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MASTER

Nuclear Materials & Propulsion Operation

Cross Sections for Reactor Analysis

Janet M. Brunner

William B. Henderson

March 18, 1964

ADVANCED TECHNOLOGY SERVICES

GENERAL ELECTRIC

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ABSTRACT

This report contains a listing of the revised nuclear data tape. The nuclear data is a reproduction of the computer print-out. Other nuclear data (spectra, energy, absorption cross section of some poisons and absorption and fission cross sections of selected fuel materials) have been transcribed from the tape listing to provide a more compact format or to allow easier comparison of absorbers and fuels.

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NOMENCLATURE AND NOTATION

N_0	Avogadro's number $\times 10^{-24} = 0.60247$ (on physical scale).
ρ	Density, g/cm^3 .
A	Atomic or molecular weight, g/mole .
N	Number of atoms or molecules $\times 10^{-24}$ per $\text{cm}^3 = N_0 \rho / A$.
M	Atomic or molecular mass/neutron mass ratio.
W	Weight fraction of an element in a compound, mixture, alloy, or other substance.
σ	Microscopic cross section. The effective area in barns (10^{-24} cm^2) per atom or molecule that a neutron exhibits for a particular reaction with its environment.
Σ	Macroscopic cross section. The probability per unit path length (cm^{-1}) that a neutron will undergo a particular reaction with its environment. $\Sigma = N\sigma$ for a single element. If the environment contains i elements uniformly distributed, then $\Sigma = \sum_i N^i \sigma^i$.
σ_a	Microscopic absorption cross section. This includes all reactions that remove neutrons with or without the production of more neutrons (n, γ ; n, α ; $n, \text{fission}$; $n, 2n$), but does not include inelastic scattering.
σ_s	Microscopic scattering cross section. This consists of elastic and inelastic scattering reactions (n, n and n, n').
σ_t	Total microscopic cross section $= \sigma_s + \sigma_a$.
ξ	Average logarithmic energy decrement per scattering reaction. When scattering is elastic and is isotropic in the center-of-mass coordinates, $\xi = 1 + \frac{(M-1)^2}{2M} \ln \frac{M+1}{M-1}$

A good approximation, for which the error is less than 0.2 percent, is

$$\xi \approx \frac{2}{M + 2/3}$$

for elements heavier than lithium.

- $\xi \sigma_s$ Slowing-down cross section. When the neutron energy is less than the binding energy of the atom in a substance, the effective atomic mass is no longer the mass of a free atom.
- b Average cosine of the scattering angle (angle between the direction of the incident neutron and the scattered neutron, measured in the laboratory coordinates). When scattering is elastic and is isotropic in the center-of-mass coordinates, $b = 2/3M$.
- σ_{tr} Microscopic transport cross section = $(1 - b)\sigma_s$. When the neutron energy is less than the binding energy of the atom in a substance, the effective atomic mass is no longer the mass of a free atom.
- u Lethargy = $\ln E_0/E$, where E is the neutron energy in electron volts and E_0 as used here is 10^7 ev.
- σ_f Microscopic fission cross section. Usually $\nu \sigma_f$ is the quantity of significance, where ν is the number of neutrons produced per fission.
- $\phi(u)$ Flux as a function of lethargy (neutrons/cm²-sec-unit lethargy).
- Z Atomic number or number of protons in a compound.

SOURCES OF DATA

BNL 325⁵ and its supplements^{6,7,8} were used as the principal sources of nuclear data that have been prepared for the data tape. The densities of the substances and the composition of alloys and mixtures were taken from the Handbook of Chemistry and Physics, 37th Edition;¹⁰ the Reactor Handbook, Volume 3;¹² and the Metals Handbook, 1948 Edition.¹¹ Where differences occurred, the most recent document was assumed to be correct. Atomic weights and isotopic weights were taken from the Handbook of Chemistry and Physics, 37th Edition and the Chart of the Nuclides, Fifth Edition.¹³ The quantities ξ and $(1 - b)$ were taken from the chart by H. R. Kroeger,⁹ except where atomic weights have been changed since the chart was published (1949). Values based on the latest atomic weights were calculated for atomic weights that have been changed since 1949.

INTRODUCTION

The purpose of this document is primarily to provide a list of the data on the new, shorter, nuclear data tape.

Physical Description of Data Tape

This is a binary tape and must therefore be read in the binary mode. It cannot be listed directly on any printer without being first converted into a binary-coded decimal form.

The section of the reel of tape used for the NDT is separated from the rest of the tape by an end-of-file mark. It is the first file of information on the tape and can be of any length, depending upon the number of records it contains and the physical limitation of the tape.

The records will vary in length depending upon the contents of the record, but each record will contain a complemented check sum as the last word of the record.

With the exception of the first record on the NDT, which is a table of contents record and varies with the number of records on tape, the exact number of words in a given record can be predicted by testing the first two words of the record.

The first record of the tape can be considered a table of contents for the whole tape. Each record on the file is described in the first record by five words: two words of binary-coded information give the designation; two words of binary-coded information give a formula; and one word is in floating point, which is the code number. These groups of five words each are written on the tape in sequential order according to the absolute value of the code number. The last word of the record is the complemented check sum. If either the formula or the designation does not require two words, the second will be filled by blanks (not zeros). There will always be five words for each material as illustrated:

```
EXAMPL  
E-ONE-  
EX1---  
-----  
1.0000
```

Although twelve characters can be assigned to the designation or formula, at least one character in the first six has been made different for each record in order to facilitate machine identification of the designation or formula. For this reason uranium-238 and uranium-235,

for example, have been designated 238 URANIUM and 235 URANIUM.

The records following the initial identification record are sequentially ordered according to the absolute value of the code number. Therefore, the records also follow the order given in the identification record.

The order on tape by code number is used to facilitate searching the tape. Code numbers were assigned in blocks as indicated below, and the convention has been followed in the present assignment of code numbers.

<u>Code Numbers</u>	<u>Type of Data</u>
0.001 to 0.999	Miscellaneous nuclear data, other than cross sections, that are often required before cross-section records are read (for example spectra and $1/v$ factors).
-1.000 to -1.999	Fuels.
2.000 to 2.999	Hydrogenous moderators.
3.000 to 3.999	Nonhydrogenous moderators.
4.000 to 4.999	Primary structure (Fe, Ni, Ti, and alloys.)
5.000 to 5.999	Other structure
6.000 to 6.999	Nonmetals
7.000 to 7.999	Coolants
8.000 to 8.999	Absorbers
9.000 to 99.999	Other miscellaneous data.

The type of information contained in a record can be determined by testing the first two words of the record. A material can be assumed to be either fissionable or nonfissionable as indicated by the sign of the code number (first word). If the code number is positive, the material is nonfissionable; if the code number is negative, the material is fissionable. The sign of the code number is the only means recognized by this program for testing if a material is fissionable. Whether a record contains macroscopic or microscopic cross sections depends only upon the value assigned to the density (second word of the record). If the density is zero, the material is considered to be microscopic; if the density is given a non-zero value, the material is considered to be macroscopic. The number assigned for the code number has no connection

with this problem as far as the UPDOC Program¹⁴, which is used to prepare the tape, is concerned.

The cross sections are copied on the tape in such a manner that the values for all levels of a given cross section are given in order for each type of cross section before proceeding to the next type of cross section. There are only four possibilities for the number of words to be found in a given record, depending on whether the material is fissionable or nonfissionable and microscopic or macroscopic. The program will consider any material as falling into one of these four groups, even though the record may not contain actual cross sections, e.g., a record of spectral data. In that case the unnecessary locations will contain zeros.

Microscopic Nonfissionable

The first word is the code number, and the second is the density. The next 104 words are cross sections: 26 values for σ_s , 26 values for $\xi \sigma_s$, 26 values for σ_{tr} , and 26 values for σ_a . The next four words are Z, A, ξ , and $(1 - b)$ in that order. The last word is the complemented check sum. The total is 111 words.

Microscopic Fissionable

The first word is the code number, and the second is the density. The next 156 words are cross sections: 26 values for σ_s , 26 values for $\xi \sigma_s$, 26 values for σ_{tr} , 26 values for σ_a , 26 values for v_{of} , and 26 values for S. The next four words are Z, A, ξ , and $(1 - b)$ in that order. The total is 163 words.

Macroscopic Nonfissionable

The first word is the code number, and the second is the density. The next 104 words are cross sections given in the same order as nonfissionable microscopic records. The next 12 words are the code numbers and corresponding weight fractions of each of the materials used in computing the macroscopic cross sections. There will always be 12 words given even though less than six materials were used in the computation (the unnecessary words are given values of zero). Within these 12 words the ordering is such that the first word is a code number; the second, the corresponding weight fraction; the third, another code number, etc. The last word is the complemented check sum. The total is 119 words.

Macroscopic Fissionable

The first word is the code number, and the second is the density. The next 156 words are cross sections given in the same order as microscopic fissionable records. The next 12 words are codes and weight fractions. The last word is the complemented check sum. The total is 171 words.

DESCRIPTION OF CROSS SECTIONS

C-Fine Cross Sections

In general those cross sections designated as C-Fine are the most up-to-date. They are obtained as the flat lethargy flux average from the half lethargy interval below the level to the half lethargy interval above. The cross section at level zero is the average from $u = 0$ to $u = .25$ and at level 18 is the average from $u = 19$ to $u = 19.554883$ (.0322 ev). The sources of data used in the C-Fine cross sections are contained in APEX-704¹.

Method Used to Average Microscopic Cross Sections in the Nonthermal Groups

The microscopic cross sections at lethargy levels 0 through 18 (lethargies 0 to 19.795 or energies 10^7 ev to 0.0253 ev) are monoenergetic or point values in that they do not represent the average cross section in a lethargy interval, as is the case with many compilations of multigroup cross sections, but rather the values at the lethargy boundaries. They are chosen, however, so that the area under the straight line that joins the cross section at either boundary of a lethargy interval approximates the area under the actual cross section curve,

$$\int_{u_n}^{u_{n+1}} \sigma(u) du$$

and follows the trend of the actual curve. The cross sections so obtained are used in multigroup calculations in which quantities of the form $\int \sigma(u) \phi(u) du$ are approximated by trapezoidal integration. The trapezoidal approximation to the actual cross section curve will produce the correct value of

$$\frac{\int_{u_n}^{u_{n+1}} \sigma(u) \phi(u) du}{\int_{u_n}^{u_{n+1}} \phi(u) du}$$

if either $\phi(u)$ is constant over the lethargy interval, or if $\sigma(u)$ is constant over the interval. Leakage terms will be somewhat in error if

$$[\sigma_{tr}(u) + \sigma_a(u)]$$

is not constant.

At energies from 10 Mev to about 0.1 Mev, $\phi(u)$ builds up rapidly, then falls off rapidly because of the shape of the fission spectrum. Over this range the lethargy intervals are chosen 0.5 units wide in deference to the rapidly changing flux and the variation of cross sections. At intermediate energies both the flux and the cross sections tend to be slowly varying functions of lethargy, and the interval widths are increased to 2.0 units. Near thermal energy, where the majority of fissions in the nonthermal groups occur, lethargy intervals are reduced to 1.0 unit in width. The intervals become successively smaller on an energy scale as energy decreases.

Method Used to Average Microscopic Cross Sections in the Thermal Group

A few scattering cross sections were assumed to be constant over the thermal range, and all $1/v$ absorption cross sections were averaged by multiplying the absorption cross section given in BNL 325, First Edition, for a neutron velocity of 2200 meters per second by

$$\left(\frac{293.597}{T_K^0} \right)^{1/2} \frac{\sqrt{\pi}}{2}$$

where T_K^0 is the Kelvin temperature. Level 3000 contains the Maxwell-averaged cross sections that correspond to a Fahrenheit temperature of 3000°. Levels 2500, 2000, 1500, 1000, 500, and 68 are similarly identified. The machine-averaging is carried out by a Gaussian numerical integration over the energy range 10^{-4} ev to 10 ev, and cross section values at 45 points and the analytical expression for the Maxwellian distribution at each temperature are used in the process.

The assumption is made that neutrons slow down to an energy corresponding to the average velocity of neutrons in a Maxwellian distribution. Neutrons that survive to this thermal base energy are dumped discontinuously into a Maxwellian distribution. Actually the epithermal flux and the Maxwellian distribution form a smooth curve.

Methods Used to Obtain Monoenergetic Microscopic Cross Sections

In order to obtain the monoenergetic cross sections to be averaged as described in the two immediately preceding sections, some processing of the raw data, such as is found in BNL 325, First Edition, is necessary.

$1/v$ Absorbers

Many of the elements on the nuclear data tape have an absorption cross section that is inversely proportional to the neutron velocity and resonances that are almost entirely scattering. For these elements the total cross-section curve and the absorption cross section at a neutron velocity, v , of 2200 meters per second are given in BNL 325,

First Edition. The scattering cross section is obtained by subtracting $(2200/v) \sigma_{a,2200}$ from σ_t .

Resonances

Where resonance parameters are given in BNL 325, an attempt was made, in those cases where it seemed important, to use the single level Breit-Wigner formula to generate the cross section data. Where σ_s/σ_a or σ_s/σ_t ratios are plotted, these were used. In the case of Xe^{135} a Breit-Wigner calculation of σ_s and σ_a was made of the low-energy resonance by adjusting the resonance parameters to give the best fit to the measured total cross-section curve. The resulting cross sections for Xe^{135} do not seem to yield calculated results in agreement with experiment, although the cross sections are not too different from other independent results.

At energies above the resonance region values of σ_n, γ , σ_t , σ_{ne} , and σ_f have been used where data were available.

Chemical Binding

Chemical binding was taken into account only as it is reflected in the $\sigma_t(u) - \sigma_a(u)$ values obtained from BNL 325, First Edition, with the exception of water and hydrogen gas. In those cases a phenomenological recipe was used to obtain σ_{tr} and σ_s in the low energy range as described in the following paragraphs.

At energies above about 1 ev the effect of binding becomes small. The cross sections of a molecule can then be treated as the sum of the cross sections of the individual atoms, and the effective mass of each atom is the mass of the free atom. At energies below about 10^{-3} ev the molecule was treated as a hard scattering center having a mass of the bound molecule.

In this simple model it was assumed that at energies between 10^{-3} ev and 1 ev scattering occurs in some proportion with each of these two extremes and that at any energy a number, f , can be assigned to the fraction of scattering events that occur with the bound molecule. The fraction, f , is unity below about 10^{-3} ev and zero above 1 ev. (Rotational states are excited above 0.006 ev.)

The recipe in the case of water was used as follows:

1. A curve of σ_{s,H_2O} was plotted from $\sigma_t(u)$ and $\sigma_{a,2200}$ values found in BNL 325, First Edition.
2. The free-atom cross sections were taken to be:

Oxygen	Hydrogen	$H_2O = 2H + O$
$\sigma_s = 3.8$ barns	20 barns	43.8 barns
$\sigma_{tr} = 3.6$ barns	6.7 barns	17.0 barns
$\sigma_s = 0.5$ barns	20 barns	40.5 barns

The value of $(1 - b)$ corresponding to the molecular weight of the water molecule is 0.963, and the value of ξ is 0.108.

- From the data in (1) and (2), a curve of σ_{tr} was constructed. The curve is $0.963 \sigma_{s,H_2O}$ below 10^{-3} ev, 17 barns at 1 ev, and follows the trend of σ_{s,H_2O} between these extremes in a smooth curve which yields a Maxwell-averaged value at $68^\circ F$ in approximate agreement with values derived from recent measurements (33.7 barns versus 34 or 35 barns from experiment).
- The value of f was determined by eliminating the bound-molecule cross sections in the equations

$$\begin{aligned}\sigma_{s,H_2O} &= f\sigma_{s,bound H_2O} + 43.8 (1-f) \\ \sigma_{tr,H_2O} &= 0.963 f\sigma_{s,bound H_2O} + 17.0 (1-f) \\ \text{giving } f &= \frac{(\sigma_{tr,H_2O} - 17) - 0.963 (\sigma_{s,H_2O} - 43.8)}{25.12}\end{aligned}$$

- The value of $\xi \sigma_s$ was calculated from

$$\xi \sigma_{s,H_2O} = 0.108 f\sigma_{s,bound H_2O} + 40.5 (1-f).$$

The expression of σ_{s,H_2O} was used to eliminate $\sigma_{s,bound H_2O}$

The result is

$$\xi \sigma_{s,H_2O} = 0.108 \left[\sigma_{s,H_2O} - 43.8 + 43.8 f \right] + 40.5 (1-f).$$

The microscopic cross sections of water are given on the tape

per atom of hydrogen ($H_2O/2 = HO_{1/2}$).

