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RADIATION RESEARCH ASSOCIATES, INC.

Fort Worth, Texas

INELASTIC NEUTRON AND CAPTURE-GAMMA RAY CROSS SECTION LIBRARIES FOR THE COHORT MONTE CARLO PROCEDURE

By
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ABSTRACT

A set of cross section libraries has been compiled for the family of routines designated as COHORT. The elements for which these libraries have been compiled are Li^6 , Li^7 , Be^9 , B^{10} , C, N, O, Al, Fe, and U^{235} . These elements are those typically encountered in nuclear rocket radiation heating and transport problems, although they are not restricted to that type problem. The set of compiled libraries does not include all of the cross sections required for a complete COHORT calculation but it does include those libraries dealing with the production of secondary gamma rays by neutron capture or inelastic scattering. It is hoped that these libraries will be useful to all those who use the COHORT Monte Carlo Procedure.

FORWARD

The author wishes to acknowledge the technical guidance of M. B. Wells of the RRA Staff. The technical monitor was Henry E. Stern of the Research Projects Laboratory, Marshall Space Flight Center, Huntsville, Alabama. The author also wishes to express his appreciation to Mrs. Frances Hopper for her help in the task of placing much of the cross section data on computer cards.

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I. INTRODUCTION

This report describes the element libraries which have been prepared for the COHORT Monte Carlo Procedure. The elements for which libraries have been compiled are Li^6 , Li^7 , Be^9 , B^{10} , C, N, O, Al, Fe, and U^{235} . The element libraries for which cross section data have been prepared are library nine for the history generator routine, H01, and all libraries, one through ten, for the source generator routine S02. An H01 library nine has been prepared for each of the elements listed above. The S02 libraries one through four have been compiled for only those elements listed above for which gamma ray production by inelastic scattering events is important. Likewise, the S02 libraries five through eight have been compiled only for those elements for which radiative neutron capture events are important. The S02 libraries nine and ten give the energies at which data have been compiled for libraries one through four and five through eight respectively.

The inelastic scattered neutrons and inelastically produced gamma rays are usually not important for low energy neutron problems. Thus, the energy range covered in preparation of the H01 library nine and S02 libraries one through four and library nine was chosen to extend from an incident neutron energy of 1 kev to 15.0 MeV. However, the radiative capture process is most important for low energy neutrons, but for some elements, it may also be important for intermediate or fast neutrons. Because of this large energy range over which radiative capture may be important, two sets of S02 libraries five through eight and library ten have been compiled. One set covers the energy range from thermal energy to 1.0 kev and the other extends from 1.0 kev to 15.0 MeV.

After a literature survey of neutron cross section data was made, the Evaluated Neutron Data File¹ (ENDF) was chosen for the basic source for data used in compilation of the COHORT libraries. The ENDF has two storage systems, one to contain the evaluated data as it is being assimilated and a second file which contains completed sets of data for each element. These two files are referred to as the ENDF/A and the ENDF/B, respectively. The completed file, ENDF/B, was the one used in the COHORT library compilations. The ENDF/B, however, does not contain all the information required for shielding calculations since it was primarily designed to furnish data for reactor calculations. When specific data were not available, or when the ENDF/B did not give data for an element, other sources had to be relied upon. Whenever the ENDF/B data were not employed, the reference used is noted in this report for each set of data.

The second section of this report describes certain modifications made to the history generator routine H01. Also described in Section II are the methods used to put inelastic scattering cross section data in the format required by H01 library nine. Section III describes the requirements and methods for preparation of libraries one through four and library nine for the source generator routine S02. The radiative capture libraries for S02 are described in Section IV. Compatibility of the compiled libraries and the problem input requirements are discussed in Section V. Listings of each of the libraries are given in the appendix of this report.

II. LIBRARY NINE: H01 HISTORY GENERATOR ROUTINE

The H01 routine traces the life histories of individual source particles as they scatter within simple or complex geometrical regions. For neutrons, one of the reaction mechanisms encountered in the scattering process is that of inelastic scattering. When a neutron undergoes an inelastic collision another neutron emerges from the collision center. The energy of this emerging neutron is a function of the angle between its direction of propagation and that of the original neutron and is also a function of the mass of the scattering nucleus and the excitation level in which the scattering nucleus is left after the collision. The H01 routine assumes that the scattering angle is isotropic in the center-of-mass coordinate system. Thus, after having chosen the mass of the target nucleus, the excitation level must be known in order to calculate the energy of the scattered neutron. This required information is contained in library nine of the H01 routine.

2.1 H01 Library Nine Data Format

The format of library nine is given in Reference 2; however, modifications to the H01 routine have been made since the publication of Reference 2. Table I gives the new format of the library nine data reflecting these modifications.

The changes which have been made to this H01 procedure make NMESH and EMESH functions of the elements. Previously these quantities had to be the same for all elements. The modifications allow greater flexibility in preparation of library nine for H01.

TABLE I
HO1 LIBRARY NINE INPUT DATA FORMATS

CARD	FORMAT	INPUT ITEM	DESCRIPTION	LIMIT
1	2I10,4I5	LIBT	Library Type (LIBT = 9 for this library)	
		NMESH(J)	The number of input energies for which probabilities of exciting the various levels of the target nucleus are listed.	≤ 25
		J	Element number (The elements are numbered in the order the atomic weights are listed in the problem input data.)	≤ 8
		L	Energy Super Group Number (The super groups are numbered beginning with the highest energies as number 1 and the super group numbers increase as the energies decrease).	
		NEXP(J)	Number of excitation levels for which probabilities are given for element J.	≤ 25
		NI	Option to determine if inelastic scattering with element J is possible for neutrons within super group L. NI = 0; inelastic scattering not possible (omit remainder of library) NI = 1; inelastic scattering possible.	
2	6E10.4	EEK(J,N)	Energy Excitation Levels for Element J (listed in ascending order with respect to energy, the first value of EEK should be zero.	N=1, NEXP(J)
Follows last EEK(J,N) card	6E10.4	EMESH(J,M)	Incident neutron energies for which probabilities are given. (These energies are in descending order and are the upper bounds of the incident-energy groups for which excitation probabilities are listed.)	N=1, NMESH(J)

CARD	FORMAT	INPUT ITEM	DESCRIPTION	LIMIT
Follows last EMESH(J,M) card. (Start a new card for each incident energy group.)	6E10.4	SEP(J,M,N)	Inelastic scattering probability for element J, incident energy group M, and exci- tation level N. (Probabilities are listed for each excitation level for the first neutron incident energy group, then for each excitation level for the second neutron incident energy group, etc. Probabilities are cumulative probabilities.)	

2.2 Library Nine Data Preparation

The H01 library nine data which have been compiled are for one energy super group. The energy bounds of the super group are from 1 kev to 15.0 MeV. This covers the energy range for which inelastic scattering is important for all the elements.

The element numbers J, which must correspond to the order in which the atomic numbers are input in the problem data, have not been punched on the library decks. This will allow the user of these libraries to order the atomic numbers as best suited for his problem.

In preparation of the inelastic scattering probability distribution tables, SEP(J,M,N), tabulated data were used when they existed. However, in most cases, data were tabulated only for low discrete energy levels and a continuum was employed to describe the secondary energy distribution for high incident neutron energies. For those data taken from the ENDF/B, this continuum was described by the Maxwellian Distribution

$$N(E') = (E'/\theta^2)\exp(-E'/\theta)$$

where $N(E')$ is the number of inelastic neutrons per unit energy having energy E' . The nuclear temperature, θ , was either a constant or a function of the incident neutron energy. In either case, this distribution was used to calculate the excitation probabilities for pseudo-excitation levels which were distributed over the continuum and used to approximate the continuum. This was necessary since the H01 routine does not employ any method of calculating the inelastic neutron energy other than through the use of excitation levels.

The method which was employed to calculate the probabilities for exciting the pseudo-excitation levels requires that one assume that the energy of the scattered neutron is not dependent upon the scattering angle and that the recoil energy of the target nucleus is negligible. Thus, if E_0 is the energy of the incident neutron and E' is the energy of the scattered neutron, then the pseudo-excitation level in which the scattering nucleus is left is given by

$$E = E_0 - E' .$$

To use this equation in this form would require that the excitation levels also have a continuous distribution; therefore, it has been assumed that neutrons with energies close to E' will leave the scattering nucleus in pseudo-excitation level E' such that

$$E = E_0 - (E' \pm \Delta E') .$$

Using this assumption, the cumulative probability for excitation of pseudo-energy level $EL(N)$ for an incident neutron energy $E_0(M)$ is given by

$$SEP(J,M,N) = \frac{\int_{E'_\lambda}^{E_0} (E'/\theta^2) \exp(-E'/\theta) dE'}{\int_0^{E_0} (E'/\theta^2) \exp(-E'/\theta) dE'}$$

where $E'_\lambda = [EL(N) + EL(N+1)]/2.0$. The cumulative probability corresponds to the normalized shaded area shown in Figure 1.

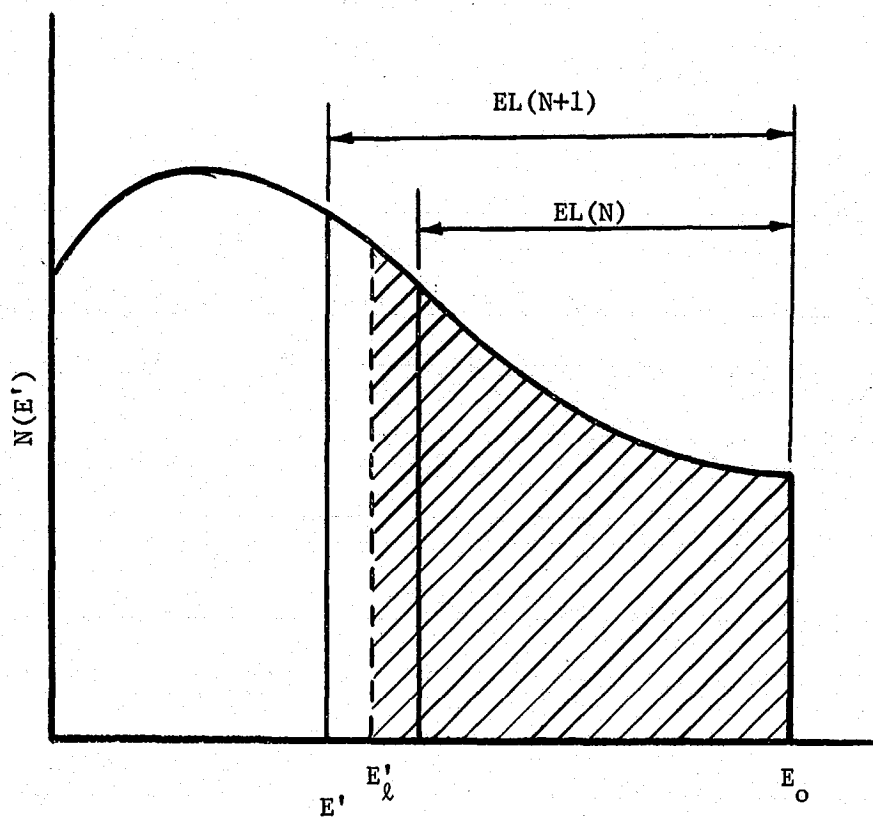


Figure 1. Maxwellian Inelastic Neutron Energy Distribution

2.3 H01 Library Nine Data Sources

As previously stated, the ENDF/B data were employed whenever possible but it was necessary to use other data for some of the library requirements. This subsection gives the data sources employed in the preparation of the library nines for H01.

2.3.1 Lithium 6 and Lithium 7

Rosen and Stewart³ have observed the number of inelastic events as a function of excitation energy of the lithium nuclides. Their data were used to calculate the excitation probabilities for these nuclides. Excitation levels were chosen to correspond to resonances in their data.

2.3.2 Beryllium 9

The literature search indicates that inelastic cross section data is virtually non-existent³ for excitation levels higher than those for the first excited state of Be⁹. Since sufficient data were not available to obtain probabilities for the higher excited states, it has been assumed that an inelastic event can leave the excited nucleus only in the 2.43 MeV state. Thus, below the threshold energy of approximately 2.7 MeV, no inelastic scattering can occur. Above the threshold energy, inelastic scattering occurs only with the 2.43 MeV state and the excitation probability is 1.0. This assumption is conservative since less energy is lost in exciting a low excitation level than in exciting a high one.

2.3.3 Boron 10

The probabilities for inelastically scattered neutron excitation of B^{10} were obtained from the ENDF/B. Tabulate values were given for the first excited state of 0.717 MeV. For incident neutron energies above 4.5 MeV, the inelastic neutron energy distribution was described by the Maxwellian distribution with the nuclear temperature a linear function of the incident energy. The nuclear temperature was defined at 4.5 and 14.0 MeV to be 2.06 and 3.64 MeV respectively.

2.3.4 Carbon

The inelastic scattering probabilities as reported by Troubetzkoy et al. in Reference 4 were used for carbon. Inelastic scattering was assumed to leave the carbon nucleus only in two excited states at 4.43 and 7.66 MeV.

2.3.5 Nitrogen

The inelastic scattering neutron excitation probabilities were obtained from the ENDF/B. Probabilities were given for the discrete levels at 2.31 and 3.94 MeV. Pseudo-excitation levels were distributed over a Maxwellian distribution to obtain probabilities for scattering from the continuum. The nuclear temperature which describes the distribution was 1.975 MeV for an incident energy of 5.25 MeV and was 3.34 MeV for an incident energy of 15.0 MeV. It was assumed to vary linearly between these incident energies.

2.3.6 Oxygen

Excitation probability tables were tabulated in the ENDF/B for most excited states of oxygen. These data were used without modification to prepare the library nine for this element. The energy levels were at 6.05, 6.13, 6.92, 7.12, 8.88, 9.59, 9.85, 10.36, 10.95, 11.08, 11.26, 11.52, 11.63, 12.44, 12.53, 12.79, 12.97, 13.1, 13.26, and 13.66 MeV.

2.3.7 Aluminum

The aluminum excitation probabilities were obtained from the ENDF/B. Probabilities were tabulated for the lowest thirteen excitation levels. Above these levels a Maxwellian distribution was used to describe the energy distribution of the inelastically scattered neutrons. The discrete levels are at 0.842, 1.013, 2.21, 2.73, 2.976, 3.00, 3.674, 3.951, 4.052, 4.403, 4.504, 4.576, and 4.811 MeV. For incident energies 5.00 and 15.0 MeV, the nuclear temperature describing the Maxwellian distribution varied from 1.39 to 2.40 MeV. Again, this variation was linear with respect to the incident neutron energy.

2.3.8 Iron

Iron, like aluminum, had excitation probabilities tabulated in the ENDF/B for the lower levels and had the energy distribution of scattered neutrons described by a continuum for higher energies. The discrete levels were at 0.86, 2.12, 3.01, 3.41, 3.66 and 3.77 MeV. The Maxwellian energy distribution was defined for a constant nuclear

temperature of 0.865 MeV and was independent of the incident neutron energy.

2.3.9 Uranium-235

The ENDF/B was used as the source for the excitation probabilities for U^{235} . Probabilities were tabulated for excitation levels of 0.013, 0.05, 0.084, 0.103, 0.15, 0.173, 0.235, 0.27, 0.4, and 0.6 MeV. Pseudo-excitation levels were chosen for levels above 0.6 MeV and probabilities were calculated for these levels from a Maxwellian inelastic neutron energy distribution. The nuclear temperature which defined the distribution for a given incident energy was a non-linear function of the incident energy. The values of the nuclear temperature for certain incident energies are presented in Table II. For incident energies above 10.0 MeV, the energy distribution of the inelastic neutrons was assumed to be the same as the distribution at 10.0 MeV.

TABLE II.
NUCLEAR TEMPERATURE AS A FUNCTION OF
INCIDENT ENERGY FOR U^{235}

<u>Incident Energy (MeV)</u>	<u>Nuclear Temperature (MeV)</u>
0.00	0.1000
0.95	0.20536
1.00	0.21070
1.50	0.25805
2.00	0.29797
2.50	0.33314
3.00	0.36494
3.50	0.39418
4.00	0.42140
4.50	0.44696
5.00	0.47114
5.50	0.49149
6.00	0.51611
6.50	0.53718
7.00	0.55746
7.50	0.57703
8.00	0.59595
8.50	0.61429
9.00	0.63210
9.50	0.64942
10.00	0.66629

III. INELASTIC GAMMA-RAY LIBRARIES: S02 SOURCE GENERATOR ROUTINE

The source generator routine, S02, is designed to write a source tape for a secondary gamma-ray problem. The S02 code calculates secondary gamma-ray source parameters for either capture or inelastic gamma rays or for both, provided that the energy ranges for the two events do not overlap. Specifically, S02 libraries one through four and library nine are needed to generate a source tape for inelastic gamma rays. Library nine contains the energy points at which cross sections are input for each element. Therefore, only one library nine is required and the cross sections for all elements must be input for the same set of energies.

3.1 Library Contents

The user of the libraries is referred to Reference 2 for the formats and definitions of input variables required for an inelastic gamma-ray problem. Library one contains the total microscopic cross sections for the energy range over which inelastic gamma rays may be produced. The microscopic inelastic scattering cross sections for the same energy range are input in library two of S02. These two libraries are used to calculate a macroscopic inelastic scattering probability for each material encounter in a problem. If a neutron with energy E_j has undergone a collision within a region containing material M, then the probability, $P_M(E_j)$, that the collision is an inelastic collision is defined by the expression

$$P_M(E_j) = \frac{\sum_{i=1}^{NE} N_{M,i} \sigma_{i,n,n'}(E_j)}{\sum_{i=1}^{NE} N_{M,i} \sigma_{i,T}(E_j)}$$

where NE is the number of elements contained in material M, $N_{M,i}$ is the atomic density of element i in material M, and $\sigma_{i,n,n'}(E_j)$ and $\sigma_{i,T}(E_j)$ are the inelastic and total cross sections for the ith element at energy E_j . The $N_{M,i}$'s are problem input data.

Library three contains the number of gamma rays given off per inelastic scattering event as a function of incident neutron energy. Again the energies at which these data are input are those contained in library nine. These data, with the inelastic scattering cross sections, are used to calculate the average number of gamma rays emitted per inelastic scattering of a neutron with energy E_j in material M. This average number of gamma rays is calculated from

$$v_M(E_j) = \frac{\sum_{i=1}^{NE} N_{M,i} \sigma_{i,n,n'}(E_j) v_i(E_j)}{\sum_{i=1}^{NE} N_{M,i} \sigma_{i,n,n'}(E_j)}$$

The $v_i(E_j)$ values are those required in library three for each element.

Library four contains a complete list of the gamma-ray energies that may be produced from inelastic collisions with any of the elements. That is, for each library four, one must use the same set of gamma-ray energies. Thus, there will be gamma-ray energies listed in library four for a given element for which creation of a gamma ray of that

energy will be impossible. For such cases, the probability of creating a gamma ray of that energy is set equal to zero. Library four also contains the probability that a gamma ray of a given energy will result from an inelastic collision of a neutron whose energy lies in a given range. The maximum number of incident energy groups allowed is twenty-five and these groups must be the same for all elements. When the library fours were compiled, these energy groups had to be chosen. The bounds of these energy groups and other input data required to utilize the S02 libraries are discussed in Section V of this report. The elemental probabilities which are input into each library four are used to calculate the probability that a gamma ray with energy E_k will be given off after an inelastic collision of a neutron of energy E_j in material M. This material probability is obtained from

$$q_{M,j,k} = \frac{\sum_{i=1}^{NE} N_{M,i} \sigma_{i,n,n'}(E_j) q_{i,j,k}}{\sum_{i=1}^{NE} N_{M,i} \sigma_{i,n,n'}(E_j)}$$

The $q_{i,j,k}$'s are the elemental probabilities which are input in the library fours.

3.2 Cross Section Averaging

Library nine contains the energies at which cross sections were input for all libraries one and two in S02. The maximum number of energy points allowed, and thus the maximum number of cross sections, is 126. To adequately describe the total and inelastic cross sections for all the elements at only 126 energy points over an energy range of approximately

four decades became a formidable problem. For example, the total cross section for carbon contains over 15 resonances just in the energy range from 1.0 to 15.0 MeV. Thus if the total cross section of carbon were properly defined, it would not be possible to define any structure in the total or inelastic cross sections of the other elements. To alleviate this problem, a computer procedure was written which takes point cross section data and calculates average cross sections for a given energy increment. The average cross sections were calculated by the following equation

$$\langle \sigma(\bar{E}) \rangle = \frac{\int_{E_\ell}^{E_u} \sigma(E) dE}{\int_{E_\ell}^{E_u} dE}$$

where $\bar{E} = (E_\ell + E_u)/2.0$.

The cross sections in all libraries one and two of S02 are averaged cross sections.

3.3 Library Data Sources

Libraries one through four were prepared for all elements except Li^6 and Be^9 . The inelastic scattering of a neutron from Li^6 does not produce inelastic gamma rays. Instead, the reaction leads to a two body breakup of the compound nucleus into a deuteron and a He^5 nucleus. The inelastic scattering of a neutron with Be^9 does produce some inelastic gamma rays; however, the ratio of the inelastic gamma-ray production cross section $\sigma_{n,n'\gamma}$ to the total cross section is of the order of 10^{-6} . This means that approximately one out of 10^6 neutron collisions

with Be^9 would result in the production of inelastic gammas. Thus Be^9 is not an important source of inelastic gamma rays.

The total and inelastic cross sections were obtained from the ENDF/B for all the elements for which inelastic gammas are an important secondary gamma source except for U^{235} . Troubetzkoy et al.'s⁴ cross sections were used for U^{235} in lieu of using the ENDF/B cross sections for this element. The ENDF/B does not contain data which gives the number and energy of the inelastic gamma rays. These data, required for libraries three and four, were obtained from data given by Troubetzkoy et al.^{4,5} except for B^{10} . Their data were presented in tabular form as the number of gamma rays following a neutron producing event as a function of gamma-ray energy and incident neutron energy group. Each set of data was not necessarily for the same neutron energy group or for the same gamma ray energies. Since this is a requirement for the S02 libraries, these data had to be regrouped. Therefore, the gamma energies used in library four may not exactly correspond to the discrete levels for all elements. The number of gamma rays of a given energy which should be produced for a discrete level, was sometimes divided between two other gamma ray energies. This was done in such a manner to conserve energy. This division was necessary since the 25 gamma energies allowed in library four are insufficient to describe all possible gamma energies for all elements. As an example of this regrouping over gamma-ray energies, consider Li^7 . The de-excitation from the first excited state produces a 0.477 MeV gamma-ray. However, this is not one of the gamma ray energies used

in the compilation of library four but 0.25 and 0.75 MeV are used. The gamma-ray energy probability for the 0.25 MeV gamma ray was input so that 54.6% of the time an inelastic collision will produce this gamma ray. For the other inelastic collisions, a 0.75 MeV gamma ray will be produced. For a sufficient number of collisions, the average gamma-ray energy will be 0.477 MeV.

For B^{10} , one gamma ray was considered to be produced per each inelastic scattering event. The probabilities for gamma-ray production were set equal to the probabilities for exciting the various levels in B^{10} . This assumes that all gamma rays are produced by de-excitation from the first level excited directly to the ground state. It is known that there are actually some cascades from the first level excited through intermediate levels to the ground state; however, the literature did not yield any estimates of the transmission probabilities for these cascade gammas. Therefore, the above conservative assumption was made.

A summary of the sources of data for the first four libraries of S02 is given in Table III.

TABLE III
SUMMARY OF THE DATA SOURCES FOR THE INELASTIC
GAMMA-RAY LIBRARIES OF THE SOURCE
GENERATOR PROCEDURE S02

<u>ELEMENT</u>	<u>LIBRARY 1</u>	<u>LIBRARY 2</u>	<u>LIBRARY 3</u>	<u>LIBRARY 4</u>
LITHIUM-7	ENDF/B	ENDF/B	UNC-5139	UNC-5139
BORON-10	ENDF/B	ENDF/B	SEE TEXT	SEE TEXT
CARBON	ENDF/B	ENDF/B	UNC-5099	UNC-5099
NITROGEN	ENDF/B	ENDF/B	UNC-5139	UNC-5139
OXYGEN	ENDF/B	ENDF/B	UNC-5139	UNC-5139
ALUMINUM	ENDF/B	ENDF/B	UNC-5139	UNC-5139
IRON	ENDF/B	ENDF/B	UNC-5139	UNC-5139
URANIUM-235	UNC-5099	UNC-5099	UNC-5099	UNC-5099

IV. CAPTURE GAMMA RAY LIBRARIES: S02 SOURCE GENERATOR ROUTINE

The capture gamma ray libraries are used by the S02 source generator routine in preparation of a secondary gamma-ray source tape for those gamma rays which are produced in a neutron radiative capture reaction. The S02 libraries five through eight and library ten are employed in preparation of the source tape. Library ten contains the energy points at which cross sections are input for each element. A set of libraries five through eight is required for each element which has a non-zero radiative capture cross section.

4.1 Library Contents

The input requirements for the capture gamma-ray libraries are given in Volume II of Reference 2.

Library five contains the total microscopic cross sections in the energy range for which neutron radiative capture can occur. These cross sections are input at the energy points listed in library ten.

The microscopic radiative capture cross sections in the energy range for which neutron capture can occur are input in library six. These cross sections are input for the same energy points as are the microscopic total cross sections.

The two sets of microscopic cross sections, total and radiative capture, are used to calculate the probability of having a radiative capture event occur in a given material region. If a neutron with energy E_j has undergone a collision in a region which contains material M , then the probability $P_M(E_j)$ that the collision is a radiative capture

event is defined by the expression

$$P_M(E_j) = \frac{\sum_{i=1}^{NE} N_{M,i} \sigma_{i,n\gamma}(E_j)}{\sum_{i=1}^{NE} N_{M,i} \sigma_{i,T}(E_j)}, \quad \text{where}$$

NE is the number of elements required to describe material M, $N_{M,i}$ is the atomic density of element i in material M, and $\sigma_{i,n\gamma}$ and $\sigma_{i,T}$ are the microscopic radiative capture and total cross section of the ith element.

Library seven contains the average number of gamma rays given off per radiative capture event for a given element. Whenever a capture event is statistically chosen, the data contained in the library seven are used to determine how many gamma rays are to be produced. This number, $\nu_M(E_j)$, times the neutron weight is written on the source tape as the initial weight of the gamma ray. If the option to produce gamma rays at every neutron collision is chosen, then the product of $\nu_M(E_j)$, the neutron weight, and the probability of having a capture event occur is written on the source tape as the initial weight of the gamma ray. The average number of gamma rays produced in material M from a capture of a neutron with energy E_j is calculated from

$$\nu_M(E_j) = \frac{\sum_{i=1}^{NE} N_{M,i} \sigma_{i,n\gamma}(E_j) \nu_i(E_j)}{\sum_{i=1}^{NE} N_{M,i} \sigma_{i,n\gamma}(E_j)} .$$

The $\nu_i(E_j)$ are those data contained in library seven for the ith element.

