTION Q VALUE 2.7900E+06 EV

INTERPOLATION LAW BETWEEN ENERGIES

RANGE	DESCRIPTION	RANGE	DESCRIPTION
1 TO 96	LN Y LINEAR IN LN X	96 TO 193	Y LINEAR IN X

NEUTRON CROSS SECTIONS

INDEX	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS
1	1.0000E-05	1.9300E+05	2.5300E-02	3.8365E+03	1.0000E-01	1.9294E+03	1.0000E+00	6.0989E+02	1.0000E+01	1.9200E+02
6	1.0000E+02	6.0644E+01	1.0000E+03	1.8958E+01	5.0000E+03	8.3639E+00	1.0000E+04	5.8871E+00	2.0000E+04	4.1655E+00
11	3.0000E+04	3.4190E+00	4.0000E+04	2.9813E+00	5.0000E+04	2.6864E+00	6.0000E+04	2.4705E+00	7.0000E+04	2.3032E+00
16	8.0000E+04	2.1683E+00	9.0000E+04	2.0558E+00	1.0000E+05	1.9596E+00	1.1000E+05	1.8755E+00	1.2000E+05	1.8000E+00
21	1.3000E+05	1.7334E+00	1.4000E+05	1.6718E+00	1.5000E+05	1.6149E+00	1.6000E+05	1.5619E+00	1.7000E+05	1.5123E+00
26	1.8000E+05	1.4653E+00	1.9000E+05	1.4209E+00	2.0000E+05	1.3787E+00	2.0500E+05	1.3583E+00	2.1000E+05	1.3383E+00
31	2.1500E+05	1.3188E+00	2.2000E+05	1.2997E+00	2.2500E+05	1.2811E+00	2.3000E+05	1.2627E+00	2.3500E+05	1.2448E+00
36	2.4000E+05	1.2271E+00	2.4500E+05	1.2099E+00	2.5000E+05	1.1929E+00	2.6000E+05	1.1600E+00	2.7000E+05	1.128[illegible]E+00
41	2.8000E+05	1.0979E+00	2.9000E+05	1.0689E+00	3.0000E+05	1.0414E+00	3.1000E+05	1.0155E+00	3.2000E+05	9.9[illegible]E-01
46	3.3000E+05	9.6934E-01	3.4000E+05	9.4925E-01	3.5000E+05	9.3126E-01	3.6000E+05	9.1542E-01	3.7000E+05	9.0[illegible]7E-01
51	3.8000E+05	8.8986E-01	3.9000E+05	8.7981E-01	4.0000E+05	8.7112E-01	4.1000E+05	8.6374E-01	4.2000E+05	8.5691E-01
56	4.3000E+05	8.5024E-01	4.4000E+05	8.4317E-01	4.5000E+05	8.3522E-01	4.6000E+05	8.2591E-01	4.6500E+05	8.2063E-01
61	4.7000E+05	8.1487E-01	4.7500E+05	8.0862E-01	4.8000E+05	8.0185E-01	4.8500E+05	7.9458E-01	4.9000E+05	7.8677E-01
66	4.9500E+05	7.7845E-01	5.0000E+05	7.6966E-01	5.0500E+05	7.6040E-01	5.1000E+05	7.5071E-01	5.1500E+05	7.4062E-01
71	5.2000E+05	7.3019E-01	5.3000E+05	7.0845E-01	5.4000E+05	6.8585E-01	5.6000E+05	6.3950E-01	5.8000E+05	5.9365E-01
76	6.0000E+05	5.4998E-01	6.2000E+05	5.0900E-01	6.4000E+05	4.7263E-01	6.6000E+05	4.3937E-01	6.8000E+05	4.0958E-01
81	7.0000E+05	3.8297E-01	7.2000E+05	3.5924E-01	7.4000E+05	3.3805E-01	7.6000E+05	3.1914E-01	7.8000E+05	3.0223E-01
86	8.0000E+05	2.8718E-01	8.2000E+05	2.7399E-01	8.4000E+05	2.6142E-01	8.6000E+05	2.5096E-01	8.8000E+05	2.4089E-01
91	9.0000E+05	2.3220E-01	9.2000E+05	2.2486E-01	9.4000E+05	2.1786E-01	9.6000E+05	2.1212E-01	9.8000E+05	2.0738E-01
96	1.0000E+06	2.0374E-01	1.1000E+06	1.9448E-01	1.2000E+06	1.9600E-01	1.3000E+06	2.0600E-01	1.4000E+06	2.2920E-01
101	1.5000E+06	2.6100E-01	1.5500E+06	2.8979E-01	1.6000E+06	3.3190E-01	1.6500E+06	3.8200E-01	1.7000E+06	4.3510E-01
106	1.7500E+06	4.8510E-01	1.8000E+06	5.1200E-01	1.8500E+06	5.2400E-01	1.9000E+06	5.1950E-01	1.9500E+06	4.9940E-01
111	2.0000E+06	4.7200E-01	2.0500E+06	4.4303E-01	2.1000E+06	4.1000E-01	2.1500E+06	3.8171E-01	2.2000E+06	3.5640E-01
116	2.2500E+06	3.3395E-01	2.3000E+06	3.1300E-01	2.3500E+06	2.9659E-01	2.4000E+06	2.8000E-01	2.4500E+06	2.8236E-01
121	2.5000E+06	2.7410E-01	2.5500E+06	2.9240E-01	2.6000E+06	3.0500E-01	2.6500E+06	3.1740E-01	2.7000E+06	3.2900E-01
126	2.7500E+06	3.4000E-01	2.8000E+06	3.4110E-01	2.8500E+06	3.3070E-01	2.9000E+06	3.1640E-01	2.9500E+06	3.0260E-01
131	3.0000E+06	2.8990E-01	3.0500E+06	2.7882E-01	3.1000E+06	2.6700E-01	3.1500E+06	2.59[illegible]7E-01	3.2000E+06	2.5120E-01
136	3.3000E+06	2.3521E-01	3.4000E+06	2.2200E-01	3.6000E+06	2.1390E-01	3.7000E+06	2.1740E-01	3.8000E+06	2.2720E-01
141	4.0000E+06	2.5960E-01	4.2000E+06	2.6089E-01	4.3000E+06	2.6970E-01	4.4000E+06	2.5640E-01	4.6000E+06	2.3123E-01
146	4.8000E+06	2.1129E-01	5.0000E+06	1.9300E-01	5.2000E+06	1.7810E-01	5.4000E+06	1.6180E-01	5.5000E+06	1.5700E-01
151	5.6000E+06	1.5460E-01	5.8000E+06	1.5090E-01	6.0000E+06	1.4300E-01	6.2000E+06	1.3730E-01	6.4000E+06	1.3575E-01
156	6.6000E+06	1.3950E-01	6.8000E+06	1.2100E-01	7.0000E+06	1.0700E-01	7.2000E+06	9.8033E-02	7.4000E+06	9.1448E-02
161	7.6000E+06	8.5418E-02	7.8000E+06	8.0282E-02	8.0000E+06	7.5900E-02	8.2000E+06	7.2316E-02	8.4000E+06	6.9614E-02
166	8.6000E+06	6.7890E-02	8.8000E+06	6.4914E-02	9.0000E+06	6.3700E-02	9.2000E+06	6.2345E-02	9.4000E+06	6.1530E-02
171	9.6000E+06	6.0994E-02	9.8000E+06	6.0300E-02	1.0000E+07	5.9758E-02	1.0500E+07	5.9065E-02	1.1000E+07	5.8480E-02
176	1.1500E+07	5.8195E-02	1.2000E+07	5.8100E-02	1.2500E+07	5.8425E-02	1.3000E+07	5.8790E-02	1.3500E+07	5.9355E-02
181	1.4000E+07	6.0220E-02	1.4500E+07	6.0439E-02	1.5000E+07	5.9790E-02	1.5500E+07	5.8294E-02	1.6000E+07	5.6817E-02
186	1.6500E+07	5.5340E-02	1.7000E+07	5.3863E-02	1.7500E+07	5.2386E-02	1.8000E+07	5.0908E-02	1.8500E+07	4.9431E-02
191	1.9000E+07	4.7954E-02	1.9500E+07	4.6477E-02	2.0000E+07	4.5000E-02				

Appendix - E

Gold - 197 MAT. No. 1283

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 79-AU-197 BNL          EVAL-APR74.S.F.MUGHABGHAB,A.PRINCE,M.D.GO
                        DIST-SEP74  REV-NOV74 AT AND S.PEARLSTEIN
FILE=2     RESONANCE PARAMETERS
------------------------------
MT=151     RESOLVED RESONANCE PARAMETERS    GIVEN FROM 1.0E-05EV
           TO 2.0KEV BASED ON REF1 AND THE REFERENCES GIVEN THER
           AND A BOUND LEVEL.SOME OF THE RESONANCE SPIN ASSIGNME
           S FROM REF2.
           UNRESOLVED RESONANCE PARAMETERS  GIVEN FROM 2.0 TO 10.
           KEV.
FILE=3     NEUTRON CROSS-SECTIONS
------------------------------
MT=1       TOTAL CROSS-SECTION FROM 10.0KEV-2.3MEV REF 3-7.FROM
           2.3-15.0MEV BASED MAINLY ON FOSTERS DATA(REF8) AND REF
           9-12.FROM 15.0-20.0MEV DATA IN REF 12-13 WAS USED.
MT=2       ELASTIC CROSS-SECTION BY SUBTRACTING SUM OF ALL NON-
           ELASTIC CROSS-SECTIONS(REF14-21 ) FROM TOTAL CROSS-
           SECTION
MT=4       TOTAL INELASTIC SUM OF ALL THE DISCRETE LEVEL EXCITA-
           TION CROSS-SECTIONS AND THE CONTINUUM CROSS-SECTION
MT=16      (N,2N) CROSS-SECTION. DATA ARE IN REF 22-24.
MT=17      (N,3N) CROSS-SECTION. DATA ARE IN REF 22-24.
MT=26      CROSS-SECTION FOR THE FORMATION OF 10.0HOUR METASTABLE
           (SIXTH LEVEL) IN AU-196 DATA IN REF 22-24
MT=51-64   CROSS-SECTIONS FOR THE EXCITATION OF DISCRETE LEVELS.
           MODEL CALCULATIONS USING COMMNUC-I (REF 25) NORMALIZED
           TO THE EXPERIMENTAL DATA ON INDIVIDUAL LEVELS WHERE
           AVAILABLE(REF 26-28 )
MT=91      INELASTIC SCATTERING CROSS-SECTION TO THE CONTINUUM OF
           LEVELS OBTAINED BY USING COMMNUC-I AND NORMALIZING IT
           TO THE DIFFERENCE BETWEEN NON-ELASTIC(REF14-21) AND TH
           SUM OF DISCRETE INELASTIC AND (N,PARTICLE) CROSS-SECNS
MT=102     CAPTURE CROSS-SECTION FROM 1.0E-05EV TO 10KEV CALCULAT
           D FROM RESONANCE PARAMETERS
           FROM 10.0KEV TO 1.0MEV DATA USED IN THE FINAL EVALUATN
           WERE THOSE WHICH DID NOT USE U-235 AS A STANDARD(REF29
           37).ONLY DATA PUBLISHED SINCE 1960 CONSIDERED.
           ABOVE 1.0MEV ONLY ONE NEW DATA SET(REF40)WAS CONSIDERE
           AND IT WAS DECIDED TO RETAIN THE ENDF/B-III(MAT= 1166
           WHICH INCLUDED THE EVALUATION BY VAUGHN AND GRENCH(1.0
           5.2MEV) AND THAT OF BOGART ABOVE  5.2MEV(REF41)
MT=103     (N,P) CROSS SECTION BASED ON THE DATA OF REF 23.
MT=107     (N,ALPHA) CROSS SECTION BASED ON THE DATA OF REF 23.
MT=251-253 CALCULATED USING THE ANGULAR DISTRIBUTION OF FILE4.
           MT=2 USING THE CODE DUMMY5(REF 42)
FILE=4     ANGULAR DISTRIBUTION OF SECONDARY NEUTRONS
----------------------------------------------------
MT=2       ELASTIC SCATTERING BASED ON THE EXPERIMENTAL DATA IN
           REF 44-50  UPTO 8.05MEV. FROM 9.0MEV AND ABOVE BASED O
           MODEL CALCULATIONS USING ABACUS-2(REF 43) AND THE
```

OPTICAL MODEL PARAMETERS GIVEN IN REF44,
MT=16 (N,2N) ANGULAR DISTRIBUTION ASSUMED TO BE ISOTROPIC
MT=17 (N,3N) ANGULAR DISTRIBUTION ASSUMED TO BE ISOTROPIC
FILE=5 ENERGY DISTRIBUTION OF SECONDARY NEUTRONS

MT=16,17,26 ENERGY DISTRIBUTION GIVEN BY COMBINATION OF A TEMPERATURE AND A PRE-EQU: 'BRIUM EMISSION MODEL BASED ON DATA IN REF 51,52
MT=91 A TEMPERATURE MODEL USING THE PARAMETERS IN REF 53,

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GOLD-197 RESONANCE DATA ENDF/B MATERIAL NO. 1283

RESONANCE PARAMETERS

ISOTOPE--------------------------GOLD-197
FRACTIONAL ABUNDANCE---------- 1.0000E+00
NUMBER OF ENERGY RANGES------ 2

ENERGY RANGE NUMBER---------- 1 RESOLVED SINGLE-LEVEL BREIT-WIGNER PARAMETERS
LOWER ENERGY LIMIT (EV)------ 1.0000E-05
UPPER ENERGY LIMIT (EV)------ 2.0000E+03
NUCLEAR SPIN----------------- 1.5000E+00
SPIN SCATTERING LENGTH (A+)-- 9.6000E-01
NUMBER OF L STATES----------- 3

L VALUE---------------------- 0
NUMBER OF RESONANCES--------- 117
SPIN SCATTERING LENGTH (A-)-- 0.0000E+00

INDEX	ENERGY (EV)	J VALUE	RESONANCE WIDTHS (EV) TOTAL	NEUTRON	RADIATION	FISSION
1	-2.5580E+01	2.0000E+00	1.7642E-01	5.2420E-02	1.2400E-01	0.0000E+00
2	4.9060E+00	2.0000E+00	1.3920E-01	1.5200E-02	1.2400E-01	0.0000E+00
3	4.6450E+01	1.0000E+00	1.2413E-01	1.3000E-04	1.2400E-01	0.0000E+00
4	5.8100E+01	1.0000E+00	1.1640E-01	4.4000E-03	1.1200E-01	0.0000E+00
5	6.0300E+01	2.0000E+00	1.9800E-01	6.8000E-02	1.3000E-01	0.0000E+00
6	7.8400E+01	1.0000E+00	1.4670E-01	1.6700E-02	1.3000E-01	0.0000E+00
7	1.0700E+02	2.0000E+00	1.2780E-01	7.8000E-03	1.2000E-01	0.0000E+00
8	1.2230E+02	2.0000E+00	1.2480E-01	8.0000E-04	1.2400E-01	0.0000E+00
9	1.4420E+02	1.0000E+00	1.2890E-01	8.9000E-03	1.2000E-01	0.0000E+00
10	1.5130E+02	2.0000E+00	1.4200E-01	2.2000E-02	1.2000E-01	0.0000E+00
11	1.6290E+02	1.0000E+00	1.8800E-01	5.8000E-02	1.3000E-01	0.0000E+00
12	1.6490E+02	2.0000E+00	1.1530E-01	9.3000E-03	1.0600E-01	0.0000E+00
13	1.9030E+02	1.0000E+00	1.7400E-01	4.4000E-02	1.3000E-01	0.0000E+00
14	2.0030E+02	2.0000E+00	1.2450E-01	5.0000E-04	1.2400E-01	0.0000E+00
15	2.4050E+02	2.0000E+00	1.7200E-01	7.2000E-02	1.0000E-01	0.0000E+00
16	2.5570E+02	1.0000E+00	1.2490E-01	9.0000E-04	1.2400E-01	0.0000E+00
17	2.6240E+02	1.0000E+00	2.5300E-01	1.3300E-01	1.2000E-01	0.0000E+00
18	2.7580E+02	2.0000E+00	1.6920E-01	4.2000E-03	1.6500E-01	0.0000E+00
19	2.93[illegible]0E+02	2.0000E+00	5.1100E-01	3.6500E-01	1.4600E-01	0.0000E+00
20	3.2950E+02	2.0000E+00	1.7960E-01	4.5600E-02	1.3400E-01	0.0000E+00
21	3.3100E+02	1.0000E+00	2.0000E-01	6.2000E-02	1.3800E-01	0.0000E+00
22	3.5900E+02	2.0000E+00	1.6420E-01	3.9200E-02	1.2500E-01	0.0000E+00
23	3.7070E+02	2.0000E+00	1.9000E-01	8.4000E-02	1.0600E-01	0.0000E+00
24	3.7510E+02	1.0000E+00	1.4390E-01	1.3900E-02	1.3000E-01	0.0000E+00
25	3.8150E+02	2.0000E+00	1.6610E-01	6.1100E-02	1.0500E-01	0.0000E+00
26	4.0000E+02	2.0000E+00	1.6000E-01	2.0000E-02	1.4000E-01	0.0000E+00
27	4.4000E+02	1.0000E+00	4.2000E-01	2.8800E-01	1.3200E-01	0.0000E+00
28	4.5090E+02	2.0000E+00	1.7200E-01	6.2000E-02	1.1000E-01	0.0000E+00
29	4.7700E+02	2.0000E+00	4.5000E-01	3.2000E-01	1.3000E-01	0.0000E+00
30	4.9000E+02	1.0000E+00	1.6700E-01	3.7000E-02	1.3000E-01	0.0000E+00
31	4.9400E+02	2.0000E+00	1.6000E-01	2.7000E-02	1.3300E-01	0.0000E+00
32	5.3410E+02	2.0000E+00	1.6200E-01	3.5000E-02	1.2700E-01	0.0000E+00
33	5.4600E+02	1.0000E+00	1.8000E-01	5.3000E-02	1.2700E-01	0.0000E+00
34	5.7910E+02	2.0000E+00	5.2000E-01	3.7000E-01	1.5000E-01	0.0000E+00
35	5.8890E+02	1.0000E+00	2.6200E-01	1.4700E-01	1.1500E-01	0.0000E+00
36	5.9700E+02	1.0000E+00	1.6900E-01	3.3000E-02	1.3600E-01	0.0000E+00
37	6.0200E+02	2.0000E+00	3.6900E-01	2.2400E-01	1.4500E-01	0.0000E+00
38	6.1730E+02	2.0000E+00	2.3400E-01	9.4000E-02	1.4000E-01	0.0000E+00

39	6,2400E+02	1,0000E+00	1.7000E-01	4.9000E-02	1,2100E-01	0,0000E+00
40	6,2840E+02	2,0000E+00	1.6800E-01	2.2000E-02	1,3000E-01	0,0000E+00
41	6,3270E+02	2,0000E+00	6.3000E-01	4.8000E-01	1,5000E-01	0,0000E+00
42	6,5870E+02	1,0000E+00	1.3240E-01	6.4000E-03	1,2400E-01	0,0000E+00
43	6,6590E+02	1,0000E+00	1.3730E-01	1.3300E-02	1,2400E-01	0,0000E+00
44	6,9560E+02	1,0000E+00	8.3300E-01	6.6700E-01	1,6300E-01	0,0000E+00
45	6,9900E+02	2,0000E+00	8.8000E-01	7.3600E-01	1,4400E-01	0,0000E+00
46	7,1560E+02	2,0000E+00	2.6500E-01	1.1500E-01	1,7000E-01	0,0000E+00
47	7,3849E+02	2,0000E+00	1.3200E-01	8.0000E-03	1,2400E-01	0,0000E+00
48	7,5990E+02	1,0000E+00	5.6100E-01	4.2700E-01	1,5400E-01	0,0000E+00
49	7,7380E+02	1,0000E+00	6.0300E-01	4.7560E-01	1,2500E-01	0,0000E+00
50	7,8430E+02	2,0000E+00	2.8000E-01	1.2000E-01	1,6000E-01	0,0000E+00
51	7,9600E+02	2,0000E+00	3.2500E-01	1.7000E-01	1,4700E-01	0,0000E+00
52	8,1350E+02	1,0000E+00	1.4500E-01	2.2800E-02	1,2400E-01	0,0000E+00