Since data on σ_{tr} of H_2 gas is not available, the same f factor derived for H_2O was assumed to apply to H_2 gas. The value of $(1-b)$ for the bound molecule is $2/3$, and the value of ξ is 0.725. The procedure used was analogous to that used for H_2O . The equation

$$\sigma_{s,H_2} = f\sigma_{s,bound H_2} + 40(1-f)$$

was used to eliminate $\sigma_{s,bound H_2}$ in

$$\sigma_{tr,H_2} = \frac{2}{3} f\sigma_{s,bound H_2} + \frac{40}{3} (1-f) \text{ and}$$

$$\xi\sigma_{s,H_2} = 0.725 f\sigma_{s,bound H_2} + 40 (1-f).$$

The result is:

$$\sigma_{tr,H \text{ in } H_2} = \frac{1}{2} \sigma_{tr,H_2} = \frac{1}{3} \sigma_{s,H_2} - \frac{20}{3} (1-f)$$

$$\xi\sigma_{s,H \text{ in } H_2} = \frac{1}{2} \xi\sigma_{s,H_2} = 0.362 \sigma_{s,H_2} + 5.5 (1-f).$$

The cross sections for hydrogen bound in water were obtained by subtracting the cross sections of oxygen from water ($\sigma_{H \text{ in } H_2O} = \sigma_{HO_{1/2}} - \sigma_{O_{1/2}}$). The proper cross section for a free atom of hydrogen above 1 ev results, and the type of cross section variation in the thermal range that is characteristic of hydrogen bound in a heavy molecule is produced.

U235ML

U235ML was processed from the Hanford RBU library in the same manner as C-Fine cross sections except as follows:

1. $\nu(E)$ levels 0 through 8 is $2.40 + .1E$.

2. σ_{tr} levels 0 through 8 uses $1-\bar{\mu}$ from C-Fine.
3. $\xi \sigma_s$ levels 0 through 8 uses $0.6 \xi \sigma_s$ from C-Fine.
4. At levels 10, 11, and 12, the C-Fine values of σ_f were used because the Hanford set showed anomalous behavior. The σ_a values were chosen on the basis of a smooth curve through measured α values. At level 13 σ_a was increased to give an α of 1.0 vs opposed to 0.95 from the Hanford set. Levels 15 and greater use flat flux and Maxwellian averages of $\sigma_a \sqrt{E}$ and $\sigma_f \sqrt{E}$ data from BNL 325, Second Edition, supplement 1.
5. At levels 9 and greater, the values of σ_s , $\xi \sigma_s$, and σ_{tr} are taken from the C-Fine set.
6. The resulting cross sections have been shown to produce good ($\pm 1.5\%$) agreement in k of fast, intermediate, and thermal reactors, both hydrogen and graphite moderated, using the Coveyou-Macauley model. The fission integral to 0.5 ev is 275.6 barns and the absorption integral is 420.5 barns.

INDEX BY CODE NUMBER

A negative code number indicates a fuel. An asterisk in the designation and formula indicates macroscopic cross sections.

CODE	DESIGNATION	FORMULA	REMARKS
0.910	LETHARGY	$\ln E \text{ ZERO}/E$	$\ln \frac{10^7}{E}$
0.930	1/V FACTOR	$V18/V \text{ (AVG)}$	A trapezoidal average of $2200/v$ (or the Maxwell average in the thermal range).
0.939	S(CF)	S(CF)	Prompt plus delayed neutron spectra from C-fine normalized to $\int_0^\infty S(u)du = 1$
0.940	0 SPECTRUM	S(0)	U^{235} prompt-neutron spectrum.
0.942	2 SPECTRUM	S(2)	U^{235} prompt-plus-delayed-neutron spectrum.
0.946	PO-BE	PO-BE	Po-Be spectrum
0.951	1 DELAY	1 DELAY	Spectrum of 1st U^{235} delayed-neutron group ($\omega = 0.0126 \text{ sec}^{-1}$).
0.952	2 DELAY	2 DELAY	Spectrum of 2nd U^{235} delayed-neutron group ($\omega = 0.0311 \text{ sec}^{-1}$).
0.953	3 DELAY	3 DELAY	Spectrum of 3rd U^{235} delayed-neutron group ($\omega = 0.1134 \text{ sec}^{-1}$).
0.954	4 DELAY	4 DELAY	Spectrum of 4th U^{235} delayed-neutron group ($\omega = 0.3060 \text{ sec}^{-1}$).
0.955	5 DELAY	5 DELAY	Spectrum of 5th U^{235} delayed-neutron group ($\omega = 1.253 \text{ sec}^{-1}$).
0.956	6 DELAY	6 DELAY	Spectrum of 6th U^{235} delayed-neutron group ($\omega = 3.381 \text{ sec}^{-1}$).
0.980	ACCUMULATION	ACC	A fictitious element having all cross sections zero except σ_a , which varies as $1/v$ and is 1 barn at a neutron velocity of 2200 meters per second. It is used to generate the term ω/v in the time-dependent multigroup equations. Together with FICTITIUM, code 9.020, it can be used to simulate an element which has constant σ_s , and σ_a as $1/v$.

CODE	DESIGNATION	FORMULA	REMARKS
-1.000	233 URANIUM	U 233	
-1.020	235 URANIUM	U 235	
-1.022	R 235 URAN	REV U 235	100% U ²³⁵ (revised). Cross sections from BNL-325 Supplement 1, BNL-250, LA2114, ANL-5800. $\nu = 2.47 + 0.145E$ (Mev). Resonance cross sections averaged across resonance region.
-1.040	238 URANIUM	U 238	100% U ²³⁸ . $\xi\sigma_s$ includes the effect of inelastic scattering. $\nu = 2.50$.
-1.081	234 URANIUM	U234 CFINE	
-1.082	CF 235 URAN	U235 CFINE	
-1.083	236 URANIUM	U236 CFINE	
-1.084	CF 238 URAN	U238 CFINE	
-1.085	U235M1	U235M1	See page 15 for additional information.
-1.088	U238M1	U238M1	Same as U ²³⁸ C-Fine except as follows: (1) σ_a at levels 12 and 13 from Hanford RBU library and (2) levels 14 and greater are $1/\nu$ corresponding to $\sigma_{2200} = 2.75$. The absorption integral is reduced from 289 barns to 282 barns. (3) $\xi\sigma_s$ levels 0 through 8 is $0.75 \sigma_s$ from C-Fine.
-1.130	*ORALLOY	*OY	Enriched uranium 93.2 w/o U ²³⁵
-1.131	*CF ORALLOY	*OY CFINE	Enriched uranium. 93.2% U ²³⁵ , 5.42% U ²³⁸ , 1.0% U ²³⁴ , and 0.4% U ²³⁶ by weight.
-1.201	CF PU 239	CF PU 239	
-1.202	PU239M1	PU239M1	Processed from the Hanford RBU library in the same manner as C-Fine cross sections except as follows: (1) Level 18 extends to 0.0253 ev. (2) $\nu(E)$ levels 0 through 8 is $2.87 + 0.1E$. (3) σ_{tL} levels 0 through 8 uses $1-\mu$ from C-Fine. (4) $\xi\sigma_s$ levels 0 through 8 uses 0.5ξ from C-Fine.

CODE	DESIGNATION	FORMULA	REMARKS
-1. 203	PU240HAPO	PU240HAPO	Processed from the Hanford RBU library in the same manner as C-Fine cross sections except $\xi\sigma_s$ and σ_{tr} from level 0 through 6, where the C-Fine $\xi \times 0.6$ and $(1 - \bar{\mu})$ for U^{238} were used. Also level 18 extends to 0. 0253 ev.
-1. 204	PU241HAPO	PU241HAPO	Processed from the Hanford RBU library in the same manner as C-Fine cross sections except $\xi\sigma_s$ and σ_{tr} from level 0 through 8, where the C-Fine $\xi \times 0.6$ and the $(1 - \bar{\mu})$ for Pu^{239} were used. Also level 18 extends to 0. 0253 ev.
-1. 205	PU242HAPO	PU242HAPO	Processed from the Hanford RBU library in the same manner as C-Fine cross sections except $\xi\sigma_s$ and σ_{tr} from level 0 through 5, where the C-Fine $\xi \times 0.6$ and $(1 - \bar{\mu})$ for U^{238} were used. Also level 18 extends to 0. 0253 ev.
-1. 301	CF THORIUM	TH CFINE	
-1. 410	*OY DIOXIDE	*OYO2	Dioxide of 93. 2% enriched uranium using old U^{235} and U^{238} cross sections.
-1. 411	*CF OYO2	*CF OYO2	Dioxide of Oralloy using C-Fine cross sections.
-1. 502	RBE(N, 2N)	RBE(N, 2N)	Same as record -1. 500 except for high energy σ_a .
-1. 512	*RBE(N, 2N)	*RBE(N, 2N)	
-1. 532	*RBEO(N, 2N)	*RBEO(N, 2N)	Beryllium Oxide
2. 020	GAS HYDROGEN	H(GAS)	One-half the cross section of H_2 .
2. 040	BND HYDROGEN	H(WATER)	One-half the cross section of water minus one-half the cross section of oxygen.
2. 041	CF HYDROGEN	H BND CFINE	
2. 060	WATER/H	HO1/2	One-half the cross section of water.
2. 510	*WATER	*H2O	
2. 530	*PENTALENE	*PENTALENE	Pentalene 195
2. 550	*PLEXIGLAS	*C5H8O2	
2. 570	*POLYETHYLEN	*CH2	

CODE	DESIGNATION	FORMULA	REMARKS
3. 100	DEUTERIUM	D(HVY WATER)	One-half the cross section of heavy water minus one-half the cross section of oxygen.
3. 110	*HVY WATER	*D2O	
3. 301	CF CARBON	C CFINE	
3. 401	CF LITHIUM	LI CFINE	
3. 421	CF 6 LITHIUM	LI 6 CFINE	
3. 601	CF OXYGEN	O CFINE	
3. 800	HVY WATER/D	DO1/2	One-half the cross section of heavy water.
3. 900	RIENIUM	RE	
4. 002	CF IRON	FE CFINE	
4. 003	CF1 IRON	CF1 IRON	The same as CF IRON except σ_a which is as follows: (1) Levels 0 and 1 from BNL-325. (2) Levels 2 through 9, a smooth curve through $\sigma_{n,\gamma}$ and extrapolated. (3) Level 10 is the value required to bring the absorption integral to 2.1 barns. (4) Levels 11 through 18 is the 1/v portion of CF IRON scaled from 2.53 to 2.75 barns at 2200 m/s. (5) Thermal cross sections are Maxwellian averaged 1/v corresponding to 2.75 barns at 2200 m/s.
4. 102	CF NICKEL	NI CFINE	
4. 103	CF1 NICKEL	CF1 NICKEL	The same as CF NICKEL except σ_a at levels 0 through 10 which are as follows: (1) Levels 0 through 9, a smooth curve through $\sigma_{n,\gamma}$ and extrapolated. (2) Level 10 is the value required to produce an absorption integral of 3.2 barns.
4. 112	*CF IRON	*FE CFINE	
4. 113	*CF1 IRON	*CF1 IRON	
4. 151	*CF304 SS	*CF304 SS	71.42% Fe, 19% Cr, 9.5% Ni, and 0.08% C by weight.

CODE	DESIGNATION	FORMULA	REMARKS
4. 152	*R CF 304SS	*R CF 304SS	70. 5% Fe, 19% Cr, 9. 5% Ni, and 1% Mn by weight. This is the better 304 SS to use.
4. 171	*CF310 SS	*CF310 SS	55. 9% Fe, 25% Cr, and 19. 1% Ni by weight.
4. 202	CF CHROMIUM	CR CFINE	
4. 203	CF1 CHROMIUM	CF1 CHROMIUM	The same as CF CHROMIUM except σ_a at levels 0 through 10 which are as follows: (1) Levels 0 through 9, a smooth curve through $\sigma_{n,\gamma}$ and extrapolated. (2) Level 10 is the value required to produce an absorption integral of 2. 3 barns.
4. 301	CF TITANIUM	TI CFINE	
4. 311	*CF .8NI.2CR	*CF .8NI.2CR	78. 65% Ni, 19. 85% Cr, 1. 25% Si, 0. 2% Fe, and 0. 05% Mn by weight.
4. 331	*CF X INC	*CF X INC	73% Ni, 15% Cr, 7% Fe, 2. 5% Ti, 1% Nb, and 0. 5% Mn by weight.
4. 352	*CF1 FECRAL	*CF1 FECRAL	70% Fe, 25% Cr, and 5% Al by weight. This composition uses the revised C-Fine cross sections for Fe and Cr.
4. 401	CF MANGANESE	MN CFINE	
4. 412	*CF NICKEL	*NI CFINE	
4. 413	*CF1 NICKEL	*CF1 NICKEL	
4. 432	*CF CHROMIUM	*CR CFINE	
4. 433	*CF1 CHROM	*CF1 CHROM	
4. 501	CF COBALT	CO CFINE	
4. 600	VANADIUM	V	Data from BNL-325, Supplement 1.
4. 631	*CF AL2O3	*CF AL2O3	
4. 700	RHODIUM	RH	
4. 710	*RHODIUM	*RH	
4. 800	PLATINUM	PT	
4. 810	*PLATINUM	*PT	
4. 900	TANTALUM	TA	

CODE	DESIGNATION	FORMULA	REMARKS
4. 901	REV TANTALUM	TA1	The same as TANTALUM except for levels 11 through 14 which were changed to bring the 19 level values into agreement with the 25 group values. The absorption integral is 752 barns.
4. 902	R2TANTALUM	TA2	Same as TA1 (4. 901) except $\xi\sigma_s$ at levels 0 through 8, where 0.5 $\xi\sigma_s$ is used.
4. 910	*TANTALUM	*TA	
5. 101	CF ALUMINUM	AL CFINE	
5. 111	*AL CF	*AL CF	
5. 140	MAGNESIUM	MG	
5. 142	NDA MG	NDA MG	Magnesium cross sections processed by NDA.
5. 201	CF ZIRCONIUM	ZR CFINE	
5. 245	CF YTTRIUM	Y CFINE	
5. 300	MOLYBDENUM	MO	
5. 301	CF MOLY	CF MO	
5. 361	CF NIOBIUM	NB CFINE	
5. 400	CALCIUM	CA	
5. 420	BARIUM	BA	
5. 471	*CF HASTA	*CF HASTA	48.4% Ni, 22% Cr, 18.5% Fe, 9% Mo, 1.5% Co, and 0.6% W by weight.
5. 475	*CF RENE 41	*CF RENE 41	52.1% Ni, 19% Cr, 11% Co, 9.75% Mo, 5% Fe, and 3.15% Ti by weight.
5. 476	*CF DCM	*CF DCM	66.65% Ni, 15% Cr, 5.25% Mo, 5% Fe, 4.6% Al, and 3.5% Ti by weight.
5. 477	*CF A286	*CF A286	55.25% Fe, 25% Ni, 15% Cr, 2% Ti, 1.5% Mn, and 1.25% Mo by weight.
5. 500	SILICON	SI	
5. 510	*SIL DIOXIDE	*SIO2	Silicon dioxide.
5. 530	*SIL CARBIDE	*SIC	Silicon carbide.
5. 550	*THERMOFLEX	*AL2O3+SIO2	
5. 600	SCANDIUM	SC	

CODE	DESIGNATION	FORMULA	REMARKS
6. 000	FLUORINE	F	
6. 100	SULPHUR	S	
6. 200	PHOSPHORUS	P	
6. 300	NITROGEN	N	
7. 300	SODIUM	NA	
7. 310	*SODIUM	*NA	
7. 400	POTASSIUM	K	
7. 500	BISMUTH	BI	
7. 600	LEAD	PB	
7. 610	*LEAD	*PB	
7. 702	NDA MERCURY	NDA HG	Mercury cross sections processed by NDA.
7. 740	CHLORINE	CL	Data from BNL-325, Supplement 1.
8. 001	CF BORON	B CFINE	
8. 020	10 BORON	B 10	
8. 021	CF 10 BORON	B 10 CFINE	
8. 050	*BOR CARBIDE	*B4C	Boron carbide.
8. 204	R GADOLINIUM	REV GD	Absorption cross section 1/v from level 12 to level 0; yields better agreement with experimental rod worth.
8. 207	GD CFINE	GD CFINE	
8. 224	R SAMARIUM	R SM	
8. 225	149 SAMARIUM	R SM 149	
8. 226	CF SAMARIUM	SM CFINE	
8. 227	CF 149 SM	CF 149 SM	
8. 243	TN EU	TN EU	Resonance self-shielding factors for a very thin slab of europium were applied to C-Fine cross sections.
8. 244	TK EU	TK EU	Resonance self-shielding factors for a thick slab of europium were applied to C-Fine cross sections.
8. 245	CF EUROPIUM	EU CFINE	
8. 260	DYSPROSIUM	DY	
8. 280	HAFNIUM	HF	

CODE	DESIGNATION	FORMULA	REMARKS
8.300	CADMIUM	CD	
8.320	INDIUM	IN	
8.340	GOLD	AU	
8.360	COPPER	CU	
8.501	CF TUNGSTEN	W CFINE	
8.502	REV TUNG CF	W1 CFINE	
8.503	R2CFTUNGSTEN	W2 CFINE	Same as W1 C-Fine (8.502) except $\xi\sigma_s$ at levels through 8, where $0.5 \xi\sigma_s$ is used.
8.600	XENON 135	XE 135	
8.601	CF 135 XENON	CF XE 135	
9.000	SLAG	SLAG	
9.020	FICTITIUM	FI	A fictitious element with constant scattering cross section of 1 barn. σ_{tr} is also a constant 1 barn, and $\xi\sigma_s$ and σ_a are zero. Together with ACCUMULATION, code 0.980, it can be used to simulate an element that is not on the tape but which has essentially constant σ_s , and σ_a which varies as $1/v$.
9.200	ENERGY	E(EV)	The energy, in electron volts, corresponding to each lethargy level.
-10.000	IMPORTANCE	IMP	A fictitious element with $\sigma_s = \xi\sigma_s = \sigma_a = \sigma_{tr} = 0$ and $\nu\sigma_f = \frac{[\nu\sigma_f(u)]_{U^{235}}}{\int_{-\infty}^{\infty} [\nu\sigma_f(u)]_{U^{235}} du}$
99.997	AG, AU, CU, IN	N-BETA	Beta activation cross sections for silver, gold, copper, and indium listed respectively in the columns for σ_s , $\xi\sigma_s$, σ_{tr} , and σ_a .
99.998	MN,	N-BETA	Beta activation cross sections for manganese listed in the σ_s column.