Library eight contains the gamma-ray energies and probabilities for producing a gamma ray of a given energy. The gamma-ray energies are a complete list of all possible gamma-ray energies which may be created by a capture event with any element encountered in a problem. Thus, the list of gamma-ray energies must be the same for all elements. The probabilities that gamma rays of given energies will result from the radiative capture of a neutron are input for a set of neutron energy groups. A maximum number of 25 neutron energy groups is allowed. The number of energy groups and their bounds are problem input data and must therefore be the same for all elements in a problem. The energy groups which were chosen for the compilation of the capture gamma-ray libraries are given in the next section of this report.

After determination that a collision is a capture event and the number of gamma rays produced by the event, the library eights are used to determine the energy of the gamma ray from

$$q_{M,j,k} = \frac{\sum_{i=1}^{NE} N_{M,i} \sigma_{i,n\gamma}(E_j) q_{i,j,k}}{\sum_{i=1}^{NE} N_{M,i} \sigma_{i,n\gamma}(E_j)}$$

where $q_{i,j,k}$ are the input probabilities that a gamma ray will be given off with energy E_k when a neutron of energy E_j is captured by element i .

As previously mentioned, two sets of capture gamma-ray libraries have been compiled for each element for which radiative capture is important. One covers the energy range from thermal energy to 1.0 kev

and the other extends from 1.0 kev to 15.0 MeV. For all elements, the probability of producing a capture gamma ray, $q_{i,j,k}$, with a given energy was assumed to be independent of the neutron energy; therefore, only one incident neutron energy group was necessary. However, for the high energy range, several neutron energy groups have been used. This was done to allow libraries to be compiled for other elements whose capture gamma ray energy probabilities may not be constant for all incident neutron energies.

4.2 Cross Section Averaging

The microscopic total and radiative capture cross sections were averaged in the same manner as the inelastic gamma-ray cross sections (Section 3.2). The capture cross sections were not as wildly varying as the inelastic cross sections; however, to insure that all resonances were included, averaged cross sections were employed. The average cross sections for smoothly varying capture cross sections were found to be identical with the point cross section data.

4.3 Library Data Sources

The radiative capture gamma-ray libraries were prepared for nine of the ten elements being reported upon. Oxygen does not produce gamma rays through the radiative capture reaction; therefore, capture gamma ray libraries are not required for this element.

For Al, Fe, Li^7 , U^{235} , and N, the capture gamma-ray libraries were prepared for both the high and low neutron energy ranges. The capture

libraries for Li^6 , Be^9 , B^{10} , and C were compiled only for the low-energy neutron energy range since their capture cross sections are zero above 1.0 kev.

The microscopic total and radiative capture cross sections were obtained from the ENDF/B for all elements except for U^{235} . The number of gamma rays produced by the radiative capture reaction in U^{235} is small compared to the number of gamma rays created by the fission of U^{235} . Therefore, libraries five through eight for this element are for prompt-fission gamma rays rather than radiative-capture gamma rays. The mechanics of calculation are exactly the same as for the capture gamma rays and these U^{235} libraries may be used as if they were capture gamma-ray libraries. The total and fission microscopic cross sections were taken from Troubetzkoy et al.⁴ It should be noted that a fission-product gamma-ray calculation may be made as a primary gamma-ray source problem and care should be taken in order not to include these gammas as both primary and secondary gamma rays.

The gamma rays which are created by a neutron absorption by B^{10} do not come from the radiative capture reaction per se. The true capture cross section is almost an insignificant fraction of the total cross section of B^{10} . However, the cross section for the $\text{B}^{10} (n,\alpha)\text{Li}^{7*}$ reaction is approximately equal to the total cross section for neutrons in the low energy range. The residual Li^7 nucleus is left in the first excited state and de-excites by the emission of a 0.48 MeV gamma ray. This means for nearly every collision of a slow neutron with B^{10} this gamma ray will be created. The cross sections which have

been input into library six for B^{10} are not the capture cross sections but are the (n,α) cross sections. Like the U^{235} libraries, the B^{10} libraries may be used as if they were capture libraries.

The ENDF/B does not give the number of gamma rays or the energy probabilities for capture gamma rays; therefore, these data had to be obtained from other sources. For C, Al, Fe, and U^{235} , the data of Troubetzkoy *et al.*^{4,5} were used. The Reactor Handbook⁶ was used to obtain these data for Li^7 , Be^9 , and N. These data were obtained from Stehn *et al.*⁷ for Li^6 . Since the $B^{10}(n,\alpha)Li^{7*}$ reaction leaves the Li^7 nucleus in the first excited state, only one gamma ray may be produced per reaction. Therefore, the number of gammas produced by neutron absorption in B^{10} is one per event.

A summary of the data sources for all S02 libraries five through eight is given in Table IV.

TABLE IV
 SUMMARY OF THE DATA SOURCES FOR THE
 CAPTURE GAMMA RAY LIBRARIES OF THE
 SOURCE GENERATOR ROUTINE S02

<u>ELEMENT</u>	<u>LIBRARY 5</u>	<u>LIBRARY 6</u>	<u>LIBRARY 7</u>	<u>LIBRARY 8</u>
LITHIUM-6	ENDF/B	ENDF/B	BNL-325	BNL-325
LITHIUM-7	ENDF/B	ENDF/B	HANDBOOK	HANDBOOK
BERYLLIUM-9	ENDF/B	ENDF/B	HANDBOOK	HANDBOOK
BORON-10	ENDF/B	ENDF/B	SEE TEXT	SEE TEXT
CARBON	ENDF/B	UNC 5099	UNC 5099	UNC 5099
NITROGEN	ENDF/B	ENDF/B	HANDBOOK	HANDBOOK
ALUMINUM	ENDF/B	ENDF/B	UNC-5139	UNC-5139
IRON	ENDF/B	ENDF/B	UNC-5139	UNC-5139
URANIUM-235	UNC-5099	UNC-5099	UNC-5099	UNC-5099

V. PROBLEM INPUT REQUIREMENTS: S02 SOURCE GENERATOR ROUTINE

The S02 libraries which have been compiled required that some of the data be for the same number of energy groups or energy points. This requirement is reflected in certain problem input parameters. For a complete description of the problem input parameters, the user of these libraries is referred to Volume II of Reference 2. Only those problem input parameters which are required to be constants for use of the compiled libraries are discussed.

NGI is the number of gamma rays of different energy which are given off in inelastic events over the whole inelastic energy range. NGI must be 25 for use of the compiled S02 libraries.

NGC, the number of gamma rays of different energy which are given off in capture events over the whole capture energy range, must be set equal to 13.

EMAX is the maximum neutron energy for which cross sections are input. If an inelastic gamma-ray source tape, a fast-neutron capture source tape, or a combination of inelastic or slow-capture gamma-ray source tape is being written, then EMAX must equal 15.0 MeV. If a slow-capture gamma-ray source tape is being written independently of the inelastic gamma rays, then EMAX must equal 1.0 kev.

EIN is the minimum threshold energy for which inelastic scattering can occur. For the compiled libraries, EIN should be input as 1.0 kev.

ESEC is the maximum energy for which neutrons may be captured. For the libraries covering the slow energy range, ESEC should be input as 1.0 kev or for the fast capture energy range, ESEC should be 15.0 MeV.

The minimum neutron energy for cross section input is EMIN. It will be the lowest energy value in either library nine or ten. For use of the inelastic secondary libraries or the capture libraries for the high energy range, EMIN is 1.0 kev. For the capture libraries covering the slow neutron energy range or for a combination of the slow capture libraries and the inelastic libraries, EMIN will be 0.025 ev.

The number of neutron energy groups for which the probabilities of obtaining a different inelastic gamma-ray energy is NI. NI must be set equal to 25 for an inelastic gamma-ray problem.

NC is the number of neutron energy groups for which probabilities of obtaining a different capture gamma-ray energy are tabulated. For the slow neutron energy range, NC must be set equal to one, or for the fast neutron energy range, NC must be 9.

The atomic density of element J in material I is $DN(I,J)$. The numerical values of the $DN(I,J)$'s are determined by the materials in a particular problem. However, the units of the $DN(I,J)$'s must be 10^{-24} times the number of nuclei per cubic centimeter. This is required since the cross sections have been input into all libraries in units of barns.

The bounds of the neutron energy groups for which gamma-ray energy probabilities have been input in the library fours are ENI(K). The number of ENI(K)'s is one more than NI and these values must be input in descending order. For the libraries which have been compiled, these energies must be input as follows:

15 MeV, 14 MeV, 13 MeV, 12 MeV, 11 MeV, 10 MeV, 9.5 MeV, 9 MeV, 8.5 MeV, 8 MeV, 7.5 MeV, 7 MeV, 6.5 MeV, 6 MeV, 5.5 MeV, 5 MeV, 4.5 MeV, 4 MeV, 3.5 MeV, 3 MeV, 2.5 MeV, 2 MeV, 1.5 MeV, 1 MeV, 0.5 MeV, 1 KeV.

Between ENI(K) and ENI(K+1), the gamma-ray energy probabilities are assumed to be constant.

The ENC(K)'s are the neutron energy bounds for which capture gamma-ray energy probabilities have been input in all library eights. The number of ENC(K)'s must be one more than NC. For the slow capture energy range, only two ENC(K)'s are required. These are 1.0 KeV and 0.025 ev. For the fast capture energy range, ten ENC(K)'s are required and are as follows: 15 MeV, 3.5 MeV, 2.4 MeV, 1.6 MeV, 1.4 MeV, 1.3 MeV, 1.1 MeV, 0.9 MeV, 0.7 MeV, 1.0 KeV. These values must be input in descending order. Between ENC(K) and ENC(K+1), the capture gamma-ray energy probabilities are considered to be constant.

The remainder of the problem input data depends upon the geometry of the problem and the number of neutron collisions generated by the history generator routine H01.

REFERENCES

1. H. C. Honeck, Specifications for an Evaluated Nuclear Data File for Reactor Applications, USAEC, Washington, D. C.
2. D. G. Collins and M. B. Wells, COHORT, A Monte Carlo Program for Calculation of Radiation Heating and Transport, Radiation Research Associates, Inc. Report RRA-T62 (17 September 1966).
3. L. Rosen and L. Stewart, Neutron-Induced Disintegration of Li^6 and Li^7 , Phys. Rev. 126, 1150 (1962).
4. Troubetzkoy et al., Neutron Cross Sections of U^{238} , U^{235} , U^{239} , U^{234} , U^{236} , Pu^{239} , Pu^{240} , W, Pb, Ni, Cr, C, Li^6 , Li^7 , and T, United Nuclear Corporation UNC-5099 (31 December 1964).
5. Troubetzkoy et al., Neutron Cross Sections of Nitrogen, Oxygen, Aluminum, Silicon, Iron, Deuterium, and Beryllium, United Nuclear Corporation UNC-5139 (15 November 1965).
6. E. P. Blizzard, Editor, Reactor Handbook, Volume III, Part B, Shielding, Interscience Publishers, New York (1962).
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APPENDIX
LISTINGS OF COHORT LIBRARIES

This appendix contains listings of all the COHORT libraries which have been compiled. Two identification cards have been placed before each library. The first card contains the element name, the procedure (either S02 or H01), and the incident neutron energy range for which the following library has been prepared. The second card gives a brief description of the reference or source material from which the data in the library was obtained. These two cards are for identification purposes only and must not be loaded as part of the COHORT library. In addition, the COHORT procedure requires that each library card be sequenced in columns 69 through 72. The first card in each of the compiled library data decks has been numbered 0001 in these columns and each of the succeeding cards has been numbered in increasing order. In columns 67 and 68 of each library data deck, the library number has been placed. The procedure name (H01 or S02) has been placed in columns 78 through 80 of each deck. One can tell the procedure name and the library number from each card, but the element name and incident neutron energy range can be obtained only from the first identification card.

The library listings for each element have been placed in a different table. The order of the tables is that of increasing atomic number. The H01 library nine is listed first and the S02 libraries are listed next. All S02 libraries are listed in the order of increasing library number. The last table contains libraries nine and ten of S02 which contain the energies at which cross sections are input.

TABLE A1. COHORT CROSS SECTION LIBRARIES FOR LITHIUM-6

LITHIUM-6 LIBRARY 09 H01		DATA TAKEN FROM PHYS. REV. 126, 1150 1962			
9	13	1	25	1	
0.00+00	1.50+00	2.00+00	2.20+00	2.40+00	2.60+00
2.80+00	3.00+00	3.20+00	3.40+00	3.60+00	3.80+00
4.00+00	4.20+00	4.40+00	4.60+00	5.00+00	5.40+00
6.20+00	6.60+00	7.00+00	8.40+00	9.40+00	1.06+01
1.20+01	1.40+01	1.20+01	1.06+01	9.30+00	8.00+00
7.50+00	7.00+00	6.50+00	5.80+00	5.40+00	5.10+00
4.40+00	0.00+00	0.00+00	5.40-02	1.73-01	4.22-01
0.00+00	6.48-01	8.21-01	9.13-01	9.35-01	9.89-01
5.30-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00
1.00+00	0.00+00	1.19-02	7.76-02	1.49-01	2.54-01
0.00+00	3.79-01	4.89-01	5.88-01	6.90-01	7.73-01
2.84-01	9.64-01	9.88-01	9.94-01	1.00+00	1.00+00
8.63-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00
1.00+00	0.00+00	7.10-03	6.38-02	1.63-01	2.31-01
1.00+00	3.16-01	3.79-01	4.57-01	5.43-01	6.24-01
2.52-01	8.37-01	9.36-01	9.93-01	1.00+00	1.00+00
7.31-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00
1.00+00	0.00+00	3.16-01	4.57-01	5.43-01	6.24-01
1.00+00	3.22-01	3.52-01	3.97-01	4.65-01	5.51-01
0.00+00	6.89-01	8.47-01	9.51-01	9.96-01	1.00+00
2.85-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00
6.14-01	6.00-03	3.30-02	1.23-01	2.82-01	3.18-01
1.00+00	3.72-01	3.93-01	4.46-01	5.12-01	5.78-01
0.00+00	6.62-01	7.07-01	8.27-01	9.41-01	9.77-01
3.45-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00
6.02-01	0.00+00	2.27-02	9.09-02	1.97-01	2.27-01
1.00+00	0.00+00	2.99-01	3.60-01	4.17-01	5.00-01
1.00+00	2.99-01	6.97-01	7.35-01	8.87-01	9.32-01
0.00+00	5.53-01				

090001 H01
090002 H01
090003 H01
090004 H01
090005 H01
090006 H01
090007 H01
090008 H01
090009 H01
090010 H01
090011 H01
090012 H01
090013 H01
090014 H01
090015 H01
090016 H01
090017 H01
090018 H01
090019 H01
090020 H01
090021 H01
090022 H01
090023 H01
090024 H01
090025 H01
090026 H01
090027 H01
090028 H01
090029 H01
090030 H01
090031 H01
090032 H01
090033 H01
090034 H01
090035 H01
090036 H01
090037 H01

TABLE A1. (CONTINUED)

1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090038	H01
1.00+00	0.00+00	7.40-03	7.06-02	1.71-01	1.97-01	090039	H01	090039	H01
0.00+00	2.86-01	3.05-01	3.79-01	4.27-01	5.02-01	090040	H01	090040	H01
2.34-01	6.24-01	6.99-01	7.99-01	8.66-01	9.10-01	090041	H01	090041	H01
5.50-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090042	H01	090042	H01
9.92-01	0.00+00	0.00+00	5.97-02	2.01-01	2.31-01	090043	H01	090043	H01
1.00+00	2.83-01	3.62-01	3.84-01	4.24-01	4.81-01	090044	H01	090044	H01
0.00+00	6.19-01	6.42-01	6.94-01	7.98-01	8.50-01	090045	H01	090045	H01
2.46-01	9.96-01	1.00+00	1.00+00	1.00+00	1.00+00	090046	H01	090046	H01
5.41-01	0.00+00	2.04-02	1.02-01	1.83-01	2.44-01	090047	H01	090047	H01
9.66-01	0.00+00	3.67-01	4.07-01	4.41-01	4.74-01	090048	H01	090048	H01
1.00+00	3.26-01	5.60-01	5.81-01	7.03-01	7.36-01	090049	H01	090049	H01
0.00+00	5.40-01	8.91-01	1.00+00	1.00+00	1.00+00	090050	H01	090050	H01
0.00+00	8.40-01	0.00+00	2.84-02	1.42-01	1.99-01	090051	H01	090051	H01
0.00+00	0.00+00	2.64-01	2.73-01	3.01-01	3.29-01	090052	H01	090052	H01
2.27-01	2.56-01	4.09-01	4.49-01	5.85-01	5.85-01	090053	H01	090053	H01
3.49-01	3.69-01	7.10-01	8.69-01	1.00+00	1.00+00	090054	H01	090054	H01
6.82-01	6.87-01	0.00+00	6.10-02	1.64-01	1.64-01	090055	H01	090055	H01
1.00+00	0.00+00	2.05-02	2.71-01	3.26-01	3.81-01	090056	H01	090056	H01
0.00+00	1.89-01	2.30-01	5.21-01	5.91-01	6.52-01	090057	H01	090057	H01
1.76-01	4.51-01	4.86-01	8.49-01	9.44-01	1.00+00	090058	H01	090058	H01
4.16-01	7.00-01	7.61-01	6.64-02	1.83-01	2.16-01	090059	H01	090059	H01
6.65-01	0.00+00	0.00+00	3.16-01	3.41-01	3.65-01	090060	H01	090060	H01
1.00+00	2.33-01	2.74-01	5.81-01	6.31-01	7.14-01	090061	H01	090061	H01
0.00+00	4.98-01	5.40-01	8.68-01	9.09-01	9.59-01	090062	H01	090062	H01
0.00+00	8.10-01	8.34-01	6.64-02	1.83-01	2.16-01	090063	H01	090063	H01
0.00+00	0.00+00	0.00+00	3.16-01	3.41-01	3.65-01	090064	H01	090064	H01
2.33-01	2.33-01	2.74-01	5.81-01	6.31-01	7.14-01	090065	H01	090065	H01
4.32-01	4.98-01	5.40-01	8.68-01	9.09-01	9.59-01	090066	H01	090066	H01
7.68-01	8.10-01	8.34-01	6.64-02	1.83-01	2.16-01	090067	H01	090067	H01
1.00+00	0.00+00	0.00+00	3.16-01	3.41-01	3.65-01	090068	H01	090068	H01
0.00+00	2.33-01	2.74-01	5.81-01	6.31-01	7.14-01	090069	H01	090069	H01
0.00+00	4.98-01	5.40-01	8.68-01	9.09-01	9.59-01	090070	H01	090070	H01
2.33-01	2.33-01	2.74-01	6.64-02	1.83-01	2.16-01	090071	H01	090071	H01
4.32-01	4.98-01	5.40-01	3.16-01	3.41-01	3.65-01	090072	H01	090072	H01
7.68-01	8.10-01	8.34-01	5.81-01	6.31-01	7.14-01	090073	H01	090073	H01
1.00+00	8.10-01	8.34-01	8.68-01	9.09-01	9.59-01	090074	H01	090074	H01

TABLE A1. (CONTINUED)

LITHIUM-6 LIBRARY 05 SLOW S02

DATA TAKEN FROM ENDF-B		126 0.600E 01		0.485E 01 0.487E 01 0.489E 01 0.491E 01 0.493E 01		050001
5						S02
0.484E 01	0.485E 01	0.487E 01	0.489E 01	0.491E 01	0.493E 01	050002
0.496E 01	0.498E 01	0.500E 01	0.502E 01	0.504E 01	0.506E 01	050003
0.509E 01	0.511E 01	0.513E 01	0.515E 01	0.518E 01	0.520E 01	050004
0.523E 01	0.525E 01	0.528E 01	0.530E 01	0.533E 01	0.535E 01	050005
0.538E 01	0.541E 01	0.543E 01	0.546E 01	0.549E 01	0.552E 01	050006
0.555E 01	0.558E 01	0.561E 01	0.564E 01	0.567E 01	0.570E 01	050007
0.573E 01	0.576E 01	0.580E 01	0.583E 01	0.586E 01	0.590E 01	050008
0.593E 01	0.597E 01	0.601E 01	0.605E 01	0.608E 01	0.612E 01	050009
0.616E 01	0.620E 01	0.624E 01	0.629E 01	0.633E 01	0.637E 01	050010
0.642E 01	0.646E 01	0.651E 01	0.656E 01	0.661E 01	0.666E 01	050011
0.671E 01	0.676E 01	0.681E 01	0.687E 01	0.692E 01	0.698E 01	050012
0.704E 01	0.710E 01	0.716E 01	0.723E 01	0.729E 01	0.736E 01	050013
0.743E 01	0.750E 01	0.757E 01	0.765E 01	0.773E 01	0.781E 01	050014
0.789E 01	0.797E 01	0.806E 01	0.815E 01	0.825E 01	0.834E 01	050015
0.845E 01	0.855E 01	0.866E 01	0.877E 01	0.889E 01	0.901E 01	050016
0.914E 01	0.928E 01	0.941E 01	0.956E 01	0.971E 01	0.987E 01	050017
0.100E 02	0.102E 02	0.104E 02	0.106E 02	0.108E 02	0.110E 02	050018
0.112E 02	0.115E 02	0.118E 02	0.121E 02	0.124E 02	0.127E 02	050019
0.131E 02	0.135E 02	0.139E 02	0.144E 02	0.150E 02	0.156E 02	050020
0.163E 02	0.171E 02	0.180E 02	0.191E 02	0.204E 02	0.220E 02	050021
0.242E 02	0.270E 02	0.312E 02	0.382E 02	0.540E 02	0.962E 03	050022

LITHIUM-6 LIBRARY 06 SLOW S02

DATA TAKEN FROM ENDF-B		126 0.600E 01		0.225E-03 0.226E-03 0.227E-03 0.228E-03 0.229E-03		060001
6						S02
0.224E-03	0.225E-03	0.226E-03	0.227E-03	0.228E-03	0.229E-03	060002
0.230E-03	0.231E-03	0.232E-03	0.233E-03	0.234E-03	0.235E-03	060003
0.236E-03	0.237E-03	0.238E-03	0.239E-03	0.240E-03	0.242E-03	060004
0.243E-03	0.244E-03	0.245E-03	0.246E-03	0.247E-03	0.249E-03	060005
0.250E-03	0.251E-03	0.252E-03	0.254E-03	0.255E-03	0.256E-03	060006
0.258E-03	0.259E-03	0.260E-03	0.262E-03	0.263E-03	0.265E-03	060007
0.266E-03	0.268E-03	0.269E-03	0.271E-03	0.272E-03	0.274E-03	060008
0.276E-03	0.277E-03	0.279E-03	0.281E-03	0.283E-03	0.284E-03	060009
0.286E-03	0.288E-03	0.290E-03	0.292E-03	0.294E-03	0.296E-03	060010
0.298E-03	0.300E-03	0.302E-03	0.305E-03	0.307E-03	0.309E-03	060011
0.312E-03	0.314E-03	0.316E-03	0.319E-03	0.322E-03	0.324E-03	060012

TABLE A1. (CONTINUED)

0.327E-03	0.330E-03	0.333E-03	0.336E-03	0.339E-03	0.342E-03	060013	S02
0.345E-03	0.348E-03	0.352E-03	0.355E-03	0.359E-03	0.363E-03	060014	S02
0.366E-03	0.370E-03	0.374E-03	0.379E-03	0.383E-03	0.388E-03	060015	S02
0.392E-03	0.397E-03	0.402E-03	0.408E-03	0.413E-03	0.419E-03	060016	S02
0.425E-03	0.431E-03	0.437E-03	0.444E-03	0.451E-03	0.459E-03	060017	S02
0.467E-03	0.475E-03	0.484E-03	0.493E-03	0.503E-03	0.513E-03	060018	S02
0.524E-03	0.536E-03	0.548E-03	0.562E-03	0.577E-03	0.592E-03	060019	S02
0.610E-03	0.628E-03	0.649E-03	0.672E-03	0.697E-03	0.726E-03	060020	S02
0.758E-03	0.795E-03	0.838E-03	0.889E-03	0.950E-03	0.102E-02	060021	S02
0.112E-02	0.125E-02	0.145E-02	0.177E-02	0.251E-02	0.447E-01	060022	S02

LITHIUM-6 LIBRARY 07 SLOW S02
DATA TAKEN FROM BNL-325 2ND EDITION SUPPLEMENT 2

7	126	0.600E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	070001	S02
0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	070002	S02
0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	070003	S02
0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	070004	S02
0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	070005	S02
0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	070006	S02
0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	070007	S02
0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	070008	S02
0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	070009	S02
0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	070010	S02
0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	070011	S02
0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	070012	S02
0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	070013	S02
0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	070014	S02
0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	070015	S02
0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	070016	S02
0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	070017	S02
0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	070018	S02
0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	070019	S02
0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	070020	S02
0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	070021	S02
0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	070022	S02

LITHIUM-6 LIBRARY 08 SLOW S02
DATA TAKEN FROM BNL-325 2ND EDITION SUPPLEMENT NO.2

8	1	6.00+00	080001	S02
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TABLE A1. (CONTINUED)

1.00+01	8.00+00	6.50+00	5.50+00	4.50+00	3.75+00	080002	S02
3.25+00	2.75+00	2.25+00	1.75+00	1.25+00	7.50-01	080003	S02
2.50-01						080004	S02
0.00+00	1.36-01	3.60-01	0.00+00	2.25-01	0.00+00	080005	S02
0.00+00	2.79-01	0.00+00	0.00+00	0.00+00	0.00+00	080006	S02
0.00+00						080007	S02