53	8,1950E+02	2,0000E+00	3.8000E-01	2.3000E-01	1,5000E-01	0,0000E+00
54	8,2500E+02	2,0000E+00	7.0000E-01	5.3300E-01	1,6700E-01	0,0000E+00
55	8,6450E+02	1,0000E+00	1.7000E-01	2.3000E-02	1,4700E-01	0,0000E+00
56	8,7970E+02	2,0000E+00	1.7200E-01	3.5000E-02	1,3000E-01	0,0000E+00
57	9,3240E+02	2,0000E+00	5.6000E-01	4.1100E-01	1,4900E-01	0,0000E+00
58	9,6130E+02	1,0000E+00	2.6200E-01	1.0900E-01	1,5100E-01	0,0000E+00
59	9,6420E+02	2,0000E+00	4.8000E-01	3.3100E-01	1,4900E-01	0,0000E+00
60	9,8600E+02	2,0000E+00	2.9000E-01	1.2100E-01	1,6900E-01	0,0000E+00
61	9,9550E+02	2,0000E+00	6.5200E-01	4.9600E-01	1,5400E-01	0,0000E+00
62	1,0224E+03	1,0000E+00	1.2530E-01	1.3000E-03	1,2400E-01	0,0000E+00
63	1,0398E+03	1,0000E+00	1.6800E-01	4.4000E-02	1,2400E-01	0,0000E+00
64	1,0430E+03	1,0000E+00	6.1200E-01	4.8500E-01	1,2900E-01	0,0000E+00
65	1,0630E+03	2,0000E+00	1.3040E-01	6.4000E-03	1,2400E-01	0,0000E+00
66	1,0777E+03	1,0000E+00	4.8400E-01	3.6000E-01	1,2400E-01	0,0000E+00
67	1,0925E+03	2,0000E+00	5.2000E-01	3.7600E-01	1,4400E-01	0,0000E+00
68	1,1204E+03	1,0000E+00	1.4600E-01	2.2000E-02	1,2400E-01	0,0000E+00
69	1,1280E+03	2,0000E+00	1.6100E-01	3.7000E-02	1,2400E-01	0,0000E+00
70	1,1354E+03	2,0000E+00	4.9000E-01	3.3900E-01	1,5100E-01	0,0000E+00
71	1,1779E+03	2,0000E+00	1.3200E-01	8.0000E-03	1,2400E-01	0,0000E+00
72	1,1830E+03	2,0000E+00	4.3000E-01	2.9000E-01	1,4000E-01	4,5030E+00
73	1,2070E+03	2,0000E+00	5.0000E-01	3.6000E-01	1,4000E-01	0,0000E+00
74	1,2189E+03	2,0000E+00	1.5600E-01	3.2000E-02	1,2400E-01	0,0000E+00
75	1,2233E+03	1,0000E+00	7.0000E-01	5.6000E-01	1,4000E-01	0,0000E+00
76	1,2454E+03	1,0000E+00	2.5700E-01	1.3300E-01	1,2400E-01	0,0000E+00
77	1,2817E+03	1,0000E+00	6.0000E-01	4.5900E-01	1,4100E-01	0,3000E+00
78	1,2882E+03	2,0000E+00	1.3900E-01	1.5000E-02	1,2400E-01	0,0000E+00
79	1,3187E+03	2,0000E+00	3.7700E-01	2.5300E-01	1,2400E-01	0,0000E+00
80	1,3288E+03	1,0000E+00	8.4000E-01	7.0400E-01	1,3600E-01	0,0000E+00
81	1,3358E+03	2,0000E+00	2.4900E-01	1.2500E-01	1,2400E-01	0,0000E+00
82	1,3543E+03	1,0000E+00	7.2000E-01	5.9200E-01	1,2800E-01	0,0000E+00
83	1,3995E+03	2,0000E+00	1.5000E-01	2.6000E-02	1,2400E-01	0,0000E+00
84	1,3677E+03	1,0000E+00	3.9100E-01	2.6700E-01	1,2400E-01	0,0000E+00
85	1,3958E+03	2,0000E+00	1.5600E-01	3.2000E-02	1,2400E-01	0,0000E+00
86	1,4262E+03	1,0000E+00	3.8500E-01	2.6100E-01	1,2400E-01	0,0000E+00
87	1,4380E+03	2,0000E+00	5.5000E-01	4.2600E-01	1,2400E-01	0,0000E+00
88	1,4505E+03	2,0000E+00	4.1000E-01	2.7700E-01	1,3300E-01	0,0000E+00
89	1,4692E+03	2,0000E+00	1.6100E-01	3.7000E-02	1,2400E-01	0,0000E+00
90	1,4743E+03	1,0000E+00	2.6400E-01	1.6700E-01	1,2400E-01	0,0000E+00
91	1,4904E+03	2,0000E+00	1.1600E+00	1.0350E+00	1,2500E-01	0,0000E+00
92	[illegible]	1,0000E+00	1.5440E-01	3.0400E-02	1,2400E-01	0,0000E+00
93	1,5300E+03	1,0000E+00	1.7400E-01	5.0000E-02	1,2400E-01	0,0000E+00
94	1,5523E+03	2,0000E+00	3.0000E-01	1.5000E-01	1,5000E-01	0,0000E+00
95	1,5696E+03	1,0000E+00	1.3600E-01	1.2000E-02	1,2400E-01	0,0000E+00
96	1,5784E+03	1,0000E+00	6.4200E-01	4.8000E-01	1,6000E-01	0,0000E+00
97	1,5933E+03	2,0000E+00	1.8300E-01	5.9000E-02	1,2400E-01	0,0000E+00
98	1,6144E+03	2,0000E+00	2.8000E-01	1.6600E-01	1,1400E-01	0,0000E+00

99	1.6415E+03	1.0000E+00	2.4400E-01	1.2000E-01	1.2400E-01	0.0000E+00
100	1.6464E+03	2.0000E+00	2.2000E-01	9.6000E-02	1.2400E-01	0.0000E+00
101	1.6605E+03	1.0000E+00	1.3010E-01	6.1000E-03	1.2400E-01	0.0000E+00
102	1.6932E+03	2.0000E+00	2.5800E-01	1.3400E-01	1.2400E-01	0.0000E+00
103	1.7062E+03	2.0000E+00	3.9400E-01	2.7000E-01	1.2400E-01	0.0000E+00
104	1.7212E+03	2.0000E+00	1.8100E-01	5.7000E-02	1.2400E-01	0.0000E+00
105	1.7344E+03	2.0000E+00	4.3900E-01	3.1500E-01	1.2400E-01	0.0000E+00
106	1.7549E+03	2.0000E+00	4.4400E-01	3.2000E-01	1.2400E-01	0.0000E+00
107	1.7563E+03	1.0000E+00	6.9200E-01	5.6800E-01	1.2400E-01	0.0000E+00
108	1.8114E+03	1.0000E+00	2.2000E-01	9.6000E-02	1.2400E-01	0.0000E+00
109	1.8211E+03	2.0000E+00	1.3800E-01	1.4000E-02	1.2400E-01	0.0000E+00
110	1.8320E+03	1.0000E+00	2.1200E-01	8.8000E-02	1.2400E-01	0.0000E+00
111	1.8503E+03	1.0000E+00	1.5500E+00	1.3830E+00	1.6700E-01	0.0000E+00
112	1.8600E+03	2.0000E+00	2.1000E-01	8.6000E-02	1.2400E-01	0.0000E+00
113	1.8838E+03	1.0000E+00	3.5100E-01	2.2700E-01	1.2400E-01	0.0000E+00
114	1.8933E+03	2.0000E+00	1.2770E-01	3.7000E-03	1.2400E-01	0.0000E+00
115	1.9136E+03	1.0000E+00	2.6000E+00	2.4530E+00	1.4700E-01	0.0000E+00
116	1.9397E+03	1.0000E+00	6.5000E-01	5.2000E-01	1.3000E-01	0.0000E+00
117	1.9489E+03	2.0000E+00	9.0000E-01	7.3400E-01	1.6600E-01	0.0000E+00

GOLD-197 RESONANCE DATA ENDF/B MATERIAL NO. 1283
RESONANCE PARAMETERS

ISOTOPE---------------------------GOLD-197
FRACTIONAL ABUNDANCE---------- 1.0000E+00
NUMBER OF ENERGY RANGES------ 2

ENERGY RANGE NUMBER---------- 2 UNRESOLVED SINGLE-LEVEL BREIT-WIGNER PARAMETERS
LOWER ENERGY LIMIT (EV)------ 2.0000E+03
UPPER ENERGY LIMIT (EV)------ 1.0000E+04
NUCLEAR SPIN----------------- 1.5000E+00
EFFECTIVE SCATTERING RADIUS-- 9.6800E-01
NUMBER OF L STATES----------- 2

L VALUE---------------------- 0
NUMBER OF J STATES----------- 2

LEVEL SPACING	J-VALUE	DEG OF FREEDOM	AVERAGE RESONANCE WIDTHS (EV) NEUTRON	RADIATION
4.3200E+01	1.0000E+00	1.0000E+00	9.8720E-03	1.2500E-01
2.5900E+01	2.0000E+00	1.0000E+00	5.4390E-03	1.2500E-01

L VALUE---------------------- 1
NUMBER OF J STATES----------- 4

LEVEL SPACING	J-VALUE	DEG OF FREEDOM	AVERAGE RESONANCE WIDTHS (EV) NEUTRON	RADIATION
1.2960E+02	0.0000E+00	1.0000E+00	5.1840E-03	1.2500E-01
4.3200E+01	1.0000E+00	2.0000E+00	1.7280E-03	1.2500E-01
2.5900E+01	2.0000E+00	2.0000E+00	1.0360E-03	1.2500E-01
1.8500E+01	3.0000E+00	1.0000E+00	7.4000E-04	1.2500E-01

GOLD-197 (N,GAMMA) ENDF/B MATERIAL NO. 1283

NEUTRON CROSS SECTION

REACTION Q VALUE 6.5127E+06 EV

INTERPOLATION LAW BETWEEN ENERGIES

RANGE	DESCRIPTION	RANGE	DESCRIPTION
1 TO 95	Y LINEAR IN X	95 TO 135	LN Y LINEAR IN LN X

NEUTRON CROSS SECTIONS

INDEX,	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS
1	1.0000E-05	0.0000E+00	2.0000E+03	0.0000E+03	2.0000E+03	4.1340E-02	3.0000E+03	1.9020E-02	4.0000E+03	3.4130E-02
6	5.0000E+03	8.2240E-02	6.0000E+03	1.2102E-01	7.0000E+03	1.3143E-01	8.0000E+03	1.2623E-01	9.0000E+03	1.3054E-01
11	1.0000E+04	1.0318E-01	1.0000E+04	1.2250E+00	1.1000E+04	1.1400E+00	1.2000E+04	1.0500E+00	1.3000E+04	9.9000E-01
16	1.4000E+04	9.2500E-01	1.5000E+04	8.9000E-01	1.6000E+04	8.5000E-01	1.7000E+04	8.2000E-01	1.8000E+04	7.9000E-01
21	1.9000E+04	7.7000E-01	2.0000E+04	7.3500E-01	2.1000E+04	7.1600E-01	2.2000E+04	6.9800E-01	2.3000E+04	6.8250E-01
26	2.4000E+04	6.6400E-01	2.5000E+04	6.5000E-01	2.6000E+04	6.3800E-01	2.7000E+04	6.2300E-01	2.8000E+04	6.0900E-01
31	2.9000E+04	5.9700E-01	3.0000E+04	5.8400E-01	3.2000E+04	5.6600E-01	3.4000E+04	5.4000E-01	3.6000E+04	5.3000E-01
36	3.8000E+04	5.1250E-01	4.0000E+04	5.0100E-01	4.2000E+04	4.8900E-01	4.4000E+04	4.7900E-01	4.6000E+04	4.6900E-01
41	4.8000E+04	4.5900E-01	5.0000E+04	4.4900E-01	5.2000E+04	4.4000E-01	5.4000E+04	4.3100E-01	5.6000E+04	4.2300E-01
46	5.8000E+04	4.1700E-01	6.0000E+04	4.0800E-01	6.5000E+04	3.9000E-01	7.0000E+04	3.7250E-01	7.5000E+04	3.5750E-01
51	8.0000E+04	3.4100E-01	8.5000E+04	3.3000E-01	9.0000E+04	3.2600E-01	9.5000E+04	3.2000E-01	1.0000E+05	3.1300E-01
56	1.1000E+05	3.0700E-01	1.2000E+05	3.0100E-01	1.3000E+05	2.9500E-01	1.4000E+05	2.9000E-01	1.5000E+05	2.8300E-01
61	1.6000E+05	2.7900E-01	1.7000E+05	2.7300E-01	1.8000E+05	2.6800E-01	1.9000E+05	2.6200E-01	2.0000E+05	2.5750E-01
66	2.1000E+05	2.5100E-01	2.2000E+05	2.4500E-01	2.3000E+05	2.4100E-01	2.4000E+05	2.3500E-01	2.5000E+05	2.3000E-01
71	2.6000E+05	2.2500E-01	2.7000E+05	2.2000E-01	2.8000E+05	2.1600E-01	2.9000E+05	2.1200E-01	3.0000E+05	2.0800E-01
76	3.2000E+05	1.9800E-01	3.4000E+05	1.8900E-01	3.6000E+05	1.8100E-01	3.8000E+05	1.7120E-01	4.0000E+05	1.6500E-01
81	4.2000E+05	1.6000E-01	4.4000E+05	1.5400E-01	4.6000E+05	1.4600E-01	4.8000E+05	1.4300E-01	5.0000E+05	1.4000E-01
86	5.2000E+05	1.3500E-01	5.4000E+05	1.3100E-01	5.6000E+05	1.2800E-01	5.8000E+05	1.2300E-01	6.0000E+05	1.2000E-01
91	6.5000E+05	1.1100E-01	7.0000E+05	1.0400E-01	7.5000E+05	1.0000E-01	8.0000E+05	9.5000E-02	8.5000E+05	9.0000E-02
96	9.0000E+05	8.9000E-02	9.5000E+05	8.7000E-02	1.0000E+06	8.4450E-02	1.1000E+06	8.1730E-02	1.2000E+06	7.9530E-02
101	1.3000E+06	7.7530E-02	1.4000E+06	7.5200E-02	1.5000E+06	7.2610E-02	1.6000E+06	6.9800E-02	1.7000E+06	6.6810E-02
106	1.8000E+06	6.3600E-02	1.9000E+06	6.0460E-02	2.0000E+06	5.7170E-02	2.1000E+06	5.3860E-02	2.2000E+06	5.0560E-02
111	2.3000E+06	4.7300E-02	2.4000E+06	4.4090E-02	2.5000E+06	4.0900E-02	2.6000E+06	3.8000E-02	2.7000E+06	3.5500E-02
116	2.8000E+06	3.3100E-02	2.9000E+06	3.0700E-02	3.0000E+06	2.8400E-02	3.2000E+06	2.4000E-02	3.4000E+06	2.1900E-02
121	3.6000E+06	1.9900E-02	3.8000E+06	1.8700E-02	4.0000E+06	1.7800E-02	4.2000E+06	1.7100E-02	4.4000E+06	1.6600E-02
126	4.6000E+06	1.6100E-02	4.8000E+06	1.5700E-02	5.0000E+06	1.5400E-02	5.2000E+06	1.5200E-02	5.4000E+06	1.4900E-02
131	6.0000E+06	1.4300E-02	8.0000E+06	1.2700E-02	1.0000E+07	1.1000E-02	1.5000E+07	9.8000E-03	2.0000E+07	8.7000E-03

Appendix - F

Uranium - 235   MAT. No. - 1261

92-U -235 LASL,AI   EVAL-MAR74 L,STEWART, H,ALTER , R,HUNTER
DIST-JUL74 REV-JUN75

PRINCIPAL EVALUATORS- L,STEWART LASL, H,ALTER AI, R,HUNTER LASL

CONTRIBUTING EVALUATORS

NU-BAR--B,R, LEONARD BNW, L, STEWART AND RAY HUNTER LASL,
HUMMEL ANL,
F.P.YIELDS--R,SCHENTER HEDL, FISSION PROD, SUBCOMMITTEE
DELAYED NEUTRON DATA-- S,A,COX(ANL)
RADIOACTIVE DECAY DATA--C,W,REICH ANC
RESOLVED RESONANCE DATA--J.R, SMITH ANC, R, GWIN, R, PEELE, AN
G,DESAUSSURE ORNL
UNRESOLVED RESONANCE DATA-- R,PEELLE(ORNL) AND M,BHAT(BNL)

SMOOTH DATA

THERMAL RANGE C,LUBITZ KAPL, J,HARDY BAPL, B,R,LEONARD BNW
82 EV -25 KEV--R,GWIN, G,DESAUSSURE ORNL, R,BLOCK RPI,
J,R, SMITH ANC
25 KEV-1 MEV A,CARLSON NBS, W,POENITZ ANL, L,STEWART
LASL, H,ALTER
1 MEV-20 MEV--R,HUNTER, L,STEWART LASL, H,ALTER
INELASTIC SCAT--L,STEWART, R,HUNTER LASL
SECONDARY NEUTRON DIST,--L.STEWART, R,HUNTER LASL
GAMMA PRODUCTION--R,HUNTER, L,STEWART LASL

NO FORMAL REPORT AVAILABLE DESCRIBING THIS EVALUATION

MF = 1

MT=452
NU-BAR TOTAL

NORMALIZED TO CF-252---SUGGESTED BY THERMAL TASK FORCE

MT=453
INDUCED REACTION BRANCHING RATIOS

NO DATA GIVEN

MT=454
FISSION PRODUCT YIELD DATA

*   *   *   *   *   *
FISSION PRODUCT YIELD DATA FOR ENDF/B-IV 8/74,   RECOMMENDE[

VALUES ARE GIVEN FROM THE YIELDS SUBCOMMITTEES OF THE DECAY HEAT TASK FORCE. MEMBERS OF THE SUBCOMMITTEES INCLUDE W.WALKER(CH), P.ALINE,N.DUDEY,R.LARSEN,W.MAECK,W.MCELROY,B.RIDER,T.ENGLAND(CH) A.WAHL AND K.WOLFSBERG. FINAL DIRECT YIELDS WERE GENERATED BY B. RIDER USING METHODS DESCRIBED IN NEDO-12154 REV.1 JAN.74. ENDF/B FILE PREP. AND MODIFICATIONS WERE MADE BY R.SCHENTER 8/74. PEAK CHAIN YIELDS ARE GIVEN AS

ELAB=2.53E-02 EV   A-YCHAIN(PERCENT)=

872.55, 883.62, 894.84, 905.91, 915.92, 925.96, 936.37, 946.42,
956.46, 966.25, 975.96, 985.78, 996.12,1006.30,1015.04,1024.20,
1033.14,1312.83,1324.25,1336.79,1347.68,1356.60,1366.27,1376.27,
1386.82,1396.48,1406.32,1415.89,1425.93,1435.97,1445.45,1453.93,
1462.99,1472.27

ELAB=5.00E+05 EV   A-YCHAIN(PERCENT)=

872.41, 883.59, 894.56, 905.57, 915.59, 925.72, 936.10, 946.19,
956.38, 966.09, 975.96, 985.87, 995.70,1006.24,1015.42,1024.59,
1033.29,1042.31,1313.23,1324.65,1336.47,1347.62,1356.28,1366.24,
1376.16,1386.47,1396.33,1406.02,1415.99,1425.46,1435.70,1445.27,
1453.75,1462.90,1472.37

ELAB=1.40E+07 EV   A-YCHAIN(PERCENT)=

872.41, 883.32, 893.97, 904.60, 914.81, 925.12, 935.21, 945.20,
955.05, 965.11, 975.47, 984.88, 995.10,1005.21,1014.42,1023.93,
1033.09,1042.28,1272.18,1282.37,1292.96,1303.44,1314.04,1324.63,
1335.48,1346.28,1355.38,1365.02,1374.92,1385.09,1394.83,1404.43,
1414.57,1424.88,1433.90,1443.23,1453.05,1462.37

*   *   *   *   *   *

MT=455
DELAYED NEUTRON YIELDS
EVALUATION BY S.A.COX(ANL),L.STEWART(LASL),B.HUTCHINS(GEBRDO) AND N.C.PAIK(WARD) SEE REPORT ANL/NDM-5 BY S.A.COX(ANL)

MT=456
PROMPT NU-BAR

NORMALIZED TO CF-252. SUGGESTED BY THERMAL TASK FORCE

MT=457
SPONTANEOUS RADIOACTIVE DECAY DATA

EVALUATION BY C.W.REICH (ANC)   FEB74
REFERENCES Q(ALPHA)= 1973 REVISION OF WAPSTRA-GOVE MASS TABLES
HALF-LIFE= N.E. HOLDEN, CHART OF THE NUCLIDES (1973) AND PRIVATE COMMUNICATION (JAN.,1974)
GAMMA-RAY ENERGIES AND RELATIVE INTENSITIES - L.A. KROGER, PH.D. THESIS (UNIV. OF WYOMING, 1971) SEE

ALSO, USAEC REPORT ANCR-1016, P,75 (1971),
OTHER- A, ARTNA-COHEN, NUCLEAR DATA B 6, NO.3, 287,
(1971).