ALPHABETICAL INDEX

<u>NAME</u>	<u>FORMULA</u>	<u>CODE</u>
*CF A286	*CF A286	5.477
ACCUMULATION	ACC	0.980
AG, AU, CU, IN	N-BETA	99.997
CF ALUMINUM	AL CFINE	5.101
*AL CF	*AL CF	5.111
*CF AL203	*CF AL203	4.631
AVG DELAY	S(3)	0.943
BARIUM	BA	5.420
RBE(N, 2N)	RBE(N, 2N)	- 1.502
*RBE(N, 2N)	*RBE(N, 2N)	- 1.512
*RBEO(N, 2N)	*RBEO(N, 2N)	- 1.532
BISMUTH	BI	7.500
CF BORON	B CFINE	8.001
10 BORON	B 10	8.020
CF 10 BORON	B 10 CFINE	8.021
*BOR CARBIDE	*B4C	8.050
CADMIUM	CD	8.300
CALCIUM	CA	5.400
CF CARBON	C CFINE	3.301
CHLORINE	CL	7.740
CF CHROMIUM	CR CFINE	4.202

<u>NAME</u>	<u>FORMULA</u>	<u>CODE</u>
*CF CHROMIUM	*CR CFINE	4.432
CF1 CHROMIUM	CF1 CHROMIUM	4.203
*CF1 CHROM	*CF1 CHROM	4.433
CF COBALT	CO CFINE	4.501
COPPER	CU	8.360
*CF DCM	*CF DCM	5.476
DEUTERIUM	D(HVY WATER)	3.100
DYSPROSIUM	DY	8.260
ENERGY	E(EV)	9.200
CF EUROPIUM	EU CFINE	8.245
TK EU	TK EU	8.244
TN EU	TN EU	8.243
1/V FACTOR	V18/V(AVG)	0.930
*CF1 FECRAL	*CF1 FECRAL	4.352
FICTITIUM	FI	9.020
FLUORINE	F	6.000
R GADOLINIUM	REV GD	8.204
GD CFINE	GD CFINE	8.207
GOLD	AU	8.340
HAFNIUM	HF	8.280
*CF HASTA	*CF HASTA	5.471
BND HYDROGEN	H(WATER)	2.040
CF HYDROGEN	H BND CFINE	2.041

<u>NAME</u>	<u>FORMULA</u>	<u>CODE</u>
GAS HYDROGEN	H(GAS)	2.020
IMPORTANCE	IMP	-10.000
INDIUM	IN	8.320
*CF X INC	*CF X INC	4.331
CF IRON	FE CFINE	4.002
*CF IRON	*FE CFINE	4.112
CF1 IRON	CF1 IRON	4.003
*CF1 IRON	*CF1 IRON	4.113
LEAD	PB	7.600
*LEAD	*PB	7.610
LETHARGY	LN E ZERO/E	0.910
CF LITHIUM	LI CFINE	3.401
CF 6 LITHIUM	LI 6 CFINE	3.421
MAGNESIUM	MG	5.140
NDA MG	NDA MG	5.142
CF MANGANESE	MN CFINE	4.401
NDA MERCURY	NDA HG	7.702
MOLYBDENUM	MO	5.300
CF MOLY	CF MO	5.301
MN,	N-BETA	99.998
CF NICKEL	NI CFINE	4.102
*CF NICKEL	*NI CFINE	4.412
CF1 NICKEL	CF1 NICKEL	4.103

<u>NAME</u>	<u>FORMULA</u>	<u>CODE</u>
*CF1 NICKEL	*CF1 NICKEL	4.413
*CF .8NI.2CR	*CF .8NI.2CR	4.311
CF NIOBIUM	NB CFINE	5.361
NITROGEN	N	6.300
*ORALLOY	*OY	- 1.130
*CF ORALLOY	*OY CFINE	- 1.131
*OY DIOXIDE	*OYO2	- 1.410
*CF OYO2	*CF OYO2	- 1.411
CF OXYGEN	O CFINE	3.601
*PENTALENE	*PENTALENE	2.530
PHOSPHORUS	P	6.200
PLATINUM	PT	4.800
*PLATINUM	*PT	4.810
*PLEXIGLAS	*C5H8O2	2.550
PO-BE	PO-BE	0.946
*POLYETHYLEN	*CH2	2.570
POTASSIUM	K	7.400
CF PU 239	CF PU 239	- 1.201
PU239M1	PU239M1	- 1.202
PU240HAPO	PU240HAPO	- 1.203
PU241HAPO	PU241HAPO	- 1.204
PU242HAPO	PU242HAPO	- 1.205
*CF RENE 41	*CF RENE 41	5.475

<u>NAME</u>	<u>FORMULA</u>	<u>CODE</u>
RHENIUM	RE	3.900
RHODIUM	RH	4.700
*RHODIUM	*RH	4.710
R SAMARIUM	R SM	8.224
149 SAMARIUM	R SM 149	8.225
CF SAMARIUM	SM CFINE	8.226
CF 149 SM	CF 149 SM	8.227
SCANDIUM	SC	5.600
SILICON	SI	5.500
*SIL CARBIDE	*SIC	5.530
*SIL DIOXIDE	*SI02	5.510
SLAG	SLAG	9.000
SODIUM	NA	7.300
*SODIUM	*NA	7.310
S(CF)	S(CF)	0.939
0 SPECTRUM	S(0)	0.940
2 SPECTRUM	S(2)	0.942
*CF304 SS	*CF304 SS	4.151
*R CF 304SS	*R CF 304SS	4.152
*CF310 SS	*CF310 SS	4.171
SULPHUR	S	6.100
TANTALUM	TA	4.900
*TANTALUM	*TA	4.910
REV TANTALUM	TA1	4.901
R2TANTALUM	TA2	4.902

<u>NAME</u>	<u>FORMULA</u>	<u>CODE</u>
*THERMOFLEX	*AL2O3+SiO2	5.550
CF THORIUM	TH CFINE	- 1.301
CF TITANIUM	TI CFINE	4.301
CF TUNGSTEN	W CFINE	8.501
REV TUNG CF	W1 CFINE	8.502
R2CFTUNGSTEN	W2 CFINE	8.503
233 URANIUM	U 233	- 1.000
234 URANIUM	U234 CFINE	- 1.081
235 URANIUM	U 235	- 1.020
R 235 URAN	REV U 235	- 1.022
CF 235 URAN	U235 CFINE	- 1.082
U235M1	U235M1	- 1.085
236 URANIUM	U236 CFINE	- 1.083
238 URANIUM	U 238	- 1.040
CF 238 URAN	U238 CFINE	- 1.084
U238M1	U238M1	- 1.088
VANADIUM	V	4.600
WATER/H	HOL/2	2.060
*WATER	*H2O	2.510
*HVV WATER	*D2O	3.110
HVV WATER/D	DOL/2	3.800
XENON 135	XE 135	8.600
CF 135 XENON	CF XE 135	8.601
CF YTTRIUM	Y CFINE	5.245
CF ZIRCONIUM	ZR CFINE	5.201

CROSS SECTION DATA

This section is arranged by code number and is a reproduction of the computer print out with the following exceptions:

- a) The nuclei/cm³ given with the macroscopic cross sections have been added to the report and do not appear on the tape.
- b) The density and nuclei/cm³ given with the microscopic cross sections have been added to the report and do not appear on the tape.

An asterisk in the name and formula indicates that the cross section is macroscopic.

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
ACCUMULATION	ACC	0.9800	0.	0	0.	0.	0.

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	0.	0.	0.	5.030000E-05
1	0.500	0.	0.	0.	6.450000E-05
2	1.000	0.	0.	0.	8.280000E-05
3	1.500	0.	0.	0.	1.060000E-04
4	2.000	0.	0.	0.	1.370000E-04
5	2.500	0.	0.	0.	1.750000E-04
6	3.000	0.	0.	0.	2.250000E-04
7	3.500	0.	0.	0.	2.890000E-04
8	4.000	0.	0.	0.	3.710000E-04
9	6.000	0.	0.	0.	1.010000E-03
10	8.000	0.	0.	0.	2.740000E-03
11	10.000	0.	0.	0.	7.460000E-03
12	12.000	0.	0.	0.	2.030000E-02
13	14.000	0.	0.	0.	5.510000E-02
14	15.500	0.	0.	0.	1.037000E-01
15	16.500	0.	0.	0.	1.991000E-01
16	17.500	0.	0.	0.	3.001000E-01
17	18.500	0.	0.	0.	5.229000E-01
18	19.795	0.	0.	0.	9.295000E-01
3000	17.675	0.	0.	0.	3.463700E-01
2500	17.831	0.	0.	0.	3.744800E-01
2000	18.016	0.	0.	0.	4.107800E-01
1500	18.243	0.	0.	0.	4.602200E-01
1000	18.537	0.	0.	0.	5.332400E-01
500	18.959	0.	0.	0.	6.576400E-01
68	19.555	0.	0.	0.	8.868800E-01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
233 IRANIUM N/CC - SOLID MATERIAL	U 233 0.0482261	-1.0000	18.66	92	233.112	0.00863	0.99710

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION	FISSION SPECTRUM
0	0.	1.000000E 01	8.632000E-02	9.971000E 00	3.000000E 00	6.830000E 00	0.
1	0.500	1.000000E 01	8.632000E-02	9.971000E 00	1.800000E 00	4.220000E 00	1.015000E-01
2	1.000	1.000000E 01	8.632000E-02	9.971000E 00	1.800000E 00	4.320000E 00	3.584000E-01
3	1.500	1.000000E 01	8.632000E-02	9.971000E 00	2.100000E 00	4.930000E 00	4.798000E-01
4	2.000	1.000000E 01	8.632000E-02	9.971000E 00	2.100000E 00	4.950000E 00	4.271000E-01
5	2.500	1.000000E 01	8.632000E-02	9.971000E 00	2.100000E 00	4.980000E 00	2.807000E-01
6	3.000	1.000000E 01	8.632000E-02	9.971000E 00	2.300000E 00	5.380000E 00	1.663000E-01
7	3.500	1.000000E 01	8.632000E-02	9.971000E 00	2.600000E 00	6.070000E 00	9.360000E-02
8	4.000	1.000000E 01	8.632000E-02	9.971000E 00	2.400000E 00	5.490000E 00	3.380000E-02
9	6.000	1.000000E 01	8.632000E-02	9.971000E 00	4.300000E 00	9.930000E 00	0.
10	8.000	1.000000E 01	8.632000E-02	9.971000E 00	2.000000E 01	5.000000E 01	0.
11	10.000	1.000000E 01	8.632000E-02	9.971000E 00	4.800000E 01	1.050000E 02	0.
12	12.000	1.000000E 01	8.632000E-02	9.971000E 00	5.000000E 01	1.200000E 02	0.
13	14.000	1.000000E 01	8.632000E-02	9.971000E 00	9.000000E 01	2.000000E 02	0.
14	15.500	1.000000E 01	8.632000E-02	9.971000E 00	3.300000E 02	7.350000E 02	0.
15	16.500	1.000000E 01	8.632000E-02	9.971000E 00	1.300000E 02	2.790000E 02	0.
16	17.500	1.000000E 01	8.632000E-02	9.971000E 00	1.920000E 02	3.940000E 02	0.
17	18.500	1.000000E 01	8.632000E-02	9.971000E 00	2.940000E 02	6.860000E 02	0.
18	19.795	1.000000E 01	8.632000E-02	9.971000E 00	5.080000E 02	1.300000E 03	0.
3000	17.675	1.000000E 01	8.632000E-02	9.971000E 00	2.137700E 02	4.729000E 02	0.
2500	17.831	1.000000E 01	8.632000E-02	9.971000E 00	2.259100E 02	5.048600E 02	0.
2000	18.016	1.000000E 01	8.632000E-02	9.971000E 00	2.435200E 02	5.499200E 02	0.
1500	18.243	1.000000E 01	8.632000E-02	9.971000E 00	2.697800E 02	6.142900E 02	0.
1000	18.537	1.000000E 01	8.632000E-02	9.971000E 00	3.092700E 02	7.114400E 02	0.
500	18.959	1.000000E 01	8.632000E-02	9.971000E 00	3.803700E 02	8.780100E 02	0.
68	19.555	1.000000E 01	8.632000E-02	9.971000E 00	5.164600E 02	1.189200E 03	0.

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
235 URANIUM N/CC - SOLID MATERIAL	U 235 0.0478149	-1.0200	18.66	92	235.117	0.00840	0.99720

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION	FISSION SPECTRUM
0 C.	1.300000E 00	1.092000E-02	1.296360E 00	1.700000E 00	3.700000E 00	0.
1 0.500	1.900000E 00	1.596000E-02	1.894680E 00	1.600000E 00	3.400000E 00	1.015000E-01
2 1.000	2.500000E 00	2.100000E-02	2.493000E 00	1.500000E 00	3.200000E 00	3.584000E-01
3 1.500	3.000000E 00	2.520000E-02	2.991600E 00	1.500000E 00	3.200000E 00	4.798000E-01
4 2.000	3.500000E 00	2.940000E-02	3.490200E 00	1.500000E 00	3.000000E 00	4.271000E-01
5 2.500	3.700000E 00	3.108000E-02	3.689640E 00	1.600000E 00	3.000000E 00	2.887000E-01
6 3.000	3.800000E 00	3.192000E-02	3.789360E 00	1.700000E 00	3.200000E 00	1.663000E-01
7 3.500	5.100000E 00	4.284000E-02	5.085720E 00	1.900000E 00	3.700000E 00	9.360000E-02
8 4.000	6.400000E 00	5.376000E-02	6.382080E 00	2.000000E 00	3.900000E 00	3.380000E-02
9 6.000	8.500000E 00	7.140000E-02	8.476200E 00	3.300000E 00	6.900000E 00	0.
10 8.000	8.500000E 00	7.140000E-02	8.476200E 00	5.800000E 00	1.100000E 01	0.
11 10.000	8.500000E 00	7.140000E-02	8.476200E 00	1.450000E 01	2.460000E 01	0.
12 12.000	8.500000E 00	7.140000E-02	8.476200E 00	6.500000E 01	9.350000E 01	0.
13 14.000	8.500000E 00	7.140000E-02	8.476200E 00	1.160000E 02	1.670000E 02	0.
14 15.500	8.500000E 00	7.140000E-02	8.476200E 00	3.900000E 01	5.660000E 01	0.
15 16.500	8.500000E 00	7.140000E-02	8.476200E 00	8.700000E 01	1.870000E 02	0.
16 17.500	8.500000E 00	7.140000E-02	8.476200E 00	2.020000E 02	4.010000E 02	0.
17 18.500	8.500000E 00	7.140000E-02	8.476200E 00	2.960000E 02	6.224000E 02	0.
18 19.795	9.000000E 00	7.560000E-02	8.974800E 00	6.910000E 02	1.436000E 03	0.
3000 17.675	8.500000E 00	7.140000E-02	8.476200E 00	2.142000E 02	4.350000E 02	0.
2500 17.831	8.500000E 00	7.140000E-02	8.476200E 00	2.348000E 02	4.769000E 02	0.
2000 18.016	8.500000E 00	7.140000E-02	8.476200E 00	2.607000E 02	5.299000E 02	0.
1500 18.243	8.500000E 00	7.140000E-02	8.476200E 00	2.946000E 02	6.002000E 02	0.
1000 18.537	8.500000E 00	7.140000E-02	8.476200E 00	3.434000E 02	7.027000E 02	0.
500 18.959	8.500000E 00	7.140000E-02	8.476200E 00	4.294000E 02	8.833000E 02	0.
68 19.555	8.500000E 00	7.140000E-02	8.476200E 00	6.004000E 02	1.237000E 03	0.