TABLE A2. COHORT CROSS SECTION LIBRARIES FOR LITHIUM-7

LITHIUM-7 LIBRARY 09 H01		126, 1150		1962			
DATA TAKEN FROM PHYS. REV.		125	1				
9	12	1	1				
0.00+00	3.00+00	3.20+00	3.40+00	3.60+00	3.80+00	090001	H01
4.00+00	4.20+00	4.40+00	4.60+00	4.80+00	5.00+00	090002	H01
5.40+00	5.60+00	5.80+00	6.00+00	6.20+00	6.40+00	090003	H01
6.80+00	7.20+00	7.60+00	8.40+00	9.60+00	1.04+01	090004	H01
1.28+01						090005	H01
1.50+01	1.40+01	1.20+01	1.06+01	9.30+00	8.00+00	090006	H01
7.50+00	7.00+00	6.50+00	5.80+00	5.40+00	5.10+00	090007	H01
0.00+00	0.00+00	0.00+00	1.10-02	1.10-02	2.20-02	090008	H01
4.40-02	1.21-01	2.14-01	3.02-01	4.01-01	4.56-01	090009	H01
5.60-01	5.88-01	5.96-01	6.04-01	6.37-01	6.70-01	090010	H01
6.92-01	7.20-01	7.36-01	7.86-01	8.30-01	8.85-01	090011	H01
1.00+00						090012	H01
0.00+00	0.00+00	0.00+00	1.10-02	1.10-02	2.20-02	090013	H01
4.40-02	1.21-01	2.14-01	3.02-01	4.01-01	4.56-01	090014	H01
5.60-01	5.88-01	5.96-01	6.04-01	6.37-01	6.70-01	090015	H01
6.92-01	7.20-01	7.36-01	7.86-01	8.30-01	8.85-01	090016	H01
1.00+00						090017	H01
0.00+00	0.00+00	0.00+00	0.00+00	1.20-02	2.40-02	090018	H01
3.60-02	7.20-02	1.14-01	2.04-01	2.93-01	4.13-01	090019	H01
4.85-01	4.85-01	5.57-01	6.29-01	6.47-01	6.65-01	090020	H01
7.07-01	7.31-01	7.73-01	8.32-01	9.94-01	1.00+00	090021	H01
1.00+00						090022	H01
0.00+00	0.00+00	1.20-02	2.40-02	3.70-02	3.70-02	090023	H01
6.10-02	7.30-02	8.50-02	2.20-01	2.93-01	3.87-01	090024	H01
4.94-01	5.55-01	5.86-01	6.16-01	6.83-01	7.50-01	090025	H01
7.62-01	7.99-01	3.54-01	9.21-01	1.00+00	1.00+00	090026	H01
1.00+00						090027	H01
0.00+00	0.00+00	1.20-02	2.40-02	6.00-02	6.00-02	090028	H01
8.30-02	1.07-01	1.90-01	3.45-01	5.12-01	6.31-01	090029	H01
7.02-01	7.38-01	7.68-01	7.98-01	8.33-01	8.69-01	090030	H01
8.99-01	9.29-01	9.58-01	1.00+00	1.00+00	1.00+00	090031	H01
1.00+00						090032	H01
0.00+00	0.00+00	0.00+00	1.40-02	4.80-02	7.50-02	090033	H01
1.16-01	1.58-01	2.81-01	3.94-01	4.76-01	5.58-01	090034	H01
6.88-01	7.63-01	7.84-01	8.32-01	8.90-01	9.45-01	090035	H01
9.86-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090036	H01
						090037	H01

TABLE A2. (CONTINUED)

0.199E 00	0.199E 00	0.197E 00	0.194E 00	0.186E 00	0.171E 00	020020	S02
0.148E 00	0.116E 00	0.812E-01	0.499E-01	0.189E-01	0.909E-03	020021	S02
0.727E-03	0.545E-03	0.363E-03	0.186E-03	0.549E-04	0.590E-05	020022	S02
LITHIUM-7 LIBRARY 03 FAST S02							
DATA TAKEN FROM UNC 5139							
3 126 7.0E+00							
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	030001	S02
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	030002	S02
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	030003	S02
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	030004	S02
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	030005	S02
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	030006	S02
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	030007	S02
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	030008	S02
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	030009	S02
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	030010	S02
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	030011	S02
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	030012	S02
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	030013	S02
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	030014	S02
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	030015	S02
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	030016	S02
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	030017	S02
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	030018	S02
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	030019	S02
1.000+00	1.000+00	1.000+00	1.000+00	0.000+00	0.000+00	030020	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	030021	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	030022	S02
LITHIUM-7 LIBRARY 04 FAST S02							
DATA TAKEN FROM UNC 5139							
4 25 7.0E+00							
1.500+01	1.300+01	1.100+01	1.050+01	9.000+00	8.500+00	040001	S02
7.750+00	7.250+00	6.750+00	6.500+00	6.000+00	5.750+00	040002	S02
5.500+00	5.250+00	4.750+00	4.500+00	4.250+00	3.750+00	040003	S02
3.250+00	2.750+00	2.250+00	1.750+00	1.250+00	7.500-01	040004	S02
2.500-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040005	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040006	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040007	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040008	S02

TABLE A2. (CONTINUED)

LITHIUM-7 LIBRARY 08 FAST S02
DATA TAKEN FROM REACTOR HANDBOOK VOL. III, PART B

8	1.00+01	8.00+00	7.00+00	5.50+00	4.50+00	3.75+00	080001	S02
	3.25+00	2.75+00	2.25+00	1.75+00	1.25+00	7.50-01	080002	S02
	2.50-01	6.00-01	2.00-01	2.00-01	0.00+00	0.00+00	080003	S02
	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080004	S02
	0.00+00	6.00-01	2.00-01	2.00-01	0.00+00	0.00+00	080005	S02
	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080006	S02
	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080007	S02
	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080008	S02
	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080009	S02
	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080010	S02
	0.00+00	6.00-01	2.00-01	2.00-01	0.00+00	0.00+00	080011	S02
	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080012	S02
	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080013	S02
	0.00+00	6.00-01	2.00-01	2.00-01	0.00+00	0.00+00	080014	S02
	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080015	S02
	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080016	S02
	0.00+00	6.00-01	2.00-01	2.00-01	0.00+00	0.00+00	080017	S02
	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080018	S02
	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080019	S02
	0.00+00	6.00-01	2.00-01	2.00-01	0.00+00	0.00+00	080020	S02
	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080021	S02
	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080022	S02
	0.00+00	6.00-01	2.00-01	2.00-01	0.00+00	0.00+00	080023	S02
	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080024	S02
	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080025	S02
	0.00+00	6.00-01	2.00-01	2.00-01	0.00+00	0.00+00	080026	S02
	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080027	S02
	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080028	S02
	0.00+00	6.00-01	2.00-01	2.00-01	0.00+00	0.00+00	080029	S02
	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080030	S02
	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080031	S02

LITHIUM-7 LIBRARY 08 SLOW S02
DATA TAKEN FROM REACTOR HANDBOOK VOL. III, PART B

8	1.00+01	8.00+00	7.00+00	5.50+00	4.50+00	3.75+00	080001	S02
	3.25+00	2.75+00	2.25+00	1.75+00	1.25+00	7.50-01	080002	S02
							080003	S02

TABLE A3. COHORT CROSS SECTION LIBRARIES FOR BERYLLIUM-9

BERYLLIUM LIBRARY 09 H01			BERYLLIUM LIBRARY 05 SLOW S02		
DATA TAKEN FROM BNL 325 VOL 1 SUPPLEMENT 2			DATA TAKEN FROM ENDF-B		
9	6	1	5	126	9.00+00
0.00+00	2.34+00	1	0.581E 01	0.581E 01	0.581E 01
1.50+01	1.40+01	2	0.581E 01	0.581E 01	0.581E 01
0.00+00	1.00+00	1	0.581E 01	0.581E 01	0.581E 01
0.00+00	1.00+00	2	0.581E 01	0.581E 01	0.581E 01
0.00+00	1.00+00	1	0.581E 01	0.581E 01	0.581E 01
0.00+00	1.00+00	2	0.581E 01	0.581E 01	0.581E 01
0.00+00	1.00+00	1	0.581E 01	0.581E 01	0.581E 01
0.00+00	1.00+00	2	0.581E 01	0.581E 01	0.581E 01
1.00+00	1.00+00	1	0.581E 01	0.581E 01	0.581E 01
1.00+00	1.00+00	2	0.581E 01	0.581E 01	0.581E 01
0.00+00	5.00+00	4.10+00	0.581E 01	0.581E 01	0.581E 01
0.00+00	3.50+00	2.69+00	0.581E 01	0.581E 01	0.581E 01

090001	H01	050001	S02
090002	H01	050002	S02
090003	H01	050003	S02
090004	H01	050004	S02
090005	H01	050005	S02
090006	H01	050006	S02
090007	H01	050007	S02
090008	H01	050008	S02
090009	H01	050009	S02
		050010	S02
		050011	S02
		050012	S02
		050013	S02
		050014	S02
		050015	S02
		050016	S02
		050017	S02
		050018	S02
		050019	S02
		050020	S02
		050021	S02
		050022	S02

TABLE A3. (CONTINUED)

1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	070013	S02
1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	070014	S02
1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	070015	S02
1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	070016	S02
1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	070017	S02
1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	070018	S02
1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	070019	S02
1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	070020	S02
1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	070021	S02
1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	1.27+00	070022	S02
BERYLLIUM LIBRARY 08 SLOW S02								
DATA TAKEN FROM REACTOR HANDBOOK VOL. III, PART B								
8	1	9.00+00					080001	S02
1.00+01	8.00+00	6.50+00	5.50+00	4.50+00	3.75+00		080002	S02
3.25+00	2.75+00	2.25+00	1.75+00	1.25+00	7.50-01		080003	S02
2.50-01							080004	S02
0.00+00	0.00+00	2.874-01	2.874-01	2.126-01	1.063-01		080005	S02
1.063-01	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00		080006	S02
0.00+00							080007	S02

TABLE A4. COHORT CROSS SECTION LIBRARIES FOR BORON-10

BORON-10 LIBRARY 09 H01		DATA TAKEN FROM ENDF-B									
9	18	1	25	1	18	1	25	1	18	1	25
0.00+00	7.17-01	1.25+00	1.75+00	2.25+00	2.75+00	2.25+00	2.75+00	2.75+00	2.75+00	2.75+00	2.75+00
3.25+00	3.75+00	4.25+00	4.50+00	4.75+00	5.25+00	4.75+00	5.25+00	5.25+00	5.25+00	5.25+00	5.25+00
5.50+00	5.75+00	6.00+00	6.50+00	6.75 00	7.25+00	6.75 00	7.25+00	7.25+00	7.25+00	7.25+00	7.25+00
7.75+00	8.50+00	9.00+00	1.05+01	1.10+01	1.30+01	1.10+01	1.30+01	1.30+01	1.30+01	1.30+01	1.30+01
1.50+01	1.40+01	1.30+01	1.20+01	1.10+01	1.00+01	1.10+01	1.00+01	1.00+01	1.00+01	1.00+01	1.00+01
1.50+01	9.00+00	8.50+00	8.00+00	7.50+00	7.00+00	7.50+00	7.00+00	7.00+00	7.00+00	7.00+00	7.00+00
9.50+00	6.00+00	5.50+00	5.00+00	4.50+00	4.00+00	4.50+00	4.00+00	4.00+00	4.00+00	4.00+00	4.00+00
6.50+00	0.2461-01	0.3881-01	0.5441-01	0.7153-01	0.9028-01	0.7153-01	0.9028-01	0.9028-01	0.9028-01	0.9028-01	0.9028-01
0.0000+00	0.1331+00	0.1512+00	0.1639+00	0.1840+00	0.2054+00	0.1840+00	0.2054+00	0.2054+00	0.2054+00	0.2054+00	0.2054+00
0.1107+00	0.2359+00	0.2604+00	0.2862+00	0.3135+00	0.3522+00	0.3135+00	0.3522+00	0.3522+00	0.3522+00	0.3522+00	0.3522+00
0.2203+00	0.4599+00	0.5567+00	0.6606+00	0.7934+00	0.9679+00	0.7934+00	0.9679+00	0.9679+00	0.9679+00	0.9679+00	0.9679+00
0.4041+00	0.1000+01	0.2789-01	0.4406-01	0.6188-01	0.8149-01	0.6188-01	0.8149-01	0.8149-01	0.8149-01	0.8149-01	0.8149-01
0.0000+00	0.1524+00	0.1733+00	0.1880+00	0.2113+00	0.2360+00	0.2113+00	0.2360+00	0.2360+00	0.2360+00	0.2360+00	0.2360+00
0.1266+00	0.2713+00	0.2996+00	0.3295+00	0.3610+00	0.4055+00	0.3610+00	0.4055+00	0.4055+00	0.4055+00	0.4055+00	0.4055+00
0.2533+00	0.5285+00	0.6367+00	0.7491+00	0.8822+00	0.1000+01	0.8822+00	0.1000+01	0.1000+01	0.1000+01	0.1000+01	0.1000+01
0.4650+00	0.3191-01	0.5051-01	0.7108-01	0.9378-01	0.1187+00	0.9378-01	0.1187+00	0.1187+00	0.1187+00	0.1187+00	0.1187+00
0.1000+01	0.1763+00	0.2007+00	0.2178+00	0.2450+00	0.2738+00	0.2450+00	0.2738+00	0.2738+00	0.2738+00	0.2738+00	0.2738+00
0.0000+00	0.3150+00	0.3479+00	0.3827+00	0.4191+00	0.4704+00	0.4191+00	0.4704+00	0.4704+00	0.4704+00	0.4704+00	0.4704+00
0.1462+00	0.6099+00	0.7286+00	0.8444+00	0.9613+00	0.1000+01	0.9613+00	0.1000+01	0.1000+01	0.1000+01	0.1000+01	0.1000+01
0.2940+00	0.3715-01	0.5890-01	0.8302-01	0.1097+00	0.1391+00	0.1097+00	0.1391+00	0.1391+00	0.1391+00	0.1391+00	0.1391+00
0.5384+00	0.2070+00	0.2358+00	0.2561+00	0.2881+00	0.3220+00	0.2881+00	0.3220+00	0.3220+00	0.3220+00	0.3220+00	0.3220+00
0.1000+01	0.3704+00	0.4089+00	0.4494+00	0.4916+00	0.5505+00	0.4916+00	0.5505+00	0.5505+00	0.5505+00	0.5505+00	0.5505+00
0.0000+00	0.7062+00	0.8302+00	0.9365+00	0.1000+01	0.1000+01	0.1000+01	0.1000+01	0.1000+01	0.1000+01	0.1000+01	0.1000+01
0.0000+00	0.4355-01	0.6920-01	0.9773-01	0.1293+00	0.1643+00	0.1293+00	0.1643+00	0.1643+00	0.1643+00	0.1643+00	0.1643+00
0.0000+00	0.2451+00	0.2794+00	0.3034+00	0.3414+00	0.3815+00	0.3414+00	0.3815+00	0.3815+00	0.3815+00	0.3815+00	0.3815+00
0.1715+00	0.4384+00	0.4835+00	0.5305+00	0.5790+00	0.6456+00	0.5790+00	0.6456+00	0.6456+00	0.6456+00	0.6456+00	0.6456+00
0.3458+00	0.8130+00	0.9293+00	0.9965+00	0.1000+01	0.1000+01	0.1000+01	0.1000+01	0.1000+01	0.1000+01	0.1000+01	0.1000+01
0.6273+00	0.5184-01	0.8254-01	0.1167+00	0.1548+00	0.1969+00	0.1548+00	0.1969+00	0.1969+00	0.1969+00	0.1969+00	0.1969+00
0.1000+01	0.2942+00	0.3353+00	0.3341+00	0.4094+00	0.4570+00	0.4094+00	0.4570+00	0.4570+00	0.4570+00	0.4570+00	0.4570+00
0.0000+00	0.5239+00	0.5762+00	0.6300+00	0.6845+00	0.7571+00	0.6845+00	0.7571+00	0.7571+00	0.7571+00	0.7571+00	0.7571+00
0.2434+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00
0.4900+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00

090001 H01
090002 H01
090003 H01
090004 H01
090005 H01
090006 H01
090007 H01
090008 H01
090009 H01
090010 H01
090011 H01
090012 H01
090013 H01
090014 H01
090015 H01
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090027 H01
090028 H01
090029 H01
090030 H01
090031 H01
090032 H01
090033 H01
090034 H01
090035 H01
090036 H01
090037 H01

TABLE A4. (CONTINUED)

0.150E 01	0.152E 01	0.155E 01	0.157E 01	0.160E 01	0.165E 01	010014	S02
0.170E 01	0.174E 01	0.178E 01	0.179E 01	0.177E 01	0.173E 01	010015	S02
0.169E 01	0.164E 01	0.162E 01	0.161E 01	0.162E 01	0.166E 01	010016	S02
0.171E 01	0.176E 01	0.184E 01	0.197E 01	0.212E 01	0.226E 01	010017	S02
0.236E 01	0.236E 01	0.227E 01	0.212E 01	0.197E 01	0.190E 01	010018	S02
0.190E 01	0.196E 01	0.206E 01	0.217E 01	0.226E 01	0.220E 01	010019	S02
0.204E 01	0.197E 01	0.202E 01	0.212E 01	0.225E 01	0.242E 01	010020	S02
0.261E 01	0.287E 01	0.322E 01	0.363E 01	0.404E 01	0.438E 01	010021	S02
0.460E 01	0.481E 01	0.488E 01	0.495E 01	0.655E 01	0.180E 02	010022	S02

BORON-10 LIBRARY 02 FAST S02

DATA TAKEN FROM ENDF-B

2	126	1.00+01				020001	S02
0.394E 00	0.393E 00	0.391E 00	0.385E 00	0.376E 00	0.368E 00	020002	S02
0.360E 00	0.355E 00	0.351E 00	0.346E 00	0.342E 00	0.338E 00	020003	S02
0.333E 00	0.329E 00	0.325E 00	0.322E 00	0.319E 00	0.315E 00	020004	S02
0.312E 00	0.309E 00	0.306E 00	0.303E 00	0.300E 00	0.297E 00	020005	S02
0.294E 00	0.291E 00	0.285E 00	0.281E 00	0.281E 00	0.279E 00	020006	S02
0.277E 00	0.273E 00	0.270E 00	0.268E 00	0.264E 00	0.261E 00	020007	S02
0.257E 00	0.253E 00	0.249E 00	0.246E 00	0.242E 00	0.238E 00	020008	S02
0.235E 00	0.231E 00	0.227E 00	0.224E 00	0.219E 00	0.216E 00	020009	S02
0.212E 00	0.208E 00	0.205E 00	0.201E 00	0.197E 00	0.193E 00	020010	S02
0.189E 00	0.186E 00	0.182E 00	0.178E 00	0.173E 00	0.170E 00	020011	S02
0.166E 00	0.162E 00	0.159E 00	0.155E 00	0.150E 00	0.147E 00	020012	S02
0.143E 00	0.138E 00	0.135E 00	0.131E 00	0.128E 00	0.123E 00	020013	S02
0.119E 00	0.115E 00	0.112E 00	0.108E 00	0.104E 00	0.101E 00	020014	S02
0.976E-01	0.934E-01	0.883E-01	0.827E-01	0.764E-01	0.689E-01	020015	S02
0.612E-01	0.547E-01	0.501E-01	0.466E-01	0.456E-01	0.476E-01	020016	S02
0.507E-01	0.512E-01	0.482E-01	0.439E-01	0.401E-01	0.372E-01	020017	S02
0.361E-01	0.359E-01	0.359E-01	0.360E-01	0.363E-01	0.393E-01	020018	S02
0.450E-01	0.537E-01	0.673E-01	0.637E-01	0.304E-01	0.136E-01	020019	S02
0.649E-02	0.328E-02	0.179E-02	0.600E-03	0.000E 00	0.000E 00	020020	S02
0.000E 00	0.000E 00	0.000E 00	0.000E 00	0.000E 00	0.000E 00	020021	S02
0.000E 00	0.000E 00	0.000E 00	0.000E 00	0.000E 00	0.000E 00	020022	S02

BORON-10 LIBRARY 03 FAST S02

ONE GAMMA RAY IS ASSUMED TO BE CREATED AFTER EACH INELASTIC SCATTER.

3	126	1.00+01				030001	S02
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	030002	S02

TABLE A4. (CONTINUED)

1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	030003	S02
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	030004	S02
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	030005	S02
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	030006	S02
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	030007	S02
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	030008	S02
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	030009	S02
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	030010	S02
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	030011	S02
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	030012	S02
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	030013	S02
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	030014	S02
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	030015	S02
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	030016	S02
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	030017	S02
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	030018	S02
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	030019	S02
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	030020	S02
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	030021	S02
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	030022	S02

BORON-10 LIBRARY 04 FAST S02

GAMMA-RAY PROBABILITIES SET EQUAL TO EXCITATION PROBABILITIES.

1.50+01	1.30+01	1.745-01	1.00+01	1.05+01	9.00+00	8.85+00	040001	S02
7.75+00	7.25+00	3.869-02	1.10+01	6.50+00	6.00+00	5.75+00	040002	S02
5.50+00	5.25+00	2.140-02	6.75+00	4.50+00	4.25+00	3.75+00	040003	S02
3.25+00	2.75+00	1.880-02	4.75+00	1.75+00	1.25+00	7.50-01	040004	S02
2.50-01	2.25+00	1.709-02	2.25+00	1.75+00	1.25+00	040005	040006	S02
3.210-02	1.745-01	1.328-01	1.328-01	1.038-01	9.700-02	5.580-02	040007	S02
5.189-02	3.869-02	2.730-02	2.730-02	2.579-02	2.450-02	1.559-02	040008	S02
1.490-02	2.140-02	2.010-02	2.010-02	1.269-02	1.810-02	2.239-02	040009	S02
2.040-02	1.880-02	1.709-02	1.709-02	1.560-02	1.419-02	1.290-02	040010	S02
1.170-02	1.178-01	1.330-01	1.330-01	1.124-01	1.081-01	6.380-02	040011	S02
0.000+00	4.450-02	3.149-02	3.149-02	2.990-02	2.829-02	1.800-02	040012	S02
5.949-02	2.469-02	2.329-02	2.329-02	1.469-02	2.090-02	2.579-02	040013	S02
1.729-02	2.149-02	1.960-02	1.960-02	1.780-02	1.619-02	1.470-02	040014	S02
2.360-02	2.149-02	1.960-02	1.960-02	1.780-02	1.619-02	1.470-02	040015	S02
1.320-02							040016	S02

TABLE A4. (CONTINUED)

0.000+00	3.870-02	1.168-01	1.158-01	1.186-01	7.170-02	040017	S02
6.799-02	5.129-02	3.640-02	3.480-02	3.289-02	2.100-02	040018	S02
2.020-02	2.879-02	2.719-02	1.710-02	2.439-02	3.010-02	040019	S02
2.749-02	2.490-02	2.270-02	2.060-02	1.860-02	1.680-02	040020	S02
1.510-02	0.000+00	6.350-02	1.063-01	1.240-01	7.889-02	040021	S02
0.000+00	5.889-02	4.220-02	4.049-02	3.850-02	2.459-02	040022	S02
7.680-02	3.390-02	3.199-02	2.030-02	2.880-02	3.549-02	040023	S02
2.380-02	2.219-02	2.670-02	2.409-02	2.170-02	1.960-02	040024	S02
3.960-02	0.000+00	3.500-03	6.729-02	1.163-01	8.290-02	040025	S02
1.760-02	6.659-02	4.850-02	4.699-02	4.509-02	2.890-02	040026	S02
0.000+00	4.003-02	3.799-02	2.399-02	3.430-02	4.230-02	040027	S02
8.449-02	3.500-02	3.160-02	2.850-02	2.560-02	2.299-02	040028	S02
2.800-02	0.000+00	0.000+00	4.000-03	7.519-02	7.660-02	040029	S02
3.849-02	7.260-02	5.449-02	5.380-02	5.229-02	3.389-02	040030	S02
2.060-02	4.759-02	4.530-02	2.880-02	4.110-02	5.079-02	040031	S02
0.000+00	4.209-02	3.810-02	3.420-02	3.070-02	2.740-02	040032	S02
8.709-02	0.000+00	0.000+00	0.000+00	3.380-02	6.500-02	040033	S02
3.299-02	7.349-02	5.660-02	5.669-02	5.589-02	3.649-02	040034	S02
4.650-02	5.190-02	4.949-02	3.160-02	4.509-02	5.610-02	040035	S02
2.440-02	4.660-02	4.209-02	3.770-02	3.390-02	3.020-02	040036	S02
0.000+00	0.000+00	0.000+00	0.000+00	4.500-03	4.320-02	040037	S02
8.350-02	7.149-02	5.739-02	5.900-02	5.910-02	3.899-02	040038	S02
3.569-02	5.629-02	5.399-02	3.460-02	4.970-02	6.189-02	040039	S02
5.120-02	5.160-02	4.669-02	4.190-02	3.750-02	3.350-02	040040	S02
2.690-02	0.000+00	0.000+00	0.000+00	0.000+00	1.060-02	040041	S02
0.000+00	6.460-02	5.589-02	5.960-02	6.139-02	4.120-02	040042	S02
7.370-02	6.060-02	5.879-02	3.790-02	5.469-02	6.850-02	040043	S02
3.840-02	5.750-02	5.200-02	4.679-02	4.180-02	3.720-02	040044	S02
5.680-02	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040045	S02
2.970-02	4.980-02	5.049-02	5.760-02	6.210-02	4.269-02	040046	S02
0.000+00	4.470-02	6.360-02	4.139-02	6.009-02	7.560-02	040047	S02
5.400-02	6.409-02	5.800-02	5.220-02	4.660-02	4.140-02	040048	S02
4.100-02	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040049	S02
6.289-02	1.970-02	4.980-02	5.760-02	6.210-02	4.269-02	040050	S02
3.300-02	4.320-02	5.470-02	4.139-02	6.009-02	7.560-02	040051	S02
0.000+00	7.000-02	6.409-02	5.800-02	5.220-02	4.660-02	040052	S02
1.970-02	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040053	S02
4.320-02	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040054	S02
7.000-02	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040055	S02

TABLE A4. (CONTINUED)

BORON-10 LIBRARY 05 SLOW S02

DATA TAKEN FROM ENDF-B

5	126	0.100E	02	0.219E	02	0.220E	02	0.221E	02	050001	S02
0.217E	02	0.217E	02	0.218E	02	0.219E	02	0.220E	02	050002	S02
0.222E	02	0.222E	02	0.223E	02	0.224E	02	0.225E	02	050003	S02
0.227E	02	0.228E	02	0.229E	02	0.229E	02	0.230E	02	050004	S02
0.232E	02	0.233E	02	0.234E	02	0.235E	02	0.236E	02	050005	S02
0.238E	02	0.239E	02	0.241E	02	0.242E	02	0.243E	02	050006	S02
0.245E	02	0.246E	02	0.247E	02	0.249E	02	0.250E	02	050007	S02
0.252E	02	0.254E	02	0.255E	02	0.256E	02	0.258E	02	050008	S02
0.261E	02	0.262E	02	0.263E	02	0.265E	02	0.266E	02	050009	S02
0.270E	02	0.271E	02	0.273E	02	0.275E	02	0.276E	02	050010	S02
0.280E	02	0.282E	02	0.283E	02	0.285E	02	0.287E	02	050011	S02
0.291E	02	0.293E	02	0.296E	02	0.293E	02	0.300E	02	050012	S02
0.305E	02	0.307E	02	0.309E	02	0.312E	02	0.315E	02	050013	S02
0.320E	02	0.323E	02	0.326E	02	0.329E	02	0.332E	02	050014	S02
0.338E	02	0.342E	02	0.345E	02	0.349E	02	0.353E	02	050015	S02
0.361E	02	0.365E	02	0.369E	02	0.374E	02	0.378E	02	050016	S02
0.388E	02	0.394E	02	0.399E	02	0.405E	02	0.411E	02	050017	S02
0.424E	02	0.431E	02	0.439E	02	0.447E	02	0.455E	02	050018	S02
0.473E	02	0.484E	02	0.494E	02	0.506E	02	0.519E	02	050019	S02
0.547E	02	0.563E	02	0.581E	02	0.600E	02	0.622E	02	050020	S02
0.674E	02	0.706E	02	0.743E	02	0.786E	02	0.839E	02	050021	S02
0.988E	02	0.110E	03	0.126E	03	0.154E	03	0.217E	03	050022	S02