NOTE AVG, E-ALPHA = 4468, KEV,
THIS VALUE INCLUDES CONTRIBUTIONS FROM THE KINETIC
ENERGY OF THE ALPHA PARTICLE AND THE RECOIL ENERGY
OF THE DAUGHTER NUCLEUS,

MF = 2

RESOLVED RESONANCE REGION

RESOLVED RESONANCE REGION REMAINS UNCHANGED FROM ENDF/B-3,
AND REPORT BY J,R,SMITH

UNRESOLVED RESONANCE DATA--R, PEELLE (ORNL), M, BHAT (BNL)

82 EV-25 KEV

PARAMETERS ARE GIVEN AT 120 ENERGY POINTS, LOCAL-AVERAGE PARAMETERS ARE CONSTANT OVER THE RANGE FOR P-WAVE RESONANCES, SPINS 2-5, AND HAVE THE SAME VALUES GIVEN FOR ENDF/B-111, FOR S-WAVE LOCAL-AVERAGE PARAMETERS (J=3,4), THE GAMMA-RAY WIDTHS WERE KEPT AT THE ENDF/B-111 VALUE OF 35 MV, WHILE THE WIDTHS WERE VARIED TO PRODUCE A FIT TO THE APPARENT GROSS STRUCTURE IN THE CROSS SECTIONS EVALUATED BY LOOKING AT THE FEATURES COMMON TO SEVERAL EXPERIMENTAL MEASUREMENTS, FITS WERE PRODUCED USING THE CODE UR, THE S-WAVE POTENTIAL SCATTERING RADIUS WAS TAKEN AS ,95663X10-12 CM, GIVING A POTENTIAL SCATTERING CROSS SECTION OF 11,5 B, JUST AS IN THE RESOLVED RANGE, TO PRODUCE ACCEPTABLE 5 PERCENT AGREEMENT WITH AVERAGE SIGMA TOTALS, THE CROSS SECTIONS INPUT TO THE FIT WERE ADJUSTED TO YIELD THE EVALUATED AVERAGE CAP, AND FIS, CROSS SECTIONS GIVEN BELOW, IF THE CROSS SECTIONS ARE LINEARLY INTERPOLATED BETWEEN THE POINTS GIVEN, IF A PROCESSING CODE LINEARLY INTERPOLATES PARAMETERS BETWEEN THESE ENERGY POINTS, THE RESULTING AVERAGE FIS, CROSS SECTIONS ARE TOO HIGH, FOR DECIMAL INTERVALS BY UP TO ,7 PERCENT AND CAP, CROSS SECTIONS AVERAGED OVER THESE INTERVALS ARE TOO LO BY UP TO 1,3 PERCENT, INTEGRAL CROSS SECTIONS UP TO 1 KEV ARE HI AND LO BY 0,3 AND 0,7 PERCENT AND THE INTEGRALS FROM 1 KEV UP ARE HI AND LO BY 0,16 AND 0,24 PERCENT, THE EVALUATED AVERAGE FIS, CROSS SECTIONS WERE NORMALIZED TO A 2200 M/SEC VALUE OF 584,5 B, AND HAVE A SHAPE DETERMINED BY COMBINING DATA FROM REFERENCES 27-31 IN APPROPRIATE ENERGY RANGES, AVERAGE (UNIT WEIGHT) CAP, CROSS SECTIONS WERE COMBINED FROM REFERENCES 28,30 AND 31, THE EVALUATED AVERAGE CROSS SECTIONS GIVEN BELOW ARE TAKEN FROM REFERENCE, REF, 32,

ELO EHI FIS, CAP, ELO EHI FIS, CAP, ELO EHI FIS, CAP,

(KEV)		(B)	(B)	(KEV)		(B)	(B)	(KEV)		(B)	(B)
.08	.10	25.05	15.70	0.7	0.8	11.11	4.91	5.	6.	3.80	1.42
.10	.15	22.50	12.80	0.8	0.9	8.25	4.15	6.	7.	3.41	1.40
.15	.20	19.50	11.00	0.9	1.0	7.55	5.05	7.	8.	3.15	1.33
.20	.25	21.50	12.70	1.0	1.5	8.07	3.40	8.	9.	3.01	1.45
.25	.30	19.50	7.10	1.5	2.0	6.57	2.56	9.	10.	3.05	1.25
.30	.40	13.12	6.56	2.0	2.5	5.49	2.20	10.	15.	2.65	1.08
.40	.50	13.59	4.83	2.5	3.0	5.15	1.74	15.	20.	2.31	.90
.50	.60	15.22	4.62	3.0	4.0	4.75	1.62	20.	25.	2.19	.87
.60	.70	11.50	4.67	4.0	5.0	4.27	1.53				

THE SHAPES OF THESE CROSS SECTIONS ARE BASED ON THE 10-BORON (N,ALPHA) REACTIONS AS GIVEN IN ENDF/B-III. OVERALL UNCERTAINTIES IN THE EVALUATED AVERAGE CROSS SECTION ARE ESTIMATED AS 3 PERCENT IN FIS, AND 8 PERCENT IN CAP, AS DETAILED IN THE COMPLETED DOCUMENTATION. THE CONTRIBUTIONS TO THESE UNCERTAINTIES WHICH ARE HIGHLY CORRELATED OVER THE WHOLE ENERGY RANGE ARE 2 PERCENT FOR FIS, AND 7 PERCENT FOR CAPT. FOR ADDITIONAL DETAILS SEE REF 32 OR THE COMPLETE DOCUMENTATION REPORT.

MF = 3

SMOOTH DATA

THERMAL DATA---THERMAL TASK FORCE
1 EV TO 82 EV J. R. SMITH
82 EV TO 25 KEV PEELLE, BHAT
25 KEV TO 100 KEV BIG THREE PLUS TWO TASK FORCE
100KEV TO 1 MEV---FISSION CROSS SECTION TAKEN AS CURVE SUGGESTED BY U-235 TASK FORCE AND CSEWG STANDARDS AND NORMALIZATION SUBCOMMITTEE. IN THIS ENERGY REGION DATA TAKEN FROM REFERENCES 1 THROUGH 9. DATA OF REF.4 SZABO (71) RAISED BY 1.04. BETWEEN 1 AND 6 MEV CURVE DRAWN THROUGH DATA OF REFERENCES 3, 5, AND 7 THROUGH 11, WITH HEAVY WEIGHT GIVEN TO REF. 11. ABOVE 6 MEV CURVE DRAWN THROUGH DATA OF REFERENCES 7, 8, 12 AND 13. DATA OF REFS. 12 AND 13 NORMALIZED TO 2.152 BARNS AT 14.0 MEV.---ALPHA CURVE BETWEEN 10 KEV AND 10 MEV BASED ON REFERENCES 1 AND 14 THROUGH 19 AS RECOMMENDED BY U-235 TASK FORCE. ABOVE 1 MEV ALPHA CURVE SMOOTHLY EXTRAPOLATED TO 20 MEV.---CAPTURE CROSS SECTION DERIVED AS THE PRODUCT OF THE FISSION CROSS SECTION WITH ALPHA---ABOVE 0.5 MEV TOTAL CROSS SECTION TAKEN FROM SPLINE FIT TO DATA OF REFERENCES 20 AND 21. BETWEEN 25 KEV AND 0.5 MEV A SMOOTH CURVE WAS FIT TO THE TOTAL CROSS SECTION OF ENDF/B-3.

MF = 4

ANGULAR DISTRIBUTIONS

ELASTIC SCATTERING ANGULAR DATA TAKEN FROM EVALUATION OF REFERENCE 22, HUNTER.---ANGULAR DISTRIBUTION DATA FOR NONISOTROPIC INELASTIC LEVELS (MT=61-66) BASED PRIMARILY ON

WORK OF KAMMERDIENER, REF. 23. ALL INELASTIC DATA BELOW 5 MEV TAKEN TO BE ISOTROPIC. ANGULAR DISTRIBUTIONS FOR ALL OTHER NEUTRON REACTIONS ARE ASSUMED ISOTROPIC, EXCEPT FOR DIRECT INTERACTION CROSS SECTIONS ABOVE 4 MEV FOR MT=61-66.

MF = 5

ENERGY DISTRIBUTIONS

FISSION--THERMAL-- T=1.323 MEV AS RECOMMENDED BY THERMAL TASK FORCE.--AT 14 MEV-- T=1.50 AS APPROXIMATED FROM SLOPE OF PU-239 DATA. EXCEPT FOR DISCRETE INELASTIC, ALL INELASTIC, (N, 2N) ETC. REPRESENTED BY TEMPERATURE MODELS.

NOTE

MT=19-21 SHOULD BE USED IN PLACE OF MT=18
IF RESULTS ARE SENSITIVE TO FISSIONS CAUSED
BY NEUTRONS OF 6 MEV OR GREATER.

MF = 12-15

GAMMA PRODUCTION

DATA TAKEN FROM STEWART, REF. 24. CROSS SECTIONS BASED ON NEUTRON FILES (MF=2, 3) AND CALCULATED MULTIPLICITIES BELOW 1.09 MEV. ABOVE 1.09 MEV DATA BASED ON DRAKE, REF. 25, AND NELLIS, REF. 26.