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
R 235 URAN N/CC - SOLID MATERIAL	REV U 235 0.0478149	-1.0220	18.66	92	235.117	0.00856	0.99714

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION	FISSION SPECTRUM
0 C.	4.500000E 00	3.851000E-02	4.487000E 00	2.020000E 00	5.450000E 00	0.
1 0.500	4.500000E 00	3.851000E-02	4.487000E 00	2.020000E 00	5.450000E 00	8.737815E-02
2 1.000	6.400000E 00	5.477000E-02	6.382000E 00	1.410000E 00	3.620000E 00	3.753289E-01
3 1.500	6.170000E 00	5.280000E-02	6.152000E 00	1.500000E 00	3.620000E 00	4.736545E-01
4 2.000	4.900000E 00	4.193000E-02	4.886000E 00	1.500000E 00	3.400000E 00	4.256609E-01
5 2.500	5.400000E 00	4.621000E-02	5.385000E 00	1.390000E 00	3.150000E 00	3.005973E-01
6 3.000	6.000000E 00	5.135000E-02	5.983000E 00	1.400000E 00	3.150000E 00	1.554684E-01
7 3.500	7.100000E 00	6.076000E-02	7.080000E 00	1.500000E 00	3.390000E 00	9.871010E-02
8 4.000	8.950000E 00	7.659000E-02	8.924000E 00	1.800000E 00	3.880000E 00	3.297910E-02
9 6.000	1.040000E 01	8.900000E-02	1.037000E 01	3.480000E 00	6.300000E 00	1.624400E-04
10 8.000	1.040000E 01	8.900000E-02	1.037000E 01	6.730000E 00	1.310000E 01	2.258000E-05
11 10.000	1.290000E 01	1.095000E-01	1.276000E 01	1.670000E 01	2.800000E 01	3.030000E-06
12 12.000	1.650000E 01	1.421000E-01	1.655000E 01	6.000000E 01	9.500000E 01	4.700000E-07
13 14.000	1.600000E 01	1.369000E-01	1.595000E 01	6.000000E 01	9.500000E 01	0.
14 15.500	1.141000E 01	9.765000E-02	1.138000E 01	6.000000E 01	9.500000E 01	0.
15 16.500	1.303000E 01	1.115000E-01	1.299000E 01	8.400000E 01	1.870000E 02	0.
16 17.500	1.340000E 01	1.147000E-01	1.336000E 01	2.100000E 02	4.190000E 02	0.
17 18.500	1.436000E 01	1.229000E-01	1.432000E 01	2.975000E 02	6.310000E 02	0.
18 19.795	1.452000E 01	1.243000E-01	1.448000E 01	6.940000E 02	1.437540E 03	0.
3000 17.675	1.400000E 01	1.198000E-01	1.396000E 01	2.142000E 02	4.368000E 02	0.
2500 17.831	1.400000E 01	1.198000E-01	1.396000E 01	2.348000E 02	4.788000E 02	0.
2000 18.016	1.400000E 01	1.198000E-01	1.396000E 01	2.607000E 02	5.321000E 02	0.
1500 18.243	1.400000E 01	1.198000E-01	1.396000E 01	2.946000E 02	6.026000E 02	0.
1000 18.537	1.400000E 01	1.198000E-01	1.396000E 01	3.434000E 02	7.056000E 02	0.
500 18.959	1.400000E 01	1.198000E-01	1.396000E 01	4.294000E 02	8.869000E 02	0.
68 19.555	1.400000E 01	1.198000E-01	1.396000E 01	6.004000E 02	1.242000E 03	0.

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
238 URANIUM N/CC - SOLID MATERIAL	U 238 0.0472109	-1.0400	18.66	92	238.125	0.00840	0.99720

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION	FISSION SPECTRUM
0	0.	4.160000E 00	3.860000E 00	4.130000E 00	1.370000E 00	3.430000E 00	0.
1	0.500	6.270000E 00	5.010000E 00	6.260000E 00	5.900000E-01	1.480000E 00	1.015000E-01
2	1.000	7.410000E 00	5.840000E 00	7.400000E 00	5.800000E-01	1.400000E 00	3.584000E-01
3	1.500	6.580000E 00	6.260000E 00	6.570000E 00	5.500000E-01	1.280000E 00	4.798000E-01
4	2.000	6.700000E 00	4.970000E 00	6.690000E 00	3.200000E-01	6.250000E-01	4.271000E-01
5	2.500	6.800000E 00	1.760000E 00	6.780000E 00	1.200000E-01	0.	2.887000E-01
6	3.000	8.200000E 00	1.160000E 00	8.180000E 00	1.500000E-01	0.	1.663000E-01
7	3.500	9.450000E 00	8.360000E-01	9.420000E 00	1.800000E-01	0.	9.360000E-02
8	4.000	1.077000E 01	5.090000E-01	1.074000E 01	2.100000E-01	0.	3.380000E-02
9	6.000	1.320000E 01	1.108000E-01	1.316000E 01	4.300000E-01	0.	0.
10	8.000	1.320000E 01	1.108000E-01	1.316000E 01	9.500000E-01	0.	0.
11	10.000	1.320000E 01	1.108000E-01	1.316000E 01	2.880000E 00	0.	0.
12	12.000	1.100000E 01	9.240000E-02	1.097000E 01	2.200000E 01	0.	0.
13	14.000	9.300000E 00	7.810000E-02	9.270000E 00	2.600000E 02	0.	0.
14	15.500	9.150000E 00	7.690000E-02	9.120000E 00	2.900000E-01	0.	0.
15	16.500	9.020000E 00	7.580000E-02	8.990000E 00	5.500000E-01	0.	0.
16	17.500	8.790000E 00	7.380000E-02	8.770000E 00	8.300000E-01	0.	0.
17	18.500	8.480000E 00	7.120000E-02	8.460000E 00	1.440000E 00	0.	0.
18	19.795	8.160000E 00	6.850000E-02	8.140000E 00	2.560000E 00	0.	0.
3000	17.675	8.657600E 00	7.272400E-02	8.633400E 00	9.525000E-01	0.	0.
2500	17.831	8.616300E 00	7.237700E-02	8.592200E 00	1.029800E 00	0.	0.
2000	18.016	8.565000E 00	7.194600E-02	8.541000E 00	1.129600E 00	0.	0.
1500	18.243	8.495800E 00	7.136500E-02	8.472000E 00	1.265600E 00	0.	0.
1000	18.537	8.396800E 00	7.053300E-02	8.373300E 00	1.466400E 00	0.	0.
500	18.959	8.234000E 00	6.916600E-02	8.210900E 00	1.808500E 00	0.	0.
68	19.555	7.918200E 00	6.651300E-02	7.896000E 00	2.438900E 00	0.	0.

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
234 URANIUM N/CC - SOLID MATERIAL	U234 CFINE 0.0480197	-1.0810	18.66	92	234.114	1.00000	0.

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION
0	0.	4.224419E 00	5.790658E 00	2.631801E 00	1.742816E 00	6.615644E 00
1	0.500	5.516435E 00	5.215775E 00	2.816501E 00	1.665088E 00	5.663071E 00
2	1.000	6.401991E 00	4.046261E 00	2.998483E 00	1.563550E 00	4.736332E 00
3	1.500	5.732323E 00	2.787935E 00	3.217179E 00	1.533865E 00	4.254583E 00
4	2.000	5.232564E 00	1.818397E 00	3.581217E 00	1.414147E 00	3.593834E 00
5	2.500	5.760737E 00	1.156015E 00	4.188471E 00	1.257904E 00	2.944192E 00
6	3.000	7.445995E 00	6.547160E-01	5.706038E 00	6.367203E-01	1.325130E 00
7	3.500	8.778542E 00	3.452736E-01	7.090332E 00	2.605404E-01	3.328804E-01
8	4.000	9.235806E 00	1.417824E-01	8.173721E 00	2.594508E-01	7.604839E-02
9	6.000	9.369521E 00	8.053023E-02	9.270288E 00	4.650372E-01	0.
10	8.000	1.217612E 01	1.046527E-01	1.214114E 01	1.134838E 00	0.
11	10.000	3.173313E 01	2.727435E-01	3.164105E 01	7.477619E 00	0.
12	12.000	2.280503E 01	1.960073E-01	2.273951E 01	3.065821E 01	0.
13	14.000	6.699361E 01	5.758043E-01	6.680113E 01	3.313585E 02	0.
14	15.500	9.734754E 00	8.366937E-02	9.706784E 00	6.132972E 00	0.
15	16.500	1.362236E 01	1.170830E-01	1.358322E 01	1.296431E 01	0.
16	17.500	1.539643E 01	1.323310E-01	1.535219E 01	2.802745E 01	0.
17	18.500	1.624358E 01	1.396122E-01	1.619691E 01	5.234125E 01	0.
18	19.795	1.654522E 01	1.422047E-01	1.649768E 01	7.996884E 01	0.
3000	17.675	1.518630E 01	1.305249E-01	1.514267E 01	3.095380E 01	0.
2500	17.831	1.539740E 01	1.323393E-01	1.535316E 01	3.426120E 01	0.
2000	18.016	1.562030E 01	1.342551E-01	1.557542E 01	3.851520E 01	0.
1500	18.243	1.585200E 01	1.362466E-01	1.580645E 01	4.426800E 01	0.
1000	18.537	1.609420E 01	1.382283E-01	1.604796E 01	5.268460E 01	0.
500	18.959	1.635260E 01	1.405492E-01	1.630561E 01	6.681290E 01	0.
68	19.555	1.655360E 01	1.422768E-01	1.650604E 01	9.229920E 01	0.

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CF 235 URAN N/CC - SOLID MATERIAL	U235 CFINE 0.0478149	-1.0820	18.66	92	235.117	1.00000	0.

LETHARGY LEVEL		SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION
0	C.	3.437461E 00	6.763955E-01	6.910081E-01	2.535215E 00	6.992521E 00
1	C.500	5.183474E 00	3.280200E 00	2.346537E 00	1.712949E 00	4.540373E 00
2	1.000	6.251230E 00	4.061542E 00	3.499219E 00	1.445171E 00	3.634599E 00
3	1.500	5.764534E 00	2.600801E 00	3.376639E 00	1.512302E 00	3.646246E 00
4	2.000	5.152231E 00	1.746855E 00	3.272929E 00	1.468192E 00	3.414658E 00
5	2.500	5.359051E 00	1.622037E 00	3.760108E 00	1.396877E 00	3.148510E 00
6	3.000	6.199243E 00	1.347693E 00	4.603408E 00	1.440472E 00	3.157124E 00
7	3.500	7.423447E 00	1.012980E 00	5.853420E 00	1.623986E 00	3.472733E 00
8	4.000	9.262986E 00	8.042408E-01	9.191009E 00	2.110895E 00	4.341174E 00
9	6.000	1.035258E 01	9.855573E-02	1.024538E 01	3.730116E 00	7.209628E 00
10	8.000	1.019998E 01	8.729146E-02	1.017081E 01	7.369230E 00	1.332137E 01
11	10.000	1.314916E 01	1.125305E-01	1.311155E 01	2.101064E 01	3.543334E 01
12	12.000	2.131952E 01	1.824524E-01	2.125854E 01	5.487375E 01	8.821359E 01
13	14.000	1.067500E 01	9.135665E-02	1.064447E 01	7.956731E 01	1.167508E 02
14	15.500	1.117158E 01	9.566639E-02	1.113963E 01	3.586777E 01	6.754347E 01
15	16.500	1.264424E 01	1.082094E-01	1.260808E 01	8.586599E 01	1.009109E 02
16	17.500	1.365615E 01	1.168693E-01	1.361709E 01	2.213924E 02	4.541315E 02
17	18.500	1.420918E 01	1.216022E-01	1.410855E 01	3.264705E 02	6.845481E 02
18	19.795	1.442786E 01	1.234730E-01	1.438660E 01	5.206242E 02	1.085131E 03
3000	17.675	1.400000E 01	1.198000E-01	1.396000E 01	2.142000E 02	4.368000E 02
2500	17.831	1.400000E 01	1.198000E-01	1.396000E 01	2.348000E 02	4.788000E 02
2000	18.016	1.400000E 01	1.198000E-01	1.396000E 01	2.607000E 02	5.321000E 02
1500	18.243	1.400000E 01	1.198000E-01	1.396000E 01	2.946000E 02	6.026000E 02
1000	18.537	1.400000E 01	1.198000E-01	1.396000E 01	3.434000E 02	7.056000E 02
500	18.959	1.400000E 01	1.198000E-01	1.396000E 01	4.294000E 02	8.869000E 02
68	19.555	1.400000E 01	1.198000E-01	1.396000E 01	6.004000E 02	1.242000E 03

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
236 URANIUM N/CC - SOLID MATERIAL	U236 CFINE 0.0476120	-1.0830	18.66	92	236.119	1.00000	0.

LETHARGY LEVEL		SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION
0	C.	3.748437E 00	5.072425E 00	2.331068E 00	2.234901E 00	8.426705E 00
1	C.500	6.031853E 00	5.681839E 00	3.070311E 00	1.149887E 00	3.890212E 00
2	1.000	7.065017E 00	4.485390E 00	3.309478E 00	9.184090E-01	2.720637E 00
3	1.500	6.528845E 00	3.178916E 00	3.671296E 00	8.052223E-01	2.215721E 00
4	2.000	5.928743E 00	2.069323E 00	4.056878E 00	6.584242E-01	1.602018E 00
5	2.500	6.760677E 00	1.351118E 00	4.914909E 00	2.947313E-01	4.136967E-01
6	3.000	7.990816E 00	6.303249E-01	6.121229E 00	1.362289E-01	2.409160E-02
7	3.500	8.966847E 00	7.641655E-02	7.241766E 00	1.333679E-01	0.
8	4.000	9.243173E 00	7.877143E-02	8.180878E 00	2.311620E-01	0.
9	6.000	9.369521E 00	7.984819E-02	9.270390E 00	4.650372E-01	0.
10	8.000	1.217612E 01	1.037664E-01	1.214144E 01	1.134838E 00	0.
11	10.000	3.236570E 01	2.758244E-01	3.227350E 01	6.396235E 00	0.
12	12.000	4.069786E 01	3.468320E-01	4.058192E 01	3.453615E 01	0.
13	14.000	1.739515E 01	1.482436E-01	1.734560E 01	1.328146E 02	0.
14	15.500	8.361060E 00	7.125396E-02	8.337241E 00	1.515556E 00	0.
15	16.500	9.082410E 00	7.740991E-02	9.057533E 00	1.661930E 00	0.
16	17.500	9.248428E 00	7.881622E-02	9.222081E 00	2.663740E 00	0.
17	18.500	9.308465E 00	7.932785E-02	9.281947E 00	4.377884E 00	0.
18	19.795	9.326945E 00	7.948535E-02	9.300375E 00	6.409368E 00	0.
3000	17.675	9.206080E 00	7.845532E-02	9.179854E 00	2.980690E 00	0.
2500	17.831	9.228820E 00	7.864911E-02	9.202529E 00	3.110300E 00	0.
2000	18.016	9.252830E 00	7.885373E-02	9.226470E 00	3.408280E 00	0.
1500	18.243	9.275040E 00	7.904300E-02	9.248617E 00	3.815080E 00	0.
1000	18.537	9.295340E 00	7.921600E-02	9.268859E 00	4.417320E 00	0.
500	18.959	9.316360E 00	7.939514E-02	9.289819E 00	5.444080E 00	0.
68	19.555	9.314520E 00	7.937945E-02	9.287984E 00	7.329310E 00	0.