BORON-10 LIBRARY 06 SLOW S02

DATA TAKEN FROM ENDF-B

6	126	0.100E	02	0.195E <th>02</th> <th>0.196E <th>02</th> <th>0.196E <th>02</th> <th>060001</th> <th>S02</th> </th></th>	02	0.196E <th>02</th> <th>0.196E <th>02</th> <th>060001</th> <th>S02</th> </th>	02	0.196E <th>02</th> <th>060001</th> <th>S02</th>	02	060001	S02
0.192E	02	0.193E	02	0.194E	02	0.195E	02	0.196E	02	060002	S02
0.197E	02	0.198E	02	0.199E	02	0.200E	02	0.201E	02	060003	S02
0.202E	02	0.203E	02	0.204E	02	0.205E	02	0.206E	02	060004	S02
0.208E	02	0.209E	02	0.210E	02	0.211E	02	0.212E	02	060005	S02
0.214E	02	0.215E	02	0.216E	02	0.217E	02	0.218E	02	060006	S02
0.221E	02	0.222E	02	0.223E	02	0.224E	02	0.226E	02	060007	S02
0.228E	02	0.229E	02	0.231E	02	0.232E	02	0.233E	02	060008	S02
0.236E	02	0.238E	02	0.239E	02	0.241E	02	0.242E	02	060009	S02
0.245E	02	0.247E	02	0.249E	02	0.250E	02	0.252E	02	060010	S02
0.255E	02	0.257E	02	0.259E	02	0.261E	02	0.263E	02	060011	S02
0.267E	02	0.269E	02	0.271E	02	0.273E	02	0.276E	02	060012	S02

TABLE A4. (CONTINUED)

0.280E 02	0.283E 02	0.285E 02	0.288E 02	0.290E 02	0.293E 02	060013	S02
0.296E 02	0.299E 02	0.301E 02	0.305E 02	0.308E 02	0.311E 02	060014	S02
0.314E 02	0.317E 02	0.321E 02	0.325E 02	0.328E 02	0.332E 02	060015	S02
0.336E 02	0.341E 02	0.345E 02	0.349E 02	0.354E 02	0.359E 02	060016	S02
0.364E 02	0.369E 02	0.375E 02	0.381E 02	0.387E 02	0.393E 02	060017	S02
0.400E 02	0.407E 02	0.415E 02	0.422E 02	0.431E 02	0.440E 02	060018	S02
0.449E 02	0.459E 02	0.470E 02	0.482E 02	0.494E 02	0.508E 02	060019	S02
0.523E 02	0.539E 02	0.556E 02	0.576E 02	0.598E 02	0.622E 02	060020	S02
0.650E 02	0.682E 02	0.718E 02	0.762E 02	0.815E 02	0.880E 02	060021	S02
0.964E 02	0.107E 03	0.124E 03	0.152E 03	0.215E 03	0.383E 04	060022	S02

BORON-10 LIBRARY 07 SLOW S02
 ONE GAMMA ASSUMED GENERATED PER EACH N,ALPHA REACTION

0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	070001	S02
0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	070002	S02
0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	070003	S02
0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	070004	S02
0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	070005	S02
0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	070006	S02
0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	070007	S02
0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	070008	S02
0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	070009	S02
0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	070010	S02
0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	070011	S02
0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	070012	S02
0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	070013	S02
0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	070014	S02
0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	070015	S02
0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	070016	S02
0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	070017	S02
0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	070018	S02
0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	070019	S02
0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	070020	S02
0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	070021	S02
0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	0.100E 01	070022	S02

BORON-10 LIBRARY 08 SLOW S02
 DATA TAKEN FROM REACTOR HANDBOOK VOL. III PART B
 8 1 1.00+01 080001 S02

TABLE A4. (CONTINUED)

1.00+01	8.00+00	6.50+00	5.50+00	4.50+00	3.75+00	080002	S02
3.25+00	2.75+00	2.25+00	1.75+00	1.25+00	7.50-01	080003	S02
2.50-01						080004	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080005	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	5.00-01	080006	S02
5.00-01						080007	S02

TABLE A5. (CONTINUED)

2.50-01	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	1.57-01	0.00+00	040006	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	1.35-02	0.00+00	040007	S02
0.00+00	5.09-03	0.00+00	8.21-01	0.00+00	0.00+00	0.00+00	1.03-03	040008	S02
9.25-04	6.67-04	4.63-04	2.59-04	5.46-05	0.00+00	0.00+00	0.00+00	040009	S02
0.00+00	0.00+00	0.00+00	0.00+00	5.92-02	0.00+00	0.00+00	0.00+00	040010	S02
0.00+00	0.00+00	0.00+00	0.00+00	6.79-03	0.00+00	0.00+00	0.00+00	040011	S02
0.00+00	1.93-03	0.00+00	9.31-01	0.00+00	3.08-04	0.00+00	0.00+00	040012	S02
0.00+00	1.79-04	1.79-04	1.29-04	0.00+00	0.00+00	0.00+00	0.00+00	040013	S02
3.08-04	0.00+00	0.00+00	0.00+00	1.80-02	0.00+00	0.00+00	0.00+00	040014	S02
0.00+00	0.00+00	0.00+00	0.00+00	3.32-03	0.00+00	0.00+00	0.00+00	040015	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	1.54-04	0.00+00	0.00+00	040016	S02
0.00+00	3.40-04	0.00+00	9.78-01	0.00+00	0.00+00	0.00+00	0.00+00	040017	S02
4.99-05	4.99-05	4.99-05	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	040018	S02
0.00+00	0.00+00	0.00+00	0.00+00	3.15-03	0.00+00	0.00+00	0.00+00	040019	S02
0.00+00	0.00+00	0.00+00	0.00+00	6.93-04	0.00+00	0.00+00	0.00+00	040020	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	7.07-05	0.00+00	0.00+00	040021	S02
0.00+00	0.00+00	0.00+00	0.00+00	9.96-01	0.00+00	0.00+00	0.00+00	040022	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	040023	S02
0.00+00	0.00+00	0.00+00	0.00+00	1.74-04	0.00+00	0.00+00	0.00+00	040024	S02
0.00+00	0.00+00	0.00+00	0.00+00	2.56-05	0.00+00	0.00+00	0.00+00	040025	S02
0.00+00	0.00+00	0.00+00	0.00+00	9.998-01	0.00+00	0.00+00	0.00+00	040026	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	040027	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	040028	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	040029	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	040030	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	040031	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	040032	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	040033	S02
0.00+00	0.00+00	0.00+00	0.00+00	1.00+00	0.00+00	0.00+00	0.00+00	040034	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	040035	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	040036	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	040037	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	040038	S02
0.00+00	0.00+00	0.00+00	0.00+00	1.00+00	0.00+00	0.00+00	0.00+00	040039	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	040040	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	040041	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	040042	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	040043	S02
0.00+00	0.00+00	0.00+00	0.00+00	1.00+00	0.00+00	0.00+00	0.00+00	040044	S02

TABLE A5. (CONTINUED)

0.000E 00	0.000E 00	0.000E 00	0.000E 00	0.000E 00	0.000E 00	0.000E 00	0.000E 00	0.000E 00	0.000E 00	070017	S02
0.000E 00	0.000E 00	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	070018	S02
0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	070019	S02
0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	070020	S02
0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	070021	S02
0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	0.130E 01	070022	S02
CARBON LIBRARY 08 SLOW S02											
DATA TAKEN FROM UNC-5099											
8											
1.00+01	8.00+00	2.75+00	0.00+00	1.20+01	5.50+00	1.75+00	4.50+00	1.25+00	3.75+00	080001	S02
3.25+00	2.75+00	2.25+00	0.00+00	6.50+00	2.70-01	0.00+00	2.70-01	2.30-01	7.50-01	080002	S02
2.50-01	0.00+00	0.00+00	0.00+00	2.25+00	2.70-01	0.00+00	2.30-01	0.00+00	0.00+00	080003	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	2.70-01	2.30-01	0.00+00	080004	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080005	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080006	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	080007	S02

TABLE A6: COHORT CROSS SECTION LIBRARIES FOR NITROGEN

NITROGEN LIBRARY 09 H01 DATA TAKEN FROM ENDF-B		9		25		1		25		1		90001	
0.00+00	2.32+00	3.94+00	4.91+00	5.10+00	5.69+00	5.10+00	5.69+00	5.10+00	5.69+00	5.10+00	5.69+00	5.10+00	5.69+00
5.83+00	5.98+00	6.23+00	6.44+00	7.02+00	7.40+00	7.02+00	7.40+00	7.02+00	7.40+00	7.02+00	7.40+00	7.02+00	7.40+00
7.72+00	8.06+00	8.62+00	8.70+00	8.90+00	8.98+00	8.90+00	8.98+00	8.90+00	8.98+00	8.90+00	8.98+00	8.90+00	8.98+00
9.94+00	1.04+01	1.10+01	1.15+01	1.20+01	1.30+01	1.20+01	1.30+01	1.20+01	1.30+01	1.20+01	1.30+01	1.20+01	1.30+01
1.40+01	1.40+01	1.30+01	1.20+01	1.10+01	1.00+01	1.10+01	1.00+01	1.10+01	1.00+01	1.10+01	1.00+01	1.10+01	1.00+01
1.50+01	9.00+00	8.50+00	8.00+00	7.75+00	7.50+00	7.75+00	7.50+00	7.75+00	7.50+00	7.75+00	7.50+00	7.75+00	7.50+00
9.50+00	7.00+00	6.75+00	6.50+00	6.25+00	6.00+00	6.25+00	6.00+00	6.25+00	6.00+00	6.25+00	6.00+00	6.25+00	6.00+00
7.25+00	5.50+00	5.26+00	5.00+00	4.50+00	4.30+00	4.50+00	4.30+00	4.50+00	4.30+00	4.50+00	4.30+00	4.50+00	4.30+00
5.75+00	7.33-02	1.22-01	1.48-01	1.67-01	1.87-01	1.67-01	1.87-01	1.67-01	1.87-01	1.67-01	1.87-01	1.67-01	1.87-01
2.50+00	2.07-01	2.21-01	2.46-01	2.79-01	3.05-01	2.79-01	3.05-01	2.79-01	3.05-01	2.79-01	3.05-01	2.79-01	3.05-01
0.00+00	3.69-01	3.97-01	4.10-01	4.23-01	4.74-01	4.23-01	4.74-01	4.23-01	4.74-01	4.23-01	4.74-01	4.23-01	4.74-01
1.95-01	6.07-01	6.70-01	7.29-01	8.16-01	9.20-01	8.16-01	9.20-01	8.16-01	9.20-01	8.16-01	9.20-01	8.16-01	9.20-01
3.31-01	8.53-02	1.42-01	1.73-01	1.96-01	2.19-01	1.96-01	2.19-01	1.96-01	2.19-01	1.96-01	2.19-01	1.96-01	2.19-01
5.48-01	2.43-01	2.59-01	2.89-01	3.29-01	3.59-01	3.29-01	3.59-01	3.29-01	3.59-01	3.29-01	3.59-01	3.29-01	3.59-01
1.00+00	4.34-01	4.67-01	4.82-01	4.97-01	5.55-01	4.97-01	5.55-01	4.97-01	5.55-01	4.97-01	5.55-01	4.97-01	5.55-01
0.00+00	7.04-01	7.72-01	8.32-01	9.13-01	9.88-01	9.13-01	9.88-01	9.13-01	9.88-01	9.13-01	9.88-01	9.13-01	9.88-01
0.00+00	1.00-01	1.68-01	2.05-01	2.33-01	2.60-01	2.33-01	2.60-01	2.33-01	2.60-01	2.33-01	2.60-01	2.33-01	2.60-01
2.29-01	2.88-01	3.08-01	3.44-01	3.90-01	4.26-01	3.90-01	4.26-01	3.90-01	4.26-01	3.90-01	4.26-01	3.90-01	4.26-01
3.90-01	5.14-01	5.52-01	5.69-01	5.86-01	6.52-01	5.86-01	6.52-01	5.86-01	6.52-01	5.86-01	6.52-01	5.86-01	6.52-01
6.39-01	8.12-01	8.78-01	9.31-01	9.87-01	1.00+00	9.87-01	1.00+00	9.87-01	1.00+00	9.87-01	1.00+00	9.87-01	1.00+00
1.00+00	1.20-01	2.02-01	2.46-01	2.79-01	3.13-01	2.79-01	3.13-01	2.79-01	3.13-01	2.79-01	3.13-01	2.79-01	3.13-01
0.00+00	3.46-01	3.70-01	4.12-01	4.67-01	5.10-01	4.67-01	5.10-01	4.67-01	5.10-01	4.67-01	5.10-01	4.67-01	5.10-01
2.72-01	6.11-01	6.54-01	6.73-01	6.92-01	7.64-01	6.92-01	7.64-01	6.92-01	7.64-01	6.92-01	7.64-01	6.92-01	7.64-01
4.62-01	9.19-01	9.70-01	9.96-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00
7.44-01	1.45-01	2.45-01	2.99-01	3.39-01	3.79-01	3.39-01	3.79-01	3.39-01	3.79-01	3.39-01	3.79-01	3.39-01	3.79-01
1.00+00	4.20-01	4.48-01	4.98-01	5.63-01	6.12-01	5.63-01	6.12-01	5.63-01	6.12-01	5.63-01	6.12-01	5.63-01	6.12-01
0.00+00	7.26-01	7.72-01	7.92-01	8.12-01	8.82-01	8.12-01	8.82-01	8.12-01	8.82-01	8.12-01	8.82-01	8.12-01	8.82-01
0.00+00	9.94-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00
0.00+00	1.78-01	3.01-01	3.67-01	4.16-01	4.65-01	4.16-01	4.65-01	4.16-01	4.65-01	4.16-01	4.65-01	4.16-01	4.65-01

TABLE A6. (CONTINUED)

4.85-01	5.13-01	5.47-01	6.06-01	6.80-01	7.35-01	090038	H01
7.86-01	8.53-01	8.96-01	9.14-01	9.31-01	9.80-01	090039	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090040	H01
1.00+00	1.98-01	3.35-01	4.09-01	4.63-01	5.17-01	090041	H01
0.00+00	5.69-01	6.05-01	6.69-01	7.46-01	8.02-01	090042	H01
5.38-01	9.14-01	9.51-01	9.65-01	9.77-01	1.00+00	090043	H01
8.52-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090044	H01
1.00+00	2.22-01	3.75-01	4.57-01	5.17-01	5.75-01	090045	H01
1.00+00	6.32-01	6.70-01	7.36-01	8.15-01	8.70-01	090046	H01
0.00+00	9.67-01	9.90-01	9.97-01	1.00+00	1.00+00	090047	H01
5.98-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090048	H01
9.16-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090049	H01
1.00+00	2.50-01	4.22-01	5.12-01	5.77-01	6.40-01	090050	H01
1.00+00	7.00-01	7.40-01	8.08-01	8.85-01	9.33-01	090051	H01
0.00+00	9.98-01	1.00+00	1.00+00	1.00+00	1.00+00	090052	H01
6.65-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090053	H01
9.69-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090054	H01
1.00+00	2.83-01	4.75-01	5.75-01	6.45-01	7.12-01	090055	H01
1.00+00	7.74-01	8.15-01	8.80-01	9.47-01	9.82-01	090056	H01
0.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090057	H01
7.38-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090058	H01
9.99-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090059	H01
1.00+00	3.01-01	5.04-01	6.09-01	6.81-01	7.49-01	090060	H01
1.00+00	8.12-01	8.52-01	9.14-01	9.73-01	9.96-01	090061	H01
0.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090062	H01
7.76-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090063	H01
1.00+00	3.22-01	5.37-01	6.46-01	7.20-01	7.89-01	090064	H01
1.00+60	8.51-01	8.89-01	9.46-01	9.91-01	1.00+00	090065	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090066	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090067	H01
0.00+00	3.44-01	5.72-01	6.85-01	7.61-01	8.29-01	090068	H01
8.16-01	8.89-01	9.24-01	9.73-01	1.00+00	1.00+00	090069	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090070	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090071	H01
0.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090072	H01
8.55-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090073	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090074	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090075	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090076	H01

TABLE A6. (CONTINUED)

0.00+00	3.68-01	6.08-01	7.24-01	8.01-01	8.68-01	090077	H01
8.93-01	9.24-01	9.55-01	9.92-01	1.00+00	1.00+00	090078	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090079	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090080	H01
1.00+00	3.93-01	6.46-01	7.65-01	8.42-01	9.06-01	090081	H01
0.00+00	9.56-01	9.80-01	1.00+00	1.00+00	1.00+00	090082	H01
9.28-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090083	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090084	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090085	H01
1.00+00	4.22-01	6.87-01	8.08-01	8.83-01	9.41-01	090086	H01
0.00+00	9.81-01	9.97-01	1.00+00	1.00+00	1.00+00	090087	H01
9.60-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090088	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090089	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090090	H01
1.00+00	4.54-01	7.31-01	8.52-01	9.21-01	9.71-01	090091	H01
0.00+00	9.97-01	1.00+00	1.00+00	1.00+00	1.00+00	090092	H01
9.85-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090093	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090094	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090095	H01
1.00+00	4.88-01	7.75-01	8.93-01	9.55-01	9.92-01	090096	H01
0.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090097	H01
9.99-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090098	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090099	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090100	H01
1.00+00	5.24-01	8.21-01	9.32-01	9.83-01	1.00+00	090101	H01
0.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090102	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090103	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090104	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090105	H01
1.00+00	5.65-01	8.67-01	9.66-01	9.98-01	1.00+00	090106	H01
0.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090107	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090108	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090109	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090110	H01
1.00+00	6.07-01	9.09-01	9.90-01	1.00+00	1.00+00	090111	H01
0.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090112	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090113	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090114	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090115	H01

TABLE A6. (CONTINUED)

1.00+00										090116	H01
0.00+00										090117	H01
1.00+00	7.61-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090118	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090119	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090120	H01
1.00+00										090121	H01
0.00+00	8.75-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090122	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090123	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090124	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090125	H01
1.00+00										090126	H01
0.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090127	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090128	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090129	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090130	H01
1.00+00										090131	H01
0.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090132	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090133	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090134	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090135	H01
1.00+00										090136	H01

NITROGEN LIBRARY 01 FAST S02

DATA TAKEN FROM ENDF-B

1	126	1.40+01									S02
0.163E 01	0.161E 01	0.162E 01	0.152E 01	0.147E 01	0.152E 01	0.147E 01	0.152E 01	0.147E 01	0.152E 01	010001	S02
0.155E 01	0.156E 01	0.155E 01	0.153E 01	0.151E 01	0.153E 01	0.151E 01	0.153E 01	0.151E 01	0.153E 01	010002	S02
0.144E 01	0.141E 01	0.137E 01	0.136E 01	0.139E 01	0.136E 01	0.139E 01	0.136E 01	0.139E 01	0.136E 01	010003	S02
0.141E 01	0.138E 01	0.142E 01	0.145E 01	0.145E 01	0.145E 01	0.145E 01	0.145E 01	0.145E 01	0.145E 01	010004	S02
0.142E 01	0.140E 01	0.138E 01	0.140E 01	0.136E 01	0.140E 01	0.136E 01	0.140E 01	0.136E 01	0.140E 01	010005	S02
0.130E 01	0.130E 01	0.131E 01	0.131E 01	0.127E 01	0.131E 01	0.127E 01	0.131E 01	0.127E 01	0.131E 01	010006	S02
0.127E 01	0.128E 01	0.125E 01	0.123E 01	0.122E 01	0.123E 01	0.122E 01	0.123E 01	0.122E 01	0.123E 01	010007	S02
0.123E 01	0.126E 01	0.138E 01	0.146E 01	0.142E 01	0.146E 01	0.142E 01	0.146E 01	0.142E 01	0.146E 01	010008	S02
0.138E 01	0.146E 01	0.153E 01	0.151E 01	0.143E 01	0.151E 01	0.143E 01	0.151E 01	0.143E 01	0.151E 01	010009	S02
0.123E 01	0.117E 01	0.120E 01	0.122E 01	0.124E 01	0.122E 01	0.124E 01	0.122E 01	0.124E 01	0.122E 01	010010	S02
0.131E 01	0.134E 01	0.139E 01	0.143E 01	0.143E 01	0.143E 01	0.143E 01	0.143E 01	0.143E 01	0.143E 01	010011	S02
0.131E 01	0.134E 01	0.146E 01	0.145E 01	0.146E 01	0.145E 01	0.146E 01	0.145E 01	0.146E 01	0.145E 01	010012	S02
0.150E 01	0.138E 01	0.122E 01	0.103E 01	0.102E 01	0.103E 01	0.102E 01	0.103E 01	0.102E 01	0.103E 01	010013	S02
0.149E 01	0.161E 01	0.167E 01	0.187E 01	0.216E 01	0.187E 01	0.216E 01	0.187E 01	0.216E 01	0.187E 01	010014	S02
										010015	S02

TABLE A6. (CONTINUED)

0.197E 01	0.225E 01	0.176E 01	0.171E 01	0.177E 01	0.175E 01	010016	S02
0.154E 01	0.154E 01	0.169E 01	0.163E 01	0.161E 01	0.153E 01	010017	S02
0.137E 01	0.134E 01	0.135E 01	0.139E 01	0.135E 01	0.157E 01	010018	S02
0.166E 01	0.154E 01	0.158E 01	0.174E 01	0.229E 01	0.188E 01	010019	S02
0.227E 01	0.200E 01	0.240E 01	0.182E 01	0.174E 01	0.226E 01	010020	S02
0.186E 01	0.131E 01	0.186E 01	0.220E 01	0.179E 01	0.230E 01	010021	S02
0.300E 01	0.299E 01	0.351E 01	0.445E 01	0.652E 01	0.337E 01	010022	S02

NITROGEN LIBRARY 02 FAST S02

DATA TAKEN FROM ENDF-B

2	126	1.40+01					
0.498E 00	0.493E 00	0.483E 00	0.471E 00	0.460E 00	0.449E 00	020001	S02
0.436E 00	0.427E 00	0.419E 00	0.411E 00	0.403E 00	0.337E 00	020002	S02
0.372E 00	0.378E 00	0.370E 00	0.364E 00	0.358E 00	0.353E 00	020003	S02
0.347E 00	0.342E 00	0.336E 00	0.331E 00	0.326E 00	0.321E 00	020004	S02
0.315E 00	0.309E 00	0.290E 00	0.288E 00	0.288E 00	0.285E 00	020005	S02
0.279E 00	0.272E 00	0.266E 00	0.260E 00	0.253E 00	0.246E 00	020006	S02
0.238E 00	0.231E 00	0.224E 00	0.216E 00	0.208E 00	0.200E 00	020007	S02
0.192E 00	0.184E 00	0.176E 00	0.168E 00	0.160E 00	0.152E 00	020008	S02
0.144E 00	0.137E 00	0.130E 00	0.123E 00	0.117E 00	0.111E 00	020009	S02
0.104E 00	0.985E-01	0.923E-01	0.864E-01	0.809E-01	0.756E-01	020010	S02
0.705E-01	0.658E-01	0.613E-01	0.570E-01	0.529E-01	0.490E-01	020011	S02
0.453E-01	0.419E-01	0.376E-01	0.332E-01	0.327E-01	0.300E-01	020012	S02
0.275E-01	0.251E-01	0.230E-01	0.214E-01	0.199E-01	0.185E-01	020013	S02
0.172E-01	0.160E-01	0.148E-01	0.138E-01	0.128E-01	0.119E-01	020014	S02
0.109E-01	0.100E-01	0.924E-02	0.845E-02	0.770E-02	0.700E-02	020015	S02
0.636E-02	0.576E-02	0.520E-02	0.507E-02	0.418E-02	0.364E-02	020016	S02
0.313E-02	0.260E-02	0.203E-02	0.750E 05	0.600E 06	0.120E 07	020017	S02
0.180E 07	0.240E 07	0.300E 07	0.360E 07	0.420E 07	0.480E 07	020018	S02
0.540E 07	0.600E 07	0.660E 07	0.720E 07	0.780E 07	0.840E 07	020019	S02
0.900E 07	0.960E 07	0.102E 08	0.108E 08	0.114E 08	0.120E 08	020020	S02
0.126E 08	0.132E 08	0.138E 08	0.143E 08	0.148E 08	0.149E 08	020021	S02
						020022	S02

NITROGEN LIBRARY 03 FAST S02

DATA TAKEN FROM UNC 5139

3	126	1.40+01					
1.632+00	1.632+00	1.594+00	1.557+00	1.557+00	1.523+00	030001	S02
1.496+00	1.496+00	1.496+00	1.471+00	1.471+00	1.471+00	030002	S02
1.448+00	1.448+00	1.448+00	1.428+00	1.428+00	1.428+00	030003	S02
						030004	S02

TABLE A6. (CONTINUED)

1.428+00	1.428+00	1.413+00	1.413+00	1.413+00	1.413+00	1.413+00	030005	S02
1.413+00	1.413+00	1.402+00	1.402+00	1.402+00	1.402+00	1.402+00	030006	S02
1.393+00	1.393+00	1.393+00	1.393+00	1.393+00	1.393+00	1.389+00	030007	S02
1.389+00	1.389+00	1.389+00	1.388+00	1.388+00	1.388+00	1.388+00	030008	S02
1.388+00	1.390+00	1.390+00	1.390+00	1.390+00	1.390+00	1.397+00	030009	S02
1.397+00	1.397+00	1.397+00	1.410+00	1.410+00	1.410+00	1.410+00	030010	S02
1.410+00	1.428+00	1.428+00	1.428+00	1.454+00	1.454+00	1.454+00	030011	S02
1.454+00	1.486+00	1.486+00	1.486+00	1.526+00	1.526+00	1.526+00	030012	S02
1.526+00	1.573+00	1.623+00	1.623+00	1.642+00	1.642+00	1.642+00	030013	S02
1.700+00	1.933+00	1.940+00	1.940+00	1.940+00	1.940+00	1.940+00	030014	S02
1.940+00	1.940+00	1.940+00	1.940+00	1.940+00	1.940+00	1.940+00	030015	S02
1.940+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	030016	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	030017	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	030018	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	030019	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	030020	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	030021	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	030022	S02