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URANIUM-235

RESONANCE DATA
RESONANCE PARAMETERS

ISOTOPE------------------------URANIUM-235
FRACTIONAL ABUNDANCE---------- 1.0000E+00
NUMBER OF ENERGY RANGES------ 2

ENERGY RANGE NUMBER---------- 1 RESOLVED SINGLE-LEVEL BREIT-WIGNER PARAMETERS
LOWER ENERGY LIMIT (EV)------ 1.0000E-02
UPPER ENERGY LIMIT (EV)------ 8.2000E+01
NUCLEAR SPIN----------------- 3.5000E+00
SPIN SCATTERING LENGTH (A+)-- 9.5663E-01
NUMBER OF L STATES----------- 1

L VALUE---------------------- 0
NUMBER OF RESONANCES--------- 132
SPIN SCATTERING LENGTH (A-)-- 2.0000E+00

INDEX	ENERGY (EV)	J VALUE	RESONANCE WIDTHS (EV) TOTAL	NEUTRON	RADIATION	FISSION
1	-1.4900E+00	3.5000E+00	2.3760E-01	3.6820E-03	2.7000E-02	2.0700E-01
2	2.9000E-01	3.5000E+00	1.3500E-01	3.0157E-06	3.6000E-02	9.9000E-02
3	1.1400E+00	3.5000E+00	1.5002E-01	1.5161E-05	3.4600E-02	1.1620E-01
4	2.0350E+00	3.5000E+00	4.4696E-02	7.6605E-06	3.4874E-02	9.8140E-03
5	2.9200E+00	3.5000E+00	2.2000E-01	6.8532E-06	2.0000E-02	2.0000E-01
6	3.1470E+00	3.5000E+00	1.3961E-01	2.2405E-05	3.3210E-02	1.f .37E-01
7	3.6290E+00	3.5000E+00	8.4379E-02	4.5594E-05	3.3696E-02	5.ι 37E-02
8	4.8482E+00	3.5000E+00	3.9592E-02	6.0352E-05	3.5945E-02	3.5870E-03
9	5.4482E+00	3.5000E+00	9.0120E-02	5.3611E-06	6.0000E-02	3.0117E-02
10	5.6000E+00	3.5000E+00	6.4192E-01	5.3319E-05	2.0000E-02	4.2189E-01
11	6.2102E+00	3.5000E+00	2.3290E-01	6.3795E-05	4.3469E-02	1.8736E-01
12	6.3820E+00	3.5000E+00	4.4700E-02	2.6834E-04	3.4972E-02	9.5400E-03
13	7.0772E+00	3.5000E+00	5.3934E-02	1.2660E-04	3.5574E-02	2.6233E-02
14	8.7810E+00	3.5000E+00	1.2329E-01	1.1234E-03	3.1170E-02	9.1000E-02
15	9.2860E+00	3.5000E+00	1.1076E-01	1.6364E-04	3.5600E-02	7.5000E-02
16	9.7300E+00	3.5000E+00	2.6905E-01	5.3020E-05	3.2000E-02	2.3700E-01
17	1.0180E+01	3.5000E+00	1.0056E-01	6.1890E-05	3.8000E-02	6.2500E-02
18	1.0800E+01	3.5000E+00	9.3529E-01	9.3332E-05	6.7000E-02	8.6800E-01
19	1.1666E+01	3.5000E+00	4.7277E-02	6.2744E-04	4.0400E-02	6.2500E-03
20	1.2396E+01	3.5000E+00	6.3262E-02	1.2622E-03	3.4500E-02	2.7500E-02
21	1.2861E+01	3.5000E+00	1.1955E-01	5.3076E-05	3.3000E-02	8.6000E-02
22	1.3275E+01	3.5000E+00	1.5144E-01	3.9350E-05	2.8600E-02	1.2280E-01
23	1.3700E+01	3.5000E+00	1.2394E-01	3.7013E-05	3.0400E-02	9.3500E-02
24	1.3996E+01	3.5000E+00	4.9654E-01	5.3723E-04	2.6000E-02	4.7000E-01
25	1.4544E+01	3.5000E+00	5.6215E-02	1.1517E-04	3.5200E-02	2.0900E-02
26	1.5406E+01	3.5000E+00	7.8837E-02	2.3707E-04	3.5300E-02	4.3300E-02
27	1.6088E+01	3.5000E+00	5.0361E-02	3.6099E-04	3.1383E-02	1.8617E-02
28	1.6667E+01	3.5000E+00	1.3327E-01	2.7300E-04	3.2185E-02	1.0009E-01
29	1.8052E+01	3.5000E+00	1.6038E-01	3.8451E-04	3.5022E-02	1.2500E-01
30	1.8960E+01	3.5000E+00	1.0512E-01	1.1582E-04	5.0000E-02	5.5000E-02
31	1.9297E+01	3.5000E+00	9.8194E-02	5.1936E-03	3.4821E-02	6.0179E-02
32	2.0132E+01	3.5000E+00	2.4009E-01	8.7714E-05	1.3912E-02	2.2609E-01
33	2.0200E+01	3.5000E+00	5.0013E-02	1.3034E-05	4.9282E-02	7.2000E-04
34	2.0610E+01	3.5000E+00	8.4191E-02	1.9117E-04	4.0485E-02	4.3515E-02
35	2.1072E+01	3.5000E+00	7.3503E-02	1.5027E-03	4.0342E-02	3.1658E-02
36	2.2939E+01	3.5000E+00	7.5436E-02	4.3984E-04	3.2670E-02	4.2330E-02
37	2.3412E+01	3.3000E+00	3.2204E-02	7.0372E-04	2.6500E-02	5.0000E-03
38	2.3629E+01	3.5000E+00	2.2586E-01	8.5577E-04	4.3000E-02	1.8200E-01

39	2.4245E+01	3.5000E+00	5.8268E-02	2.6839E-04	3.1000E-02	2.7000E-02
40	2.4370E+01	3.5000E+00	1.0015E-01	1.4958E-04	3.5000E-02	6.5000E-02
41	2.5200E+01	3.5000E+00	8.5268E-01	6.7624E-04	2.5000E-02	8.2500E-02
42	2.5590E+01	3.5000E+00	3.8556E-01	5.3455E-04	2.5000E-02	3.6200E-01
43	2.6480E+01	3.5000E+00	1.9248E-01	4.7399E-04	3.2200E-02	1.6000E-01
44	2.6740E+01	3.5000E+00	2.5029E-01	8.5635E-05	3.0000E-02	2.2040E-01
45	2.7149E+01	3.5000E+00	1.1559E-01	8.5139E-05	4.2000E-02	7.3500E-02
46	2.7796E+01	3.5000E+00	1.2067E-01	6.7447E-04	3.2000E-02	8.8200E-02
47	2.8090E+01	3.5000E+00	6.5031E-02	5.1164E-05	4.0000E-02	2.5000E-02
48	2.8351E+01	3.5000E+00	1.4219E-01	1.8854E-04	3.1700E-02	1.1730E-01
49	2.8510E+01	3.5000E+00	1.3004E-01	4.5009E-05	5.0000E-02	8.2040E-02
50	2.9644E+01	3.5000E+00	6.1777E-02	1.7744E-04	3.7000E-02	2.4040E-02
51	3.0590E+01	3.5000E+00	1.5523E-01	2.2732E-04	4.5294E-02	1.0792E-01
52	3.0860E+01	3.5000E+00	5.4532E-02	5.3235E-04	3.5269E-02	1.8731E-02
53	3.2070E+01	3.5000E+00	5.9823E-02	1.8233E-03	3.7724E-02	6.0276E-02
54	3.3920E+01	3.5000E+00	5.0859E-02	1.8595E-03	3.1861E-02	7.3139E-02
55	3.4370E+01	3.5000E+00	8.7233E-02	2.2527E-03	4.3160E-02	4.1840E-02
56	3.4850E+01	3.5000E+00	1.1610E-01	1.0997E-03	3.8247E-02	7.4753E-02
57	3.5187E+01	3.5000E+00	1.0350E-01	3.5204E-03	3.1402E-02	6.5598E-02
58	3.5300E+01	3.5000E+00	6.9157E-01	1.5675E-03	4.0220E-02	6.5220E-01
59	3.6400E+01	3.5000E+00	1.5421E+00	1.1994E-04	4.0002E-02	1.5000E+00
60	3.7503E+01	3.5000E+00	1.5422E+00	1.6630E-04	4.0002E-02	1.5000E+00
61	3.8300E+01	3.5000E+00	3.0834E-01	3.3592E-04	4.2191E-02	2.6581E-01
62	3.9410E+01	3.5000E+00	9.5523E-02	2.5233E-03	3.4490E-02	5.8512E-02
63	3.9900E+01	3.5000E+00	1.5024E-01	2.3637E-04	3.3177E-02	1.1682E-01
64	4.0536E+01	3.5000E+00	2.0938E-01	7.8029E-04	3.4323E-02	1.7400E-01
65	4.1350E+01	3.5000E+00	4.4564E-01	6.4484E-04	4.5000E-02	4.0000E-01
66	4.1990E+01	3.5000E+00	1.6522E-01	2.2391E-04	3.0907E-02	1.3409E-01
67	4.1873E+01	3.5000E+00	4.1233E-02	1.2325E-03	2.8951E-02	1.1249E-02
68	4.2230E+01	3.5000E+00	1.4545E-01	4.4722E-04	4.8240E-02	9.6760E-02
69	4.2890E+01	3.5000E+00	6.1345E-02	3.4518E-04	4.4322E-02	1.6678E-02
70	4.3395E+01	3.5000E+00	7.0754E-02	7.5449E-04	4.5880E-02	2.4120E-02
71	4.3000E+01	3.5000E+00	1.1020E-01	2.0096E-04	4.1036E-02	6.8964E-02
72	4.3970E+01	3.5000E+00	2.5234E-01	3.4547E-04	1.7509E-02	2.3259E-01
73	4.4600E+01	3.5000E+00	1.7584E-01	5.3866E-04	4.5970E-02	1.2982E-01
74	4.4950E+01	3.5000E+00	5.3578E-01	9.5700E-04	3.0739E-02	5.0426E-01
75	4.5790E+01	3.5000E+00	1.3419E-01	1.8791E-04	4.0807E-02	9.3193E-02
76	4.6790E+01	3.5000E+00	1.5280E-01	8.0369E-04	3.7000E-02	1.1500E-01
77	4.7011E+01	3.5000E+00	1.3994E-01	9.3659E-04	4.2000E-02	9.7000E-02
78	4.7970E+01	3.5000E+00	9.3988E-02	9.8834E-04	4.5710E-02	4.7290E-02
79	4.8300E+01	3.5000E+00	1.6577E-01	7.7894E-04	2.4715E-02	1.4028E-01
80	4.8630E+01	3.5000E+00	6.5691E-02	6.9861E-04	2.5431E-02	3.9569E-02
81	4.9300E+01	3.5000E+00	2.4010E-01	1.7675E-04	2.0006E-02	2.2000E-01
82	4.9410E+01	3.5000E+00	6.1013E-02	1.0132E-03	4.2913E-02	1.7087E-02
83	5.0108E+01	3.5000E+00	5.4353E-02	3.1505E-04	3.1094E-02	2.2943E-02
84	5.0480E+01	3.5000E+00	7.5964E-02	9.6365E-04	3.2930E-02	4.2970E-02
85	5.0900E+01	3.5000E+00	3.3019E-01	1.8955E-04	3.0000E-02	3.0000E-01
86	5.1288E+01	3.5000E+00	1.8854E-01	3.5448E-03	5.1974E-02	1.3303E-01
87	5.1630E+01	3.5000E+00	7.4346E-02	3.4969E-04	3.3454E-02	4.0546E-02
88	5.2221E+01	3.5000E+00	3.6351E-01	2.5876E-03	3.1000E-02	3.3000E-01
89	5.3430E+01	3.5000E+00	1.3554E-01	5.3729E-04	3.3463E-02	1.0154E-01
90	5.4132E+01	3.5000E+00	1.5021E-01	2.1410E-04	4.4000E-02	1.0600E-01
91	5.5064E+01	3.5000E+00	1.1117E-01	3.1689E-03	4.6539E-02	5.9461E-02
92	5.5840E+01	3.5000E+00	2.5135E-01	2.3549E-03	3.8719E-02	2.1028E-01
93	5.6070E+01	3.5000E+00	1.9079E-01	7.8624E-04	3.0000E-02	1.6000E-01
94	5.6490E+01	3.5000E+00	1.1992E-01	4.9200E-03	3.9167E-02	7.5833E-02
95	5.7800E+01	3.5000E+00	2.2113E-01	1.1292E-03	3.5800E-02	1.8500E-01
96	5.8860E+01	3.5000E+00	6.5394E-02	1.3539E-03	3.2315E-02	3.1685E-02
97	5.8674E+01	3.5000E+00	1.3633E-01	1.3320E-03	3.3000E-02	1.0200E-01
98	5.9760E+01	3.5000E+00	2.5527E-01	2.7057E-04	4.2000E-02	2.1300E-01

99	6,0180E+01	3,5000E+00	2,5513E-01	1,1265E-03	3,4000E-02	2,2000E-01
100	6,0837E+01	3,5000E+00	1,2046E-01	4,6253E-04	3,0000E-02	9,6000E-02
101	6,1130E+01	3,5000E+00	1,2936E-01	3,6270E-04	4,0000E-02	8,5000E-02
102	6,1970E+01	3,5000E+00	5,3023E-01	2,2520E-04	3,0000E-02	5,0000E-01
103	6,1000E+01	3,5000E+00	5,3017E-01	1,7073E-04	3,0000E-02	5,0000E-01
104	6,2400E+01	3,5000E+00	4,6026E-01	2,6103E-04	6,0000E-02	4,0000E-01
105	6,3020E+01	3,5000E+00	2,4009E-01	9,2896E-05	4,0000E-02	2,0000E-01
106	6,3320E+01	3,5000E+00	2,5010E-01	1,0209E-04	5,0000E-02	2,0000E-01
107	6,3690E+01	3,5000E+00	6,2107E-01	1,0744E-03	6,0000E-02	5,6000E-01
108	6,4500E+01	3,5000E+00	4,7545E-02	1,2447E-03	3,9000E-02	7,3000E-03
109	6,5030E+01	3,5000E+00	9,6423E-02	6,2327E-04	5,0000E-02	4,6000E-02
110	6,6402E+01	3,5000E+00	8,9449E-02	4,4948E-04	4,5000E-02	4,4000E-02
111	6,7247E+01	3,5000E+00	9,0001E-02	8,0930E-05	4,1000E-02	4,9000E-02
112	6,8440E+01	3,5000E+00	2,5004E-01	3,7641E-05	5,0000E-02	2,0000E-01
113	6,8530E+01	3,5000E+00	1,6011E-01	1,7836E-04	6,0000E-02	1,0000E-01
114	6,9293E+01	3,5000E+00	2,0072E-01	7,1530E-04	4,0900E-02	1,6000E-01
115	7,0404E+01	3,5000E+00	1,7272E-01	2,7156E-03	5,0000E-02	1,2000E-01
116	7,0750E+01	3,5000E+00	2,3741E-01	2,4091E-03	3,5000E-02	2,0000E-01
117	7,1610E+01	3,5000E+00	1,6029E-01	2,9136E-04	4,0000E-02	1,2000E-01
118	7,2390E+01	3,5000E+00	1,3861E-01	2,6115E-03	3,1000E-02	1,0500E-01
119	7,2910E+01	3,5000E+00	3,6037E-01	3,6717E-04	4,0000E-02	3,2000E-01
120	7,4544E+01	3,5000E+00	1,0167E-01	2,7287E-03	3,8000E-02	6,0937E-02
121	7,5170E+01	3,5000E+00	2,9089E-01	8,0833E-04	5,0000E-02	2,4000E-01
122	7,5941E+01	3,5000E+00	2,3336E-01	1,3621E-03	3,2000E-02	2,0020E-01
123	7,6750E+01	3,5000E+00	1,1611E-01	1,0732E-04	3,6000E-02	9,0000E-02
124	7,7492E+01	3,5000E+00	1,1299E-01	9,8681E-04	4,0020E-02	7,2000E-02
125	7,8117E+01	3,5000E+00	1,4022E-01	1,2245E-03	4,7000E-02	1,0000E-01
126	7,9672E+01	3,5000E+00	1,2979E-01	7,8557E-04	4,4000E-02	8,5000E-02
127	8,0357E+01	3,5000E+00	1,7484E-01	6,3851E-04	4,0000E-02	1,3400E-01
128	8,1434E+01	3,5000E+00	1,3204E-01	1,0433E-03	4,1000E-02	9,0000E-02
129	8,3590E+01	3,5000E+00	1,1027E-01	1,1703E-03	4,8000E-02	6,9100E-02
130	8,6800E+01	3,5000E+00	8,0120E-02	7,1958E-04	5,2000E-02	2,7400E-02

URANIUM-235

RESONANCE DATA
RESONANCE PARAMETERS

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ISOTOPE------------------------URANIUM-235
FRACTIONAL ABUNDANCE---------- 1.0000E+00
NUMBER OF ENERGY RANGES------           2

ENERGY RANGE NUMBER-----------          2   UNRESOLVED SINGLE-LEVEL BREIT-WIGNER PARAMETERS
LOWER ENERGY LIMIT (EV)------- 8.2000E+01
UPPER ENERGY LIMIT (EV)------- 2.5000E+04
NUCLEAR SPIN------------------ 3.5000E+00
EFFECTIVE SCATTERING RADIUS--- 9.5663E-01
NUMBER OF L STATES-----------           2


L VALUE----------------------           0
NUMBER OF J STATES-----------           2
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DEGREES OF FREEDOM USED IN THE WIDTH DISTRIBUTION

J-VALUE	COMPETITIVE	NEUTRON	RADIATION	FISSION
3.0000E+00	0.0000E+00	1.0000E+00	2.0000E+00	2.0030E+00

AVERAGE RESONANCE WIDTHS (EV)

INDEX	ENERGY (EV)	LEVEL SPACING	COMPETITIVE	NEUTRON	RADIATION	FISSION
1	8.2000E+01	1.0000E+00	0.0000E+00	9.3278E-05	3.5000E-02	3.2338E-01
2	8.6500E+01	1.0000E+00	0.0000E+00	8.4406E-05	3.5000E-02	3.4056E-01
3	9.1000E+01	1.0000E+00	0.0000E+00	5.5939E-05	3.5000E-02	2.6394E-01
4	9.5500E+01	1.0000E+00	0.0000E+00	8.7313E-05	3.5000E-02	2.0598E-01
5	1.0000E+02	1.0000E+00	0.0000E+00	9.9434E-05	3.5000E-02	8.4620E-02
6	1.1000E+02	1.0000E+00	0.0000E+00	8.6620E-05	3.5000E-02	1.3229E-01
7	1.2000E+02	1.0000E+00	0.0000E+00	1.0427E-04	3.5000E-02	2.9946E-01
8	1.0000E+02	1.0000E+00	0.0000E+00	9.8358E-05	3.5000E-02	2.4919E-01
9	2.4000E+02	1.0000E+00	0.0000E+00	1.3181E-04	3.5000E-02	3.0695E-01
10	2.6000E+02	1.0000E+00	0.0000E+00	2.1003E-05	3.5000E-02	1.0310E+00
11	2.8000E+02	1.0000E+00	0.0000E+00	9.3538E-05	3.5000E-02	7.5330E-01
12	2.9000E+02	1.0000E+00	0.0000E+00	7.0914E-05	3.5000E-02	5.5929E-01
13	3.0000E+02	1.0000E+00	0.0000E+00	8.0412E-05	3.5000E-02	3.2833E-01
14	3.1500E+02	1.0000E+00	0.0000E+00	7.9453E-05	3.5000E-02	3.3064E-01
15	3.3000E+02	1.0000E+00	0.0000E+00	9.9192E-05	3.5000E-02	1.8540E-01
16	3.4500E+02	1.0000E+00	0.0000E+00	8.4286E-05	3.5000E-02	3.4234E-01
17	3.6000E+02	1.0000E+00	0.0000E+00	8.9227E-05	3.5000E-02	5.5757E-01
18	4.5000E+02	1.0000E+00	0.0000E+00	9.3835E-05	3.5000E-02	4.0869E-01
19	5.2000E+02	1.0000E+00	0.0000E+00	1.1974E-04	3.5000E-02	5.0149E-01
20	5.6500E+02	1.0000E+00	0.0000E+00	1.1742E-04	3.5000E-02	1.0043E+00
21	6.1000E+02	1.0000E+00	0.0000E+00	1.0711E-04	3.5000E-02	9.2310E-01
22	6.2000E+02	1.0000E+00	0.0000E+00	1.0825E-04	3.5000E-02	6.5530E-01
23	6.3000E+02	1.0000E+00	0.0000E+00	9.5608E-05	3.5000E-02	1.7554E-01
24	6.4000E+02	1.0000E+00	0.0000E+00	1.1968E-04	3.5000E-02	1.0701E-01
25	6.5000E+02	1.0000E+00	0.0000E+00	1.0641E-04	3.5000E-02	3.2751E-01
26	6.6000E+02	1.0000E+00	0.0000E+00	8.6759E-05	3.5000E-02	4.2087E-01
27	7.1000E+02	1.0000E+00	0.0000E+00	9.8628E-05	3.5000E-02	6.4322E-01
28	7.2500E+02	1.0000E+00	0.0000E+00	1.1895E-04	3.5000E-02	4.1650E-01
29	7.4000E+02	1.0000E+00	0.0000E+00	1.3378E-04	3.5000E-02	1.9020E-01
30	7.5500E+02	1.0000E+00	0.0000E+00	1.1936E-04	3.5000E-02	3.2629E-01
31	7.7000E+02	1.0000E+00	0.0000E+00	1.0512E-04	3.5000E-02	3.9803E-01
32	8.0000E+02	1.0000E+00	0.0000E+00	8.7337E-05	3.5000E-02	2.3209E-01

33	9.1000E+02	1.0000E+00	0.0000E+00	1.0180E-24	3.5000E-02	2.1179E-01
34	9.9200E+02	1.0000E+00	0.0000E+00	1.0457E-24	3.5000E-02	1.3726E-01
35	1.0850E+03	1.0000E+00	0.0000E+00	1.1153E-24	3.5000E-02	3.3629E-01
36	1.1800E+03	1.0000E+00	0.0000E+00	1.2142E-24	3.5000E-02	5.3589E-01
37	1.2200E+03	1.0000E+00	0.0000E+00	8.7624E-25	3.5000E-02	3.2576E-01
38	1.3000E+03	1.0000E+00	0.0000E+00	9.0564E-25	3.5000E-02	5.0301E-01
39	1.4000E+03	1.0000E+00	0.0000E+00	1.2446E-24	3.5000E-02	6.0221E-01
40	1.4300E+03	1.0000E+00	0.0000E+00	1.3656E-24	3.5000E-02	2.4744E-01
41	1.4500E+03	1.0000E+00	0.0000E+00	1.1221E-24	3.5000E-02	6.3519E-01
42	1.4600E+03	1.0000E+00	0.0000E+00	1.1391E-24	3.5000E-02	6.2704E-01
43	1.4800E+03	1.0000E+00	0.0000E+00	6.4821E-25	3.5000E-02	1.0471E-01
44	1.5000E+03	1.0000E+00	0.0000E+00	7.0668E-25	3.5000E-02	1.9345E-01
45	1.5450E+03	1.0000E+00	0.0000E+00	8.6144E-25	3.5000E-02	4.2664E-01
46	1.5900E+03	1.0000E+00	0.0000E+00	1.0195E-24	3.5000E-02	5.3814E-01
47	1.7000E+03	1.0000E+00	0.0000E+00	9.5254E-25	3.5000E-02	5.3743E-01
48	1.9000E+03	1.0000E+00	0.0000E+00	9.4274E-25	3.5000E-02	3.0525E-01
49	1.9100E+03	1.0000E+00	0.0000E+00	1.1239E-24	3.5000E-02	4.3576E-01
50	2.0000E+03	1.0000E+00	0.0000E+00	1.0774E-24	3.5000E-02	2.9444E-01
51	2.1000E+03	1.0000E+00	0.0000E+00	8.5182E-25	3.5000E-02	2.9599E-01
52	2.3000E+03	1.0000E+00	0.0000E+00	9.0730E-25	3.5000E-02	5.1877E-01
53	2.5000E+03	1.0000E+00	0.0000E+00	9.6127E-25	3.5000E-02	5.4299E-01
54	2.7000E+03	1.0000E+00	0.0000E+00	8.4702E-25	3.5000E-02	5.3117E-01
55	3.2000E+03	1.0000E+00	0.0000E+00	9.0700E-25	3.5000E-02	4.2930E-01
56	3.3000E+03	1.0000E+00	0.0000E+00	9.3309E-25	3.5000E-02	6.5952E-01
57	3.4000E+03	1.0000E+00	0.0000E+00	8.8321E-25	3.5000E-02	6.7391E-01
58	3.7500E+03	1.0000E+00	0.0000E+00	9.2606E-25	3.5000E-02	6.3354E-01
59	4.1000E+03	1.0000E+00	0.0000E+00	9.7237E-25	3.5000E-02	3.0854E-01
60	4.3000E+03	1.0000E+00	0.0000E+00	1.1061E-24	3.5000E-02	6.0392E-01
61	4.4000E+03	1.0000E+00	0.0000E+00	9.8661E-25	3.5000E-02	5.2563E-01
62	4.8000E+03	1.0000E+00	0.0000E+00	9.1578E-25	3.5000E-02	3.3330E-01
63	4.9000E+03	1.0000E+00	0.0000E+00	8.5575E-25	3.5000E-02	5.8397E-01
64	5.0000E+03	1.0000E+00	0.0000E+00	7.9647E-25	3.5000E-02	8.0119E-01
65	5.1000E+03	1.0000E+00	0.0000E+00	8.3750E-25	3.5000E-02	5.5989E-01
66	5.2200E+03	1.0000E+00	0.0000E+00	8.8593E-25	3.5000E-02	3.0294E-01
67	5.2500E+03	1.0000E+00	0.0000E+00	8.3996E-25	3.5000E-02	5.3535E-01
68	5.3200E+03	1.0000E+00	0.0000E+00	8.0355E-25	3.5000E-02	6.2110E-01
69	5.6300E+03	1.0000E+00	0.0000E+00	9.0242E-25	3.5000E-02	9.1282E-01
70	5.6500E+03	1.0000E+00	0.0000E+00	9.2935E-25	3.5000E-02	6.8495E-01
71	5.7000E+03	1.0000E+00	0.0000E+00	8.9486E-25	3.5000E-02	3.2335E-01
72	5.9000E+03	1.0000E+00	0.0000E+00	1.3332E-24	3.5000E-02	2.4710E-01
73	6.0000E+03	1.0000E+00	0.0000E+00	1.0338E-24	3.5000E-02	1.5401E-01
74	6.1000E+03	1.0000E+00	0.0000E+00	1.0203E-24	3.5000E-02	3.0015E-01
75	6.4500E+03	1.0000E+00	0.0000E+00	9.3122E-25	3.5000E-02	4.3992E-01