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CF 238 URAN N/CC - SOLID MATERIAL	U238 CFINE 0.0472109	-1.0840	18.66	92	238.125	1.00000	0.

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION
0	C.	4.874027E 00	6.694461E 00	3.036888E 00	1.015000E 00	3.759724E 00
1	0.500	6.230203E 00	5.898203E 00	3.178864E 00	7.200939E-01	2.403295E 00
2	1.000	7.189543E 00	4.550556E 00	3.367093E 00	5.822751E-01	1.684307E 00
3	1.500	6.694370E 00	3.288484E 00	3.767771E 00	5.990790E-01	1.552986E 00
4	2.000	6.553060E 00	2.307348E 00	4.484903E 00	2.665853E-01	4.584836E-01
5	2.500	6.906503E 00	1.393275E 00	5.020287E 00	1.523061E-01	1.900084E-02
6	3.000	8.034411E 00	7.122479E-01	6.154015E 00	1.270516E-01	4.298087E-04
7	3.500	9.316616E 00	3.632919E-01	7.527412E 00	1.369370E-01	0.
8	4.000	1.147236E 01	1.656840E-01	1.017452E 01	2.397217E-01	0.
9	6.000	1.326491E 01	1.138595E-01	1.312970E 01	4.704326E-01	0.
10	8.000	1.429849E 01	1.201073E-01	1.425845E 01	1.111058E 00	0.
11	10.000	2.366878E 01	1.988178E-01	2.360251E 01	6.097120E 00	0.
12	12.000	5.691917E 01	4.781211E-01	5.675980E 01	3.790887E 01	0.
13	14.000	2.413706E 01	2.027513E-01	2.406948E 01	1.113136E 02	0.
14	15.500	7.985576E 00	6.707841E-02	7.963166E 00	5.335789E-01	0.
15	16.500	8.282677E 00	6.957239E-02	8.259237E 00	5.906141E-01	0.
16	17.500	8.344902E 00	7.009717E-02	8.321536E 00	8.863046E-01	0.
17	18.500	8.366311E 00	7.027701E-02	8.342885E 00	1.415229E 00	0.
18	19.795	8.350240E 00	7.014201E-02	8.326859E 00	2.057070E 00	0.
3000	17.675	8.657600E 00	7.272384E-02	8.633359E 00	9.525000E-01	0.
2500	17.831	8.616300E 00	7.237692E-02	8.592174E 00	1.029800E 00	0.
2000	18.016	8.565000E 00	7.194600E-02	8.541018E 00	1.129600E 00	0.
1500	18.243	8.495800E 00	7.136472E-02	8.472012E 00	1.265600E 00	0.
1000	18.537	8.396800E 00	7.053312E-02	8.373289E 00	1.466400E 00	0.
500	18.959	8.234000E 00	6.916560E-02	8.210945E 00	1.808500E 00	0.
68	19.555	7.918200E 00	6.651288E-02	7.896029E 00	2.438900E 00	0.

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
U235M1 N/CC - SOLID MATERIAL	U235M1 0.0478149	-1.0850	18.66	92	235.117	0.	0.

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION
0	C.	4.232960E 00	5.000000E-01	1.500000E 00	1.863920E 00	5.891000E 00
1	0.500	5.479510E 00	2.080000E 00	2.479900E 00	1.388580E 00	4.019000E 00
2	1.000	6.367350E 00	2.480000E 00	3.563200E 00	1.252140E 00	3.366000E 00
3	1.500	6.338650E 00	1.720000E 00	3.712900E 00	1.349390E 00	3.423000E 00
4	2.000	5.758220E 00	1.170000E 00	3.657800E 00	1.363570E 00	3.247000E 00
5	2.500	5.695330E 00	9.960000E-01	3.855700E 00	1.352100E 00	2.026000E 00
6	3.000	6.274600E 00	8.100000E-01	4.039400E 00	1.439420E 00	3.073000E 00
7	3.500	7.421710E 00	6.060000E-01	5.852000E 00	1.657550E 00	3.375000E 00
8	4.000	9.169570E 00	4.780000E-01	8.108400E 00	2.201830E 00	4.246000E 00
9	6.000	1.016200E 01	9.850000E-02	1.005600E 01	3.903970E 00	6.938890E 00
10	8.000	1.019998E 01	8.729000E-02	1.017000E 01	7.650000E 00	1.310000E 01
11	10.000	1.314916E 01	1.125000E-01	1.311100E 01	2.120000E 01	3.486000E 01
12	12.000	2.131900E 01	1.824000E-01	2.125850E 01	5.430000E 01	8.678000E 01
13	14.000	1.067500E 01	9.135000E-02	1.064440E 01	7.570070E 01	9.194650E 01
14	15.500	1.117100E 01	9.561000E-02	1.113960E 01	3.712220E 01	6.762780E 01
15	16.500	1.264400E 01	1.082000E-01	1.260800E 01	8.284000E 01	1.722000E 02
16	17.500	1.365600E 01	1.169000E-01	1.361700E 01	2.093000E 02	4.187000E 02
17	18.500	1.420900E 01	1.216000E-01	1.416800E 01	3.167000E 02	6.539000E 02
18	19.795	1.442800E 01	1.235000E-01	1.438600E 01	5.065000E 02	1.052900E 03
3000	17.675	1.400000E 01	1.198000E-01	1.396000E 01	2.080000E 02	4.235000E 02
2500	17.831	1.400000E 01	1.198000E-01	1.396000E 01	2.288000E 02	4.661000E 02
2000	18.016	1.400000E 01	1.198000E-01	1.396000E 01	2.547000E 02	5.190000E 02
1500	18.243	1.400000E 01	1.198000E-01	1.396000E 01	2.883000E 02	5.008000E 02
1000	18.537	1.400000E 01	1.198000E-01	1.396000E 01	3.365000E 02	6.901000E 02
500	18.959	1.400000E 01	1.198000E-01	1.396000E 01	4.217000E 02	8.499000E 02
68	19.555	1.400000E 01	1.198000E-01	1.396000E 01	5.922000E 02	1.226200E 03

DESIGNATION	FORMULA	CCOE	DENSITY	Z	A	XI	1-8
U238M1	U238M1	-1.0880	18.66	92	238.125	0.	0.
N/CC - SOLID MATERIAL.	0.0472109						

LETHARGY LEVEL		SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION
0	C.	4.874000E 00	5.020000E 00	3.037000E 00	1.615000E 00	3.760000E 00
1	C.500	6.230000E 00	4.420000E 00	3.179000E 00	7.200000E-01	2.403000E 00
2	1.000	7.189000E 00	3.410000E 00	3.367000E 00	5.822000E-01	1.684000E 00
3	1.500	6.694000E 00	2.470000E 00	3.767000E 00	5.991000E-01	1.553000E 00
4	2.000	6.553000E 00	1.730000E 00	4.485000E 00	2.666000E-01	4.584000E-01
5	2.500	6.906000E 00	1.040000E 00	5.020000E 00	1.523000E-01	1.900000E-02
6	3.000	8.034000E 00	5.340000E-01	6.154000E 00	1.271000E-01	4.300000E-04
7	3.500	9.317000E 00	2.720000E-01	7.527000E 00	1.369000E-01	0.
8	4.000	1.147000E 01	1.240000E-01	1.017000E 01	2.397000E-01	0.
9	6.000	1.326000E 01	1.139000E-01	1.313000E 01	4.704000E-01	0.
10	8.000	1.430000E 01	1.201000E-01	1.426000E 01	1.111000E 00	0.
11	10.000	2.367000E 01	1.988000E-01	2.360000E 01	6.097000E 00	0.
12	12.000	5.692000E 01	4.781000E-01	5.676000E 01	3.606000E 01	0.
13	14.000	2.414000E 01	2.028000E-01	2.407000E 01	1.096350E 02	0.
14	15.500	7.986000E 00	6.708000E-02	7.963000E 00	5.486000E-01	0.
15	16.500	8.242000E 00	6.957000E-02	8.259000E 00	6.073000E-01	0.
16	17.500	8.345000E 00	7.009000E-02	8.321000E 00	9.190000E-01	0.
17	18.500	8.366000E 00	7.028000E-02	8.343000E 00	1.463000E 00	0.
18	19.795	8.350000E 00	7.014000E-02	8.327000E 00	2.200000E 00	0.
3000	17.675	8.658000E 00	7.272000E-02	8.633000E 00	9.919000E-01	0.
2500	17.831	8.616000E 00	7.238000E-02	8.592000E 00	1.064600E 00	0.
2000	18.016	8.564000E 00	7.195000E-02	8.541000E 00	1.159400E 00	0.
1500	18.243	8.496000E 00	7.136000E-02	8.472000E 00	1.289600E 00	0.
1000	18.537	8.397000E 00	7.053000E-02	8.373000E 00	1.483800E 00	0.
500	18.959	8.234000E 00	6.916000E-02	8.211000E 00	1.818300E 00	0.
68	19.555	7.918000E 00	6.651000E-02	7.896000E 00	2.442500E 00	0.

DESIGNATION	FORMULA	CODE	DENSITY
*ORALLOY	*CY	-1.1300	18.46000

CODE	-1.0200	-1.0400
DESIGNATION	235 URANIUM	238 URANIUM
WEIGHT	C.932009	0.068000
FRACTION		
N/CC - EACH		
CONSTITUENT	0.0440858	C.0031759

LETHARGY LEVEL		SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION	FISSION SPECTRUM
0	C.	7.052345E-02	1.274051E-02	7.026769E-02	7.929693E-02	1.740110E-01	0.
1	C.500	1.036762E-01	1.661502E-02	1.034099E-01	7.241112E-02	1.545922E-01	1.015000E-01
2	1.000	1.337482E-01	1.947324E-02	1.334079E-01	6.797078E-02	1.455209E-01	3.584000E-01
3	1.500	1.531551E-01	2.099224E-02	1.527530E-01	6.787550E-02	1.451398E-01	4.798000E-01
4	2.000	1.755791E-01	1.708050E-02	1.751153E-01	6.714564E-02	1.342424E-01	4.271000E-01
5	2.500	1.847139E-01	6.959826E-03	1.841936E-01	7.091843E-02	1.322575E-01	2.887000E-01
6	3.000	1.935688E-01	5.091299E-03	1.930362E-01	7.542229E-02	1.410746E-01	1.663000E-01
7	3.500	2.548503E-01	4.543715E-03	2.541254E-01	8.433474E-02	1.631176E-01	9.360000E-02
8	4.000	3.163541E-01	3.986603E-03	3.154688E-01	8.083060E-02	1.719347E-01	3.380000E-02
9	6.000	4.166518E-01	3.499621E-03	4.154755E-01	1.468489E-01	3.041922E-01	0.
10	8.000	4.166518E-01	3.499621E-03	4.154755E-01	2.587149E-01	4.893527E-01	0.
11	10.000	4.166518E-01	3.499621E-03	4.154755E-01	6.483912E-01	1.084511E 00	0.
12	12.000	4.096648E-01	3.441184E-03	4.085202E-01	2.935449E 00	4.122025E 00	0.
13	14.000	4.042657E-01	3.395768E-03	4.031211E-01	5.939698E 00	7.362333E 00	0.
14	15.500	4.037893E-01	3.391957E-03	4.026448E-01	1.720268E 00	2.495258E 00	0.
15	16.500	4.033764E-01	3.388463E-03	4.022319E-01	3.837214E 00	8.244050E 00	0.
16	17.500	4.026460E-01	3.382112E-03	4.015332E-01	8.907973E 00	1.767842E 01	0.
17	18.500	4.016614E-01	3.373854E-03	4.005486E-01	1.305398E 01	2.743902E 01	0.
18	19.795	4.226880E-01	3.550440E-03	4.215135E-01	3.047144E 01	6.330725E 01	0.
3000	17.675	4.022255E-01	3.376694E-03	4.010794E-01	7.446209E 00	1.917733E 01	0.
2500	17.831	4.020943E-01	3.377592E-03	4.009685E-01	1.035462E 01	2.102453E 01	0.
2000	18.016	4.019314E-01	3.376223E-03	4.008059E-01	1.149676E 01	2.336108E 01	0.
1500	18.243	4.017116E-01	3.374378E-03	4.005868E-01	1.299170E 01	2.646031E 01	0.
1000	18.537	4.013972E-01	3.371736E-03	4.002733E-01	1.514373E 01	3.097911E 01	0.
500	18.959	4.008801E-01	3.367394E-03	3.997575E-01	1.893620E 01	3.894101E 01	0.
68	19.555	3.998772E-01	3.358969E-03	3.987574E-01	2.647688E 01	5.453417E 01	0.

DESIGNATION	FORMULA	CODE	DENSITY
*CF DRALLOY	*DY CFINE	-1.1310	18.70000
CODE	-1.0810	-1.0820	-1.0830
DESIGNATION	234 URANIUM	CF 235 URAN	236 URANIUM
WEIGHT	0.010000	0.931800	0.004000
FRACTION			0.054200
N/CC - EACH			
CONSTITUENT	0.0004812	0.0446494	0.0001909
			0.0025643