NITROGEN LIBRARY 04 FAST S02

DATA TAKEN FROM UNC 5139

1.500+01	1.300+01	1.100+01	1.050+01	9.000+00	8.500+00	040001	S02
7.750+00	7.250+00	6.750+00	6.500+00	6.000+00	5.750+00	040002	S02
5.500+00	5.250+00	4.750+00	4.500+00	4.250+00	3.750+00	040003	S02
3.250+00	2.750+00	2.250+00	1.750+00	1.250+00	7.500-01	040004	S02
2.500-01						040005	S02
0.4011-02	0.3093-01	0.6845-01	0.0000+00	0.1147+00	0.0000+00	040006	S02
0.0000+00	0.8752-01	0.0000+00	0.1171+00	0.0000+00	0.5410-01	040007	S02
0.0000+00	0.6181-01	0.7949-01	0.0000+00	0.2303-01	0.2735-01	040008	S02
0.1313-01	0.2247-01	0.2138+00	0.8002-01	0.1667-02	0.4987-03	040009	S02
0.0000+00						040010	S02
0.0000+00	0.1753-01	0.5902-01	0.0000+00	0.1094+00	0.0000+00	040011	S02
0.0000+00	0.8761-01	0.0000+00	0.1218+00	0.0000+00	0.5647-01	040012	S02
0.0000+00	0.6516-01	0.8474-01	0.0000+00	0.2389-01	0.2892-01	040013	S02
0.1370-01	0.2407-01	0.2196+00	0.8587-01	0.1745-02	0.5171-03	040014	S02
0.0000+00						040015	S02
0.0000+00	0.5401-02	0.4727-01	0.0000+00	0.1043+00	0.0000+00	040016	S02
0.0000+00	0.8782-01	0.0000+00	0.1257+00	0.0000+00	0.5835-01	040017	S02
						040018	S02

TABLE A6. (CONTINUED)

0.0000+00	0.6806-01	0.8985-01	0.0000+00	0.2439-01	0.3023-01	040019	S02
0.1405-01	0.2564-01	0.2246+00	0.9204-01	0.1844-02	0.5325-03	040020	S02
0.0000+00						040021	S02
0.0000+00	0.3398-04	0.2871-01	0.0000+00	0.9442-01	0.0000+00	040022	S02
0.0000+00	0.8821-01	0.0000+00	0.1398+00	0.0000+00	0.6044-01	040023	S02
0.0000+00	0.7130-01	0.9600-01	0.0000+00	0.2438-01	0.3147-01	040024	S02
0.1417-01	0.2750-01	0.2300+00	0.1001+00	0.1917-02	0.5824-03	040025	S02
0.0000+00						040026	S02
0.0000+00	0.0000+00	0.7903-02	0.0000+00	0.7740-01	0.0000+00	040027	S02
0.0000+00	0.8726-01	0.0000+00	0.1365+00	0.0000+00	0.6293-01	040028	S02
0.0000+00	0.7504-01	0.1037+00	0.0000+00	0.2353-01	0.3232-01	040029	S02
0.1372-01	0.2954-01	0.2358+00	0.1117+00	0.2028-02	0.6317-03	040030	S02
0.0000+00						040031	S02
0.0000+00	0.0000+00	0.4978-03	0.0000+00	0.5722-01	0.0000+00	040032	S02
0.0000+00	0.8255-01	0.0000+00	0.1409+00	0.0000+00	0.6520-01	040033	S02
0.0000+00	0.7910-01	0.1107+00	0.0000+00	0.2255-01	0.3268-01	040034	S02
0.1291-01	0.3107-01	0.2406+00	0.1214+00	0.2008-02	0.6406-03	040035	S02
0.0000+00						040036	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.3931-01	0.0000+00	040037	S02
0.0000+00	0.7792-01	0.0000+00	0.1421+00	0.0000+00	0.6685-01	040038	S02
0.0000+00	0.8217-01	0.1162+00	0.0000+00	0.2144-01	0.3289-01	040039	S02
0.1212-01	0.3210-01	0.2445+00	0.1299+00	0.1947-02	0.6449-03	040040	S02
0.0000+00						040041	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.2130-01	0.0000+00	040042	S02
0.0000+00	0.7190-01	0.0000+00	0.1408+00	0.0000+00	0.6839-01	040043	S02
0.0000+00	0.8569-01	0.1224+00	0.0000+00	0.2030-01	0.3290-01	040044	S02
0.1128-01	0.3317-01	0.2492+00	0.1402+00	0.1876-02	0.6462-03	040045	S02
0.0000+00						040046	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.5878-02	0.0000+00	040047	S02
0.0000+00	0.5815-01	0.0000+00	0.1377+00	0.0000+00	0.6843-01	040048	S02
0.0000+00	0.9019-01	0.1308+00	0.0000+00	0.1871-01	0.3302-01	040049	S02
0.9866-02	0.3440-01	0.2560+00	0.1546+00	0.1771-02	0.5761-03	040050	S02
0.0000+00						040051	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.1726-03	0.0000+00	040052	S02
0.0000+00	0.3650-01	0.0000+00	0.1314+00	0.0000+00	0.6774-01	040053	S02
0.0000+00	0.9322-01	0.1393+00	0.0000+00	0.1689-01	0.3303-01	040054	S02
0.8628-02	0.3550-01	0.2642+00	0.1714+00	0.1565-02	0.5456-03	040055	S02
0.0000+00						040056	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040057	S02

TABLE A6. (CONTINUED)

0.0000+00	0.1254-01	0.0000+00	0.1154+00	0.0000+00	0.6797-01	040058	S02
0.0000+00	0.9680-01	0.1472+00	0.0000+00	0.1434-01	0.3293-01	040059	S02
0.7196-02	0.3671-01	0.2750+00	0.1922+00	0.1282-02	0.4979-03	040060	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040061	S02
0.0000+00	0.4170-03	0.0000+00	0.7197-01	0.0000+00	0.6355-01	040062	S02
0.0000+00	0.1042+00	0.1574+00	0.0000+00	0.7771-02	0.3188-01	040063	S02
0.5797-02	0.3781-01	0.2934+00	0.2246+00	0.8896-03	0.4048-03	040064	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040065	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040066	S02
0.0000+00	0.0000+00	0.0000+00	0.2510-01	0.0000+00	0.4947-01	040067	S02
0.0000+00	0.1082+00	0.1679+00	0.0000+00	0.1265-02	0.2727-01	040068	S02
0.4728-02	0.3813-01	0.3158+00	0.2616+00	0.3686-03	0.2586-03	040069	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040070	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040071	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040072	S02
0.0000+00	0.9471-01	0.1575+00	0.0000+00	0.0000+00	0.1178-01	040073	S02
0.1493-02	0.3326-01	0.3575+00	0.3222+00	0.0000+00	0.2146-01	040074	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.3929-04	040075	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040076	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040077	S02
0.0000+00	0.4449-01	0.1013+00	0.0000+00	0.0000+00	0.0000+00	040078	S02
0.0000+00	0.1561-01	0.4144+00	0.3988+00	0.0000+00	0.2545-01	040079	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040080	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040081	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040082	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040083	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.3092-01	040084	S02
0.0000+00	0.0000+00	0.4845+00	0.4845+00	0.0000+00	0.0000+00	040085	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040086	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040087	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040088	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.3092-01	040089	S02
0.0000+00	0.0000+00	0.4845+00	0.4845+00	0.0000+00	0.0000+00	040090	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040091	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040092	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040093	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.3092-01	040094	S02
0.0000+00	0.0000+00	0.4845+00	0.4845+00	0.0000+00	0.0000+00	040095	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040096	S02

TABLE A6. (CONTINUED)

0.163E 01	0.161E 01	0.162E 01	0.152E 01	0.147E 01	0.152E 01	050002	S02
0.155E 01	0.156E 01	0.155E 01	0.153E 01	0.151E 01	0.147E 01	050003	S02
0.144E 01	0.141E 01	0.137E 01	0.136E 01	0.139E 01	0.141E 01	050004	S02
0.141E 01	0.138E 01	0.142E 01	0.145E 01	0.145E 01	0.145E 01	050005	S02
0.142E 01	0.140E 01	0.138E 01	0.140E 01	0.136E 01	0.128E 01	050006	S02
0.130E 01	0.130E 01	0.131E 01	0.131E 01	0.127E 01	0.126E 01	050007	S02
0.127E 01	0.128E 01	0.125E 01	0.123E 01	0.122E 01	0.120E 01	050008	S02
0.123E 01	0.126E 01	0.138E 01	0.146E 01	0.142E 01	0.137E 01	050009	S02
0.138E 01	0.146E 01	0.153E 01	0.151E 01	0.143E 01	0.136E 01	050010	S02
0.123E 01	0.117E 01	0.120E 01	0.122E 01	0.124E 01	0.126E 01	050011	S02
0.131E 01	0.134E 01	0.139E 01	0.143E 01	0.143E 01	0.138E 01	050012	S02
0.131E 01	0.134E 01	0.146E 01	0.145E 01	0.146E 01	0.148E 01	050013	S02
0.150E 01	0.138E 01	0.122E 01	0.103E 01	0.102E 01	0.125E 01	050014	S02
0.149E 01	0.161E 01	0.167E 01	0.187E 01	0.216E 01	0.211E 01	050015	S02
0.197E 01	0.225E 01	0.176E 01	0.171E 01	0.177E 01	0.175E 01	050016	S02
0.154E 01	0.154E 01	0.169E 01	0.163E 01	0.161E 01	0.153E 01	050017	S02
0.137E 01	0.134E 01	0.135E 01	0.139E 01	0.135E 01	0.157E 01	050018	S02
0.166E 01	0.154E 01	0.158E 01	0.174E 01	0.229E 01	0.188E 01	050019	S02
0.227E 01	0.200E 01	0.240E 01	0.182E 01	0.174E 01	0.226E 01	050020	S02
0.186E 01	0.131E 01	0.186E 01	0.220E 01	0.179E 01	0.230E 01	050021	S02
0.300E 01	0.299E 01	0.351E 01	0.445E 01	0.652E 01	0.337E 01	050022	S02

NITROGEN LIBRARY 05 SLOW S02

DATA TAKEN FROM ENDF-B

0.899E 01	0.899E 01	0.899E 01	0.900E 01	0.900E 01	0.900E 01	050001	S02
0.901E 01	0.901E 01	0.901E 01	0.902E 01	0.902E 01	0.902E 01	050002	S02
0.902E 01	0.903E 01	0.903E 01	0.903E 01	0.904E 01	0.904E 01	050003	S02
0.904E 01	0.905E 01	0.905E 01	0.905E 01	0.906E 01	0.906E 01	050004	S02
0.906E 01	0.907E 01	0.907E 01	0.907E 01	0.908E 01	0.908E 01	050005	S02
0.908E 01	0.909E 01	0.909E 01	0.909E 01	0.910E 01	0.910E 01	050006	S02
0.911E 01	0.911E 01	0.911E 01	0.912E 01	0.912E 01	0.912E 01	050007	S02
0.913E 01	0.913E 01	0.914E 01	0.914E 01	0.914E 01	0.915E 01	050008	S02
0.915E 01	0.916E 01	0.916E 01	0.917E 01	0.917E 01	0.917E 01	050009	S02
0.918E 01	0.918E 01	0.919E 01	0.919E 01	0.920E 01	0.921E 01	050010	S02
0.921E 01	0.922E 01	0.922E 01	0.922E 01	0.923E 01	0.924E 01	050011	S02
0.924E 01	0.925E 01	0.925E 01	0.926E 01	0.927E 01	0.927E 01	050012	S02
0.928E 01	0.928E 01	0.929E 01	0.930E 01	0.931E 01	0.931E 01	050013	S02
0.932E 01	0.932E 01	0.933E 01	0.934E 01	0.935E 01	0.936E 01	050014	S02
						050015	S02

TABLE A6. (CONTINUED)

0.936E 01	0.937E 01	0.938E 01	0.939E 01	0.940E 01	0.942E 01	050016	S02
0.943E 01	0.945E 01	0.947E 01	0.948E 01	0.950E 01	0.951E 01	050017	S02
0.953E 01	0.954E 01	0.955E 01	0.957E 01	0.958E 01	0.959E 01	050018	S02
0.960E 01	0.961E 01	0.962E 01	0.963E 01	0.965E 01	0.968E 01	050019	S02
0.970E 01	0.972E 01	0.974E 01	0.976E 01	0.978E 01	0.981E 01	050020	S02
0.983E 01	0.987E 01	0.989E 01	0.992E 01	0.997E 01	0.999E 01	050021	S02
0.100E 02	0.100E 02	0.100E 02	0.100E 02	0.101E 02	0.104E 02	050022	S02

NITROGEN LIBRARY 06 FAST S02

DATA TAKEN FROM ENDF-B

6	126	1.40+01					
0.305E-05	0.308E-05	0.312E-05	0.318E-05	0.323E-05	0.328E-05	060001	S02
0.332E-05	0.335E-05	0.338E-05	0.341E-05	0.343E-05	0.346E-05	060002	S02
0.349E-05	0.353E-05	0.355E-05	0.357E-05	0.359E-05	0.361E-05	060003	S02
0.362E-05	0.364E-05	0.366E-05	0.368E-05	0.369E-05	0.371E-05	060004	S02
0.373E-05	0.375E-05	0.377E-05	0.379E-05	0.381E-05	0.383E-05	060005	S02
0.385E-05	0.387E-05	0.389E-05	0.391E-05	0.393E-05	0.396E-05	060006	S02
0.398E-05	0.400E-05	0.402E-05	0.405E-05	0.407E-05	0.410E-05	060007	S02
0.412E-05	0.415E-05	0.417E-05	0.420E-05	0.423E-05	0.425E-05	060008	S02
0.428E-05	0.431E-05	0.434E-05	0.437E-05	0.440E-05	0.443E-05	060009	S02
0.446E-05	0.449E-05	0.453E-05	0.456E-05	0.459E-05	0.463E-05	060010	S02
0.467E-05	0.470E-05	0.474E-05	0.478E-05	0.482E-05	0.486E-05	060011	S02
0.490E-05	0.494E-05	0.499E-05	0.503E-05	0.508E-05	0.513E-05	060012	S02
0.518E-05	0.523E-05	0.528E-05	0.533E-05	0.539E-05	0.545E-05	060013	S02
0.551E-05	0.557E-05	0.563E-05	0.569E-05	0.576E-05	0.583E-05	060014	S02
0.590E-05	0.598E-05	0.606E-05	0.614E-05	0.622E-05	0.631E-05	060015	S02
0.641E-05	0.650E-05	0.660E-05	0.671E-05	0.682E-05	0.694E-05	060016	S02
0.706E-05	0.719E-05	0.733E-05	0.747E-05	0.763E-05	0.779E-05	060017	S02
0.797E-05	0.815E-05	0.836E-05	0.857E-05	0.881E-05	0.907E-05	060018	S02
0.934E-05	0.965E-05	0.999E-05	0.103E-04	0.107E-04	0.112E-04	060019	S02
0.118E-04	0.122E-04	0.134E-04	0.141E-04	0.152E-04	0.167E-04	060020	S02
0.188E-04	0.216E-04	0.266E-04	0.381E-04	0.754E-04	0.563E-04	060021	S02
						060022	S02

NITROGEN LIBRARY 06 SLOW S02

DATA TAKEN FROM ENDF-B

6	126	1.40+01					
0.374E-03	0.375E-03	0.377E-03	0.378E-03	0.380E-03	0.382E-03	060001	S02
0.384E-03	0.386E-03	0.388E-03	0.389E-03	0.391E-03	0.393E-03	060002	S02
0.394E-03	0.396E-03	0.398E-03	0.400E-03	0.401E-03	0.403E-03	060003	S02
						060004	S02

TABLE A6. (CONTINUED)

0.405E-03	0.407E-03	0.409E-03	0.411E-03	0.413E-03	0.415E-03	060005	S02
0.417E-03	0.419E-03	0.421E-03	0.423E-03	0.426E-03	0.428E-03	060006	S02
0.430E-03	0.432E-03	0.435E-03	0.437E-03	0.440E-03	0.442E-03	060007	S02
0.444E-03	0.447E-03	0.449E-03	0.452E-03	0.455E-03	0.457E-03	060008	S02
0.460E-03	0.463E-03	0.466E-03	0.469E-03	0.472E-03	0.475E-03	060009	S02
0.478E-03	0.481E-03	0.484E-03	0.488E-03	0.491E-03	0.494E-03	060010	S02
0.498E-03	0.501E-03	0.505E-03	0.509E-03	0.512E-03	0.516E-03	060011	S02
0.520E-03	0.524E-03	0.528E-03	0.533E-03	0.537E-03	0.541E-03	060012	S02
0.546E-03	0.551E-03	0.556E-03	0.561E-03	0.566E-03	0.571E-03	060013	S02
0.576E-03	0.582E-03	0.587E-03	0.593E-03	0.599E-03	0.606E-03	060014	S02
0.612E-03	0.619E-03	0.625E-03	0.633E-03	0.640E-03	0.647E-03	060015	S02
0.655E-03	0.663E-03	0.672E-03	0.681E-03	0.690E-03	0.699E-03	060016	S02
0.709E-03	0.720E-03	0.731E-03	0.742E-03	0.754E-03	0.766E-03	060017	S02
0.779E-03	0.793E-03	0.808E-03	0.823E-03	0.840E-03	0.857E-03	060018	S02
0.875E-03	0.895E-03	0.916E-03	0.939E-03	0.963E-03	0.990E-03	060019	S02
0.101E-02	0.105E-02	0.108E-02	0.112E-02	0.116E-02	0.121E-02	060020	S02
0.126E-02	0.132E-02	0.140E-02	0.148E-02	0.158E-02	0.171E-02	060021	S02
0.188E-02	0.210E-02	0.243E-02	0.299E-02	0.434E-02	0.113E-01	060022	S02

NITROGEN LIBRARY 07 FAST S02
DATA TAKEN FROM THE REACTOR HANDBOOK

9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070001	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070002	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070003	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070004	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070005	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070006	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070007	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070008	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070010	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070011	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070012	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070013	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070014	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070015	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070016	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070017	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070018	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070019	S02

TABLE A6. (CONTINUED)

9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070020	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070021	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070022	S02
NITROGEN LIBRARY 07 SLOW S02												
DATA TAKEN FROM THE REACTOR HANDBOOK												
7	126	1.40+01										
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070001	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070002	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070003	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070004	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070005	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070006	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070007	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070008	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070010	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070011	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070012	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070013	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070014	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070015	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070016	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070017	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070018	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070019	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070020	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070021	S02
9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	9.200-01	070022	S02
NITROGEN LIBRARY 08 FAST S02												
DATA TAKEN FROM THE REACTOR HANDBOOK												
8	9	1.40+01										
1.00+01	8.00+00	6.50+00	5.50+00	4.50+00	3.75+00						080001	S02
3.25+00	2.75+00	2.25+00	1.75+00	1.25+00	7.50-01						080002	S02
2.50-01											080003	S02
0.000+00	1.304-01	1.630-01	1.196-01	1.956-01	1.957-01						080004	S02
1.957-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00						080005	S02
0.000+00											080006	S02
0.000+00	1.304-01	1.630-01	1.196-01	1.956-01	1.957-01						080007	S02
1.957-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00						080008	S02
											080009	S02

TABLE A6. (CONTINUED)

0.000+00	1.304-01	1.630-01	1.196-01	1.956-01	1.957-01	080010	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	080011	S02
1.957-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	080012	S02
0.000+00	1.304-01	1.630-01	1.196-01	1.956-01	1.957-01	080013	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	080014	S02
1.957-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	080015	S02
0.000+00	1.304-01	1.630-01	1.196-01	1.956-01	1.957-01	080016	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	080017	S02
1.957-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	080018	S02
0.000+00	1.304-01	1.630-01	1.196-01	1.956-01	1.957-01	080019	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	080020	S02
1.957-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	080021	S02
0.000+00	1.304-01	1.630-01	1.196-01	1.956-01	1.957-01	080022	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	080023	S02
1.957-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	080024	S02
0.000+00	1.304-01	1.630-01	1.196-01	1.956-01	1.957-01	080025	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	080026	S02
1.957-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	080027	S02
0.000+00	1.304-01	1.630-01	1.196-01	1.956-01	1.957-01	080028	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	080029	S02
1.957-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	080030	S02
0.000+00	1.304-01	1.630-01	1.196-01	1.956-01	1.957-01	080031	S02

NITROGEN LIBRARY 08 SLOW S02
DATA TAKEN FROM THE REACTOR HANDBOOK

1.00+01	8.00+00	1.40+01	5.50+00	4.50+00	3.75+00	080001	S02
3.25+00	2.75+00	6.50+00	1.75+00	1.25+00	7.50-01	080002	S02
2.50-01		2.25+00				080003	S02
0.000+00	1.304-01	1.630-01	1.196-01	1.956-01	1.957-01	080004	S02
1.957-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	080005	S02
0.000+00						080006	S02
						080007	S02

TABLE A7. COHORT CROSS SECTION LIBRARIES FOR OXYGEN

OXYGEN LIBRARY 09 H01		DATA TAKEN FROM ENDF-B																					
9	15	1	21	1	1																		
0.00+00	6.05+00	6.13+00	6.92+00	7.12+00	8.88+00																	090001	H01
9.59+00	9.85+00	1.036+01	1.095+01	1.108+01	1.126+01																	090002	H01
1.152+01	1.163+01	1.244+01	1.253+01	1.279+01	1.297+01																	090003	H01
1.310+01	1.326+01	1.366+01																				090004	H01
1.50+01	1.40+01	1.30+01	1.20+01	1.10+01	1.00+01																	090005	H01
9.00+00	8.00+00	7.60+00	7.40+00	7.20+00	7.00+00																	090006	H01
6.80+00	6.60+00	6.40+00																				090007	H01
0.00+00	3.44-02	1.39-01	2.09-01	2.54-01	3.21-01																	090008	H01
3.60-01	4.09-01	4.62-01	4.78-01	5.63-01	5.82-01																	090009	H01
6.63-01	7.74-01	8.16-01	8.79-01	8.88-01	9.25-01																	090010	H01
9.44-01	9.89-01	1.00+00																				090011	H01
0.00+00	3.75-02	1.80-01	2.77-01	3.41-01	4.41-01																	090012	H01
4.88-01	5.51-01	6.16-01	6.34-01	7.31-01	7.50-01																	090013	H01
8.31-01	9.37-01	9.56-01	9.84-01	9.88-01	1.00+00																	090014	H01
1.00+00	1.00+00	1.00+00																				090015	H01
0.00+00	4.24-02	2.36-01	3.74-01	4.69-01	6.06-01																	090016	H01
6.65-01	7.38-01	8.07-01	8.22-01	8.92-01	9.05-01																	090017	H01
9.48-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00																	090018	H01
1.00+00	1.00+00	1.00+00																				090019	H01
0.00+00	5.43-02	3.30-01	5.22-01	6.49-01	8.13-01																	090020	H01
8.64-01	9.30-01	9.76-01	9.81-01	9.98-01	1.00+00																	090021	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00																	090022	H01
1.00+00	1.00+00	1.00+00																				090023	H01
0.00+00	6.77-02	4.76-01	6.95-01	8.27-01	9.40-01																	090024	H01
9.62-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00																	090025	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00																	090026	H01
1.00+00	1.00+00	1.00+00																				090027	H01
0.00+00	9.03-02	6.96-01	8.84-01	9.69-01	1.00+00																	090028	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00																	090029	H01
1.00+00	1.00+00	1.00+00																				090030	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00																	090031	H01
1.00+00	1.00+00	1.00+00																				090032	H01
0.00+00	9.09-02	8.65-01	9.71-01	1.00+00	1.00+00																	090033	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00																	090034	H01
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00																	090035	H01
1.00+00	1.00+00	1.00+00																				090036	H01
0.00+00	8.90-02	8.85-01	9.74-01	1.00+00	1.00+00																	090037	H01

TABLE A7. (CONTINUED)

0.0000+00	0.1154-01	0.1258-01	0.0000+00	0.1311-01	0.1296-01	040009	S02
0.1199-01	0.7662-02	0.5057-02	0.1810-02	0.8168-03	0.9431-02	040010	S02
0.0000+00						040011	S02
0.0000+00	0.7192-01	0.2573+00	0.0000+00	0.2236+00	0.0000+00	040012	S02
0.3623-03	0.8768-01	0.1111+00	0.0000+00	0.1563+00	0.8605-02	040013	S02
0.0000+00	0.1032-01	0.1141-01	0.0000+00	0.1213-01	0.1231-01	040014	S02
0.1177-01	0.7518-02	0.4981-02	0.1721-02	0.8152-03	0.1014-01	040015	S02
0.0000+00						040016	S02
0.0000+00	0.2143-01	0.2438+00	0.0000+00	0.2564+00	0.0000+00	040017	S02
0.0000+00	0.8737-01	0.1308+00	0.0000+00	0.1807+00	0.3926-02	040018	S02
0.0000+00	0.6883-02	0.9472-02	0.0000+00	0.1108-01	0.1173-01	040019	S02
0.1146-01	0.7024-02	0.4692-02	0.1344-02	0.6149-03	0.1129-01	040020	S02
0.0000+00						040021	S02
0.0000+00	0.1948-03	0.1826+00	0.0000+00	0.2908+00	0.0000+00	040022	S02
0.0000+00	0.8587-01	0.1540+00	0.0000+00	0.2248+00	0.5953-03	040023	S02
0.0000+00	0.1983-02	0.4957-02	0.0000+00	0.8128-02	0.1060-01	040024	S02
0.1134-01	0.6738-02	0.4310-02	0.8425-03	0.3965-03	0.1189-01	040025	S02
0.0000+00						040026	S02
0.0000+00	0.0000+00	0.6533-01	0.0000+00	0.2923+00	0.0000+00	040027	S02
0.0000+00	0.7276-01	0.1802+00	0.0000+00	0.3515+00	0.0000+00	040028	S02
0.0000+00	0.6927-04	0.6632-03	0.0000+00	0.2494-02	0.5345-02	040029	S02
0.8296-02	0.5583-02	0.3910-02	0.4752-03	0.7919-04	0.1107-01	040030	S02
0.0000+00						040031	S02
0.0000+00	0.0000+00	0.4792-02	0.0000+00	0.1660+00	0.0000+00	040032	S02
0.0000+00	0.4347-01	0.1399+00	0.0000+00	0.6257+00	0.0000+00	040033	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.1742-03	0.1327-02	040034	S02
0.3980-02	0.2795-02	0.2859-02	0.3153-03	0.0000+00	0.8688-02	040035	S02
0.0000+00						040036	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.3066-01	0.0000+00	040037	S02
0.0000+00	0.3488-01	0.1205+00	0.0000+00	0.8045+00	0.0000+00	040038	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.1404-03	040039	S02
0.6795-03	0.4864-03	0.5842-03	0.8022-04	0.0000+00	0.7577-02	040040	S02
0.0000+00						040041	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040042	S02
0.0000+00	0.2986-01	0.1047+00	0.0000+00	0.8589+00	0.0000+00	040043	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040044	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.6596-02	040045	S02
0.0000+00						040046	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040047	S02