76	6.8000E+03	1.0000E+00	0.0000E+00	8.2825E-25	3.5000E-02	4.3291E-01
77	7.0000E+03	1.0000E+00	0.0000E+00	9.0898E-25	3.5000E-02	5.6370E-01
78	7.2000E+03	1.0000E+00	0.0000E+00	9.3412E-25	3.5000E-02	3.3947E-01
79	8.1000E+03	1.0000E+00	0.0000E+00	9.1247E-25	3.5000E-02	2.6692E-01
80	8.3000E+03	1.0000E+00	0.0000E+00	1.0663E-24	3.5000E-02	1.4558E-01
81	8.5000E+03	1.0000E+00	0.0000E+00	1.1115E-24	3.5000E-02	2.7862E-01
82	8.7000E+03	1.0000E+00	0.0000E+00	1.1565E-24	3.5000E-02	2.9922E-01
83	9.0000E+03	1.0000E+00	0.0000E+00	7.5325E-25	3.5000E-02	4.3771E-01
84	9.2000E+03	1.0000E+00	0.0000E+00	1.0652E-24	3.5000E-02	3.5324E-01
85	1.0400E+04	1.0000E+00	0.0000E+00	9.4242E-25	3.5000E-02	2.8175E-01
86	1.1400E+04	1.0000E+00	0.0000E+00	1.0969E-24	3.5000E-02	3.4881E-01
87	1.1700E+04	1.0000E+00	0.0000E+00	8.0284E-25	3.5000E-02	2.5643E-01
88	1.1900E+04	1.0000E+00	0.0000E+00	1.1050E-24	3.5000E-02	5.1890E-01
89	1.2200E+04	1.0000E+00	0.0000E+00	8.9176E-25	3.5000E-02	3.4036E-01
90	1.2200E+04	1.0000E+00	0.0000E+00	1.0199E-24	3.5000E-02	2.8312E-01
91	1.2300E+04	1.0000E+00	0.0000E+00	9.0670E-25	3.5000E-02	2.1756E-01
92	1.2700E+04	1.0000E+00	0.0000E+00	8.2683E-25	3.5000E-02	2.9169E-01

93	1.3300E+04	1.0000E+00	0.0000E+00	1.0260E-04	3.5000E-02	5.1896E-01
94	1.3600E+04	1.0000E+00	0.0000E+00	9.1473E-05	3.5000E-02	4.0887E-01
95	1.4400E+04	1.0000E+00	0.0000E+00	8.7125E-05	3.5000E-02	3.6019E-01
96	1.5000E+04	1.0000E+00	0.0000E+00	9.5262E-05	3.5000E-02	6.3045E-01
97	1.5100E+04	1.0000E+00	0.0000E+00	7.2924E-05	3.5000E-02	3.7591E-01
98	1.6400E+04	1.0000E+00	0.0000E+00	9.6541E-05	3.5000E-02	3.5699E-01
99	1.7500E+04	1.0000E+00	0.0000E+00	8.2622E-05	3.5000E-02	2.2150E-01
100	1.7600E+04	1.0000E+00	0.0000E+00	9.0441E-05	3.5000E-02	3.4094E-01
101	1.8400E+04	1.0000E+00	0.0000E+00	8.9477E-05	3.5000E-02	5.9560E-01
102	1.9200E+04	1.0000E+00	0.0000E+00	7.9155E-05	3.5000E-02	7.1276E-01
103	1.9300E+04	1.0000E+00	0.0000E+00	6.6591E-05	3.5000E-02	5.1471E-01
104	1.9900E+04	1.0000E+00	0.0000E+00	7.0721E-05	3.5000E-02	5.6137E-01
105	2.0000E+04	1.0000E+00	0.0000E+00	8.1910E-05	3.5000E-02	8.2643E-01
106	2.0200E+04	1.0000E+00	0.0000E+00	9.0913E-05	3.5000E-02	4.7857E-01
107	2.0400E+04	1.0000E+00	0.0000E+00	8.4008E-05	3.5000E-02	2.2092E-01
108	2.1000E+04	1.0000E+00	0.0000E+00	1.0124E-04	3.5000E-02	2.6345E-01
109	2.1200E+04	1.0000E+00	0.0000E+00	7.4929E-05	3.5000E-02	2.5036E-01
110	2.1700E+04	1.0000E+00	0.0000E+00	8.8157E-05	3.5000E-02	5.0047E-01
111	2.2200E+04	1.0000E+00	0.0000E+00	1.0120E-04	3.5000E-02	7.2994E-01
112	2.2300E+04	1.0000E+00	0.0000E+00	1.2651E-04	3.5000E-02	1.0014E+00
113	2.2400E+04	1.0000E+00	0.0000E+00	9.4225E-05	3.5000E-02	5.6834E-01
114	2.2800E+04	1.0000E+00	0.0000E+00	8.6872E-05	3.5000E-02	4.7215E-01
115	2.3200E+04	1.0000E+00	0.0000E+00	7.9129E-05	3.5000E-02	2.3597E-01
116	2.3400E+04	1.0000E+00	0.0000E+00	8.6298E-05	3.5000E-02	2.9942E-01
117	2.4200E+04	1.0000E+00	0.0000E+00	9.4123E-05	3.5000E-02	3.1323E-01
118	2.4400E+04	1.0000E+00	0.0000E+00	9.9763E-05	3.5000E-02	5.6938E-01
119	2.4600E+04	1.0000E+00	0.0000E+00	7.9571E-05	3.5000E-02	5.8617E-01
120	2.5000E+04	1.0000E+00	0.0000E+00	8.5593E-05	3.5000E-02	4.7128E-01

DEGREES OF FREEDOM USED IN THE WIDTH DISTRIBUTION

J-VALUE	COMPETITIVE	NEUTRON	RADIATION	FISSION
4.0000E+00	0.0000E+00	1.0000E+00	0.0000E+00	1.0000E+00

AVERAGE RESONANCE WIDTHS (EV)

INDEX	ENERGY (EV)	LEVEL SPACING	COMPETITIVE	NEUTRON	RADIATION	FISSION
1	8.2000E+01	1.0000E+00	0.0000E+00	9.3278E-05	3.5000E-02	1.6155E-01
2	8.6500E+01	1.0000E+00	0.0000E+00	1.0334E-04	3.5000E-02	1.1690E-01
3	9.1000E+01	1.0000E+00	0.0000E+00	1.0511E-04	3.5000E-02	9.0590E-02
4	9.5500E+01	1.0000E+00	0.0000E+00	1.0681E-04	3.5000E-02	7.0783E-02
5	1.0000E+02	1.0000E+00	0.0000E+00	9.9782E-05	3.5000E-02	8.4644E-02
6	1.1000E+02	1.0000E+00	0.0000E+00	1.0764E-04	3.5000E-02	1.3140E-01
7	1.2000E+02	1.0000E+00	0.0000E+00	8.7963E-05	3.5000E-02	1.4975E-01
8	1.8000E+02	1.0000E+00	0.0000E+00	9.9277E-05	3.5000E-02	1.2195E-01
9	2.4000E+02	1.0000E+00	0.0000E+00	1.3181E-04	3.5000E-02	1.5347E-01
10	2.6000E+02	1.0000E+00	0.0000E+00	2.1003E-04	3.5000E-02	3.4367E-01
11	2.8000E+02	1.0000E+00	0.0000E+00	1.3259E-04	3.5000E-02	3.7665E-01
12	2.9000E+02	1.0000E+00	0.0000E+00	1.0049E-04	3.5000E-02	2.7995E-01
13	3.0000E+02	1.0000E+00	0.0000E+00	8.0452E-05	3.5000E-02	1.6427E-01
14	3.1500E+02	1.0000E+00	0.0000E+00	9.9316E-05	3.5000E-02	1.1021E-01
15	3.3000E+02	1.0000E+00	0.0000E+00	1.0259E-04	3.5000E-02	9.2802E-02
16	3.4500E+02	1.0000E+00	0.0000E+00	1.0536E-04	3.5000E-02	1.1411E-01
17	3.6000E+02	1.0000E+00	0.0000E+00	9.1446E-05	3.5000E-02	1.7879E-01
18	4.5000E+02	1.0000E+00	0.0000E+00	9.3035E-05	3.5000E-02	2.7583E-01
19	5.2000E+02	1.0000E+00	0.0000E+00	1.1974E-04	3.5000E-02	2.5074E-01
20	5.6500E+02	1.0000E+00	0.0000E+00	1.1742E-04	3.5000E-02	2.7127E-01
21	6.1000E+02	1.0000E+00	0.0000E+00	1.1996E-04	3.5000E-02	5.7326E-01

22	6.2000E+02	1.0000E+00	0.0000E+00	1.0625E-04	3.5000E-02	1.6392E-01
23	6.3000E+02	1.0000E+00	0.0000E+00	1.0708E-04	3.5000E-02	1.0931E-01
24	6.4000E+02	1.0000E+00	0.0000E+00	1.2153E-04	3.5000E-02	7.9341E-02
25	6.5000E+02	1.0000E+00	0.0000E+00	1.0641E-04	3.5000E-02	8.1077E-02
26	6.6000E+02	1.0000E+00	0.0000E+00	9.7160E-05	3.5000E-02	2.6137E-01
27	7.1000E+02	1.0000E+00	0.0000E+00	1.1066E-04	3.5000E-02	3.9945E-01
28	7.2500E+02	1.0000E+00	0.0000E+00	1.1899E-04	3.5000E-02	1.3583E-01
29	7.4000E+02	1.6000E+00	0.0000E+00	1.3378E-04	3.5000E-02	9.5122E-02
30	7.5500E+02	1.0000E+00	0.0000E+00	1.1934E-04	3.5000E-02	1.2876E-01
31	7.7000E+02	1.0000E+00	0.0000E+00	1.0512E-04	3.5000E-02	1.9522E-01
32	8.0000E+02	1.0000E+00	0.0000E+00	8.2353E-05	3.5000E-02	1.1204E-01
33	9.1000E+02	1.0000E+00	0.0000E+00	1.0180E-04	3.5000E-02	1.4589E-01
34	9.9000E+02	1.0000E+00	0.0000E+00	[illegible].0730E-05	3.5000E-02	6.8540E-02
35	1.0850E+03	1.0000E+00	0.0000E+00	1.1153E-04	3.5000E-02	1.1276E-01
36	1.1800E+03	1.0000E+00	0.0000E+00	1.2142E-04	3.5000E-02	2.6837E-01
37	1.2230E+03	1.0000E+00	0.0000E+00	8.7624E-05	3.5000E-02	1.6316E-01
38	1.3000E+03	1.0000E+00	0.0000E+00	9.8564E-05	3.5000E-02	2.5191E-01
39	1.4000E+03	1.0000E+00	0.0000E+00	1.0446E-04	3.5000E-02	3.0140E-01
40	1.4300E+03	1.0000E+00	0.0000E+00	1.3656E-04	3.5000E-02	1.2372E-01
41	1.4500E+03	1.0000E+00	0.0000E+00	1.1221E-04	3.5000E-02	3.1810E-01
42	1.4500E+03	1.0000E+00	0.0000E+00	1.1391E-04	3.5000E-02	3.2326E-01
43	1.4800E+03	1.0000E+00	0.0000E+00	6.4821E-05	3.5000E-02	8.2499E-02
44	1.5000E+03	1.0000E+00	0.0000E+00	7.2680E-05	3.5000E-02	9.6713E-02
45	1.5450E+03	1.0000E+00	0.0000E+00	8.6144E-05	3.5000E-02	1.4221E-01
46	1.5900E+03	1.0000E+00	0.0000E+00	1.0195E-04	3.5000E-02	2.5717E-01
47	1.7200E+03	1.0000E+00	0.0000E+00	9.5254E-05	3.5000E-02	2.5683E-01
48	1.9000E+03	1.0000E+00	0.0000E+00	9.4274E-05	3.5000E-02	1.4597E-01
49	1.9100E+03	1.0000E+00	0.0000E+00	1.1239E-04	3.5000E-02	2.0824E-01
50	2.0000E+03	1.0000E+00	0.0000E+00	1.0774E-04	3.5000E-02	1.5741E-01
51	2.1000E+03	1.0000E+00	0.0000E+00	8.5102E-05	3.5000E-02	1.5874E-01
52	2.3000E+03	1.0000E+00	0.0000E+00	9.0730E-05	3.5000E-02	1.7292E-01
53	2.5000E+03	1.0000E+00	0.0000E+00	9.6127E-05	3.5000E-02	2.7144E-01
54	2.7000E+03	1.0000E+00	0.0000E+00	8.4720E-05	3.5000E-02	2.6558E-01
55	3.2000E+03	1.0000E+00	0.0000E+00	9.0245E-05	3.5000E-02	2.0469E-01
56	3.3000E+03	1.0000E+00	0.0000E+00	9.3309E-05	3.5000E-02	2.1994E-01
57	3.4000E+03	1.0000E+00	0.0000E+00	8.8321E-05	3.5000E-02	3.3689E-01
58	3.7500E+03	1.0000E+00	0.0000E+00	9.2666E-05	3.5000E-02	2.1110E-01
59	4.1000E+03	1.0000E+00	0.0000E+00	9.7837E-05	3.5000E-02	1.0427E-01
60	4.3200E+03	1.0000E+00	0.0000E+00	1.1061E-04	3.5000E-02	3.2196E-01
61	4.4000E+03	1.0000E+00	0.0000E+00	9.6941E-05	3.5000E-02	2.6279E-01
62	4.8000E+03	1.0000E+00	0.0000E+00	9.1578E-05	3.5000E-02	1.6573E-01
63	4.9200E+03	1.0000E+00	0.0000E+00	8.5975E-05	3.5000E-02	1.9462E-01
64	5.0000E+03	1.0000E+00	0.0000E+00	7.9647E-05	3.5000E-02	3.4059E-01
65	5.1000E+03	1.0000E+00	0.0000E+00	8.3750E-05	3.5000E-02	1.0663E-01
66	5.2000E+03	1.0000E+00	0.0000E+00	8.7799E-05	3.5000E-02	1.5242E-01
67	5.2500E+03	1.0000E+00	0.0000E+00	9.3996E-05	3.5000E-02	1.7845E-01
68	5.3000E+03	1.0000E+00	0.0000E+00	7.9635E-05	3.5000E-02	3.1054E-01
69	5.6000E+03	1.0000E+00	0.0000E+00	9.6242E-05	3.5000E-02	4.5641E-01
70	5.6500E+03	1.0000E+00	0.0000E+00	9.2935E-05	3.5000E-02	2.2832E-01
71	5.7000E+03	1.0000E+00	0.0000E+00	8.9406E-05	3.5000E-02	1.6168E-01
72	5.9000E+03	1.0000E+00	0.0000E+00	1.3332E-04	3.5000E-02	1.1899E-01
73	6.0000E+03	1.0000E+00	0.0000E+00	1.2659E-04	3.5000E-02	9.2730E-02
74	6.1000E+03	1.0000E+00	0.0000E+00	1.0033E-04	3.5000E-02	1.4748E-01
75	6.4500E+03	1.0000E+00	0.0000E+00	9.3122E-05	3.5000E-02	1.4664E-01
76	6.8000E+03	1.0000E+00	0.0000E+00	8.0171E-05	3.5000E-02	2.1271E-01
77	7.0000E+03	1.0000E+00	0.0000E+00	9.0098E-05	3.5000E-02	2.9155E-01
78	7.2000E+03	1.0000E+00	0.0000E+00	9.3412E-05	3.5000E-02	1.6993E-01
79	8.1000E+03	1.0000E+00	0.0000E+00	9.1247E-05	3.5000E-02	1.3346E-01
80	8.3000E+03	1.0000E+00	0.0000E+00	1.0663E-04	3.5000E-02	9.2010E-02
81	8.5000E+03	1.0000E+00	0.0000E+00	1.1119E-04	3.5000E-02	9.2275E-02

82	8.7300E+03	1.0000E+00	0.0000E+00	1.1565E-04	3.5000E-02	1.5294E-01
83	9.0300E+03	1.0000E+00	0.0000E+00	7.5329E-05	3.5000E-02	2.1895E-01
84	9.2000E+03	1.0000E+00	0.0000E+00	1.065[illegible]E-04	3.5000E-02	1.7662E-01
85	1.0400E+04	1.0000E+00	0.0000E+00	9.4[illegible]E-05	3.5000E-02	1.4287E-01
86	1.1400E+04	1.0000E+00	0.0000E+00	1.0069E-04	3.5000E-02	1.7440E-01
87	1.1700E+04	1.0000E+00	0.0000E+00	8.0254E-05	3.5000E-02	1.2821E-01
88	1.1900E+04	1.0000E+00	0.0000E+00	1.1250E-04	3.5000E-02	2.5945E-01
89	1.2000E+04	1.0000E+00	0.0000E+00	8.9174E-05	3.5000E-02	1.7010E-01
90	1.2200E+04	1.0000E+00	0.0000E+00	1.0199E-04	3.5000E-02	1.4156E-01
91	1.2300E+04	1.0000E+00	0.0000E+00	9.0670E-05	3.5000E-02	1.1221E-01
92	1.2700E+04	1.0000E+00	0.0000E+00	8.2683E-05	3.5000E-02	1.4585E-01
93	1.3300E+04	1.0000E+00	0.0000E+00	1.0260E-04	3.5000E-02	2.5948E-01
94	1.3600E+04	1.0000E+00	0.0000E+00	9.1473E-05	3.5000E-02	2.0443E-01
95	1.4400E+04	1.0000E+00	0.0000E+00	8.7129E-05	3.5000E-02	1.8079E-01
96	1.5200E+04	1.0000E+00	0.0000E+00	9.5262E-05	3.5000E-02	3.1621E-01
97	1.5100E+04	1.0000E+00	0.0000E+00	7.2924E-05	3.5000E-02	1.8843E-01
98	1.6400E+04	1.0000E+00	0.0000E+00	9.6541E-05	3.5000E-02	1.7850E-01
99	1.7500E+04	1.0000E+00	0.0000E+00	8.2672E-05	3.5000E-02	1.1275E-01
100	1.7600E+04	1.0000E+00	0.0000E+00	9.8441E-05	3.5000E-02	1.7247E-01
101	1.8400E+04	1.0000E+00	0.0000E+00	8.9437E-05	3.5000E-02	1.9853E-01
102	1.9200E+04	1.0000E+00	0.0000E+00	9.6110E-05	3.5000E-02	3.5630E-01
103	1.9300E+04	1.0000E+00	0.0000E+00	6.0045E-05	3.5000E-02	2.5735E-01
104	1.9900E+04	1.0000E+00	0.0000E+00	8.5059E-05	3.5000E-02	2.8060E-01
105	2.0000E+04	1.0000E+00	0.0000E+00	1.1067E-04	3.5000E-02	3.7162E-01
106	2.0200E+04	1.0000E+00	0.0000E+00	9.0913E-05	3.5000E-02	1.5952E-01
107	2.0400E+04	1.0000E+00	0.0000E+00	8.4000E-05	3.5000E-02	1.4223E-01
108	2.1000E+04	1.0000E+00	0.0000E+00	1.0104E-04	3.5000E-02	1.3143E-01
109	2.1200E+04	1.0000E+00	0.0000E+00	7.4929E-05	3.5000E-02	1.2499E-01
110	2.1700E+04	1.0000E+00	0.0000E+00	8.8157E-05	3.5000E-02	1.8562E-01
111	2.2200E+04	1.0000E+00	0.0000E+00	1.0120E-04	3.5000E-02	3.6392E-01
112	2.2300E+04	1.0000E+00	0.0000E+00	1.2651E-04	3.5000E-02	5.4199E-01
113	2.2400E+04	1.0000E+00	0.0000E+00	9.4225E-05	3.5000E-02	2.8475E-01
114	2.2800E+04	1.0000E+00	0.0000E+00	8.6072E-05	3.5000E-02	1.5739E-01
115	2.3200E+04	1.0000E+00	0.0000E+00	7.9109E-05	3.5000E-02	1.1823E-01
116	2.3400E+04	1.0000E+00	0.0000E+00	8.6298E-05	3.5000E-02	1.4972E-01
117	2.4200E+04	1.0000E+00	0.0000E+00	9.4601E-05	3.5000E-02	1.5475E-01
118	2.4400E+04	1.0000E+00	0.0000E+00	1.0027E-04	3.5000E-02	2.8116E-01
119	2.4600E+04	1.0000E+00	0.0000E+00	7.9775E-05	3.5000E-02	2.8962E-01
120	2.5000E+04	1.0000E+00	0.0000E+00	9.55[illegible]3E-05	3.3000E-02	2.3520E-01

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DEGREES OF FREEDOM USED IN THE WIDTH DISTRIBUTION

J-VALUE	COMPETITIVE	NEUTRON	RADIATION	FISSION
2.0000E+00	0.0000E+00	1.0000E+00	0.0000E+00	2.0000E+00

AVERAGE RESONANCE WIDTHS (EV)

INDEX	ENERGY (EV)	LEVEL SPACING	COMPETITIVE	NEUTRON	RADIATION	FISSION
1	8.2000E+01	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3230E-01
2	8.6500E+01	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3230E-01
3	9.1000E+01	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3230E-01
4	9.5500E+01	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3230E-01
5	1.0000E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3230E-01

6	1.1000E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
7	1.2300E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
8	1.8300E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
9	2.4700E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
10	2.6200E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
11	2.8000E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
12	2.9700E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
13	3.0000E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
14	3.1500E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
15	3.3200E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
16	3.4500E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
17	3.6700E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
18	4.5200E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
19	5.2200E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
20	5.6500E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
21	6.1200E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
22	6.2700E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
23	6.3700E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
24	6.4000E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
25	6.5200E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
26	6.6000E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
27	7.1000E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
28	7.2500E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
29	7.4000E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
30	7.5500E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
31	7.7200E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
32	8.8000E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
33	9.1200E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
34	9.9000E+02	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
35	1.0850E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
36	1.1800E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
37	1.2200E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
38	1.3400E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
39	1.4200E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
40	1.4300E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
41	1.4500E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
42	1.4600E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
43	1.4900E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
44	1.5200E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
45	1.5450E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
46	1.5900E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
47	1.7200E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
48	1.9000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
49	1.9100E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
50	2.0000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
51	2.1000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
52	2.3000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
53	2.5000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
54	2.7200E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
55	3.2000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
56	3.3000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
57	3.4000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
58	3.7500E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