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION
0	C.	1.687271E-01	5.112200E-02	4.035196E-02	1.170636E-01	3.266443E-01
1	0.500	2.512206E-01	1.651779E-01	1.148642E-01	7.934930E-02	2.123550E-01
2	1.000	3.019786E-01	1.958173E-01	1.669019E-01	6.694671E-02	1.693999E-01
3	1.500	2.785535E-01	1.265050E-01	1.626752E-01	6.994983E-02	1.692550E-01
4	2.000	2.504972E-01	8.918265E-02	1.601924E-01	6.704356E-02	1.556730E-01
5	2.500	2.610509E-01	7.680979E-02	1.837135E-01	6.342174E-02	1.421233E-01
6	3.000	3.025030E-01	6.243535E-02	2.252340E-01	6.497431E-02	1.416068E-01
7	3.500	3.612783E-01	4.634117E-02	2.854480E-01	7.301184E-02	1.552153E-01
8	4.000	4.492133E-01	3.641692E-02	3.973083E-01	9.503371E-02	1.938670E-01
9	6.000	5.025479E-01	4.746410E-03	4.973480E-01	1.680660E-01	3.219049E-01
10	8.000	5.002714E-01	4.275662E-03	4.988428E-01	3.326428E-01	5.947902E-01
11	10.000	6.692431E-01	5.718136E-03	6.673325E-01	9.585648E-01	1.582074E 00
12	12.000	1.116602E 00	9.532945E-03	1.113417E 00	2.568630E 00	3.938676E 00
13	14.000	5.740855E-01	4.904315E-03	5.724469E-01	4.022875E 00	5.212841E 00
14	15.500	5.255611E-01	4.494632E-03	5.240592E-01	1.606080E 00	3.015769E 00
15	16.500	5.940843E-01	5.080998E-03	5.923864E-01	3.841928E 00	8.077549E 00
16	17.500	6.403109E-01	5.476609E-03	6.384808E-01	9.901269E 00	2.027666E 01
17	18.500	6.654776E-01	5.691992E-03	6.635755E-01	1.460634E 01	3.056460E 01
18	19.795	6.753407E-01	5.776454E-03	6.734185E-01	2.329049E 01	4.845035E 01
3000	17.675	6.563562E-01	5.613260E-03	6.544821E-01	9.581770E 00	1.950282E 01
2500	17.831	6.563562E-01	5.613280E-03	6.544821E-01	1.050338E 01	2.137809E 01
2000	18.016	6.563365E-01	5.613136E-03	6.544624E-01	1.166216E 01	2.375790E 01
1500	18.243	6.562748E-01	5.612640E-03	6.544009E-01	1.317896E 01	2.690567E 01
1000	18.537	6.561414E-01	5.611542E-03	6.542678E-01	1.536253E 01	3.150455E 01
500	18.959	6.558523E-01	5.609139E-03	6.539795E-01	1.921024E 01	3.959947E 01
68	19.555	6.551389E-01	5.603164E-03	6.532681E-01	2.685951E 01	5.545444E 01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CF PU 239	CF PU 239	-1.2010	15.8	94	239.127	0.	0.
N/CC - SOLID MATERIAL	0.0398074						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION
0	C.	4.030586E 00	1.312791E 00	9.219294E-01	2.327214E 00	8.836990E 00
1	0.500	5.380925E 00	2.309410E 00	1.789881E 00	1.933052E 00	6.772452E 00
2	1.000	6.043980E 00	2.810523E 00	2.601678E 00	1.871707E 00	6.028009E 00
3	1.500	5.478393E 00	2.478256E 00	2.814294E 00	2.024251E 00	6.126820E 00
4	2.000	5.368246E 00	1.742029E 00	3.172174E 00	1.996453E 00	5.738653E 00
5	2.500	5.714524E 00	1.225739E 00	4.059204E 00	1.845581E 00	5.079419E 00
6	3.000	6.735653E 00	7.430084E-01	5.547985E 00	1.858120E 00	4.869530E 00
7	3.500	7.736650E 00	3.748412E-01	7.238339E 00	1.931559E 00	4.838770E 00
8	4.000	9.253453E 00	1.052247E-01	9.154466E 00	2.141651E 00	5.001270E 00
9	6.000	1.096705E 01	9.321994E-02	1.093634E 01	3.084025E 00	6.483302E 00
10	8.000	1.269096E 01	1.078732E-01	1.265542E 01	4.662734E 00	8.905786E 00
11	10.000	1.055963E 01	8.975688E-02	1.053007E 01	1.810397E 01	3.203938E 01
12	12.000	3.091024E 01	2.627369E-01	3.082369E 01	7.268861E 01	1.033612E 02
13	14.000	1.193955E 01	1.014862E-01	1.190612E 01	9.691626E 01	1.768491E 02
14	15.500	1.184974E 01	1.007228E-01	1.181656E 01	1.792559E 01	4.461413E 01
15	16.500	1.422772E 01	1.209357E-01	1.418789E 01	1.675581E 02	3.256361E 02
16	17.500	1.388661E 01	1.180362E-01	1.384773E 01	2.460283E 03	4.381399E 03
17	18.500	1.039837E 01	8.838615E-02	1.036926E 01	7.300185E 02	1.395071E 03
18	19.795	1.081264E 01	9.100551E-02	1.078237E 01	8.162651E 02	1.622960E 03
3000	17.675	8.746400E 00	7.360100E-02	8.721910E 00	1.354500E 03	2.308200E 03
2500	17.831	8.897500E 00	7.487250E-02	8.872587E 00	1.415200E 03	2.426700E 03
2000	18.016	9.091500E 00	7.650500E-02	9.066043E 00	1.433600E 03	2.482800E 03
1500	18.243	9.336300E 00	7.856500E-02	9.310158E 00	1.376100E 03	2.424700E 03
1000	18.537	9.625300E 00	8.099700E-02	9.598349E 00	1.212600E 03	2.208500E 03
500	18.959	9.895100E 00	8.326730E-02	9.867393E 00	9.962700E 02	1.932500E 03
68	19.555	9.995700E 00	8.411380E-02	9.967712E 00	1.000700E 03	2.074300E 03

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
PU239M1	PU239M1	-1.2020	15.8	94	239.127	0.	0.
N/CC - SOLID MATERIAL	0.0398074						

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION
0 C.	4.277740E 00	6.965000E-01	1.170000E 00	2.257180E 00	8.203000E 00
1 C.500	5.585720E 00	1.198000E 00	1.858000E 00	1.888540E 00	6.384000E 00
2 1.000	5.981110E 00	1.390000E 00	2.575000E 00	1.909740E 00	6.077000E 00
3 1.500	5.505470E 00	1.246000E 00	2.828000E 00	1.977120E 00	5.947000E 00
4 2.000	5.193840E 00	8.925000E-01	3.251000E 00	1.928990E 00	5.650000E 00
5 2.500	5.787910E 00	6.210000E-01	4.111000E 00	1.837150E 00	5.190000E 00
6 3.000	6.837210E 00	3.771000E-01	5.632000E 00	1.790400E 00	4.857000E 00
7 3.500	8.051050E 00	1.950000E-01	7.533000E 00	1.804530E 00	4.709000E 00
8 4.000	1.085790E 01	6.175000E-02	1.074000E 01	1.955240E 00	4.932780E 00
9 6.000	1.063830E 01	8.871240E-02	1.012480E 01	2.971840E 00	6.432760E 00
10 8.000	1.273610E 01	1.062070E-01	1.270060E 01	4.988840E 00	9.412470E 00
11 10.000	1.233160E 01	1.028830E-01	1.229720E 01	2.184880E 01	3.702470E 01
12 12.000	2.159900E 01	1.801140E-01	2.153880E 01	8.031500E 01	1.117530E 02
13 14.000	1.631260E 01	1.360310E-01	1.626710E 01	1.164290E 02	1.954060E 02
14 15.500	1.045000E 01	8.714260E-02	1.042090E 01	1.974270E 01	5.049080E 01
15 16.500	1.090670E 01	9.051200E-02	1.087630E 01	1.822990E 02	3.657530E 02
16 17.500	1.100000E 01	9.172900E-02	1.096930E 01	2.469680E 03	4.341690E 03
17 18.500	1.100000E 01	9.172900E-02	1.096930E 01	7.351620E 02	1.441740E 03
18 19.795	1.100000E 01	9.172900E-02	1.096930E 01	8.802670E 02	1.858020E 03
3000 17.675	1.100000E 01	9.172900E-02	1.096930E 01	1.508011E 03	2.703400E 03
2500 17.831	1.100000E 01	9.172900E-02	1.096930E 01	1.574281E 03	2.827700E 03
2000 18.016	1.100000E 01	9.172900E-02	1.096930E 01	1.588447E 03	2.865400E 03
1500 18.243	1.100000E 01	9.172900E-02	1.096930E 01	1.508008E 03	2.746300E 03
1000 18.537	1.100000E 01	9.172900E-02	1.096930E 01	1.293296E 03	2.409000E 03
500 18.959	1.100000E 01	9.172900E-02	1.096930E 01	1.009510E 03	1.984700E 03
68 19.555	1.100000E 01	9.172900E-02	1.096930E 01	9.954909E 02	2.088300E 03

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
PU240HAPD	PU240HAPD	-1.2030	15.8	92	240.120	0.00838	0.99720
N/CC - SOLID MATERIAL	0.0396428						

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION
0 C.	5.088500E 00	4.131000E 00	3.165000E 00	2.122700E 00	6.337140E 00
1 C.500	6.372090E 00	3.602000E 00	3.243000E 00	1.688730E 00	4.611880E 00
2 1.000	7.363370E 00	2.805000E 00	3.449000E 00	1.607320E 00	4.008450E 00
3 1.500	6.840590E 00	1.999000E 00	3.846000E 00	1.628820E 00	3.829090E 00
4 2.000	6.595070E 00	1.381000E 00	4.513000E 00	1.631720E 00	3.697990E 00
5 2.500	7.486150E 00	8.976000E-01	5.442000E 00	1.253310E 00	2.734900E 00
6 3.000	9.168150E 00	4.339000E-01	7.023000E 00	3.647530E-01	6.366230E-01
7 3.500	1.032710E 01	8.576160E-02	8.589490E 00	2.259340E-01	1.866130E-01
8 4.000	1.227490E 01	1.019370E-01	1.066360E 01	4.213290E-01	3.536440E-02
9 6.000	1.805250E 01	1.565600E-01	1.653710E 01	1.375380E 00	9.934260E-05
10 8.000	3.272190E 01	2.717390E-01	3.263110E 01	5.229960E 00	0.
11 10.000	4.539310E 01	3.769680E-01	4.526710E 01	7.911840E 00	0.
12 12.000	5.597980E 01	4.648850E-01	5.582440E 01	4.599320E 01	5.893010E-04
13 14.000	1.080070E 01	8.969460E-02	1.677070E 01	1.308060E 01	1.613150E-01
14 15.500	6.256890E 01	5.196040E-01	6.239520E 01	3.720940E 02	1.394000E-01
15 16.500	5.965810E 02	4.954310E 00	5.949240E 02	7.848590E 03	2.938010E 00
16 17.500	6.938940E-01	5.762450E-01	6.919680E-01	1.912890E 02	5.663270E 02
17 18.500	1.526290E 00	1.267510E-02	1.522050E 00	1.698390E 02	6.357690E-02
18 19.795	1.819750E 00	1.511220E-02	1.814700E 00	2.367910E 02	8.863280E-02
3000 17.675	4.608240E 01	3.862000E-01	4.595000E 01	7.684800E 02	2.878300E-01
2500 17.831	2.207390E 01	1.849000E-01	2.201000E 01	4.571000E 02	1.709300E-01
2000 18.016	7.829800E 00	6.561000E-02	7.808000E 00	2.673400E 02	9.957000E-02
1500 18.243	2.265600E 00	1.898000E-02	2.259000E 00	1.907600E 02	7.049000E-02
1000 18.537	1.369500E 00	1.148000E-02	1.366000E 00	1.823800E 02	6.657000E-02
500 18.959	1.554600E 00	1.303000E-02	1.550000E 00	2.043400E 02	7.284000E-02
68 19.555	1.774600E 00	1.487000E-02	1.770000E 00	2.585300E 02	8.710000E-02

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
PU241HAPO	PU241HAPO	-1.2040	15.8	92	241.320	0.00833	0.99721
N/CC - SOLID MATERIAL	0.0394457						

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION
0 C.	3.818250E 00	7.464000E-01	8.732000E-01	2.340430E 00	9.573660E 00
1 C.500	5.305680E 00	1.366000E 00	1.765000E 00	1.802520E 00	6.722110E 00
2 1.000	6.270040E 00	1.750000E 00	2.699000E 00	1.618860E 00	5.506730E 00
3 1.500	5.359010E 00	1.454000E 00	2.753000E 00	1.804380E 00	5.812010E 00
4 2.000	4.696480E 00	9.684000E-01	2.939000E 00	1.873360E 00	5.721870E 00
5 2.500	5.008580E 00	6.444000E-01	3.557000E 00	1.794630E 00	5.329350E 00
6 3.000	6.779170E 00	4.486000E-01	5.584000E 00	1.884210E 00	5.350380E 00
7 3.500	8.909920E 00	2.590000E-01	8.336000E 00	2.143700E 00	5.911850E 00
8 4.000	9.906960E 00	1.126000E-01	9.801000E 00	2.713980E 00	7.432160E 00
9 6.000	1.074970E 01	8.891270E-02	1.022720E 01	5.624320E 00	1.514610E 01
10 8.000	1.083080E 01	8.958350E-02	1.080080E 01	8.873260E 00	2.385650E 01
11 10.000	1.086010E 01	8.982590E-02	1.083010E 01	3.557690E 01	9.617490E 01
12 12.000	1.085110E 01	8.975140E-02	1.082110E 01	5.988870E 01	1.618960E 02
13 14.000	1.170190E 01	9.678890E-02	1.166960E 01	2.073700E 02	5.180140E 02
14 15.500	8.900900E 00	7.362120E-02	9.876290E 00	3.525550E 01	9.619590E 01
15 16.500	1.800480E 01	1.485220E-01	1.795510E 01	5.958290E 01	1.475180E 02
16 17.500	2.000900E 01	1.654240E-01	1.994470E 01	1.335700E 03	2.909920E 03
17 18.500	2.000000E 01	1.654240E-01	1.994470E 01	8.484990E 02	2.020830E 03
18 19.795	2.000000E 01	1.654240E-01	1.994470E 01	1.134850E 03	2.630870E 03
3000 17.675	1.974400E 01	1.646000E-01	1.969000E 01	8.808500E 02	1.957500E 03
2500 17.831	1.988600E 01	1.658000E-01	1.983000E 01	9.708500E 02	2.163200E 03
2000 18.016	1.996400E 01	1.664000E-01	1.991000E 01	1.057100E 03	2.365700E 03
1500 18.243	1.999200E 01	1.667000E-01	1.994000E 01	1.123200E 03	2.531600E 03
1000 18.537	1.999700E 01	1.668000E-01	1.995000E 01	1.146100E 03	2.613100E 03
500 18.959	1.999300E 01	1.667000E-01	1.994000E 01	1.144100E 03	2.648400E 03
68 19.555	1.997800E 01	1.666000E-01	1.993000E 01	1.345200E 03	3.116000E 03

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
PU242HAPO	PU242HAPO	-1.2050	15.8	92	242.134	0.00831	0.99720
N/CC - SOLID MATERIAL	0.0393130						

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION
0 C.	5.084500E 00	4.127000E 00	3.162000E 00	1.829120E 00	5.441500E 00
1 C.500	6.253110E 00	3.534000E 00	3.183000E 00	1.435790E 00	3.904010E 00
2 1.000	7.243390E 00	2.759000E 00	3.393000E 00	1.391670E 00	3.423300E 00
3 1.500	6.833760E 00	1.996000E 00	3.843000E 00	1.449560E 00	3.413040E 00
4 2.000	6.686090E 00	1.400000E 00	4.575000E 00	1.513630E 00	3.430010E 00
5 2.500	7.423570E 00	8.898000E-01	5.397000E 00	1.054780E 00	2.275190E 00
6 3.000	9.096450E 00	4.305000E-01	6.968000E 00	3.330630E-01	5.712500E-01
7 3.500	1.039990E 01	8.565660E-02	1.037130E 01	2.341840E-01	2.182330E-01
8 4.000	1.135110E 01	9.349110E-02	1.131990E 01	3.808610E-01	9.865340E-02
9 6.000	1.737150E 01	1.430760E-01	1.732360E 01	1.069660E 00	1.869500E-02
10 8.000	9.450860E 00	7.783990E-02	9.424840E 00	4.495910E 00	-0.
11 10.000	5.472490E 00	4.507300E-02	5.457430E 00	4.407740E 00	-0.
12 12.000	3.348980E 01	2.758310E-01	3.339760E 01	1.471170E 01	2.575440E-06
13 14.000	1.135340E 01	9.351000E-02	1.132220E 01	1.598560E 00	1.282260E-03
14 15.500	6.023290E 01	4.960950E-01	6.006710E 01	7.862010E 02	1.093200E 00
15 16.500	7.167050E 00	5.902980E-02	7.147310E 00	5.633660E 00	9.008680E-02
16 17.500	7.696430E 00	6.339000E-02	7.675240E 00	6.924790E 00	1.434160E-01
17 18.500	7.841270E 00	6.458290E-02	7.819680E 00	1.050390E 01	2.341370E-01
18 19.795	7.886930E 00	6.495890E-02	7.865210E 00	1.597920E 01	3.639250E-01
3000 17.675	7.608200E 00	6.323000E-02	7.587000E 00	7.628400E 00	1.551800E-01
2500 17.831	7.661000E 00	6.367000E-02	7.640000E 00	8.006600E 00	1.674300E-01
2000 18.016	7.711400E 00	6.409000E-02	7.690000E 00	8.578200E 00	1.832000E-01
1500 18.243	7.758300E 00	6.448000E-02	7.737000E 00	9.407500E 00	2.047200E-01
1000 18.537	7.802400E 00	6.485000E-02	7.780000E 00	1.068700E 01	2.366100E-01
500 18.959	7.843800E 00	6.519000E-02	7.822000E 00	1.294400E 01	2.911900E-01
68 19.555	7.877900E 00	6.547000E-02	7.858000E 00	1.720800E 01	3.917500E-01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CF THORIUM N/CC - SOLID MATERIAL	TH CFINE 0.0285592	-1.3010	11.0	90	232.050	0.	0.