TABLE A7. (CONTINUED)

0.0000+00	0.3055-01	0.1022+00	0.0000+00	0.8608+00	0.0000+00	040048	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040049	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.6546-02	040050	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040051	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040052	S02
0.0000+00	0.2467-01	0.8381-01	0.0000+00	0.8863+00	0.0000+00	040053	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040054	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.5314-02	040055	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040056	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040057	S02
0.0000+00	0.4478-02	0.1722-01	0.0000+00	0.9772+00	0.0000+00	040058	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040059	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.1059-02	040060	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040061	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040062	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.1000+01	0.0000+00	040063	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040064	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040065	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040066	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040067	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.1000+01	0.0000+00	040068	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040069	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040070	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040071	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040072	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040073	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040074	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040075	S02
0.1000+01						040076	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040077	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040078	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040079	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040080	S02
0.1000+01						040081	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040082	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040083	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040084	S02
0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	0.0000+00	040085	S02
0.1000+01						040086	S02

TABLE A7. (CONTINUED)

0.1000+01	040126	S02
0.0000+00	040127	S02
0.0000+00	040128	S02
0.0000+00	040129	S02
0.0000+00	040130	S02
0.1000+01	040131	S02

TABLE A8. COHORT CROSS SECTION LIBRARIES FOR ALUMINUM

ALUMINUM LIBRARY 09 H01 DATA TAKEN FROM ENDF-B		1		25		1			
9	25	1	25	1	25	1	25		
0.000+00	8.420-01	1.103+00	2.210+00	2.730+00	2.976+00	090001	H01		
3.000+00	3.674+00	3.951+00	4.052+00	4.403+00	4.504+00	090002	H01		
4.571+00	4.810+00	5.600+00	6.000+00	7.000+00	8.000+00	090003	H01		
9.000+00	1.000+01	1.100+01	1.200+01	1.300+01	1.400+01	090004	H01		
1.500+01	1.300+01	1.100+01	1.000+01	9.000+00	8.000+00	090005	H01		
1.500+01	6.000+00	5.500+00	5.000+00	4.800+00	4.550+00	090006	H01		
7.000+00	3.800+00	3.500+00	3.250+00	3.000+00	2.750+00	090007	H01		
4.100+00	2.250+00	2.000+00	1.750+00	1.500+00	1.250+00	090008	H01		
2.500+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090009	H01		
0.950+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090010	H01		
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090011	H01		
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090012	H01		
0.000+00	0.000+00	9.190-02	1.190-01	1.700-01	2.360-01	090013	H01		
3.230-01	4.330-01	5.660-01	7.160-01	8.680-01	9.810-01	090014	H01		
1.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090015	H01		
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090016	H01		
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090017	H01		
0.000+00	0.000+00	1.460-01	1.910-01	2.740-01	3.820-01	090018	H01		
0.000+00	6.800-01	8.480-01	9.770-01	1.000+00	1.000+00	090019	H01		
5.190-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090020	H01		
1.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090021	H01		
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090022	H01		
0.000+00	0.000+00	2.470-01	3.250-01	4.640-01	6.350-01	090023	H01		
0.000+00	9.730-01	1.000+00	1.000+00	1.000+00	1.000+00	090024	H01		
8.220-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090025	H01		
1.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090026	H01		
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090027	H01		
0.000+00	0.000+00	3.280-01	4.300-01	6.060-01	8.050-01	090028	H01		
0.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090029	H01		
9.700-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090030	H01		
1.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090031	H01		
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090032	H01		
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090033	H01		
0.000+00	0.000+00	4.450-01	5.760-01	7.870-01	9.660-01	090034	H01		
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090035	H01		
1.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090036	H01		
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090037	H01		

TABLE A8. (CONTINUED)

0.000+00	9.070-02	2.790-01	5.390-01	7.140-01	8.030-01	090077	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090078	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090079	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090080	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090081	H01
0.000+00	9.970-02	3.090-01	5.970-01	7.700-01	8.410-01	090082	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090083	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090084	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090085	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090086	H01
0.000+00	1.180-01	3.730-01	7.240-01	8.860-01	9.170-01	090087	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090088	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090089	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090090	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090091	H01
0.000+00	1.620-01	5.270-01	8.910-01	1.000+00	1.000+00	090092	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090093	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090094	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090095	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090096	H01
0.000+00	1.940-01	6.450-01	1.000+00	1.000+00	1.000+00	090097	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090098	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090099	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090100	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090101	H01
0.000+00	2.240-01	7.630-01	1.000+00	1.000+00	1.000+00	090102	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090103	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090104	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090105	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090106	H01
0.000+00	2.710-01	9.730-01	1.000+00	1.000+00	1.000+00	090107	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090108	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090109	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090110	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090111	H01
0.000+00	2.840-01	1.000+00	1.000+00	1.000+00	1.000+00	090112	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090113	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090114	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090115	H01

TABLE A8 (CONTINUED)

1.79+00	1.79+00	1.79+00	1.79+00	1.79+00	1.79+00	1.79+00	1.79+00	1.79+00	030005	S02
1.79+00	1.79+00	1.79+00	1.79+00	1.79+00	1.79+00	1.79+00	1.79+00	1.79+00	030006	S02
1.79+00	1.79+00	1.79+00	1.79+00	1.79+00	1.79+00	1.79+00	1.79+00	1.79+00	030007	S02
1.79+00	1.79+00	1.79+00	1.79+00	1.79+00	1.79+00	1.79+00	1.79+00	1.79+00	030008	S02
1.60+00	1.60+00	1.60+00	1.60+00	1.60+00	1.60+00	1.60+00	1.60+00	1.60+00	030009	S02
1.60+00	1.60+00	1.60+00	1.60+00	1.60+00	1.60+00	1.60+00	1.60+00	1.60+00	030010	S02
1.60+00	1.60+00	1.60+00	1.60+00	1.60+00	1.60+00	1.60+00	1.60+00	1.60+00	030011	S02
1.48+00	1.48+00	1.48+00	1.48+00	1.48+00	1.48+00	1.48+00	1.48+00	1.48+00	030012	S02
1.48+00	1.48+00	1.48+00	1.48+00	1.48+00	1.48+00	1.48+00	1.48+00	1.48+00	030013	S02
1.48+00	1.48+00	1.48+00	1.48+00	1.48+00	1.48+00	1.48+00	1.48+00	1.48+00	030014	S02
1.37+00	1.37+00	1.37+00	1.37+00	1.37+00	1.37+00	1.37+00	1.37+00	1.37+00	030015	S02
1.37+00	1.37+00	1.37+00	1.37+00	1.37+00	1.37+00	1.37+00	1.37+00	1.37+00	030016	S02
1.26+00	1.26+00	1.26+00	1.26+00	1.26+00	1.26+00	1.26+00	1.26+00	1.26+00	030017	S02
1.26+00	1.26+00	1.26+00	1.26+00	1.26+00	1.26+00	1.26+00	1.26+00	1.26+00	030018	S02
1.01+00	1.01+00	1.01+00	1.01+00	1.01+00	1.01+00	1.01+00	1.01+00	1.01+00	030019	S02
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	030020	S02
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	030021	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	030022	S02
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	0.00+00		

ALUMINUM LIBRARY 04 FAST S02

DATA TAKEN FROM UNC 5139

4	25	25	25	25	25	25	25	25	040001	S02
1.500+01	1.300+01	1.100+01	1.050+01	1.050+01	9.000+00	8.500+00	8.500+00	8.500+00	040002	S02
7.750+00	7.250+00	6.750+00	6.500+00	6.500+00	6.000+00	5.750+00	5.750+00	5.750+00	040003	S02
5.500+00	5.250+00	4.750+00	4.500+00	4.500+00	4.250+00	3.750+00	3.750+00	3.750+00	040004	S02
3.250+00	2.750+00	2.250+00	1.750+00	1.750+00	1.250+00	7.500-01	7.500-01	7.500-01	040005	S02
2.500-01	0.0 0+00	0.000+00	0.000+00	0.000+00	0.000+00	2.125-02	2.125-02	2.125-02	040006	S02
0.000+00	3.157-02	2.105-02	0.000+00	0.000+00	2.105-02	2.368-02	2.368-02	2.368-02	040007	S02
0.000+00	2.894-02	3.684-02	0.000+00	0.000+00	4.736-02	8.421-02	8.421-02	8.421-02	040008	S02
8.947-02	1.105-01	1.578-01	1.631-01	1.631-01	1.105-01	5.263-02	5.263-02	5.263-02	040009	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	1.591-02	1.591-02	1.591-02	040010	S02
0.000+00	2.662-02	1.856-02	0.000+00	0.000+00	2.122-02	2.387-02	2.387-02	2.387-02	040011	S02
0.000+00	2.917-02	3.713-02	0.000+00	0.000+00	4.774-02	7.957-02	7.957-02	7.957-02	040012	S02
8.488-02	1.061-01	1.591-01	1.697-01	1.697-01	1.167-01	6.366-02	6.366-02	6.366-02	040013	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	1.591-02	1.591-02	1.591-02	040014	S02
0.000+00	2.662-02	1.856-02	0.000+00	0.000+00	2.122-02	2.387-02	2.387-02	2.387-02	040015	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	1.591-02	1.591-02	1.591-02	040016	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	2.387-02	2.387-02	2.387-02	040017	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	2.387-02	2.387-02	2.387-02	040018	S02

TABLE A8. (CONTINUED)

0.000+00	2.917-02	3.713-02	0.000+00	4.774-02	7.957-02	040019	S02
8.488-02	1.061-01	1.591-01	1.697-01	1.167-01	6.366-02	040020	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	1.591-02	040021	S02
0.000+00	2.662-02	1.856-02	0.000+00	2.122-02	2.387-02	040022	S02
0.000+00	2.917-02	3.713-02	0.000+00	4.774-02	7.957-02	040023	S02
8.488-02	1.061-01	1.591-01	1.697-01	1.167-01	6.366-02	040024	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	6.619-03	040025	S02
0.000+00	1.793-02	1.191-02	0.000+00	2.223-02	2.501-02	040026	S02
0.000+00	3.057-02	4.393-02	0.000+00	5.002-02	5.823-02	040027	S02
7.887-02	1.011-01	1.717-01	1.728-01	1.373-01	7.172-02	040028	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	5.586-03	040029	S02
0.000+00	1.675-02	1.147-02	0.000+00	2.234-02	2.513-02	040030	S02
0.000+00	3.072-02	4.469-02	0.000+00	5.027-02	5.586-02	040031	S02
7.821-02	1.005-01	1.731-01	1.731-01	1.396-01	7.262-02	040032	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	5.586-03	040033	S02
0.000+00	1.675-02	1.147-02	0.000+00	2.234-02	2.513-02	040034	S02
0.000+00	3.072-02	4.469-02	0.000+00	5.027-02	5.586-02	040035	S02
7.821-02	1.005-01	1.731-01	1.731-01	1.396-01	7.262-02	040036	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	5.586-03	040037	S02
0.000+00	1.675-02	1.147-02	0.000+00	2.234-02	2.513-02	040038	S02
0.000+00	3.072-02	4.469-02	0.000+00	5.027-02	5.586-02	040039	S02
7.821-02	1.005-01	1.731-01	1.731-01	1.396-01	7.262-02	040040	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	5.474-03	040041	S02
0.000+00	1.652-02	1.107-02	0.000+00	2.228-02	2.514-02	040042	S02
0.000+00	3.087-02	4.481-02	0.000+00	5.042-02	5.564-02	040043	S02
7.817-02	1.002-01	1.722-01	1.735-01	1.404-01	7.321-02	040044	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040045	S02
0.000+00	0.000+00	6.369-03	0.000+00	1.930-02	2.547-02	040046	S02
0.000+00	3.821-02	5.095-02	0.000+00	5.732-02	4.458-02	040047	S02
7.643-02	8.280-02	1.273-01	1.910-01	1.783-01	1.019-01	040048	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040049	S02
0.000+00	0.000+00	6.369-03	0.000+00	1.930-02	2.547-02	040050	S02
0.000+00	3.821-02	5.095-02	0.000+00	5.732-02	4.458-02	040051	S02
7.643-02	8.280-02	1.273-01	1.910-01	1.783-01	1.019-01	040052	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040053	S02
0.000+00	0.000+00	6.369-03	0.000+00	1.930-02	2.547-02	040054	S02
0.000+00	3.821-02	5.095-02	0.000+00	5.732-02	4.458-02	040055	S02
7.643-02	8.280-02	1.273-01	1.910-01	1.783-01	1.019-01	040056	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040057	S02

TABLE A8. (CONTINUED)

0.000+00	0.000+00	6.369-03	0.000+00	1.930-02	2.547-02	040058	S02
0.000+00	3.821-02	5.095-02	0.000+00	5.732-02	4.458-02	040059	S02
7.643-02	8.280-02	1.273-01	1.910-01	1.783-01	1.019-01	040060	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040061	S02
0.000+00	0.000+00	4.713-03	0.000+00	1.424-02	1.972-02	040062	S02
0.000+00	3.178-02	4.646-02	0.000+00	5.292-02	3.999-02	040063	S02
0.000+00	7.581-02	8.573-02	1.415-01	1.862-01	1.104-01	040064	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040065	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040066	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040067	S02
0.000+00	1.346-02	3.367-02	0.000+00	4.040-02	2.693-02	040068	S02
7.407-02	9.427-02	1.818-01	1.885-01	2.089-01	1.346-01	040069	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040070	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040071	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040072	S02
0.000+00	1.346-02	3.367-02	0.000+00	4.040-02	2.693-02	040073	S02
7.407-02	9.427-02	1.818-01	1.885-01	2.089-01	1.346-01	040074	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040075	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040076	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040077	S02
0.000+00	1.165-02	2.289-02	0.000+00	2.981-02	2.065-02	040078	S02
6.204-02	9.447-02	2.100-01	1.842-01	2.237-01	1.406-01	040079	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040080	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040081	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040082	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040083	S02
0.000+00	3.679-02	9.489-02	2.700-01	1.751-01	1.532-01	040084	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040085	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040086	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040087	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040088	S02
0.000+00	3.555-02	9.331-02	2.713-01	1.738-01	1.541-01	040089	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040090	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040091	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040092	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040093	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040094	S02
7.936-03	5.575-02	3.015-01	1.428-01	3.174-01	1.746-01	040095	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040096	S02

TABLE A8. (CONTINUED)

0.166E-02	0.167E-02	0.168E-02	0.169E-02	0.170E-02	0.171E-02	060005	S02
0.172E-02	0.173E-02	0.174E-02	0.175E-02	0.176E-02	0.177E-02	060006	S02
0.178E-02	0.179E-02	0.180E-02	0.181E-02	0.182E-02	0.183E-02	060007	S02
0.184E-02	0.185E-02	0.186E-02	0.187E-02	0.188E-02	0.189E-02	060008	S02
0.190E-02	0.191E-02	0.192E-02	0.193E-02	0.194E-02	0.195E-02	060009	S02
0.196E-02	0.197E-02	0.198E-02	0.199E-02	0.200E-02	0.201E-02	060010	S02
0.202E-02	0.203E-02	0.204E-02	0.205E-02	0.206E-02	0.207E-02	060011	S02
0.208E-02	0.209E-02	0.210E-02	0.211E-02	0.212E-02	0.213E-02	060012	S02
0.214E-02	0.215E-02	0.216E-02	0.217E-02	0.218E-02	0.219E-02	060013	S02
0.220E-02	0.221E-02	0.222E-02	0.223E-02	0.224E-02	0.225E-02	060014	S02
0.226E-02	0.227E-02	0.228E-02	0.229E-02	0.230E-02	0.231E-02	060015	S02
0.232E-02	0.233E-02	0.234E-02	0.235E-02	0.236E-02	0.237E-02	060016	S02
0.238E-02	0.239E-02	0.240E-02	0.241E-02	0.242E-02	0.243E-02	060017	S02
0.244E-02	0.245E-02	0.246E-02	0.247E-02	0.248E-02	0.249E-02	060018	S02
0.250E-02	0.251E-02	0.252E-02	0.253E-02	0.254E-02	0.255E-02	060019	S02
0.256E-02	0.257E-02	0.258E-02	0.259E-02	0.260E-02	0.261E-02	060020	S02
0.262E-02	0.263E-02	0.264E-02	0.265E-02	0.266E-02	0.267E-02	060021	S02
0.268E-02	0.269E-02	0.270E-02	0.271E-02	0.272E-02	0.273E-02	060022	S02

070001	070002	070003	070004	070005	070006	070007	070008	070009	070010	070011	070012	070013	070014	070015	070016	070017	070018
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00
2.7E+01	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00

ALUMINUM LIBRARY 07 FAST S02

DATA TAKEN FROM UNC5139

TABLE A8. (CONTINUED)

6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070019	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070020	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070021	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070022	S02
ALUMINUM LIBRARY 07 SLOW S02								
DATA TAKEN FROM UNC5139								
7	126	2.7E+01						
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070001	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070002	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070003	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070004	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070005	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070006	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070007	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070008	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070009	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070010	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070011	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070012	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070013	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070014	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070015	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070016	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070017	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070018	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070019	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070020	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070021	S02
6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	6.400+00	070022	S02
ALUMINUM LIBRARY 08 FAST S02								
DATA TAKEN FROM UNC 5139								
8	9	2.70+01						
1.00+01	8.00+00	6.50+00	5.50+00	4.50+00	3.75+00	3.75+00	080001	S02
3.25+00	2.75+00	2.25+00	1.75+00	1.25+00	7.50-01	7.50-01	080002	S02
2.50-01							080003	S02
0.000+00	3.906-02	0.000+00	3.125-02	1.250-01	0.000+00	0.000+00	080004	S02
0.000+00	0.000+00	1.094-01	1.563-01	1.484-01	0.000+00	0.000+00	080005	S02
3.906-01							080006	S02
							080007	S02

TABLE A8. (CONTINUED)

0.000+00	3.906-02	0.000+00	3.125-02	1.250-01	0.000+00	080008	S02
0.000+00	0.000+00	1.094-01	1.563-01	1.484-01	0.000+00	080009	S02
3.906-01						080010	S02
0.000+00	3.906-02	0.000+00	3.125-02	1.250-01	0.000+00	080011	S02
0.000+00	0.000+00	1.094-01	1.563-01	1.484-01	0.000+00	080012	S02
3.906-01						080013	S02
0.000+00	3.906-02	0.000+00	3.125-02	1.250-01	0.000+00	080014	S02
0.000+00	0.000+00	1.094-01	1.563-01	1.484-01	0.000+00	080015	S02
3.906-01						080016	S02
0.000+00	3.906-02	0.000+00	3.125-02	1.250-01	0.000+00	080017	S02
0.000+00	0.000+00	1.094-01	1.563-01	1.484-01	0.000+00	080018	S02
3.906-01						080019	S02
0.000+00	3.906-02	0.000+00	3.125-02	1.250-01	0.000+00	080020	S02
0.000+00	0.000+00	1.094-01	1.563-01	1.484-01	0.000+00	080021	S02
3.906-01						080022	S02
0.000+00	3.906-02	0.000+00	3.125-02	1.250-01	0.000+00	080023	S02
0.000+00	0.000+00	1.094-01	1.563-01	1.484-01	0.000+00	080024	S02
3.906-01						080025	S02
0.000+00	3.906-02	0.000+00	3.125-02	1.250-01	0.000+00	080026	S02
0.000+00	0.000+00	1.094-01	1.563-01	1.484-01	0.000+00	080027	S02
3.906-01						080028	S02
0.000+00	3.906-02	0.000+00	3.125-02	1.250-01	0.000+00	080029	S02
0.000+00	0.000+00	1.094-01	1.563-01	1.484-01	0.000+00	080030	S02
3.906-01						080031	S02

ALUMINUM LIBRARY 08 SLOW S02

DATA TAKEN FROM UNC 5139

8	1	2.70+01				080001	S02
1.00+01	8.00+00	6.50+00	5.50+00	4.50+00	3.75+00	080002	S02
3.25+00	2.75+00	2.25+00	1.75+00	1.25+00	7.50-01	080003	S02
2.50-01						080004	S02
0.000+00	3.906-02	0.000+00	3.125-02	1.250-01	0.000+00	080005	S02
0.000+00	0.000+00	1.094-01	1.563-01	1.484-01	0.000+00	080006	S02
3.906-01						080007	S02

TABLE A9. COHORT CROSS SECTION LIBRARIES FOR IRON

IRON LIBRARY 09 H01		DATA TAKEN FROM ENDF-B			1			20			1			
9	23													
0.000+00	8.601-01	2.112+00	2.706+00	3.013+00	3.410+00	090001	H01							
3.664+00	3.766+00	4.000+00	5.000+00	6.000+00	7.000+00	090002	H01							
8.000+00	9.000+00	1.000+01	1.100+01	1.200+01	1.300+01	090003	H01							
1.400+01	1.500+01	1.200+01	1.100+01	1.000+01	9.000+00	090004	H01							
1.500+01	1.300+01	6.000+00	5.000+00	4.000+00	3.700+00	090005	H01							
8.000+00	7.000+00	2.700+00	2.550+00	2.400+00	2.160+00	090006	H01							
3.400+00	3.020+00	1.200+00	1.020+00	8.650-01	0.000+00	090007	H01							
2.120+00	1.800+00	0.000+00	0.000+00	0.000+00	0.000+00	090008	H01							
0.000+00	0.000+00	6.970-05	2.030-04	5.840-04	1.660-03	090009	H01							
0.000+00	0.000+00	3.410-02	8.820-02	2.160-01	4.830-01	090010	H01							
4.640-03	1.270-02	1.000+00	0.000+00	0.000+00	0.000+00	090011	H01							
8.850-01	1.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090012	H01							
0.000+00	0.000+00	5.800-04	1.650-03	4.640-03	1.270-02	090013	H01							
0.000+00	0.000+00	2.160-01	4.830-01	8.850-01	1.000+00	090014	H01							
3.410-02	8.820-02	0.000+00	0.000+00	0.000+00	0.000+00	090015	H01							
1.000+00	1.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090016	H01							
0.000+00	0.000+00	1.650-03	4.630-03	1.270-02	3.410-02	090017	H01							
0.000+00	0.000+00	4.830-01	8.850-01	1.000+00	1.000+00	090018	H01							
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090019	H01							
0.000+00	0.000+00	4.600-03	1.270-02	3.410-02	8.820-02	090020	H01							
0.000+00	0.000+00	8.850-01	1.000+00	1.000+00	1.000+00	090021	H01							
2.160-01	4.830-01	0.000+00	0.000+00	0.000+00	0.000+00	090022	H01							
1.000+00	1.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090023	H01							
0.000+00	0.000+00	1.260-02	3.400-02	8.810-02	2.160-01	090024	H01							
0.000+00	0.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090025	H01							
4.830-01	8.850-01	0.000+00	0.000+00	0.000+00	0.000+00	090026	H01							
1.000+00	1.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090027	H01							
0.000+00	0.000+00	3.380-02	8.790-02	2.160-01	4.830-01	090028	H01							
0.000+00	0.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090029	H01							
8.850-01	1.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090030	H01							
0.000+00	0.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090031	H01							
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090032	H01							
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090033	H01							
0.000+00	0.000+00	8.730-02	2.150-01	4.820-01	8.850-01	090034	H01							
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090035	H01							
1.000+00	1.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090036	H01							
1.000+00	1.000+00	0.000+00	0.000+00	0.000+00	0.000+00	090037	H01							

TABLE A9. (CONTINUED)

1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090077	H01
0.000+00	9.890-01	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090078	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090079	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090080	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090081	H01
0.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090082	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090083	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090084	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090085	H01
0.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090086	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090087	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090088	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090089	H01
0.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090090	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090091	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090092	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090093	H01
0.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090094	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090095	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090096	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090097	H01
0.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090098	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090099	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090100	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090101	H01
0.260E 01	0.293E 01	0.312E 01	0.310E 01	0.306E 01	0.302E 01	0.302E 01	0.302E 01	0.302E 01	0.302E 01	010001	S02
0.298E 01	0.295E 01	0.293E 01	0.291E 01	0.290E 01	0.288E 01	0.288E 01	0.288E 01	0.288E 01	0.288E 01	010002	S02
0.289E 01	0.292E 01	0.294E 01	0.296E 01	0.297E 01	0.299E 01	0.299E 01	0.299E 01	0.299E 01	0.299E 01	010003	S02
0.301E 01	0.302E 01	0.304E 01	0.306E 01	0.309E 01	0.312E 01	0.312E 01	0.312E 01	0.312E 01	0.312E 01	010004	S02
0.314E 01	0.317E 01	0.323E 01	0.327E 01	0.327E 01	0.328E 01	0.328E 01	0.328E 01	0.328E 01	0.328E 01	010005	S02
0.331E 01	0.333E 01	0.334E 01	0.336E 01	0.338E 01	0.340E 01	0.340E 01	0.340E 01	0.340E 01	0.340E 01	010006	S02
0.341E 01	0.342E 01	0.343E 01	0.345E 01	0.346E 01	0.348E 01	0.348E 01	0.348E 01	0.348E 01	0.348E 01	010007	S02
0.349E 01	0.351E 01	0.352E 01	0.354E 01	0.355E 01	0.357E 01	0.357E 01	0.357E 01	0.357E 01	0.357E 01	010008	S02
0.360E 01	0.362E 01	0.365E 01	0.368E 01	0.370E 01	0.373E 01	0.373E 01	0.373E 01	0.373E 01	0.373E 01	010009	S02
0.375E 01	0.378E 01	0.379E 01	0.381E 01	0.383E 01	0.384E 01	0.384E 01	0.384E 01	0.384E 01	0.384E 01	010010	S02
										010011	S02

IRON LIBRARY 01 FAST S02
DATA TAKEN FROM ENDF-B

1 126 5.6E+01

TABLE A9. (CONTINUED)