59	4.1200E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
60	4.3200E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
61	4.4000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
62	4.8000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
63	4.9000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
64	5.0000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01
65	5.1200E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3200E-01

66	5.2000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
67	5.2500E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
68	5.3000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
69	5.6000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
70	5.6500E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
71	5.7000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
72	5.9000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
73	6.0000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
74	6.1000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
75	6.4500E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
76	6.8000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
77	7.0000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
78	7.2000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
79	8.1000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
80	8.3000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
81	8.5000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
82	8.7000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
83	9.0000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
84	9.2000E+03	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
85	1.0400E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
86	1.1400E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
87	1.1700E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
88	1.1900E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
89	1.2000E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
90	1.2200E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
91	1.2300E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
92	1.2700E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
93	1.3300E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
94	1.3600E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
95	1.4400E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
96	1.5000E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
97	1.5100E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
98	1.6400E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
99	1.7500E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
100	1.7600E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
101	1.8400E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
102	1.9200E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
103	1.9300E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
104	1.9900E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
105	2.0000E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
106	2.0200E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
107	2.0400E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
108	2.1000E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
109	2.1200E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
110	2.1700E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
111	2.2200E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
112	2.2300E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
113	2.2400E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
114	2.2800E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
115	2.3200E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
116	2.3400E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
117	2.4200E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
118	2.4400E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
119	2.4600E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01
120	2.5000E+04	1.1600E+00	0.0000E+00	2.3200E-04	3.5000E-02	3.3220E-01

DEGREES OF FREEDOM USED IN THE WIDTH DISTRIBUTION

		J-VALUE	COMPETITIVE	NEUTRON	RADIATION	FISSION
		3.0000E+00	0.0000E+00	2.0000E+00	0.0000E+00	1.0000E+00

AVERAGE RESONANCE WIDTHS (EV)

INDEX	ENERGY (EV)	LEVEL SPACING	COMPETITIVE	NEUTRON	RADIATION	FISSION
1	8.2000E+01	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
2	8.6500E+01	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
3	9.1200E+01	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
4	9.9500E+01	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
5	1.0200E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
6	1.1000E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
7	1.2000E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
8	1.8000E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
9	2.4000E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
10	2.6000E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
11	2.8000E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
12	2.9000E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
13	3.0000E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
14	3.1500E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
15	3.3200E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
16	3.4500E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
17	3.6200E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
18	4.5000E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
19	5.2000E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
20	5.6500E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
21	6.1200E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
22	6.2000E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
23	6.3000E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
24	6.4000E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
25	6.5200E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
26	6.6200E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
27	7.1000E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
28	7.2500E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
29	7.4300E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
30	7.5500E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
31	7.7000E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
32	8.8000E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
33	9.1000E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
34	9.9700E+02	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
35	1.0050E+03	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
36	1.1800E+03	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
37	1.2200E+03	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
38	1.3000E+03	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
39	1.4000E+03	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
40	1.4300E+03	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
41	1.4500E+03	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
42	1.4600E+03	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
43	1.4800E+03	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
44	1.5200E+03	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
45	1.5450E+03	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
46	1.5900E+03	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
47	1.7200E+03	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
48	1.9000E+03	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
49	1.9100E+03	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
50	2.0000E+03	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
51	2.1000E+03	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
52	2.3200E+03	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
53	2.5000E+03	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01
54	2.7000E+03	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	1.2700E-01

55	3.2000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
56	3.3200E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
57	3.4000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
58	3.7500E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
59	4.1000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
60	4.3000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
61	4.4000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
62	4.8000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
63	4.9000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
64	5.0000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
65	5.1000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
66	5.2000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
67	5.2500E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
68	5.3000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
69	5.6000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
70	5.6500E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
71	5.7000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
72	5.9000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
73	6.0000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
74	6.1300E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
75	6.4500E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
76	6.8300E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
77	7.0000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
78	7.2000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
79	8.1000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
80	8.3000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
81	8.5200E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
82	8.7000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
83	9.0000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
84	9.2000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
85	1.0400E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
86	1.[illegible]400E+04	1.0000E+[illegible]	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
87	1.1700E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
88	1.1900E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
89	1.2000E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
90	1.2200E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
91	1.2300E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
92	1.2700E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
93	1.3300E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
94	1.3600E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
95	1.4400E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
96	1.5200E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
97	1.5100E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
98	1.6400E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
99	1.7500E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
100	1.7600E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
101	1.8400E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
102	1.9200E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
103	1.9300E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
104	1.9900E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
105	2.0000E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
106	2.0200E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
107	2.0400E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
108	2.1000E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
109	2.1200E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
110	2.1700E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
111	2.2200E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
112	2.2300E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
113	2.2400E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
114	2.2800E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01

115	2.3200E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
116	2.3400E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
117	2.4200E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
118	2.4400E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
119	2.4600E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01
120	2.5000E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	1.2700E-01

DEGREES OF FREEDOM USED IN THE WIDTH DISTRIBUTION

J-VALUE	COMPETITIVE	NEUTRON	RADIATION	FISSION
4.0000E+00	2.0000E+00	2.0000E+00	0.0000E+00	2.0000E+00

AVERAGE RESONANCE WIDTHS (EV)

INDEX	ENERGY (EV)	LEVEL SPACING	COMPETITIVE	NEUTRON	RADIATION	FISSION
1	8.2200E+01	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
2	8.6500E+01	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
3	9.1200E+01	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
4	9.5500E+01	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
5	1.0000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
6	1.1000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
7	1.2000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
8	1.3000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
9	2.4000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
10	2.6000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
11	2.8000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
12	2.9000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
13	3.0000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
14	3.1500E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
15	3.3000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
16	3.4500E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
17	3.6000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
18	4.5000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
19	5.2000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
20	5.6500E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
21	6.1000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
22	6.2000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
23	6.3000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
24	6.4000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
25	6.5000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
26	6.6000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
27	7.1000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5700E-02	2.8630E-01
28	7.2500E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5700E-02	2.8630E-01
29	7.4000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
30	7.5500E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
31	7.7000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
32	8.0000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
33	9.1000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
34	9.9000E+02	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
35	1.0850E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
36	1.1800E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
37	1.2200E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
38	1.3000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
39	1.4000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
40	1.4300E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
41	1.4500E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5700E-02	2.8630E-01
42	1.4600E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5700E-02	2.8630E-01
43	1.4800E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5700E-02	2.8630E-01

44	1.5000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
45	1.5450E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
46	1.5900E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8600E-01
47	1.7000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
48	1.9000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
49	1.9100E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
50	2.0300E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
51	2.1000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
52	2.3000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8600E-01
53	2.5000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