LETHARGY LEVEL		SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION
0	C.	6.306515E 00	5.524547E 00	2.862379E 00	3.197966E-01	9.687458E-01
1	C.500	6.935314E 00	5.282932E 00	3.272779E 00	2.357549E-01	6.136138E-01
2	1.000	7.221352E 00	4.813743E 00	3.808528E 00	1.693527E-01	3.352687E-01
3	1.500	6.652286E 00	4.108780E 00	4.113344E 00	1.692998E-01	2.475345E-01
4	2.000	6.499376E 00	2.746937E 00	4.279033E 00	1.451333E-01	9.592770E-02
5	2.500	6.951175E 00	7.264228E-01	4.414028E 00	1.419309E-01	0.
6	3.000	7.833058E 00	1.582210E-01	5.719154E 00	1.675943E-01	0.
7	3.500	9.244126E 00	8.914298E-02	8.919138E 00	1.926022E-01	0.
8	4.000	1.123903E 01	9.553179E-02	1.120757E 01	3.305634E-01	0.
9	6.000	1.332594E 01	1.132705E-01	1.328863E 01	5.230644E-01	0.
10	8.000	1.393974E 01	1.184878E-01	1.390071E 01	4.240161E-01	0.
11	10.000	1.982931E 01	1.685491E-01	1.977379E 01	3.954055E 00	0.
12	12.000	4.924695E 01	4.185991E-01	4.910907E 01	3.107405E 01	0.
13	14.000	1.153961E 01	9.808665E-02	1.150729E 01	1.065924E 01	0.
14	15.500	1.166962E 01	9.919178E-02	1.163695E 01	8.491277E-01	0.
15	16.500	1.219016E 01	1.036164E-01	1.215603E 01	1.472063E 00	0.
16	17.500	1.225717E 01	1.041860E-01	1.222285E 01	2.430520E 00	0.
17	18.500	1.213889E 01	1.031805E-01	1.210490E 01	4.003428E 00	0.
18	19.795	1.123853E 01	1.006823E-01	1.180535E 01	5.845780E 00	0.
3000	17.675	1.243900E 01	1.078586E-01	1.240293E 01	2.422500E 00	0.
2500	17.831	1.244400E 01	1.079019E-01	1.240791E 01	2.620700E 00	0.
2000	18.016	1.244500E 01	1.079106E-01	1.240891E 01	2.875600E 00	0.
1500	18.243	1.243900E 01	1.078586E-01	1.240293E 01	3.321000E 00	0.
1000	18.537	1.242400E 01	1.077285E-01	1.238797E 01	3.728900E 00	0.
500	18.959	1.240500E 01	1.075638E-01	1.236902E 01	4.591900E 00	0.
68	19.555	1.240100E 01	1.075291E-01	1.236504E 01	6.182300E 00	0.

DESIGNATION	FORMULA	CODE	DENSITY
*OY DIOXIDE	OYD2	-1.4100	10.97000

CODE	-1.0200	-1.0400	3.6000
DESIGNATION	235 URANIUM	238 URANIUM	
WEIGHT	0.819700	0.060570	0.119730
FRACTION			
N/CC - EACH			
CONSTITUENT	0.0230416	0.0016796	0.0494443

LETHARGY LEVEL		SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION	FISSTON SPECTRUM
0	C.	5.178079E-02	8.534022E-03	5.102349E-02	4.147386E-02	9.102017E-02	0.
1	0.500	1.067306E-01	1.512656E-02	1.043899E-01	3.785844E-02	8.082953E-02	1.015000E-01
2	1.000	1.808163E-01	2.369184E-02	1.759865E-01	3.553747E-02	7.608672E-02	3.584000E-01
3	1.500	1.345753E-01	1.767996E-02	1.320806E-01	3.548703E-02	7.588498E-02	4.798000E-01
4	2.000	2.234310E-01	2.493351E-02	2.176644E-01	3.510038E-02	7.017554E-02	4.271000E-01
5	2.500	3.622015E-01	3.577577E-02	3.507775E-01	3.706832E-02	6.912485E-02	2.887000E-01
6	3.000	2.991205E-01	2.659685E-02	2.905351E-01	3.942291E-02	7.373317E-02	1.663000E-01
7	3.500	3.188149E-01	2.480933E-02	3.106480E-01	4.408167E-02	8.525398E-02	9.360000E-02
8	4.000	3.509881E-01	2.451122E-02	3.427372E-01	4.643627E-02	8.986230E-02	3.380000E-02
9	6.000	4.034605E-01	2.424826E-02	3.950574E-01	7.676022E-02	1.589872E-01	0.
10	8.000	4.034605E-01	2.424826E-02	3.950574E-01	1.352384E-01	2.557619E-01	0.
11	10.000	4.034605E-01	2.424826E-02	3.950574E-01	3.389451E-01	5.668238E-01	0.
12	12.000	3.997621E-01	2.421733E-02	3.913758E-01	1.534690E 00	2.154391E 00	0.
13	14.000	3.969642E-01	2.419329E-02	3.885179E-01	3.109915E 00	3.847950E 00	0.
14	15.500	3.966521E-01	2.419127E-02	3.882658E-01	8.991116E-01	1.304155E 00	0.
15	16.500	3.964335E-01	2.418942E-02	3.880472E-01	2.005547E 00	4.308782E 00	0.
16	17.500	3.960469E-01	2.418606E-02	3.876774E-01	4.655805E 00	9.239688E 00	0.
17	18.500	3.979979E-01	2.448058E-02	3.895246E-01	6.822744E 00	1.434110E 01	0.
18	19.795	4.287585E-01	2.696394E-02	4.194223E-01	1.592607E 01	3.308776E 01	0.
3000	17.675	3.964374E-01	2.425837E-02	3.880951E-01	4.937110E 00	1.002310E 01	0.
2500	17.831	3.969761E-01	2.433132E-02	3.885485E-01	5.411906E 00	1.098855E 01	0.
2000	18.016	3.977997E-01	2.444059E-02	3.893339E-01	6.008852E 00	1.220975E 01	0.
1500	18.243	3.990374E-01	2.461057E-02	3.905727E-01	6.790192E 00	1.382958E 01	0.
1000	18.537	4.013142E-01	2.489731E-02	3.926899E-01	7.914962E 00	1.619134E 01	0.
500	18.959	4.056636E-01	2.545393E-02	3.968457E-01	9.897117E 00	2.035266E 01	0.
68	19.555	4.149721E-01	2.663906E-02	4.057425E-01	1.383830E 01	2.850248E 01	0.

DESIGNATION	FORMULA	CODE	DENSITY		
*CF OY02	*CF OY02	-1.4110	10.97000		
CODE	-1.0810	-1.0820	-1.0830	-1.0840	3.6000
DESIGNATION	234 URANIUM	CF 235 URAN	236 URANIUM	CF 238 URAN	
WEIGHT	0.008800	0.820220	0.003520	0.047710	0.119750
FRACTION					
N/CC - EACH					
CONSTITUENT	0.0002484	0.0230562	0.0000985	0.0013242	0.0494526

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION
0	0.	1.019634E-01	2.819171E-02	3.504954E-02	6.044958E-02	1.686731E-01
1	0.500	1.821455E-01	9.163225E-02	1.095319E-01	4.097455E-02	1.096562E-01
2	1.000	2.667100E-01	1.145091E-01	1.923065E-01	3.457007E-02	8.747498E-02
3	1.500	1.982379E-01	7.190159E-02	1.361157E-01	3.612084E-02	8.740021E-02
4	2.000	2.600901E-01	5.909043E-02	2.087085E-01	3.462010E-02	8.038673E-02
5	2.500	4.003623E-01	7.176948E-02	3.492731E-01	3.274987E-02	7.338997E-02
6	3.000	3.540173E-01	5.615502E-02	3.058090E-01	3.355164E-02	7.312338E-02
7	3.500	3.720047E-01	4.635038E-02	3.250585E-01	3.770212E-02	8.015066E-02
8	4.000	4.174129E-01	4.122567E-02	3.828213E-01	4.907386E-02	1.001098E-01
9	4.500	4.449540E-01	2.487153E-02	4.344801E-01	8.678653E-02	1.662265E-01
10	5.000	4.437782E-01	2.462844E-02	4.352517E-01	1.717713E-01	3.071401E-01
11	5.500	5.310306E-01	2.537329E-02	5.222552E-01	4.949868E-01	8.169577E-01
12	6.000	7.670402E-01	2.734320E-02	7.526068E-01	1.326397E 00	2.072869E 00
13	6.500	4.818906E-01	2.495303E-02	4.732557E-01	2.077322E 00	2.691827E 00
14	7.000	4.568376E-01	2.474151E-02	4.482733E-01	8.293545E-01	1.557295E 00
15	7.500	4.922216E-01	2.504430E-02	4.835561E-01	1.983910E 00	4.171116E 00
16	8.000	5.160921E-01	2.524859E-02	5.073583E-01	5.112867E 00	1.047054E 01
17	8.500	5.315603E-01	2.565875E-02	5.226855E-01	7.542478E 00	1.578307E 01
18	9.000	5.564386E-01	2.809389E-02	5.467185E-01	1.202684E 01	2.501898E 01
3000	17.675	5.249909E-01	2.539329E-02	5.162086E-01	4.947873E 00	1.007094E 01
2500	17.831	5.255992E-01	2.546684E-02	5.167913E-01	5.423777E 00	1.103930E 01
2000	18.016	5.264989E-01	2.557678E-02	5.176528E-01	6.022151E 00	1.226820E 01
1500	18.243	5.278814E-01	2.574751E-02	5.189760E-01	6.805405E 00	1.389366E 01
1000	18.537	5.301960E-01	2.603512E-02	5.211907E-01	7.932964E 00	1.626844E 01
500	18.959	5.346705E-01	2.659290E-02	5.254715E-01	9.919861E 00	2.044853E 01
68	19.555	5.441432E-01	2.777960E-02	5.345318E-01	1.386982E 01	2.863578E 01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
RBE(N,2N)	RBE(N,2N)	-1.5020	1.85	4	9.013	0.20780	0.92550
N/CC - SOLID MATERIAL	0.1236624						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION	FISSION SPECTRUM
0	0.	1.630000E 00	1.210000E 00	7.000000E-01	6.000000E-02	5.200000E-01	0.
1	0.500	1.820000E 00	1.125000E 00	1.000000E 00	10.000000E-02	5.200000E-01	0.
2	1.000	2.020000E 00	1.075000E 00	1.550000E 00	0.	5.200000E-01	0.
3	1.500	2.220000E 00	3.500000E-01	1.400000E 00	6.000000E-02	0.	0.
4	2.000	2.430000E 00	3.550000E-01	1.700000E 00	8.000000E-03	0.	0.
5	2.500	4.500000E 00	9.170000E-01	4.120000E 00	1.500000E-03	0.	2.000000E 00
6	3.000	4.000000E 00	8.200000E-01	3.620000E 00	2.200000E-06	0.	0.
7	3.500	3.650000E 00	7.584700E-01	3.360000E 00	2.900000E-06	0.	0.
8	4.000	5.420000E 00	1.126280E 00	5.016210E 00	3.700000E-06	0.	0.
9	4.500	5.900000E 00	1.226020E 00	5.460450E 00	1.010000E-05	0.	0.
10	5.000	6.000000E 00	1.246800E 00	5.553000E 00	2.740000E-05	0.	0.
11	5.500	6.000000E 00	1.246800E 00	5.553000E 00	7.460000E-05	0.	0.
12	6.000	8.000000E 00	1.246800E 00	5.553000E 00	2.030000E-04	0.	0.
13	6.500	6.000000E 00	1.246800E 00	5.553000E 00	5.510000E-04	0.	0.
14	7.000	6.000000E 00	1.246800E 00	5.553000E 00	1.037000E-03	0.	0.
15	7.500	6.000000E 00	1.246800E 00	5.553000E 00	1.991000E-03	0.	0.
16	8.000	5.830000E 00	1.211474E 00	5.395665E 00	3.001000E-03	0.	0.
17	8.500	5.020000E 00	1.043156E 00	4.646010E 00	5.229000E-03	0.	0.
18	9.000	6.000000E 00	1.246800E 00	5.553000E 00	9.295000E-03	0.	0.
3000	17.675	5.853200E 00	1.216295E 00	5.417136E 00	3.464000E-03	0.	0.
2500	17.831	5.853100E 00	1.216274E 00	5.417044E 00	3.745000E-03	0.	0.
2000	18.016	5.853000E 00	1.216253E 00	5.416951E 00	4.108000E-03	0.	0.
1500	18.243	5.852900E 00	1.216233E 00	5.416859E 00	4.602000E-03	0.	0.
1000	18.537	5.853800E 00	1.216470E 00	5.417692E 00	5.332000E-03	0.	0.
500	18.959	5.860000E 00	1.217708E 00	5.423430E 00	6.576000E-03	0.	0.
68	19.555	5.860500E 00	1.221960E 00	5.442463E 00	8.869000E-03	0.	0.

DESIGNATION	FORMULA	CODE	DENSITY
*RBE(N,2N)	*RBE(N,2N)	-1.5120	1.85000

CODE	-1.5020
DESIGNATION	RBE(N,2N)
WEIGHT	1.000000
FRACTION	
N/CC - EACH	
CONSTITUENT	0.1236624

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION	FISSION SPECTRUM
0	C.	2.015698E-01	1.496315E-01	8.656370E-02	7.419746E-03	6.430446E-02	0.
1	C.500	2.250656E-01	1.391202E-01	1.236624E-01	1.236624E-02	6.430446E-02	0.
2	1.000	2.497981E-01	1.329371E-01	1.916768E-01	0.	6.430446E-02	0.
3	1.500	2.745306E-01	4.328185E-02	1.731274E-01	7.419746E-03	0.	0.
4	2.000	3.004997E-01	4.390016E-02	2.102261E-01	9.892994E-04	0.	0.
5	2.500	5.564809E-01	1.133984E-01	5.094892E-01	1.854936E-04	0.	2.000000E 00
6	3.000	4.946497E-01	1.014032E-01	4.476580E-01	2.720573E-07	0.	0.
7	3.500	4.513679E-01	9.379424E-02	4.155058E-01	3.586210E-07	0.	0.
8	4.000	6.702504E-01	1.392785E-01	6.203167E-01	4.575510E-07	0.	0.
9	6.000	7.296083E-01	1.516126E-01	6.752525E-01	1.248991E-06	0.	0.
10	8.000	7.419746E-01	1.541823E-01	6.866975E-01	3.388351E-06	0.	0.
11	10.000	7.419746E-01	1.541823E-01	6.866975E-01	9.225217E-06	0.	0.
12	12.000	7.419746E-01	1.541823E-01	6.866975E-01	2.510347E-05	0.	0.
13	14.000	7.419746E-01	1.541823E-01	6.866975E-01	6.813800E-05	0.	0.
14	15.500	7.419746E-01	1.541823E-01	6.866975E-01	1.282379E-04	0.	0.
15	16.500	7.419746E-01	1.541823E-01	6.866975E-01	2.462119E-04	0.	0.
16	17.500	7.209520E-01	1.498138E-01	6.672410E-01	3.711109E-04	0.	0.
17	18.500	6.207854E-01	1.289992E-01	5.745369E-01	6.466308E-04	0.	0.
18	19.795	7.419746E-01	1.541823E-01	6.866975E-01	1.149442E-03	0.	0.
3000	17.675	7.238209E-01	1.504100E-01	6.698963E-01	4.283667E-04	0.	0.
2500	17.831	7.238086E-01	1.504074E-01	6.698848E-01	4.631158E-04	0.	0.
2000	18.016	7.237962E-01	1.504049E-01	6.698734E-01	5.080053E-04	0.	0.
1500	18.243	7.237838E-01	1.504023E-01	6.698619E-01	5.690945E-04	0.	0.
1000	18.537	7.238951E-01	1.504254E-01	6.699649E-01	6.593681E-04	0.	0.
500	18.959	7.246618E-01	1.505847E-01	6.706745E-01	8.132041E-04	0.	0.
68	19.555	7.271969E-01	1.511115E-01	6.730207E-01	1.096762E-03	0.	0.