0.386E 01	0.387E 01	0.388E 01	0.389E 01	0.389E 01	0.389E 01	010012	S02
0.388E 01	0.387E 01	0.386E 01	0.385E 01	0.383E 01	0.382E 01	010013	S02
0.381E 01	0.380E 01	0.378E 01	0.377E 01	0.377E 01	0.377E 01	010014	S02
0.376E 01	0.376E 01	0.376E 01	0.377E 01	0.378E 01	0.379E 01	010015	S02
0.381E 01	0.383E 01	0.374E 01	0.350E 01	0.334E 01	0.332E 01	010016	S02
0.334E 01	0.337E 01	0.336E 01	0.331E 01	0.323E 01	0.314E 01	010017	S02
0.310E 01	0.321E 01	0.345E 01	0.344E 01	0.320E 01	0.308E 01	010018	S02
0.308E 01	0.311E 01	0.307E 01	0.289E 01	0.268E 01	0.277E 01	010019	S02
0.309E 01	0.295E 01	0.265E 01	0.279E 01	0.239E 01	0.254E 01	010020	S02
0.244E 01	0.229E 01	0.348E 01	0.290E 01	0.248E 01	0.324E 01	010021	S02
0.394E 01	0.271E 01	0.468E 01	0.467E 01	0.853E 01	0.687E 01	010022	S02

IRON LIBRARY 02 FAST S02
DATA TAKEN FROM ENDF-B
2 126 5.6E+01

0.129E 01	0.129E+01	0.129E+01	0.130E 01	0.130E 01	0.130E 01	020001	S02
0.131E+01	0.131E+01	0.131E 01	0.131E 01	0.131E 01	0.132E 01	020002	S02
0.132E 01	0.132E 01	0.132E 01	0.132E 01	0.132E 01	0.132E 01	020003	S02
0.132E 01	0.132E 01	0.132E 01	0.133E 01	0.133E 01	0.133E 01	020004	S02
0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	0.133E 01	020005	S02
0.133E 01	0.133E 01	0.133E 01	0.134E 01	0.134E 01	0.134E 01	020006	S02
0.134E 01	0.134E 01	0.134E 01	0.134E 01	0.134E 01	0.134E 01	020007	S02
0.134E 01	0.134E 01	0.135E 01	0.135E 01	0.135E 01	0.135E 01	020008	S02
0.135E 01	0.135E 01	0.135E 01	0.135E 01	0.135E 01	0.135E 01	020009	S02
0.135E 01	0.135E 01	0.135E 01	0.135E 01	0.135E 01	0.135E 01	020010	S02
0.135E 01	0.135E 01	0.135E 01	0.135E 01	0.135E 01	0.135E 01	020011	S02
0.135E 01	0.135E 01	0.135E 01	0.135E 01	0.135E 01	0.135E 01	020012	S02
0.134E 01	0.134E 01	0.134E 01	0.134E 01	0.134E 01	0.134E 01	020013	S02
0.134E 01	0.134E 01	0.134E 01	0.135E 01	0.137E 01	0.138E 01	020014	S02
0.139E 01	0.141E 01	0.142E 01	0.143E 01	0.145E 01	0.147E 01	020015	S02
0.149E 01	0.145E 01	0.142E 01	0.136E 01	0.119E 01	0.102E 01	020016	S02
0.106E 01	0.108E 01	0.106E 01	0.101E 01	0.942E 00	0.921E 00	020017	S02
0.896E 00	0.951E 00	0.105E 01	0.937E 00	0.976E 00	0.971E 00	020018	S02
0.918E 00	0.786E 00	0.734E 00	0.690E 00	0.603E 00	0.637E 00	020019	S02
0.683E 00	0.648E 00	0.531E 00	0.437E 00	0.361E 00	0.390E 00	020020	S02
0.303E 00	0.100E 00	0.118E-01	0.101E-01	0.849E-02	0.679E-02	020021	S02
0.509E-02	0.339E-02	0.169E-02	0.424E-03	0.000E 00	0.000E 00	020022	S02

TABLE A9. (CONTINUED)

0.000+00	1.668-02	0.000+00	2.457-02	0.000+00	0.000+00	0.000+00	040013	S02
3.048-02	0.000+00	0.000+00	4.071-02	0.000+00	0.000+00	0.000+00	040014	S02
6.959-02	1.238-01	0.000+00	3.341-01	0.000+00	0.000+00	3.495-01	040015	S02
0.000+00	0.000+00	0.000+00	0.000+00	2.803-03	8.228-03	0.000+00	040016	S02
0.000+00	1.645-02	0.000+00	2.344-02	0.000+00	0.000+00	0.000+00	040017	S02
3.530-02	0.000+00	0.000+00	4.001-02	0.000+00	0.000+00	0.000+00	040018	S02
7.334-02	1.238-01	0.000+00	3.102-01	0.000+00	3.664-01	0.000+00	040019	S02
0.000+00	0.000+00	0.000+00	0.000+00	2.806-03	8.108-03	0.000+00	040020	S02
0.000+00	1.570-02	0.000+00	2.191-02	0.000+00	0.000+00	0.000+00	040021	S02
3.707-02	0.000+00	0.000+00	3.980-02	0.000+00	0.000+00	0.000+00	040022	S02
7.801-02	1.266-01	0.000+00	2.906-01	0.000+00	3.793-01	0.000+00	040023	S02
0.000+00	0.000+00	0.000+00	0.000+00	2.657-03	7.318-03	0.000+00	040024	S02
0.000+00	1.383-02	0.000+00	2.023-02	0.000+00	0.000+00	0.000+00	040025	S02
3.794-02	0.000+00	0.000+00	3.931-02	0.000+00	0.000+00	0.000+00	040026	S02
8.242-02	1.312-01	0.000+00	2.773-01	0.000+00	3.877-01	0.000+00	040027	S02
0.000+00	0.000+00	0.000+00	0.000+00	2.291-03	6.483-03	0.000+00	040028	S02
0.000+00	1.213-02	0.000+00	1.849-02	0.000+00	0.000+00	0.000+00	040029	S02
3.850-02	0.000+00	0.000+00	3.906-02	0.000+00	0.000+00	0.000+00	040030	S02
8.525-02	1.361-01	0.000+00	2.695-01	0.000+00	3.921-01	0.000+00	040031	S02
0.000+00	0.000+00	0.000+00	0.000+00	3.982-04	5.696-03	0.000+00	040032	S02
0.000+00	1.101-02	0.000+00	1.716-02	0.000+00	0.000+00	0.000+00	040033	S02
3.883-02	0.000+00	0.000+00	3.908-02	0.000+00	0.000+00	0.000+00	040034	S02
8.780-02	1.395-01	0.000+00	2.644-01	0.000+00	3.961-01	0.000+00	040035	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	4.473-03	0.000+00	040036	S02
0.000+00	9.066-03	0.000+00	1.538-02	0.000+00	0.000+00	0.000+00	040037	S02
3.844-02	0.000+00	0.000+00	3.843-02	0.000+00	0.000+00	0.000+00	040038	S02
9.027-02	1.443-01	0.000+00	2.592-01	0.000+00	4.004-01	0.000+00	040039	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040040	S02
0.000+00	6.957-03	0.000+00	1.338-02	0.000+00	0.000+00	0.000+00	040041	S02
3.732-02	0.000+00	0.000+00	3.724-02	0.000+00	0.000+00	0.000+00	040042	S02
9.300-02	1.505-01	0.000+00	2.547-01	0.000+00	4.069-01	0.000+00	040043	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040044	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040045	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040046	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040047	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040048	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040049	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040050	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040051	S02

TABLE A9. (CONTINUED)

0.000+00	0.000+00	C.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040130	S02
1.000+00									040131	S02
IRON LIBRARY 05 FAST S02										
DATA TAKEN FROM ENDF-B										
5 126 5.6E+01										
0.260E 01	0.293E 01	0.312E 01	0.310E 01	0.306E 01	0.302E 01	0.302E 01	0.302E 01	0.302E 01	050001	S02
0.298E 01	0.295E 01	0.293E 01	0.291E 01	0.290E 01	0.288E 01	0.288E 01	0.288E 01	0.288E 01	050002	S02
0.289E 01	0.292E 01	0.294E 01	0.296E 01	0.297E 01	0.299E 01	0.299E 01	0.299E 01	0.299E 01	050003	S02
0.301E 01	0.302E 01	0.304E 01	0.306E 01	0.309E 01	0.312E 01	0.312E 01	0.312E 01	0.312E 01	050004	S02
0.314E 01	0.317E 01	0.323E 01	0.327E 01	0.327E 01	0.328E 01	0.328E 01	0.328E 01	0.328E 01	050005	S02
0.331E 01	0.333E 01	0.334E 01	0.336E 01	0.338E 01	0.340E 01	0.340E 01	0.340E 01	0.340E 01	050006	S02
0.341E 01	0.342E 01	0.343E 01	0.345E 01	0.346E 01	0.348E 01	0.348E 01	0.348E 01	0.348E 01	050007	S02
0.349E 01	0.351E 01	0.352E 01	0.354E 01	0.355E 01	0.357E 01	0.357E 01	0.357E 01	0.357E 01	050008	S02
0.360E 01	0.362E 01	0.365E 01	0.368E 01	0.370E 01	0.373E 01	0.373E 01	0.373E 01	0.373E 01	050009	S02
0.375E 01	0.378E 01	0.379E 01	0.381E 01	0.383E 01	0.384E 01	0.384E 01	0.384E 01	0.384E 01	050010	S02
0.386E 01	0.387E 01	0.388E 01	0.389E 01	0.389E 01	0.389E 01	0.389E 01	0.389E 01	0.389E 01	050011	S02
0.388E 01	0.387E 01	0.386E 01	0.385E 01	0.383E 01	0.382E 01	0.382E 01	0.382E 01	0.382E 01	050012	S02
0.381E 01	0.380E 01	0.378E 01	0.377E 01	0.377E 01	0.377E 01	0.377E 01	0.377E 01	0.377E 01	050013	S02
0.376E 01	0.376E 01	0.376E 01	0.377E 01	0.378E 01	0.379E 01	0.379E 01	0.379E 01	0.379E 01	050014	S02
0.381E 01	0.383E 01	0.374E 01	0.350E 01	0.334E 01	0.332E 01	0.332E 01	0.332E 01	0.332E 01	050015	S02
0.334E 01	0.337E 01	0.336E 01	0.331E 01	0.323E 01	0.314E 01	0.314E 01	0.314E 01	0.314E 01	050016	S02
0.310E 01	0.321E 01	0.345E 01	0.344E 01	0.320E 01	0.308E 01	0.308E 01	0.308E 01	0.308E 01	050017	S02
0.308E 01	0.311E 01	0.307E 01	0.289E 01	0.268E 01	0.277E 01	0.277E 01	0.277E 01	0.277E 01	050018	S02
0.309E 01	0.295E 01	0.265E 01	0.279E 01	0.239E 01	0.254E 01	0.254E 01	0.254E 01	0.254E 01	050019	S02
0.244E 01	0.229E 01	0.348E 01	0.290E 01	0.248E 01	0.324E 01	0.324E 01	0.324E 01	0.324E 01	050020	S02
0.394E 01	0.271E 01	0.468E 01	0.467E 01	0.853E 01	0.687E 01	0.687E 01	0.687E 01	0.687E 01	050021	S02
									050022	S02
IRON LIBRARY 05 SLOW S02										
DATA TAKEN FROM ENDF-B										
5 126 5.6E+01										
0.903E 01	0.905E 01	0.907E 01	0.910E 01	0.912E 01	0.915E 01	0.915E 01	0.915E 01	0.915E 01	050001	S02
0.917E 01	0.920E 01	0.922E 01	0.925E 01	0.928E 01	0.930E 01	0.930E 01	0.930E 01	0.930E 01	050002	S02
0.933E 01	0.935E 01	0.937E 01	0.939E 01	0.941E 01	0.943E 01	0.943E 01	0.943E 01	0.943E 01	050003	S02
0.945E 01	0.948E 01	0.950E 01	0.952E 01	0.954E 01	0.956E 01	0.956E 01	0.956E 01	0.956E 01	050004	S02
0.958E 01	0.961E 01	0.963E 01	0.966E 01	0.968E 01	0.971E 01	0.971E 01	0.971E 01	0.971E 01	050005	S02
0.973E 01	0.976E 01	0.979E 01	0.982E 01	0.984E 01	0.987E 01	0.987E 01	0.987E 01	0.987E 01	050006	S02
0.990E 01	0.992E 01	0.995E 01	0.997E 01	0.999E 01	1.000E 02	1.000E 02	1.000E 02	1.000E 02	050007	S02
0.100E 02	0.100E 02	0.100E 02	0.101E 02	0.101E 02	0.101E 02	0.101E 02	0.101E 02	0.101E 02	050008	S02
									050009	S02

TABLE A9. (CONTINUED)

0.101E 02	0.101E 02	0.102E 02	0.102E 02	0.102E 02	0.102E 02	0.102E 02	0.102E 02	0.102E 02	0.102E 02	050010	S02		
0.102E 02	0.103E 02	0.103E 02	0.103E 02	0.103E 02	0.103E 02	0.103E 02	0.103E 02	0.103E 02	0.104E 02	050011	S02		
0.104E 02	0.104E 02	0.104E 02	0.104E 02	0.105E 02	0.105E 02	0.105E 02	0.105E 02	0.105E 02	0.105E 02	050012	S02		
0.105E 02	0.105E 02	0.106E 02	0.106E 02	0.106E 02	0.106E 02	0.106E 02	0.106E 02	0.106E 02	0.107E 02	050013	S02		
0.109E 02	0.108E 02	0.107E 02	0.107E 02	0.107E 02	0.107E 02	0.107E 02	0.107E 02	0.107E 02	0.107E 02	050014	S02		
0.108E 02	0.108E 02	0.108E 02	0.108E 02	0.109E 02	0.109E 02	0.109E 02	0.109E 02	0.109E 02	0.109E 02	050015	S02		
0.109E 02	0.110E 02	0.110E 02	0.110E 02	0.110E 02	0.110E 02	0.110E 02	0.110E 02	0.110E 02	0.111E 02	050016	S02		
0.111E 02	0.111E 02	0.111E 02	0.111E 02	0.112E 02	0.112E 02	0.112E 02	0.112E 02	0.112E 02	0.112E 02	050017	S02		
0.112E 02	0.113E 02	0.113E 02	0.113E 02	0.113E 02	0.113E 02	0.113E 02	0.113E 02	0.113E 02	0.114E 02	050018	S02		
0.114E 02	0.114E 02	0.114E 02	0.114E 02	0.114E 02	0.114E 02	0.114E 02	0.114E 02	0.114E 02	0.114E 02	050019	S02		
0.114E 02	0.114E 02	0.114E 02	0.114E 02	0.114E 02	0.114E 02	0.114E 02	0.114E 02	0.114E 02	0.114E 02	050020	S02		
0.114E 02	0.114E 02	0.113E 02	0.113E 02	0.113E 02	0.113E 02	0.113E 02	0.113E 02	0.113E 02	0.114E 02	050021	S02		
0.114E 02	0.114E 02	0.113E 02	0.113E 02	0.113E 02	0.113E 02	0.113E 02	0.113E 02	0.113E 02	0.115E 02	050022	S02		
IRON LIBRARY 06 FAST S02													
DATA TAKEN FROM ENDF-B													
6	126	5.6E+01										060001	S02
0.226E-03	0.229E-03	0.235E-03	0.241E-03	0.246E-03	0.252E-03	0.258E-03	0.262E-03	0.265E-03	0.272E-03	0.276E-03	060002	S02	
0.280E-03	0.284E-03	0.287E-03	0.290E-03	0.292E-03	0.294E-03	0.296E-03	0.298E-03	0.301E-03	0.303E-03	0.309E-03	060003	S02	
0.311E-03	0.313E-03	0.318E-03	0.321E-03	0.321E-03	0.323E-03	0.325E-03	0.328E-03	0.331E-03	0.334E-03	0.340E-03	060004	S02	
0.343E-03	0.346E-03	0.349E-03	0.352E-03	0.352E-03	0.355E-03	0.359E-03	0.362E-03	0.366E-03	0.373E-03	0.377E-03	060005	S02	
0.385E-03	0.389E-03	0.393E-03	0.397E-03	0.397E-03	0.402E-03	0.406E-03	0.410E-03	0.415E-03	0.425E-03	0.429E-03	060006	S02	
0.436E-03	0.441E-03	0.448E-03	0.455E-03	0.455E-03	0.463E-03	0.470E-03	0.476E-03	0.483E-03	0.489E-03	0.504E-03	060007	S02	
0.519E-03	0.527E-03	0.535E-03	0.543E-03	0.543E-03	0.552E-03	0.562E-03	0.571E-03	0.581E-03	0.591E-03	0.614E-03	060008	S02	
0.638E-03	0.650E-03	0.664E-03	0.678E-03	0.678E-03	0.693E-03	0.708E-03	0.724E-03	0.742E-03	0.779E-03	0.800E-03	060009	S02	
0.844E-03	0.869E-03	0.895E-03	0.923E-03	0.923E-03	0.953E-03	0.985E-03	1.02E-02	1.06E-02	1.11E-02	1.19E-02	060010	S02	
1.53E-02	1.69E-02	1.87E-02	2.08E-02	2.08E-02	2.35E-02	2.68E-02	3.08E-02	3.47E-02	3.82E-02	4.19E-02	060011	S02	
5.28E-02	5.41E-02	5.53E-02	5.62E-02	5.62E-02	5.62E-01	5.36E-01	5.28E-02	5.41E-02	5.53E-02	5.62E-01	060012	S02	

TABLE A9. (CONTINUED)

1.00+01	8.00+00	6.50+00	5.50+00	4.50+00	3.75+00	080002	S02
3.25+00	2.75+00	2.25+00	1.75+00	1.25+00	7.50-01	080003	S02
2.50-01						080004	S02
8.397-03	1.519-01	4.998-02	4.998-02	0.000+00	9.196-02	080005	S02
0.000+00	1.080-01	0.000+00	2.399-01	0.000+00	0.000+00	080006	S02
2.999-01						080007	S02
8.397-03	1.519-01	4.998-02	4.998-02	0.000+00	9.196-02	080008	S02
0.000+00	1.080-01	0.000+00	2.399-01	0.000+00	0.000+00	080009	S02
2.999-01						080010	S02
8.397-03	1.519-01	4.998-02	4.998-02	0.000+00	9.196-02	080011	S02
0.000+00	1.080-01	0.000+00	2.399-01	0.000+00	0.000+00	080012	S02
2.999-01						080013	S02
8.397-03	1.519-01	4.998-02	4.998-02	0.000+00	9.196-02	080014	S02
0.000+00	1.080-01	0.000+00	2.399-01	0.000+00	0.000+00	080015	S02
2.999-01						080016	S02
8.397-03	1.519-01	4.998-02	4.998-02	0.000+00	9.196-02	080017	S02
0.000+00	1.080-01	0.000+00	2.399-01	0.000+00	0.000+00	080018	S02
2.999-01						080019	S02
8.397-03	1.519-01	4.998-02	4.998-02	0.000+00	9.196-02	080020	S02
0.000+00	1.080-01	0.000+00	2.399-01	0.000+00	0.000+00	080021	S02
2.999-01						080022	S02
8.397-03	1.519-01	4.998-02	4.998-02	0.000+00	9.196-02	080023	S02
0.000+00	1.080-01	0.000+00	2.399-01	0.000+00	0.000+00	080024	S02
2.999-01						080025	S02
8.397-03	1.519-01	4.998-02	4.998-02	0.000+00	9.196-02	080026	S02
0.000+00	1.080-01	0.000+00	2.399-01	0.000+00	0.000+00	080027	S02
2.999-01						080028	S02
8.397-03	1.519-01	4.998-02	4.998-02	0.000+00	9.196-02	080029	S02
0.000+00	1.080-01	0.000+00	2.399-01	0.000+00	0.000+00	080030	S02
2.999-01						080031	S02
IRON LIBRARY 08 SLOW S02							
DATA TAKEN FROM UNC 5139 + REACTOR HANDBOOK							
8	1	5.60+01					
1.00+01	8.00+00	6.50+00	5.50+00	4.50+00	3.75+00	080001	S02
3.25+00	2.75+00	2.25+00	1.75+00	1.25+00	7.50-01	080002	S02
2.50-01						080003	S02
8.397-03	1.519-01	4.998-02	4.998-02	0.000+00	9.196-02	080004	S02
0.000+00	1.080-01	0.000+00	2.399-01	0.000+00	0.000+00	080005	S02
2.999-01						080006	S02
8.397-03	1.519-01	4.998-02	4.998-02	0.000+00	9.196-02	080007	S02
0.000+00	1.080-01	0.000+00	2.399-01	0.000+00	0.000+00	080008	S02
2.999-01						080009	S02

TABLE A10: COHORT CROSS SECTION LIBRARIES FOR URANIUM-235

URANIUM-235 LIBRARY 09 H01		DATA TAKEN FROM ENDF-B		1		21		1		090001		H01	
9	22	1	22	1	21	1	21	1	21	090001	090002	090003	090004
0.00+00	1.30-02	5.00-02	1.00+00	1.00+00	8.40-02	1.03-01	1.03-01	1.00+00	1.00+00	1.50-01	090005	090006	090007
1.73-01	2.35-01	2.70-01	1.00+00	1.00+00	4.00-01	6.00-01	6.00-01	1.00+00	1.00+00	1.00+00	090008	090009	090010
2.00+00	3.00+00	4.00+00	1.00+00	1.00+00	5.00+00	6.00+00	6.00+00	1.00+00	1.00+00	7.00+00	090011	090012	090013
8.00+00	9.00+00	1.00+01	1.00+00	1.00+00	8.00+00	7.00+00	7.00+00	1.00+00	1.00+00	6.00+00	090014	090015	090016
1.50+01	1.00+01	9.00+00	3.50+00	3.50+00	3.00+00	2.50+00	2.50+00	1.00+00	1.00+00	2.00+00	090017	090018	090019
5.00+00	4.00+00	9.00+01	9.00+01	9.00+01	7.50-01	5.00-01	5.00-01	1.00+00	1.00+00	4.00-01	090020	090021	090022
1.50+00	1.00+00	2.00-01	1.00-01	1.00-01	1.30-02	1.00+00	1.00+00	1.00+00	1.00+00	4.00-01	090023	090024	090025
3.00-01	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090026	090027	090028
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090029	090030	090031
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090032	090033	090034
1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	1.00+00	090035	090036	090037
0.00+00	0.00+00	0.00+00	0.00+00	0.00+00	1.400-02	1.400-02	1.400-02	1.400-02	1.400-02	1.400-02	090038	090039	090040
1.400-02	1.400-02	1.400-02	1.400-02	1.400-02	3.720-02	1.190-01	1.190-01	1.190-01	1.190-01	1.190-01	090041	090042	090043
1.190-01	1.190-01	1.210-01	1.210-01	1.210-01	1.270-01	1.470-01	1.470-01	1.270-01	1.270-01	2.170-01	090044	090045	090046
4.190-01	8.450-01	1.000+00	1.000+00	1.000+00	1.280-02	1.280-02	1.280-02	1.280-02	1.280-02	1.280-02	090047	090048	090049
0.00+00	0.00+00	1.280-02	1.280-02	1.280-02	3.400-02	1.090-01	1.090-01	1.090-01	1.090-01	1.090-01	090050	090051	090052
1.280-02	1.280-02	1.100-01	1.100-01	1.100-01	1.310-01	1.930-01	1.930-01	1.310-01	1.310-01	3.880-01	090053	090054	090055
1.090-01	1.000+00	1.000+00	1.000+00	1.000+00	9.520-03	9.520-03	9.520-03	9.520-03	9.520-03	9.520-03	090056	090057	090058
8.310-01	0.00+00	0.00+00	0.00+00	0.00+00	2.540-02	8.100-02	8.100-02	2.540-02	2.540-02	8.110-02	090059	090060	090061
0.00+00	0.00+00	9.520-03	9.520-03	9.520-03	1.530-01	3.420-01	3.420-01	1.530-01	1.530-01	8.110-01	090062	090063	090064
9.520-03	9.520-03	8.510-02	8.510-02	8.510-02	5.500-03	5.500-03	5.500-03	5.500-03	5.500-03	5.500-03	090065	090066	090067
8.190-02	1.000+00	1.000+00	1.000+00	1.000+00	1.470-02	4.680-02	4.680-02	1.470-02	1.470-02	4.730-02	090068	090069	090070
0.00+00	0.00+00	5.500-03	5.500-03	5.500-03	2.850-01	7.830-01	7.830-01	2.850-01	2.850-01	1.000+00	090071	090072	090073
5.500-03	5.970-02	1.060-01	1.060-01	1.060-01	3.640-03	3.640-03	3.640-03	3.640-03	3.640-03	3.640-03	090074	090075	090076
4.940-02	1.000+00	1.000+00	1.000+00	1.000+00	9.700-03	3.090-02	3.090-02	9.700-03	9.700-03	3.230-02	090077	090078	090079
1.000+00	0.00+00	0.00+00	0.00+00	0.00+00	7.540-01	1.000+00	1.000+00	7.540-01	7.540-01	1.000+00	090080	090081	090082
0.00+00	0.00+00	3.640-03	3.640-03	3.640-03	3.260-03	3.260-03	3.260-03	3.260-03	3.260-03	3.260-03	090083	090084	090085
0.00+00	3.640-03	3.640-03	3.640-03	3.640-03	8.700-03	2.770-02	2.770-02	8.700-03	8.700-03	3.240-02	090086	090087	090088
3.640-03	7.530-02	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090089	090090	090091
1.000+00	1.000+00	0.00+00	0.00+00	0.00+00	7.200-01	7.200-01	7.200-01	7.200-01	7.200-01	1.000+00	090092	090093	090094
0.00+00	0.00+00	3.260-03	3.260-03	3.260-03	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090095	090096	090097
3.260-03	3.260-03	1.960-01	1.960-01	1.960-01	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090098	090099	090100
5.790-02	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090101	090102	090103
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090104	090105	090106

TABLE A10. (CONTINUED)