54	2.7200E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
55	3.2300E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
56	3.3000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
57	3.4300E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
58	3.7500E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
59	4.1900E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
60	4.3000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8600E-01
61	4.4000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8600E-01
62	4.8000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
63	4.9000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
64	5.0000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8600E-01
65	5.1000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8600E-01
66	5.2000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8620E-01
67	5.2900E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8670E-01
68	5.3000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8600E-01
69	5.6000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8620E-01
70	5.6590E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
71	5.7000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8620E-01
72	5.9000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8600E-01
73	6.0000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8600E-01
74	6.1000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
75	6.4500E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
76	6.8000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
77	7.0060E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
78	7.2000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
79	8.1000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8620E-01
80	8.3000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
81	8.5000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
82	8.7000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8600E-01
83	9.0000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
84	9.2000E+03	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
85	1.0400E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
86	1.1400E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
87	1.1700E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
88	1.1900E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
89	1.2000E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8620E-01
90	1.2200E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8620E-01
91	1.2300E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8620E-01
92	1.2700E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8670E-01
93	1.3300E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
94	1.3600E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
95	1.4400E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
96	1.5000E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
97	1.5100E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
98	1.6490E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
99	1.7500E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8600E-01
100	1.7600E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8600E-01
101	1.8430E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
102	1.9200E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01
103	1.9300E+04	1.0000E+00	0.0000E+00	2.0000E-24	3.5000E-02	2.8630E-01

104	1.9900E+04	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	2.8630E-01
105	2.0000E+04	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	2.8630E-01
106	2.0200E+04	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	2.8670E-01
107	2.0400E+04	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	2.8630E-01
108	2.1000E+04	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	2.8630E-01
109	2.1200E+04	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	2.8630E-01
110	2.1700E+04	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	2.8630E-01
111	2.2200E+04	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	2.8630E-01
112	2.2300E+04	1.0000E+00	0.0000E+00	2.0200E-04	3.5000E-02	2.8630E-01
113	2.2450E+04	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	2.8630E-01
114	2.2800E+04	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	2.8630E-01
115	2.3200E+04	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	2.8630E-01
116	2.3400E+04	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	2.8630E-01
117	2.4200E+04	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	2.8600E-01
118	2.4400E+04	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	2.8630E-01
119	2.4500E+04	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	2.8630E-01
120	2.5000E+04	1.0000E+00	0.0000E+00	2.0000E-04	3.5000E-02	2.8630E-01

	DEGREES OF FREEDOM USED IN THE WIDTH DISTRIBUTION			
J-VALUE	COMPETITIVE	NEUTRON	RADIATION	FISSION
5.0000E+00	0.0000E+00	1.0000E+00	0.0000E+00	1.0000E+00

			AVERAGE RESONANCE WIDTHS (EV)			
INDEX	ENERGY (EV)	LEVEL SPACING	COMPETITIVE	NEUTRON	RADIATION	FISSION
1	8.2000E+01	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
2	8.6500E+01	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
3	9.1000E+01	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
4	9.5500E+01	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
5	1.0000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
6	1.1000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
7	1.2000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
8	1.8000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
9	2.4000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
10	2.6000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
11	2.8000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
12	2.9000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
13	3.0000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
14	3.1500E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
15	3.3000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
16	3.4500E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
17	3.6000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
18	4.5000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
19	5.2000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4320E-01
20	5.6500E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
21	6.1000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
22	6.2000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
23	6.3000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
24	6.4000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
25	6.5000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
26	6.6000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
27	7.1000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
28	7.2500E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
29	7.4000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
30	7.5500E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
31	7.7000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
32	8.0000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01

33	9.1000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
34	9.9000E+02	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
35	1.0850E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
36	1.1800E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
37	1.2200E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
38	1.3000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
39	1.4000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
40	1.4300E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
41	1.4500E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
42	1.4600E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
43	1.4800E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
44	1.5000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
45	1.5450E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
46	1.5900E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
47	1.7000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
48	1.9300E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
49	1.9100E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
50	2.0000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
51	2.1000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
52	2.3000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
53	2.5000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
54	2.7000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
55	3.2000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
56	3.3000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
57	3.4000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
58	3.7900E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
59	4.1000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
60	4.3000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
61	4.4000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
62	4.8000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
63	4.9000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
64	5.0000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
65	5.1000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
66	5.2000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
67	5.2500E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
68	5.3000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
69	5.6000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
70	5.6500E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
71	5.7000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
72	5.9000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
73	6.0900E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
74	6.1000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
75	6.4900E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
76	6.8000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
77	7.0000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
78	7.2000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
79	8.1000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
80	8.3000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
81	9.5000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
82	8.7000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
83	9.0000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
84	9.2000E+03	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
85	1.0400E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
86	1.1400E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
87	1.1700E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
88	1.1900E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
89	1.2300E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
90	1.2200E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
91	1.2300E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
92	1.2700E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01

93	1.3300E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
94	1.3600E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
95	1.4400E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
96	1.5000E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
97	1.5100E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
98	1.6400E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
99	1.7500E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
100	1.7600E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
101	1.8400E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
102	1.9200E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
103	1.9300E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
104	1.9900E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
105	2.0000E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
106	2.0200E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
107	2.0400E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
108	2.1000E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
109	2.1200E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
110	2.1700E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
111	2.2200E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
112	2.2300E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
113	2.2400E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
114	2.2800E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
115	2.3200E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
116	2.3400E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
117	2.4200E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
118	2.4400E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
119	2.4600E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01
120	2.5300E+04	1.1200E+00	0.0000E+00	2.2400E-04	3.5000E-02	1.4300E-01

REACTION Q VALUE 1.9250E+08 EV

INTERPOLATION LAW BETWEEN ENERGIES

RANGE	DESCRIPTION	RANGE	DESCRIPTION	RANGE	DESCRIPTION
1 TO 57	LN Y LINEAR IN LN X	57 TO 478	Y LINEAR IN X	478 TO 810	Y LINEAR IN LN X

NEUTRON CROSS SECTIONS

INDEX,	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS	ENERGY EV	CROSS SECTION BARNS
1	1.0000E-05	3.1310E+04	1.0000E-03	3.1234E+03	5.0600E-03	1.3832E+03	1.0000E-02	9.6623E+02	1.5000E-02	7.7939E+02
6	2.0000E-02	6.6687E+02	2.5300E-02	5.8540E+02	3.0000E-02	5.3159E+02	3.5000E-02	4.8633E+02	4.0000E-02	4.4961E+02
11	4.5000E-02	4.1898E+02	5.2000E-02	3.9291E+02	5.5000E-02	3.7039E+02	6.0000E-02	3.5069E+02	6.5000E-02	3.3330E+02
16	7.0000E-02	3.1784E+02	7.5000E-02	3.0485E+02	8.0000E-02	2.9175E+02	8.5000E-02	2.8072E+02	9.0000E-02	2.7072E+02
21	9.5000E-02	2.6159E+02	1.0000E-01	2.5329E+02	1.1000E-01	2.3822E+02	1.2000E-01	2.2525E+02	1.3000E-01	2.1413E+02
26	1.4000E-01	2.0486E+02	1.5000E-01	1.9926E+02	1.6000E-01	1.9082E+02	1.7000E-01	1.8561E+02	1.8000E-01	1.8158E+02
31	2.0334E-01	1.7701E+02	2.2334E-01	1.7795E+02	2.4334E-01	1.8365E+02	2.6334E-01	1.9146E+02	2.8334E-01	1.9642E+02
36	3.0334E-01	1.9182E+02	3.2334E-01	1.7425E+02	3.4334E-01	1.5394E+02	3.6334E-01	1.3901E+02	3.8334E-01	1.2603E+02
41	4.0334E-01	1.1516E+02	4.2012E-01	1.0406E+02	4.6492E-01	9.1586E+01	5.0492E-01	8.1960E+01	5.4492E-01	7.4809E+01
46	5.8492E-01	6.9431E+01	6.2492E-01	6.5391E+01	6.6492E-01	6.2223E+01	7.0492E-01	5.9661E+01	7.4492E-01	5.7651E+01
51	7.8492E-01	5.6285E+01	8.2492E-01	5.5659E+01	8.6492E-01	5.5983E+01	9.0492E-01	5.7644E+01	9.4492E-01	6.0738E+01
56	9.8492E-01	6.5238E+01	1.0000E+00	6.8116E+01	1.0000E+00	1.1856E+01	1.0550E+00	1.1430E+01	1.0730E+00	1.0640E+01
61	1.0910E+00	9.2900E+00	1.1020E+00	-1.9290E+01	1.2000E+00	-2.3570E+01	1.2180E+00	-2.5000E+01	1.2360E+00	-2.5000E+01
66	1.3270E+00	-1.4290E+01	1.3640E+00	-1.2140E+01	1.4550E+00	-6.2100E+00	1.5450E+00	-6.0700E+00	1.6360E+00	-4.6400E+00
71	1.7270E+00	-3.5700E+00	1.8180E+00	-2.8600E+00	1.9090E+00	-2.1400E+00	2.0000E+00	-2.1400E+00	2.1820E+00	-1.4300E+00
76	2.3640E+00	-7.1000E-01	2.4550E+00	-1.0700E+00	2.5450E+00	-1.7000E+00	2.6360E+00	-3.5700E+00	2.6910E+00	-4.2900E+00
81	2.7450E+00	-4.2900E+00	2.8000E+00	0.0000E+00	2.8180E+00	7.1000E-01	2.9550E+00	7.1000E+01	2.9270E+00	-7.1000E-01
86	2.9450E+00	-7.1000E-01	3.0180E+00	3.5700E+00	3.0720E+00	3.5700E+00	3.1820E+00	-3.5700E+00	3.2180E+00	-3.2100E+00
91	3.2730E+00	-1.4300E+00	3.3640E+00	2.1400E+00	3.4550E+00	6.5000E+00	3.4910E+00	7.1000E+00	3.5450E+00	8.0000E+00
96	3.5820E+00	2.5000E+00	3.6360E+00	0.0000E+00	3.6910E+00	-6.9800E+00	3.7270E+00	-9.1900E+00	3.8100E+00	-7.1400E+00
101	3.9090E+00	-5.3600E+00	4.0000E+00	-4.4000E+00	4.0910E+00	-3.7000E+00	4.1820E+00	-3.1400E+00	4.3640E+00	-2.2900E+00
106	4.5450E+00	-2.1400E+00	4.6360E+00	-1.7900E+00	4.7270E+00	-1.4300E+00	4.7820E+00	0.0000E+00	4.8000E+00	7.1000E-01
111	4.8360E+00	7.1000E-01	4.8550E+00	7.1000E-01	4.8910E+00	-1.4300E+00	4.9090E+00	-2.1400E+00	4.9450E+00	-2.8600E+00
116	4.9810E+00	-2.8600E+00	5.0910E+00	-2.8600E+00	5.1450E+00	-2.5000E+00	5.1820E+00	-2.1400E+00	5.2730E+00	-1.0700E+00
121	5.3090E+00	-7.1000E-01	5.5450E+00	-7.1000E-01	5.6550E+00	-1.7900E+00	5.7270E+00	-1.4300E+00	5.8180E+00	0.0000E+00