0.000+00	0.000+00	2.200-02	2.750-02	3.300-02	3.850-02	090038	H01
4.400-02	4.950-02	5.490-02	7.690-02	2.040-01	2.170-01	090039	H01
2.260-01	3.060-01	7.350-01	1.000+00	1.000+00	1.000+00	090040	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090041	H01
0.000+00	0.000+00	2.760-02	3.310-02	3.870-02	4.420-02	090042	H01
4.970-02	5.530-02	6.080-02	9.950-02	2.980-01	3.240-01	090043	H01
4.940-01	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090044	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090045	H01
0.000+00	0.000+00	3.310-02	4.420-02	5.520-02	6.630-02	090046	H01
7.730-02	8.840-02	9.940-02	1.490-01	4.700-01	5.130-01	090047	H01
7.890-01	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090048	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090049	H01
0.000+00	0.000+00	4.000-02	5.140-02	6.290-02	7.430-02	090050	H01
8.750-02	9.710-02	1.090-01	1.660-01	6.110-01	6.870-01	090051	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090052	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090053	H01
0.000+00	0.000+00	5.140-02	6.290-02	7.430-02	8.570-02	090054	H01
9.710-02	1.090-01	1.200-01	1.940-01	6.690-01	8.330-01	090055	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090056	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090057	H01
0.000+00	0.000+00	6.880-02	8.750-02	1.060-01	1.250-01	090058	H01
1.440-01	1.630-01	1.810-01	2.750-01	7.940-01	1.000+00	090059	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090060	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090061	H01
0.000+00	0.000+00	1.090-01	1.390-01	1.680-01	1.970-01	090062	H01
2.260-01	2.550-01	2.850-01	4.160-01	9.850-01	1.000+00	090063	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090064	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090065	H01
0.000+00	0.000+00	1.560-01	2.150-01	2.440-01	2.740-01	090066	H01
3.330-01	3.700-01	4.070-01	5.560-01	1.000+00	1.000+00	090067	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090068	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090069	H01
0.000+00	0.000+00	2.200-01	3.030-01	3.330-01	3.640-01	090070	H01
4.850-01	5.450-01	6.140-01	7.580-01	1.000+00	1.000+00	090071	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090072	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090073	H01
0.000+00	1.820-02	3.360-01	4.730-01	5.180-01	5.640-01	090074	H01
7.450-01	8.360-01	9.270-01	1.000+00	1.000+00	1.000+00	090075	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090076	H01

TABLE A10. (CONTINUED)

1.000+00	1.000+00	1.000+00	5.580-01	6.110-01	6.630-01	090077	H01
0.000+00	3.160-02	4.000-01	1.000+00	1.000+00	1.000+00	090078	H01
8.420-01	9.260-01	1.000+00	1.000+00	1.000+00	1.000+00	090079	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090080	H01
1.000+00	1.000+00	1.000+00	6.670-01	7.280-01	7.900-01	090081	H01
0.000+00	4.940-02	4.810-01	1.000+00	1.000+00	1.000+00	090082	H01
9.140-01	9.750-01	1.000+00	1.000+00	1.000+00	1.000+00	090083	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090084	H01
1.000+00	1.000+00	1.000+00	8.400-01	9.190-01	9.980-01	090085	H01
0.000+00	7.920-02	6.180-01	1.000+00	1.000+00	1.000+00	090086	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090087	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090088	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090089	H01
0.000+00	1.350-01	9.190-01	1.000+00	1.000+00	1.000+00	090090	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090091	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090092	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090093	H01
0.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090094	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090095	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090096	H01
1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	1.000+00	090097	H01

URANIUM-235 LIBRARY 01 FAST S02

DATA TAKEN FROM UNC 5099

0.589E 01	0.589E 01	0.589E 01	0.589E 01	0.589E 01	0.589E 01	010001	S02
0.589E 01	0.589E 01	0.589E 01	0.589E 01	0.589E 01	0.589E 01	010002	S02
0.590E 01	0.590E 01	0.590E 01	0.591E 01	0.592E 01	0.592E 01	010003	S02
0.593E 01	0.594E 01	0.595E 01	0.596E 01	0.597E 01	0.598E 01	010004	S02
0.599E 01	0.600E 01	0.602E 01	0.604E 01	0.604E 01	0.604E 01	010005	S02
0.605E 01	0.606E 01	0.608E 01	0.609E 01	0.610E 01	0.611E 01	010006	S02
0.613E 01	0.615E 01	0.617E 01	0.618E 01	0.620E 01	0.622E 01	010007	S02
0.624E 01	0.626E 01	0.628E 01	0.630E 01	0.632E 01	0.634E 01	010008	S02
0.636E 01	0.638E 01	0.640E 01	0.643E 01	0.645E 01	0.647E 01	010009	S02
0.650E 01	0.653E 01	0.656E 01	0.659E 01	0.662E 01	0.665E 01	010010	S02
0.669E 01	0.672E 01	0.676E 01	0.679E 01	0.683E 01	0.687E 01	010011	S02
0.690E 01	0.694E 01	0.698E 01	0.702E 01	0.707E 01	0.711E 01	010012	S02
0.715E 01	0.720E 01	0.724E 01	0.729E 01	0.734E 01	0.739E 01	010013	S02
0.744E 01	0.750E 01	0.755E 01	0.761E 01	0.767E 01	0.773E 01	010014	S02
						010015	S02

TABLE A10. (CONTINUED)

1.83+00	1.83+00	1.83+00	1.61+00	1.61+00	1.61+00	1.61+00	030005	S02
1.61+00	1.61+00	1.42+00	1.42+00	1.42+00	1.42+00	1.42+00	030006	S02
1.30+00	1.30+00	1.30+00	1.30+00	1.30+00	1.30+00	1.31+00	030007	S02
1.31+00	1.31+00	1.31+00	1.39+00	1.39+00	1.39+00	1.39+00	030008	S02
1.39+00	1.39+00	1.62+00	1.62+00	1.62+00	1.62+00	2.06+00	030009	S02
2.06+00	2.06+00	2.06+00	2.79+00	2.79+00	2.79+00	2.79+00	030010	S02
2.79+00	3.86+00	3.86+00	3.86+00	5.11+00	5.11+00	5.11+00	030011	S02
5.11+00	5.91+00	5.91+00	5.91+00	5.91+00	5.91+00	5.93+00	030012	S02
5.93+00	5.77+00	5.77+00	5.77+00	5.61+00	5.61+00	5.61+00	030013	S02
5.61+00	5.45+00	5.45+00	5.30+00	5.30+00	5.30+00	5.30+00	030014	S02
5.15+00	5.15+00	5.00+00	5.00+00	4.86+00	4.86+00	4.86+00	030015	S02
4.72+00	4.72+00	4.58+00	4.58+00	4.45+00	4.45+00	4.45+00	030016	S02
4.32+00	4.32+00	4.19+00	4.06+00	4.06+00	4.06+00	3.94+00	030017	S02
3.82+00	3.82+00	3.70+00	3.58+00	3.47+00	3.47+00	3.36+00	030018	S02
3.25+00	3.25+00	3.15+00	3.04+00	2.84+00	2.84+00	2.75+00	030019	S02
2.65+00	2.56+00	2.39+00	2.30+00	2.15+00	2.15+00	2.09+00	030020	S02
1.96+00	1.84+00	1.67+00	1.56+00	1.33+00	1.33+00	1.18+00	030021	S02
1.02+00	1.00+00	1.00+00	0.00+00	0.00+00	0.00+00	0.00+00	030022	S02

URANIUM-235 LIBRARY 04 FAST S02

DATA TAKEN FROM UNC 5099

1.500+01	1.300+01	1.100+01	1.050+01	9.000+00	9.000+00	8.500+00	040001	S02
7.750+00	7.250+00	6.750+00	6.500+00	6.000+00	6.000+00	5.750+00	040002	S02
5.500+00	5.250+00	4.750+00	4.500+00	4.250+00	4.250+00	3.750+00	040003	S02
3.250+00	2.750+00	2.250+00	1.750+00	1.250+00	1.250+00	7.500-01	040004	S02
2.500-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040005	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040006	S02
0.000+00	0.000+00	0.000+00	3.144-04	0.000+00	0.000+00	0.000+00	040007	S02
6.054-03	0.000+00	0.000+00	2.969-02	0.000+00	0.000+00	3.159-02	040008	S02
4.122-02	4.697-02	5.307-02	7.111-02	1.307-01	1.307-01	2.597-01	040009	S02
3.295-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040010	S02
0.000+00	0.000+00	0.000+00	3.209-04	0.000+00	0.000+00	0.000+00	040011	S02
0.000+00	0.000+00	0.000+00	4.676-02	0.000+00	0.000+00	5.091-02	040012	S02
8.553-03	0.000+00	0.000+00	9.896-02	1.335-01	1.335-01	1.747-01	040013	S02
6.581-02	7.345-02	8.001-02	0.000+00	0.000+00	0.000+00	0.000+00	040014	S02
2.670-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040015	S02
0.000+00	0.000+00	0.000+00	8.159-05	0.000+00	0.000+00	0.000+00	040016	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040017	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040018	S02

TABLE A10. (CONTINUED)

6.937-03	0.000+00	0.000+00	5.146-02	0.000+00	5.880-02	040019	S02
7.622-02	8.218-02	8.340-02	9.768-02	1.315-01	1.607-01	040020	S02
2.510-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040021	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040022	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040023	S02
1.683-03	0.000+00	0.000+00	4.046-02	0.000+00	6.119-02	040024	S02
8.501-02	8.975-02	7.957-02	7.932-02	1.104-01	1.602-01	040025	S02
2.924-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040026	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040027	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040028	S02
2.420-05	0.000+00	0.000+00	9.123-03	0.000+00	3.523-02	040029	S02
7.300-02	9.277-02	8.277-02	7.131-02	9.901-02	1.720-01	040030	S02
3.647-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040031	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040032	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040033	S02
0.000+00	0.000+00	0.000+00	1.941-04	0.000+00	5.139-03	040034	S02
3.061-02	6.555-02	7.369-02	7.226-02	1.096-01	2.030-01	040035	S02
4.399-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040036	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040037	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040038	S02
0.000+00	0.000+00	0.000+00	6.951-05	0.000+00	3.465-04	040039	S02
4.161-03	2.520-02	4.644-02	6.417-02	1.215-01	2.379-01	040040	S02
5.002-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040041	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040042	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040043	S02
0.000+00	0.000+00	0.000+00	7.776-05	0.000+00	3.029-04	040044	S02
1.269-03	6.511-03	2.226-02	4.981-02	1.204-01	2.551-01	040045	S02
5.442-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040046	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040047	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040048	S02
0.000+00	0.000+00	0.000+00	1.632-04	0.000+00	6.292-04	040049	S02
2.190-03	6.327-03	1.713-02	4.599-02	1.219-01	2.724-01	040050	S02
5.332-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040051	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040052	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040053	S02
0.000+00	0.000+00	0.000+00	2.842-04	0.000+00	9.849-04	040054	S02
3.391-03	1.011-02	2.579-02	5.994-02	1.374-01	2.861-01	040055	S02
4.759-01	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040056	S02
0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	0.000+00	040057	S02

TABLE A10. (CONTINUED)

0.355E 02	0.361E 02	0.368E 02	0.375E 02	0.382E 02	0.389E 02	050016	S02
0.397E 02	0.405E 02	0.413E 02	0.422E 02	0.431E 02	0.439E 02	050017	S02
0.442E 02	0.439E 02	0.434E 02	0.428E 02	0.422E 02	0.416E 02	050018	S02
0.411E 02	0.408E 02	0.407E 02	0.406E 02	0.404E 02	0.403E 02	050019	S02
0.402E 02	0.402E 02	0.401E 02	0.403E 02	0.408E 02	0.418E 02	050020	S02
0.428E 02	0.438E 02	0.450E 02	0.526E 02	0.731E 02	0.738E 02	050021	S02
0.660E 02	0.109E 03	0.119E 03	0.136E 03	0.126E 03	0.794E 02	050022	S02

URANIUM-235 LIBRARY 06 FAST S02

DATA TAKEN FROM UNC 5099

6	126	2.35+02					
0.243E 01	0.240E 01	0.233E 01	0.223E 01	0.212E 01	0.202E 01	060001	S02
0.195E 01	0.190E 01	0.188E 01	0.185E 01	0.184E 01	0.183E 01	060002	S02
0.182E 01	0.181E 01	0.180E 01	0.190E 01	0.180E 01	0.180E 01	060003	S02
0.180E 01	0.180E 01	0.180E 01	0.180E 01	0.180E 01	0.180E 01	060004	S02
0.180E 01	0.180E 01	0.181E 01	0.182E 01	0.182E 01	0.182E 01	060005	S02
0.182E 01	0.183E 01	0.183E 01	0.184E 01	0.184E 01	0.184E 01	060006	S02
0.183E 01	0.182E 01	0.182E 01	0.181E 01	0.180E 01	0.180E 01	060007	S02
0.179E 01	0.178E 01	0.176E 01	0.175E 01	0.173E 01	0.171E 01	060008	S02
0.169E 01	0.167E 01	0.164E 01	0.162E 01	0.160E 01	0.157E 01	060009	S02
0.155E 01	0.152E 01	0.148E 01	0.144E 01	0.140E 01	0.136E 01	060010	S02
0.132E 01	0.128E 01	0.124E 01	0.120E 01	0.117E 01	0.116E 01	060011	S02
0.116E 01	0.116E 01	0.116E 01	0.115E 01	0.115E 01	0.115E 01	060012	S02
0.115E 01	0.115E 01	0.115E 01	0.115E 01	0.116E 01	0.117E 01	060013	S02
0.118E 01	0.118E 01	0.119E 01	0.120E 01	0.120E 01	0.121E 01	060014	S02
0.122E 01	0.123E 01	0.124E 01	0.124E 01	0.125E 01	0.126E 01	060015	S02
0.126E 01	0.127E 01	0.128E 01	0.129E 01	0.129E 01	0.130E 01	060016	S02
0.130E 01	0.130E 01	0.130E 01	0.131E 01	0.131E 01	0.131E 01	060017	S02
0.131E 01	0.132E 01	0.132E 01	0.131E 01	0.131E 01	0.130E 01	060018	S02
0.129E 01	0.128E 01	0.128E 01	0.127E 01	0.126E 01	0.125E 01	060019	S02
0.125E 01	0.124E 01	0.124E 01	0.124E 01	0.124E 01	0.124E 01	060020	S02
0.129E 01	0.136E 01	0.150E 01	0.180E 01	0.267E 01	0.542E 01	060021	S02
						060022	S02

URANIUM-235 LIBRARY 06 SLOW S02

DATA TAKEN FROM UNC 5099

6	126	2.35+02					
0.856E 01	0.858E 01	0.862E 01	0.866E 01	0.870E 01	0.874E 01	060001	S02
0.878E 01	0.881E 01	0.885E 01	0.889E 01	0.893E 01	0.897E 01	060002	S02
0.900E 01	0.904E 01	0.908E 01	0.912E 01	0.916E 01	0.920E 01	060003	S02
						060004	S02

TABLE A10. (CONTINUED)

0.000+00	2.042-04	6.033-04	2.387-03	5.133-03	5.569-03	080008	S02
9.180-03	1.596-02	2.636-02	4.539-02	9.932-02	2.561-01	080009	S02
5.337-01						080010	S02
0.000+00	2.042-04	6.033-04	2.387-03	5.133-03	5.569-03	080011	S02
9.180-03	1.596-02	2.636-02	4.539-02	9.932-02	2.561-01	080012	S02
5.337-01						080013	S02
0.000+00	2.042-04	6.033-04	2.387-03	5.133-03	5.569-03	080014	S02
9.180-03	1.596-02	2.636-02	4.539-02	9.932-02	2.561-01	080015	S02
5.337-01						080016	S02
0.000+00	2.042-04	6.033-04	2.387-03	5.133-03	5.569-03	080017	S02
9.180-03	1.596-02	2.636-02	4.539-02	9.932-02	2.561-01	080018	S02
5.337-01						080019	S02
0.000+00	2.042-04	6.033-04	2.387-03	5.133-03	5.569-03	080020	S02
9.180-03	1.596-02	2.636-02	4.539-02	9.932-02	2.561-01	080021	S02
5.337-01						080022	S02
0.000+00	2.042-04	6.033-04	2.387-03	5.133-03	5.569-03	080023	S02
9.180-03	1.596-02	2.636-02	4.539-02	9.932-02	2.561-01	080024	S02
5.337-01						080025	S02
0.000+00	2.042-04	6.033-04	2.387-03	5.133-03	5.569-03	080026	S02
9.180-03	1.596-02	2.636-02	4.539-02	9.932-02	2.561-01	080027	S02
5.337-01						080028	S02
0.000+00	2.042-04	6.033-04	2.387-03	5.133-03	5.569-03	080029	S02
9.180-03	1.596-02	2.636-02	4.539-02	9.932-02	2.561-01	080030	S02
5.337-01						080031	S02
URANIUM-235 LIBRARY 08 SLOW S02							
DATA TAKEN FROM UNC 5099							
8	1	2.35+02				080001	S02
1.00+01	8.00+00	6.50+00	5.50+00	4.50+00	3.75+00	080002	S02
3.25+00	2.75+00	2.25+00	1.75+00	1.25+00	7.50-01	080003	S02
2.50-01						080004	S02
0.000+00	2.042-04	6.033-04	2.387-03	5.133-03	5.569-03	080005	S02
9.180-03	1.596-02	2.636-02	4.539-02	9.932-02	2.561-01	080006	S02
5.337-01						080007	S02

TABLE ALL. COHORT ENERGY LIBRARIES FOR S02

LIBRARY 09 FAST S02		LIBRARY 10 FAST S02	
9	126	10	126
1.50+01	1.48+01	1.50+01	1.48+01
1.26+01	1.24+01	1.26+01	1.24+01
1.14+01	1.12+01	1.14+01	1.12+01
1.06+01	1.05+01	1.06+01	1.05+01
1.00+01	9.90+00	1.00+01	9.90+00
9.40+00	9.30+00	9.40+00	9.30+00
8.80+00	8.70+00	8.80+00	8.70+00
8.20+00	8.10+00	8.20+00	8.10+00
7.60+00	7.50+00	7.60+00	7.50+00
7.00+00	6.90+00	7.00+00	6.90+00
6.40+00	6.30+00	6.40+00	6.30+00
5.80+00	5.70+00	5.80+00	5.70+00
5.20+00	5.10+00	5.20+00	5.10+00
4.60+00	4.50+00	4.60+00	4.50+00
4.00+00	3.90+00	4.00+00	3.90+00
3.40+00	3.30+00	3.40+00	3.30+00
2.80+00	2.70+00	2.80+00	2.70+00
2.20+00	2.10+00	2.20+00	2.10+00
1.60+00	1.50+00	1.60+00	1.50+00
1.00+00	0.90+00	1.00+00	0.90+00
0.40+00	0.30+00	0.40+00	0.30+00
1.42+01	1.38+01	1.42+01	1.38+01
1.22+01	1.20+01	1.22+01	1.20+01
1.10+01	1.09+01	1.10+01	1.09+01
1.04+01	1.03+01	1.04+01	1.03+01
9.80+00	9.70+00	9.80+00	9.70+00
9.20+00	9.10+00	9.20+00	9.10+00
8.60+00	8.50+00	8.60+00	8.50+00
8.00+00	7.90+00	8.00+00	7.90+00
7.40+00	7.30+00	7.40+00	7.30+00
6.80+00	6.70+00	6.80+00	6.70+00
6.20+00	6.10+00	6.20+00	6.10+00
5.60+00	5.50+00	5.60+00	5.50+00
5.00+00	4.90+00	5.00+00	4.90+00
4.40+00	4.30+00	4.40+00	4.30+00
3.80+00	3.70+00	3.80+00	3.70+00
3.20+00	3.10+00	3.20+00	3.10+00
2.60+00	2.50+00	2.60+00	2.50+00
2.00+00	1.90+00	2.00+00	1.90+00
1.40+00	1.30+00	1.40+00	1.30+00
0.80+00	0.70+00	0.80+00	0.70+00
0.20+00	0.10+00	0.20+00	0.10+00
1.34+01	1.30+01	1.34+01	1.30+01
1.18+01	1.16+01	1.18+01	1.16+01
1.08+01	1.07+01	1.08+01	1.07+01
1.02+01	1.01+01	1.02+01	1.01+01
9.60+00	9.50+00	9.60+00	9.50+00
9.00+00	8.90+00	9.00+00	8.90+00
8.40+00	8.30+00	8.40+00	8.30+00
7.80+00	7.70+00	7.80+00	7.70+00
7.20+00	7.10+00	7.20+00	7.10+00
6.60+00	6.50+00	6.60+00	6.50+00
6.00+00	5.90+00	6.00+00	5.90+00
5.40+00	5.30+00	5.40+00	5.30+00
4.80+00	4.70+00	4.80+00	4.70+00
4.20+00	4.10+00	4.20+00	4.10+00
3.60+00	3.50+00	3.60+00	3.50+00
3.00+00	2.90+00	3.00+00	2.90+00
2.40+00	2.30+00	2.40+00	2.30+00
1.80+00	1.70+00	1.80+00	1.70+00
1.20+00	1.10+00	1.20+00	1.10+00
0.60+00	0.50+00	0.60+00	0.50+00
0.01+00	1.00-03	0.01+00	1.00-03
1.38+01	1.34+01	1.38+01	1.34+01
1.20+01	1.18+01	1.20+01	1.18+01
1.09+01	1.08+01	1.09+01	1.08+01
1.03+01	1.02+01	1.03+01	1.02+01
9.70+00	9.60+00	9.70+00	9.60+00
9.10+00	9.00+00	9.10+00	9.00+00
8.50+00	8.40+00	8.50+00	8.40+00
7.90+00	7.80+00	7.90+00	7.80+00
7.30+00	7.20+00	7.30+00	7.20+00
6.70+00	6.60+00	6.70+00	6.60+00
6.10+00	6.00+00	6.10+00	6.00+00
5.50+00	5.40+00	5.50+00	5.40+00
4.90+00	4.80+00	4.90+00	4.80+00
4.30+00	4.20+00	4.30+00	4.20+00
3.70+00	3.60+00	3.70+00	3.60+00
3.10+00	3.00+00	3.10+00	3.00+00
2.50+00	2.40+00	2.50+00	2.40+00
1.90+00	1.80+00	1.90+00	1.80+00
1.30+00	1.20+00	1.30+00	1.20+00
0.70+00	0.60+00	0.70+00	0.60+00
0.10+00	0.01+00	0.10+00	0.01+00
1.30+01	1.30+01	1.30+01	1.30+01
1.16+01	1.16+01	1.16+01	1.16+01
1.07+01	1.07+01	1.07+01	1.07+01
1.01+01	1.01+01	1.01+01	1.01+01
9.50+00	9.50+00	9.50+00	9.50+00
8.90+00	8.90+00	8.90+00	8.90+00
8.30+00	8.30+00	8.30+00	8.30+00
7.70+00	7.70+00	7.70+00	7.70+00
7.10+00	7.10+00	7.10+00	7.10+00
6.50+00	6.50+00	6.50+00	6.50+00
5.90+00	5.90+00	5.90+00	5.90+00
5.30+00	5.30+00	5.30+00	5.30+00
4.70+00	4.70+00	4.70+00	4.70+00
4.10+00	4.10+00	4.10+00	4.10+00
3.50+00	3.50+00	3.50+00	3.50+00
2.90+00	2.90+00	2.90+00	2.90+00
2.30+00	2.30+00	2.30+00	2.30+00
1.70+00	1.70+00	1.70+00	1.70+00
1.10+00	1.10+00	1.10+00	1.10+00
0.50+00	0.50+00	0.50+00	0.50+00
1.00001	090001	100001	100001
090002	090002	100002	100002
090003	090003	100003	100003
090004	090004	100004	100004
090005	090005	100005	100005
090006	090006	100006	100006
090007	090007	100007	100007
090008	090008	100008	100008
090009	090009	100009	100009
090010	090010	100010	100010
090011	090011	100011	100011
090012	090012	100012	100012
090013	090013	100013	100013
090014	090014	100014	100014
090015	090015	100015	100015
090016	090016	100016	100016
090017	090017	100017	100017
090018	090018	100018	100018
090019	090019	100019	100019
090020	090020	100020	100020
090021	090021	100021	100021
090022	090022	100022	100022

TABLE A11. (CONTINUED)

5.20+00	5.10+00	5.00+00	4.90+00	4.80+00	4.70+00	100014	S02
4.60+00	4.50+00	4.40+00	4.30+00	4.20+00	4.10+00	100015	S02
4.00+00	3.90+00	3.80+00	3.70+00	3.60+00	3.50+00	100016	S02
3.40+00	3.30+00	3.20+00	3.10+00	3.00+00	2.90+00	100017	S02
2.80+00	2.70+00	2.60+00	2.50+00	2.40+00	2.30+00	100018	S02
2.20+00	2.10+00	2.00+00	1.90+00	1.80+00	1.70+00	100019	S02
1.60+00	1.50+00	1.40+00	1.30+00	1.20+00	1.10+00	100020	S02
1.00+00	0.90+00	0.80+00	0.70+00	0.60+00	0.50+00	100021	S02
0.40+00	0.30+00	0.20+00	0.10+00	0.01+00	1.00-03	100022	S02
LIBRARY 10 SLOW S02							
1.00-03	9.92-04	9.84-04	9.76-04	9.68-04	9.60-04	100001	S02
9.52-04	9.44-04	9.36-04	9.28-04	9.20-04	9.12-04	100002	S02
9.04-04	8.96-04	8.88-04	8.80-04	8.72-04	8.64-04	100003	S02
8.56-04	8.48-04	8.40-04	8.32-04	8.24-04	8.16-04	100004	S02
8.08-04	8.00-04	7.92-04	7.84-04	7.76-04	7.68-04	100005	S02
7.60-04	7.52-04	7.44-04	7.36-04	7.28-04	7.20-04	100006	S02
7.12-04	7.04-04	6.96-04	6.88-04	6.80-04	6.72-04	100007	S02
6.64-04	6.56-04	6.48-04	6.40-04	6.32-04	6.24-04	100008	S02
6.16-04	6.08-04	6.00-04	5.92-04	5.84-04	5.76-04	100009	S02
5.68-04	5.60-04	5.52-04	5.44-04	5.36-04	5.28-04	100010	S02
5.20-04	5.12-04	5.04-04	4.96-04	4.88-04	4.80-04	100011	S02
4.72-04	4.64-04	4.56-04	4.48-04	4.40-04	4.32-04	100012	S02
4.24-04	4.16-04	4.08-04	4.00-04	3.92-04	3.84-04	100013	S02
3.76-04	3.68-04	3.60-04	3.52-04	3.44-04	3.36-04	100014	S02
3.28-04	3.20-04	3.12-04	3.04-04	2.96-04	2.88-04	100015	S02
2.80-04	2.72-04	2.64-04	2.56-04	2.48-04	2.40-04	100016	S02
2.32-04	2.24-04	2.16-04	2.08-04	2.00-04	1.92-04	100017	S02
1.84-04	1.76-04	1.68-04	1.60-04	1.52-04	1.44-04	100018	S02
1.36-04	1.28-04	1.20-04	1.12-04	1.04-04	9.60-05	100019	S02
8.80-05	8.00-05	7.20-05	6.40-05	5.60-05	4.80-05	100020	S02
4.00-05	3.20-05	2.40-05	1.60-05	8.02-06	2.53-08	100021	S02
						100022	S02