126	5.9090E+00	1.6400E+00	6.0000E+00	2.8600E+00	6.0910E+00	2.5000E+00	6.1640E+00	1.4300E+00	6.2180E+00	-1.7900E+00
131	6.2550E+00	-1.7900E+00	6.2910E+00	0.2000E+00	6.4180E+00	0.0000E+00	6.4550E+00	-2.8600E+00	6.4910E+00	-5.0000E+00
136	6.5450E+00	-5.0000E+00	6.6360E+00	-4.2800E+00	6.7270E+00	-3.7100E+00	6.8100E+00	-2.1400E+00	6.9820E+00	0.0000E+00
141	7.1820E+00	0.0000E+00	7.2910E+00	-3.5700E+00	7.8100E+00	-3.9300E+00	8.0000E+00	-4.2900E+00	8.1810E+00	-4.2900E+00
146	8.3630E+00	-3.9300E+00	8.4530E+00	0.3000E+00	8.9250E+00	0.0000E+00	9.0150E+00	2.1430E+01	9.0520E+00	2.5000E+01
151	9.1060E+00	2.5000E+01	9.1790E+00	1.0000E+01	9.2330E+00	0.0000E+00	9.3600E+00	0.0000E+00	9.4320E+00	1.0000E+01
156	9.4510E+00	1.1430E+01	9.5850E+00	1.0000E+01	9.5410E+00	6.2100E+00	9.7040E+00	0.0000E+00	9.7590E+00	-2.1400E+00
161	9.9950E+00	-2.1400E+00	1.0005E+01	-2.8600E+00	1.0174E+01	0.0000E+00	1.0267E+01	0.0000E+00	1.0339E+01	2.1400E+00
166	1.0430E+01	2.1400E+00	1.0629E+01	-7.1000E-01	1.0720E+01	-7.1000E-01	1.0811E+01	-3.6000E-01	1.0937E+01	-5.7000E-01
171	1.0992E+01	0.0000E+00	1.1264E+01	3.0000E+00	1.1409E+01	2.7500E+00	1.1445E+01	2.0000E+00	1.1461E+01	2.9000E+00
176	1.1554E+01	0.0000E+00	1.1862E+01	0.0000E+00	1.1890E+01	2.7000E+00	1.2000E+01	5.4000E+00	1.2091E+01	7.4300E+00
181	1.2145E+01	1.1350E+01	1.2200E+01	1.0000E+01	1.2330E+01	0.0000E+00	1.4065E+01	0.0000E+00	1.4267E+01	2.8600E+00
186	1.4357E+01	5.7100E+00	1.4412E+01	5.7100E+00	1.4440E+01	4.7100E+00	1.4611E+01	-5.5000E+00	1.4647E+01	-5.5000E+00
191	1.4737E+01	-3.5700E+00	1.4901E+01	-5.0000E-01	1.5000E+01	-7.1000E-01	1.5091E+01	0.0000E+00	1.5182E+01	7.1000E-01
196	1.5273E+01	0.0000E+00	1.5455E+01	0.0000E+00	1.5545E+01	-1.4300E+00	1.5636E+01	-3.5800E+00	1.5727E+01	-3.5700E+00
201	1.5818E+01	-2.5000E+00	1.5909E+01	-1.2100E+00	1.6000E+01	0.0000E+00	1.6182E+01	0.0000E+00	1.6273E+01	-3.5600E+00
206	1.6364E+01	-6.4500E+00	1.6436E+01	-6.4300E+00	1.6491E+01	-6.4300E+00	1.6545E+01	-4.2900E+00	1.6636E+01	0.0000E+00
211	1.6727E+01	0.0000E+00	1.6818E+01	1.4300E+00	1.6909E+01	3.9300E+00	1.6945E+01	4.2900E+00	1.7000E+01	3.5700E+00
216	1.7091E+01	2.8600E+00	1.7181E+01	1.4300E+00	1.7273E+01	7.1000E-01	1.7364E+01	0.0000E+00	1.7455E+01	0.0000E+00
221	1.7545E+01	-7.1000E-01	1.7636E+01	-1.0700E+00	1.7727E+01	-1.4300E+00	1.7818E+01	-1.8600E+00	1.7909E+01	-7.1000E-01
226	1.8091E+01	0.0000E+00	1.8273E+01	0.0000E+00	1.8364E+01	3.5700E+00	1.8455E+01	3.9300E+00	1.8549E+01	3.5700E+00
231	1.8636E+01	2.8600E+00	1.8727E+01	2.1400E+00	1.8818E+01	1.4300E+00	1.8909E+01	1.0700E+00	1.9000E+01	0.0000E+00
236	1.9301E+01	0.0000E+00	1.9436E+01	2.8600E+00	1.9455E+01	7.1400E+00	1.9491E+01	1.4290E+01	1.9509E+01	1.7140E+01

241	1,9527E+01	1,7140E+01	1,9545E+01	1,5710E+01	1,9618E+01	1,0710E+01	1,9672E+01	8,2900E+00	1,9727E+01	6,4300E+00
246	1,9818E+01	4,2900E+00	1,9909E+01	2,5000E+00	2,0000E+01	7,1000E-01	2,0091E+01	0,0000E+00	2,0273E+01	-7,1000E-01
251	2,0909E+01	-7,1000E-01	2,1000E+01	-7,1000E-01	2,1036E+01	-1,0000E+00	2,1091E+01	-1,0000E+00	2,1127E+01	-1,1000E+00
256	2,1182E+01	-1,2000E+00	2,1218E+01	-1,3000E+00	2,1264E+01	-1,3500E+00	2,1364E+01	-1,4300E+00	2,1400E+01	-2,1500E+00
261	2,1455E+01	-2,1500E+00	2,1545E+01	-2,8000E+00	2,1727E+01	-3,4500E+00	2,1909E+01	-2,8700E+00	2,2091E+01	-2,5100E+00
266	2,2273E+01	-1,7900E+00	2,2455E+01	-1,0700E+00	2,2636E+01	0,0000E+00	2,3002E+01	0,0000E+00	2,3115E+01	4,0000E-01
271	2,3230E+01	3,6000E-01	2,3460E+01	1,8000E-01	2,3690E+01	9,0000E-02	2,3874E+01	0,0000E+00	2,4011E+01	-4,6400E+00
276	2,4103E+01	-4,6500E+00	2,4379E+01	2,7300E+00	2,4609E+01	9,0000E+00	2,4839E+01	4,6400E+00	2,5069E+01	-4,5000E-01
281	2,5161E+01	-4,5000E-01	2,5345E+01	1,8200E+00	2,5529E+01	0,0000E+00	2,5713E+01	0,0000E+00	2,5851E+01	-4,5500E+00
286	2,6034E+01	-1,0910E+01	2,6126E+01	-1,0910E+01	2,6218E+01	-7,7300E+00	2,6448E+01	0,0000E+00	2,6425E+01	0,0000E+00
291	2,8517E+01	4,5000E-01	2,8747E+01	4,5000E-01	2,8977E+01	4,5000E-01	2,9207E+01	4,5000E-01	2,9437E+01	4,5000E-01
296	2,9667E+01	0,0000E+00	2,9897E+01	-1,8000E-01	3,0000E+01	-3,6000E-01	3,0229E+01	-4,5200E-01	3,0457E+01	0,0000E+00
301	3,0686E+01	0,0000E+00	3,0777E+01	0,0000E+00	3,0914E+01	0,0000E+00	3,0960E+01	-8,2000E-01	3,1097E+01	-2,1000E+00
306	3,1143E+01	-2,3600E+00	3,1371E+01	-1,8200E+00	3,1600E+01	-9,1000E-01	3,1691E+01	-7,3000E-01	3,1829E+01	0,0000E+00
311	3,2194E+01	0,0000E+00	3,2286E+01	0,0000E+00	3,2514E+01	-2,7300E+00	3,2743E+01	-3,1800E+00	3,2971E+01	-3,1800E+00
316	3,3200E+01	-2,2700E+00	3,3520E+01	0,0000E+00	3,4434E+01	0,0000E+00	3,4400E+01	2,7270E+01	3,4526E+01	3,2730E+01
321	3,4571E+01	3,3630E+01	3,4617E+01	2,9290E+01	3,4663E+01	1,6360E+01	3,4709E+01	8,1820E+00	3,4754E+01	4,5400E+00
326	3,4846E+01	0,0000E+00	3,6629E+01	0,0000E+00	3,6857E+01	-9,1000E-01	3,7086E+01	-1,5000E+00	3,7314E+01	0,0000E+00
331	3,7543E+01	7,3000E-01	3,7771E+01	9,1000E-01	3,8000E+01	8,2000E-01	3,8229E+01	7,3000E-01	3,8457E+01	5,5000E-01
336	3,8686E+01	-3,6000E-01	3,8914E+01	-2,1000E+00	3,9143E+01	-4,5500E+00	3,9234E+01	-5,0000E+00	3,9280E+01	0,0000E+00
341	3,9966E+01	0,0000E+00	4,0194E+01	-1,8200E+00	4,0514E+01	0,0000E+00	4,0697E+01	2,7200E+00	4,0743E+01	3,4500E+00
346	4,0789E+01	3,6400E+00	4,0971E+01	2,7300E+00	4,1200E+01	0,0000E+00	4,1566E+01	0,0000E+00	4,1657E+01	-9,1000E-01
351	4,1794E+01	-9,1000E-01	4,1977E+01	2,7300E+00	4,2114E+01	1,8200E+00	4,2297E+01	0,0000E+00	4,2389E+01	2,7300E+00
356	4,2571E+01	2,7300E+00	4,2709E+01	-9,1000E-01	4,2800E+01	-9,1000E-01	4,2891E+01	1,8200E+00	4,3029E+01	1,8200E+00
361	4,3211E+01	0,0000E+00	4,3669E+01	0,0000E+00	4,3806E+01	-1,8200E+00	4,4034E+01	1,8200E+00	4,4171E+01	2,2700E+00
366	4,4400E+01	1,6400E+00	4,4629E+01	0,0000E+00	4,4857E+01	-1,0000E-01	4,5086E+01	0,0000E+00	4,5314E+01	-6,3000E-01
371	4,5543E+01	-9,5000E-01	4,5771E+01	-7,3000E-01	4,6000E+01	-1,0000E+00	4,6181E+01	-1,4320E+00	4,6363E+01	-7,1000E-01
376	4,6544E+01	0,0000E+00	4,7270E+01	0,0000E+00	4,7451E+01	7,2000E-01	4,7633E+01	2,1400E+00	4,7741E+01	2,7100E+00
381	4,7887E+01	0,0000E+00	4,9011E+01	0,0000E+00	4,9120E+01	2,8600E+00	4,9193E+01	2,8600E+00	4,9338E+01	0,0000E+00
386	4,9556E+01	0,0000E+00	4,9664E+01	2,1400E+00	4,9773E+01	2,1400E+00	4,9955E+01	0,0000E+00	5,3438E+01	0,0000E+00
391	5,3619E+01	2,8600E+00	5,3800E+01	3,5700E+00	5,4000E+01	1,4300E+00	5,4181E+01	0,0000E+00	5,5995E+01	0,0000E+00
396	5,6177E+01	5,0000E+00	5,6286E+01	7,8600E+00	5,6358E+01	5,0000E+00	5,6431E+01	0,0000E+00	5,6649E+01	0,0000E+00
401	5,6794E+01	5,0000E+00	5,6902E+01	2,8600E+00	5,7120E+01	-7,1000E-01	5,7265E+01	-1,2900E+00	5,7628E+01	-1,2900E+00
406	5,7810E+01	0,0000E+00	5,7991E+01	0,0000E+00	5,8172E+01	0,0000E+00	5,8317E+01	-2,5000E+00	5,8390E+01	-2,0000E+00
411	5,8825E+01	0,0000E+00	5,9007E+01	1,4000E+00	5,9116E+01	1,4000E+00	5,9442E+01	7,0000E-01	5,9624E+01	3,5000E-01
416	5,9805E+01	0,0000E+00	6,9400E+01	0,0000E+00	6,9619E+01	3,0000E+00	6,9802E+01	4,1000E+00	7,0200E+01	4,1400E+00
421	7,0181E+01	0,0000E+00	7,1560E+01	0,0000E+00	7,1814E+01	-2,8600E+00	7,1923E+01	-3,9300E+00	7,1995E+01	-3,9300E+00
426	7,2068E+01	-3,5700E+00	7,2104E+01	-2,1400E+00	7,2177E+01	0,0000E+00	7,2322E+01	0,0000E+00	7,2503E+01	0,0000E+00
431	7,2685E+01	6,7900E+00	7,2721E+01	4,0000E+00	7,2830E+01	1,4000E+00	7,2902E+01	3,6000E-01	7,2975E+01	2,0000E+00
436	7,3084E+01	0,0000E+00	7,3991E+01	0,0000E+00	7,4426E+01	0,0000E+00	7,4571E+01	3,5700E+00	7,4789E+01	1,6790E+01
441	7,4825E+01	1,6790E+01	7,4862E+01	1,4290E+01	7,4898E+01	9,2900E+00	7,4934E+01	7,5000E+00	7,4971E+01	5,7100E+00
446	7,5043E+01	3,2100E+00	7,5079E+01	2,1400E+00	7,5188E+01	0,0000E+00	7,6023E+01	-1,7000E+00	7,6168E+01	-1,2000E+00
451	7,6748E+01	0,0000E+00	7,8300E+01	0,0000E+00	7,8363E+01	5,0000E+00	7,8544E+01	6,1000E+00	7,8726E+01	5,0000E+00
456	7,3907E+01	4,5000E+00	7,9000E+01	3,2000E+03	7,9270E+01	2,1400E+00	7,9451E+01	0,0000E+00	7,9814E+01	0,0000E+00
461	7,9995E+01	2,3200E+00	8,0260E+01	2,3200E+00	8,0249E+01	0,0000E+00	8,0467E+01	0,0000E+00	8,0757E+01	2,0000E+00
466	8,0866E+01	2,1000E+00	8,0975E+01	2,0000E+00	8,1084E+01	1,5000E+00	8,1338E+01	0,0000E+00	8,1519E+01	0,7000E+00
471	8,1628E+01	0,0000E+00	8,1810E+01	1,5000E+00	8,2000E+01	1,5000E+00	8,2000E+01	0,0000E+00	1,0000E+03	0,0000E+00
476	1,3000E+04	0,0000E+00	2,5000E+04	0,0000E+00	2,5000E+04	2,1522E+00	2,5300E+04	2,1398E+00	2,5700E+04	2,1235E+00
481	2,6200E+04	2,1073E+00	2,6900E+04	2,1011E+00	2,7200E+04	2,0931E+00	2,7500E+04	2,0961E+00	2,8300E+04	2,1353E+00
486	2,8600E+04	2,1913E+00	2,9300E+04	2,1608E+00	2,9800E+04	2,0742E+00	3,0030E+04	2,0430E+00	3,1100E+04	2,0830E+00
491	3,1300E+04	2,1077E+00	3,1900E+04	2,1608E+00	3,2100E+04	2,1775E+00	3,2500E+04	2,1159E+00	3,2000E+04	2,0702E+00
496	3,4200E+04	1,9888E+00	3,4500E+04	1,9580E+00	3,5000E+04	1,9074E+00	3,6200E+04	1,9825E+00	3,6500E+04	1,9272E+00
501	3,7000E+04	1,8360E+00	3,7900E+04	1,9463E+00	3,8700E+04	1,8939E+00	3,9100E+04	1,8687E+00	3,9400E+04	1,8748E+00
506	4,0000E+04	1,8870E+00	4,0400E+04	1,9445E+00	4,1003E+04	[illegible]	4,1500E+04	1,9580E+00	[illegible]	1,8870E+00
511	4,3000E+04	1,9176E+00	4,3600E+04	1,9053E+00	4,3800E+04	1,9012E+00	4,4300E+04	1,8818E+00	4,4800E+04	1,8963E+00
516	4,5000E+04	1,8462E+00	4,5200E+04	1,8338E+00	4,5400E+04	1,8216E+00	4,6000E+04	1,7850E+00	4,6200E+04	1,8015E+00
521	4,6500E+04	1,8260E+00	4,6800E+04	1,8504E+00	4,7300E+04	1,8327E+00	4,7600E+04	1,7990E+00	4,8200E+04	1,7680E+00
526	4,8400E+04	1,7831E+00	4,8800E+04	1,8116E+00	4,9000E+04	1,8258E+00	5,0000E+04	1,7442E+00	5,0200E+04	1,7545E+00
531	5,0600E+04	1,7749E+00	5,0900E+04	1,7901E+00	5,1200E+04	1,7952E+00	5,1500E+04	1,7952E+00	5,2200E+04	1,8219E+00
536	5,2500E+04	1,8618E+00	5,3500E+04	1,9227E+00	5,3900E+04	1,9186E+00	5,4200E+04	1,9176E+00	5,4500E+04	1,9176E+00

541	5.5000E+04	1.9176E+00	5.5300E+04	1.9145E+00	5.5700E+04	1.9104E+00	5.6100E+04	1.9023E+00	5.6700E+04	1.8716E+00
546	5.7100E+04	1.8595E+00	5.7600E+04	1.8748E+00	5.7900E+04	1.8640E+00	5.8300E+04	1.8654E+00	5.8700E+04	1.8369E+00
551	5.9102E+04	1.8115E+00	5.9200E+04	1.8074E+00	5.9800E+04	1.7829E+00	6.0000E+04	1.7748E+00	6.0300E+04	1.8056E+00
556	6.1200E+04	1.8624E+00	6.1500E+04	1.8410E+00	6.2000E+04	1.8054E+00	6.2500E+04	1.8196E+00	6.2900E+04	1.8238E+00
561	6.3200E+04	1.8320E+00	6.4200E+04	1.8277E+00	6.4700E+04	1.7562E+00	6.5000E+04	1.7136E+00	6.5100E+04	1.7228E+00
566	6.6100E+04	1.8013E+00	6.6500E+04	1.7849E+00	6.7000E+04	1.7646E+00	6.7400E+04	1.7892E+00	6.8000E+04	1.8258E+00
571	6.8300E+04	1.8043E+00	6.8900E+04	1.7615E+00	6.9400E+04	1.7462E+00	7.0000E+04	1.7340E+00	7.0300E+04	1.7348E+00
576	7.0900E+04	1.7340E+00	7.2000E+04	1.7340E+00	7.2500E+04	1.7801E+00	7.3100E+04	1.8217E+00	7.3700E+04	1.7972E+00
581	7.4100E+04	1.7901E+00	7.4800E+04	1.8259E+00	7.5000E+04	1.8380E+00	7.5300E+04	1.8237E+00	7.5800E+04	1.8033E+00
586	7.6500E+04	1.7236E+00	7.7000E+04	1.6524E+00	7.7600E+04	1.6892E+00	7.8400E+04	1.7218E+00	7.8900E+04	1.7320E+00
591	7.9400E+04	1.6685E+00	8.0000E+04	1.5708E+00	8.0700E+04	1.6506E+00	8.2000E+04	1.7136E+00	8.2700E+04	1.6921E+00
596	8.3300E+04	1.6492E+00	8.4000E+04	1.5708E+00	8.4700E+04	1.6638E+00	8.5000E+04	1.7034E+00	8.5300E+04	1.6604E+00
601	8.6100E+04	1.5544E+00	8.6800E+04	1.5116E+00	8.7500E+04	1.5597E+00	8.8300E+04	1.5932E+00	8.9000E+04	1.5584E+00
606	9.0000E+04	1.6320E+00	9.0300E+04	1.6320E+00	9.1200E+04	1.5910E+00	9.2800E+04	1.5260E+00	9.3400E+04	1.5749E+00
611	9.4400E+04	1.9789E+00	9.5000E+04	1.5606E+00	9.5200E+04	1.5749E+00	9.6000E+04	1.6320E+00	9.6800E+04	1.7055E+00
616	9.7700E+04	1.6308E+00	9.8500E+04	1.6270E+00	9.9300E+04	1.6534E+00	9.9900E+04	1.6350E+00	1.0000E+05	1.5850E+00
621	1.0300E+05	1.5720E+00	1.2000E+05	1.5320E+00	1.3500E+05	1.4960E+00	1.4000E+05	1.4820E+00	1.5000E+05	1.4500E+00
626	1.6000E+05	1.4400E+00	1.7300E+05	1.4070E+00	1.8000E+05	1.3940E+00	2.0000E+05	1.3510E+00	2.0700E+05	1.3350E+00
631	2.1500E+05	1.3262E+00	2.2000E+05	1.3218E+00	2.2500E+05	1.3177E+00	2.3500E+05	1.3123E+00	2.4000E+05	1.3100E+00
636	2.5000E+05	1.3075E+00	2.6000E+05	1.3037E+00	2.7000E+05	1.3000E+00	2.8000E+05	1.2953E+00	3.0000E+05	1.2800E+00
641	3.2000E+05	1.2440E+00	3.2500E+05	1.2370E+00	3.4000E+05	1.2280E+00	3.5000E+05	1.2262E+00	3.6000E+05	1.2233E+00
646	3.8000E+05	1.2210E+00	4.0000E+05	1.2163E+00	4.2000E+05	1.2098E+00	4.4000E+05	1.2013E+00	4.5000E+05	1.1960E+00
651	4.6000E+05	1.1900E+00	4.7000E+05	1.1848E+00	4.8000E+05	1.1798E+00	5.0000E+05	1.1717E+00	5.2000E+05	1.1640E+00
656	5.4002E+05	1.1585E+00	5.5000E+05	1.1575E+00	5.6000E+05	1.1562E+00	5.7000E+05	1.1549E+00	5.8000E+05	1.1530E+00
661	6.0000E+05	1.1525E+00	6.2000E+05	1.1488E+00	6.4000E+05	1.1451E+00	6.5000E+05	1.1436E+00	6.6000E+05	1.1424E+00
666	6.7000E+05	1.1405E+00	6.8000E+05	1.1387E+00	7.0000E+05	1.1350E+00	7.2000E+05	1.1303E+00	7.3000E+05	1.1288E+00
671	7.4000E+05	1.1281E+00	7.5000E+05	1.1278E+00	7.6000E+05	1.1281E+00	7.7000E+05	1.1293E+00	7.7500E+05	1.1298E+00
676	7.8000E+05	1.1300E+00	8.0000E+05	1.1330E+00	8.2000E+05	1.1397E+00	8.4000E+05	1.1460E+00	8.5000E+05	1.1512E+00
681	8.6000E+05	1.1603E+00	8.8000E+05	1.1640E+00	9.0000E+05	1.1730E+00	9.2000E+05	1.1838E+00	9.4000E+05	1.1938E+00
686	9.5000E+05	1.1987E+00	9.6000E+05	1.2040E+00	9.7000E+05	1.2100E+00	9.8000E+05	1.2150E+00	1.0000E+06	1.2250E+00
691	1.0500E+06	1.2410E+00	1.1000E+06	1.2500E+00	1.1500E+06	1.2551E+00	1.2000E+06	1.2575E+00	1.2500E+06	1.2566E+00
696	1.2950E+06	1.2550E+00	1.3000E+06	1.2549E+00	1.3500E+06	1.2522E+00	1.4000E+06	1.2500E+00	1.4500E+06	1.2490E+00
701	1.4952E+06	1.2495E+00	1.5000E+06	1.2505E+00	1.6000E+06	1.2575E+00	1.7000E+06	1.2620E+00	1.8000E+06	1.2670E+00
706	1.9000E+06	1.2715E+00	2.0000E+06	1.2740E+00	2.1000E+06	1.2760E+00	2.2000E+06	1.2780E+00	2.3000E+06	1.2793E+00
711	2.4000E+06	1.2780E+00	2.5000E+06	1.2754E+00	2.6000E+06	1.2658E+00	2.7000E+06	1.2600E+00	2.8000E+06	1.2512E+00
716	2.9000E+06	1.2412E+00	3.0000E+06	1.2318E+00	3.1000E+06	1.2218E+00	3.2000E+06	1.2113E+00	3.3000E+06	1.2014E+00
721	3.4000E+06	1.1920E+00	3.5000E+06	1.1830E+00	3.6000E+06	1.1770E+00	3.7000E+06	1.1710E+00	3.8000E+06	1.1620E+00
726	3.9000E+06	1.1580E+00	4.0000E+06	1.1500E+00	4.1000E+06	1.1430E+00	4.2000E+06	1.1380E+00	4.3000E+06	1.1300E+00
731	4.4000E+06	1.1250E+00	4.5000E+06	1.1200E+00	4.6000E+06	1.1130E+00	4.7000E+06	1.1080E+00	4.8000E+06	1.1020E+00
736	4.9000E+06	1.0970E+00	5.0000E+06	1.0940E+00	5.1000E+06	1.0900E+00	5.1500E+06	1.0875E+00	5.2000E+06	1.0844E+00
741	5.2500E+06	1.0812E+00	5.3000E+06	1.0777E+00	5.3200E+06	1.0755E+00	5.3500E+06	1.0730E+00	5.4000E+06	1.0696E+00
746	5.4500E+06	1.0650E+00	5.5000E+06	1.0590E+00	5.5500E+06	1.0520E+00	5.6000E+06	1.0500E+00	5.6500E+06	1.0503E+00
751	5.7000E+06	1.0625E+00	5.7500E+06	1.0746E+00	5.8000E+06	1.0875E+00	5.9000E+06	1.1270E+00	6.0000E+06	1.1600E+00
756	6.1000E+06	1.1930E+00	6.2000E+06	1.2320E+00	6.3000E+06	1.2740E+00	6.4000E+06	1.3190E+00	6.5000E+06	1.3580E+00
761	6.6000E+06	1.4000E+00	6.7000E+06	1.4450E+00	6.8000E+06	1.4700E+00	6.9000E+06	1.5152E+00	7.0000E+06	1.5400E+00
766	7.1000E+06	1.5020E+00	7.2000E+06	1.6000E+00	7.3000E+06	1.6370E+00	7.4000E+06	1.6700E+00	7.5000E+06	1.6820E+00
771	7.6000E+06	1.7000E+00	7.6500E+06	1.7100E+00	7.7000E+06	1.7170E+00	7.8000E+06	1.7330E+00	7.9000E+06	1.7470E+00
776	8.0000E+06	1.7580E+00	8.2000E+06	1.7770E+00	8.4000E+06	1.7900E+00	8.5000E+06	1.7960E+00	8.6000E+06	1.8000E+00
781	8.8000E+06	1.8050E+00	9.0000E+06	1.8040E+00	9.2000E+06	1.8000E+00	9.4000E+06	1.7930E+00	9.5600E+06	1.7900E+00
786	9.6000E+06	1.7850E+00	9.8000E+06	1.7770E+00	1.0000E+07	1.7680E+00	1.0500E+07	1.7400E+00	1.1000E+07	1.7100E+00
791	1.1500E+07	1.7170E+00	1.1900E+07	1.7520E+00	1.2000E+07	1.7670E+00	1.2199E+07	1.8010E+00	1.2500E+07	1.8600E+00
796	1.3000E+07	1.9760E+00	1.3500E+07	2.0800E+00	1.4000E+07	2.1520E+00	1.4500E+07	2.2100E+00	1.5000E+07	2.2300E+00
801	1.5500E+07	2.2400E+00	1.6000E+07	2.2300E+00	1.6500E+07	2.2120E+00	1.7000E+07	2.1850E+00	1.7500E+07	2.1500E+00
806	1.8000E+07	2.1180E+00	1.8500E+07	2.0800E+00	1.9000E+07	2.0600E+00	1.9500E+07	2.0520E+00	2.0000E+07	2.0500E+00