DESIGNATION	FORMULA	CODE	DENSITY
*RBEO(N,2N)	*RBEO(N,2N)	-1.5320	3.01000

CODE	-1.5020	3.600C
DESIGNATION	RBE(N,2N)	
WEIGHT	0.360320	0.639680
FRACTION		
N/CC - EACH		
CONSTITUENT	0.0724971	0.0724830

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION	FISSION SPECTRUM
0	C.	1.399152E-01	9.035050E-02	7.157961E-02	4.349829E-03	3.769852E-02	0.
1	C.500	2.087768E-01	9.084827E-02	1.461022E-01	7.249715E-03	3.769852E-02	0.
2	1.000	3.088061E-01	9.756399E-02	2.679133E-01	1.200318E-09	3.769852E-02	0.
3	1.500	2.406750E-01	3.501351E-02	1.778786E-01	4.349830E-03	0.	0.
4	2.000	3.689728E-01	4.904658E-02	3.079521E-01	5.799791E-04	0.	0.
5	2.500	7.154708E-01	1.135382E-01	6.715741E-01	1.087483E-04	0.	2.000000E 00
6	3.000	5.799206E-01	9.450044E-02	5.401949E-01	1.627555E-07	0.	0.
7	3.500	5.364258E-01	8.784889E-02	5.039856E-01	2.144312E-07	0.	0.
8	4.000	6.647458E-01	1.145141E-01	6.240561E-01	2.736177E-07	0.	0.
9	6.000	6.995444E-01	1.217449E-01	6.562622E-01	7.468627E-07	0.	0.
10	8.000	7.067941E-01	1.232514E-01	6.629718E-01	2.026142E-06	0.	0.
11	10.000	7.067941E-01	1.232514E-01	6.629718E-01	5.516432E-06	0.	0.
12	12.000	7.067941E-01	1.232514E-01	6.629718E-01	1.501120E-05	0.	0.
13	14.000	7.067941E-01	1.232514E-01	6.629718E-01	4.074469E-05	0.	0.
14	15.500	7.067941E-01	1.232514E-01	6.629718E-01	7.668284E-05	0.	0.
15	16.500	7.067941E-01	1.232514E-01	6.629718E-01	1.472281E-04	0.	0.
16	17.500	6.944696E-01	1.206904E-01	6.515655E-01	2.219144E-04	0.	0.
17	18.500	6.393710E-01	1.089260E-01	6.006896E-01	3.866678E-04	0.	0.
18	19.795	7.394115E-01	1.271949E-01	6.942192E-01	6.873356E-04	0.	0.
3000	17.675	6.970503E-01	1.211486E-01	6.539831E-01	2.562039E-04	0.	0.
2500	17.831	6.979346E-01	1.212549E-01	6.548305E-01	2.765756E-04	0.	0.
2000	18.016	6.992610E-01	1.214146E-01	6.561015E-01	3.036169E-04	0.	0.
1500	18.243	7.013268E-01	1.216637E-01	6.580807E-01	3.401553E-04	0.	0.
1000	18.537	7.048857E-01	1.220996E-01	6.614881E-01	3.945279E-04	0.	0.
500	18.959	7.121124E-01	1.230124E-01	6.683966E-01	4.861640E-04	0.	0.
68	19.555	7.280227E-01	1.250651E-01	6.835903E-01	6.560241E-04	0.	0.

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
GAS HYDROGEN	H(GAS)	2.0200	0.	1	1.008	1.00000	0.33300

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	9.500000E-01	9.500000E-01	3.160000E-01	1.659900E-05
1	0.500	1.350000E 00	1.350000E 00	4.490000E-01	2.128500E-05
2	1.000	2.050000E 00	2.050000E 00	6.820000E-01	2.732400E-05
3	1.500	2.800000E 00	2.800000E 00	9.320000E-01	3.498000E-05
4	2.000	3.800000E 00	3.800000E 00	1.265000E 00	4.521000E-05
5	2.500	4.800000E 00	4.800000E 00	1.598000E 00	5.775000E-05
6	3.000	6.200000E 00	6.200000E 00	2.064000E 00	7.425000E-05
7	3.500	8.100000E 00	8.100000E 00	2.696000E 00	9.537000E-05
8	4.000	1.000000E 01	1.000000E 01	3.329000E 00	1.224300E-04
9	6.000	1.790000E 01	1.790000E 01	5.959000E 00	3.333000E-04
10	8.000	1.960000E 01	1.960000E 01	6.508000E 00	9.042000E-04
11	10.000	2.000000E 01	2.000000E 01	6.658000E 00	2.461800E-03
12	12.000	2.000000E 01	2.000000E 01	6.658000E 00	6.699000E-03
13	14.000	2.030000E 01	2.030000E 01	6.700000E 00	1.818300E-02
14	15.500	2.090000E 01	2.090000E 01	6.800000E 00	3.422100E-02
15	16.500	2.110000E 01	2.090000E 01	7.000000E 00	6.570300E-02
16	17.500	2.350000E 01	2.250000E 01	9.100000E 00	9.903300E-02
17	18.500	2.560000E 01	2.400000E 01	1.100000E 01	1.725570E-01
18	19.795	3.450000E 01	2.950000E 01	1.700000E 01	3.067350E-01
3000	17.675	2.376000E 01	2.263000E 01	9.300000E 00	1.143000E-01
2500	17.831	2.421000E 01	2.293000E 01	9.625000E 00	1.236000E-01
2000	18.016	2.479000E 01	2.333000E 01	1.004000E 01	1.356000E-01
1500	18.243	2.560000E 01	2.388000E 01	1.062000E 01	1.519000E-01
1000	18.537	2.682000E 01	2.471000E 01	1.150000E 01	1.760000E-01
500	18.959	2.903000E 01	2.621000E 01	1.308000E 01	2.170000E-01
68	19.555	3.350000E 01	2.926000E 01	1.630000E 01	2.927000E-01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
BND HYDROGEN	H(WATER)	2.0400	0.	1	1.008	1.00000	0.33300

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	9.500000E-01	9.500000E-01	3.160000E-01	1.659900E-05
1	0.500	1.350000E 00	1.350000E 00	4.490000E-01	2.128500E-05
2	1.000	2.050000E 00	2.050000E 00	6.820000E-01	2.732400E-05
3	1.500	2.800000E 00	2.800000E 00	9.320000E-01	3.498000E-05
4	2.000	3.800000E 00	3.800000E 00	1.265000E 00	4.521000E-05
5	2.500	4.800000E 00	4.800000E 00	1.598000E 00	5.775000E-05
6	3.000	6.200000E 00	6.200000E 00	2.064000E 00	7.425000E-05
7	3.500	8.100000E 00	8.100000E 00	2.696000E 00	9.537000E-05
8	4.000	1.000000E 01	1.000000E 01	3.329000E 00	1.224300E-04
9	6.000	1.790000E 01	1.790000E 01	5.959000E 00	3.333000E-04
10	8.000	1.955000E 01	1.955000E 01	6.508000E 00	9.042000E-04
11	10.000	2.000000E 01	2.000000E 01	6.658000E 00	2.461800E-03
12	12.000	2.000000E 01	2.000000E 01	6.658000E 00	6.699000E-03
13	14.000	2.000000E 01	2.010000E 01	6.700000E 00	1.818300E-02
14	15.500	2.050000E 01	2.050000E 01	6.800000E 00	3.422100E-02
15	16.500	2.060000E 01	2.050000E 01	7.000000E 00	6.570300E-02
16	17.500	2.540000E 01	2.090000E 01	1.170000E 01	9.903300E-02
17	18.500	3.430000E 01	2.190000E 01	1.910000E 01	1.725570E-01
18	19.795	4.670000E 01	2.290000E 01	3.630000E 01	3.067350E-01
3000	17.675	2.664000E 01	2.106000E 01	1.308000E 01	1.143000E-01
2500	17.831	2.769000E 01	2.122000E 01	1.404000E 01	1.236000E-01
2000	18.016	2.904000E 01	2.142000E 01	1.530000E 01	1.356000E-01
1500	18.243	3.087000E 01	2.163000E 01	1.704000E 01	1.519000E-01
1000	18.537	3.348000E 01	2.183000E 01	1.962000E 01	1.760000E-01
500	18.959	3.776000E 01	2.195000E 01	2.399000E 01	2.170000E-01
68	19.555	4.524000E 01	2.204000E 01	3.172000E 01	2.927000E-01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CF HYDROGEN	H BND CFINE	2.0410	0.	1	1.008	1.00000	0.33300

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0 0.	1.044100E 00	1.044100E 00	3.475809E-01	1.778730E-05
1 0.500	1.413912E 00	1.413912E 00	4.706915E-01	2.149849E-05
2 1.000	1.999582E 00	1.999582E 00	6.656609E-01	2.760439E-05
3 1.500	2.714886E 00	2.714886E 00	9.037857E-01	3.544417E-05
4 2.000	3.549008E 00	3.549008E 00	1.181465E 00	4.551520E-05
5 2.500	4.748652E 00	4.748652E 00	1.580826E 00	5.843839E-05
6 3.000	6.183249E 00	6.183249E 00	2.058404E 00	7.503618E-05
7 3.500	7.920874E 00	7.920874E 00	2.636859E 00	9.635084E-05
8 4.000	1.156529E 01	1.156529E 01	3.850085E 00	1.512859E-04
9 6.000	1.718906E 01	1.718906E 01	5.722239E 00	3.497201E-04
10 8.000	1.978557E 01	1.978557E 01	6.586617E 00	9.506337E-04
11 10.000	1.999740E 01	1.999740E 01	6.657135E 00	2.582941E-03
12 12.000	1.999298E 01	1.999298E 01	6.655660E 00	7.020929E-03
13 14.000	2.009797E 01	2.009797E 01	6.690614E 00	1.775681E-02
14 15.500	2.065544E 01	2.065544E 01	6.876196E 00	3.701403E-02
15 16.500	2.122015E 01	1.981377E 01	8.078589E 00	6.458521E-02
16 17.500	2.594105E 01	2.127965E 01	1.195380E 01	1.064853E-01
17 18.500	3.356426E 01	2.166970E 01	1.959981E 01	1.755697E-01
18 19.795	4.172058E 01	2.099544E 01	2.856139E 01	2.570422E-01
3000 17.675	2.664000E 01	2.106000E 01	1.308000E 01	1.143000E-01
2500 17.831	2.769000E 01	2.122000E 01	1.404000E 01	1.236000E-01
2000 18.016	2.904000E 01	2.142000E 01	1.530000E 01	1.356000E-01
1500 18.243	3.087000E 01	2.163000E 01	1.704000E 01	1.519000E-01
1000 18.537	3.348000E 01	2.183000E 01	1.962000E 01	1.760000E-01
500 18.959	3.776000E 01	2.195000E 01	2.399000E 01	2.170000E-01
68 19.555	4.524000E 01	2.204000E 01	3.172000E 01	2.927000E-01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
WATER/H N/CC - SOLID MATERIAL	H ₂ O/2 0.0667331	2.0600	0.998	5	9.010	0.70000	0.50000

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0 0.	1.100000E 00	9.681000E-01	6.450000E-01	1.660403E-05
1 0.500	1.880000E 00	1.414000E 00	8.400000E-01	2.129145E-05
2 1.000	3.170000E 00	2.185000E 00	1.870000E 00	2.733228E-05
3 1.500	3.350000E 00	2.866000E 00	1.295000E 00	3.499060E-05
4 2.000	5.130000E 00	3.961000E 00	2.705000E 00	4.522370E-05
5 2.500	7.485000E 00	5.125000E 00	4.120000E 00	5.776750E-05
6 3.000	8.200000E 00	6.442000E 00	4.430000E 00	7.427250E-05
7 3.500	9.975000E 00	8.327000E 00	4.740000E 00	9.539890E-05
8 4.000	1.187500E 01	1.023000E 01	5.000000E 00	1.224671E-04
9 6.000	1.977500E 01	1.813000E 01	7.800000E 00	3.334010E-04
10 8.000	2.142500E 01	1.978000E 01	8.285000E 00	9.044740E-04
11 10.000	2.187500E 01	2.023000E 01	8.455000E 00	2.462546E-03
12 12.000	2.187500E 01	2.023000E 01	8.455000E 00	6.701030E-03
13 14.000	2.190000E 01	2.030000E 01	8.500000E 00	1.818851E-02
14 15.500	2.240000E 01	2.070000E 01	8.600000E 00	3.423137E-02
15 16.500	2.250000E 01	2.070000E 01	9.900000E 00	6.572291E-02
16 17.500	2.730000E 01	2.110000E 01	1.350000E 01	9.906301E-02
17 18.500	3.620000E 01	2.210000E 01	2.090000E 01	1.726093E-01
18 19.795	4.880000E 01	2.310000E 01	3.830000E 01	3.068279E-01
3000 17.675	2.852000E 01	2.129000E 01	1.488000E 01	1.143000E-01
2500 17.831	2.958000E 01	2.145000E 01	1.585000E 01	1.236000E-01
2000 18.016	3.094000E 01	2.165000E 01	1.712000E 01	1.356000E-01
1500 18.243	3.278000E 01	2.186000E 01	1.887000E 01	1.519000E-01
1000 18.537	3.542000E 01	2.206000E 01	2.147000E 01	1.760000E-01
500 18.959	3.974000E 01	2.219000E 01	2.589000E 01	2.171000E-01
68 19.555	4.732000E 01	2.229000E 01	3.371000E 01	2.928000E-01

DESIGNATION	FORMULA	CODE	DENSITY
*WATER	*H2O	2.5100	0.99800
CODE	2.0600		
DESIGNATION	WATER/H		
WEIGHT	1.000000		
FRACTION			
N/CC - EACH			
CONSTITUENT	0.0667331		

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	7.340639E-02	6.460429E-02	4.304283E-02	1.108038E-06
1	0.500	1.254582E-01	9.436057E-02	5.605579E-02	1.420844E-06
2	1.000	2.115439E-01	1.458118E-01	1.247909E-01	1.823967E-06
3	1.500	2.235558E-01	1.912570E-01	8.641934E-02	2.335030E-06
4	2.000	3.423407E-01	2.643297E-01	1.805130E-01	3.017917E-06
5	2.500	4.994971E-01	3.420070E-01	2.749403E-01	3.855003E-06
6	3.000	5.472112E-01	4.298945E-01	2.956275E-01	4.956432E-06
7	3.500	6.656625E-01	5.556863E-01	3.163148E-01	6.366262E-06
8	4.000	7.974553E-01	6.826744E-01	3.346454E-01	8.177606E-06
9	4.500	1.319647E 00	1.209871E 00	5.205180E-01	2.224887E-05
10	8.000	1.429756E 00	1.319980E 00	5.528836E-01	6.035833E-05
11	10.000	1.459786E 00	1.350010E 00	5.642282E-01	1.643333E-04
12	12.000	1.459786E 00	1.350010E 00	5.642282E-01	4.471804E-04
13	14.000	1.461454E 00	1.354682E 00	5.672312E-01	1.213775E-03
14	15.500	1.494821E 00	1.381375E 00	5.739045E-01	2.284365E-03
15	16.500	1.501494E 00	1.381375E 00	6.339642E-01	4.385892E-03
16	17.500	1.821813E 00	1.408068E 00	9.008966E-01	6.610780E-03
17	18.500	2.415737E 00	1.474801E 00	1.394721E 00	1.151875E-02
18	19.795	3.256574E 00	1.541534E 00	2.555877E 00	2.047557E-02
3000	17.675	1.903227E 00	1.420747E 00	9.929882E-01	7.627591E-03
2500	17.831	1.973964E 00	1.431425E 00	1.057719E 00	8.248209E-03
2000	18.016	2.064721E 00	1.444771E 00	1.142470E 00	9.049005E-03
1500	18.243	2.187510E 00	1.458785E 00	1.259253E 00	1.013675E-02
1000	18.537	2.363686E 00	1.472132E 00	1.432759E 00	1.174502E-02
500	18.959	2.651973E 00	1.480807E 00	1.727719E 00	1.448775E-02
68	19.555	3.157809E 00	1.487480E 00	2.249572E 00	1.953945E-02

DESIGNATION	FORMULA	CODE	DENSITY
*PENTALENE	*PENTALENE	2.5300	0.93000
CODE	3.3000	2.0200	
DESIGNATION	CARBON	GAS HYDROGEN	
WEIGHT	0.886700	0.113300	
FRACTION			
N/CC - EACH			
CONSTITUENT	0.0413530	0.0629778	

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	1.321968E-01	7.132819E-02	8.821622E-02	1.052025E-06
1	0.500	1.305084E-01	9.224818E-02	7.121805E-02	1.349018E-06
2	1.000	2.056077E-01	1.412609E-01	1.151698E-01	1.731763E-06
3	1.500	2.528411E-01	1.884943E-01	1.309143E-01	2.216992E-06
4	2.000	3.302925E-01	2.537720E-01	1.655490E-01	2.865357E-06
5	2.500	4.201498E-01	3.210210E-01	2.118948E-01	3.660128E-06
6	3.000	5.318900E-01	4.129354E-01	2.634937E-01	4.705878E-06
7	3.500	6.685026E-01	5.352074E-01	3.193010E-01	6.044439E-06
8	4.000	8.034611E-01	6.573766E-01	3.736098E-01	7.759471E-06
9	6.000	1.321663E 00	1.158187E 00	5.587601E-01	2.112417E-05
10	8.000	1.428725E 00	1.265249E 00	5.933349E-01	5.730714E-05
11	10.000	1.453916E 00	1.290440E 00	6.027816E-01	1.560260E-04
12	12.000	1.453916E 00	1.290440E 00	6.027816E-01	4.245748E-04
13	14.000	1.477809E 00	1.308334E 00	6.054267E-01	1.152417E-03
14	15.500	1.514731E 00	1.322586E 00	6.156282E-01	2.168887E-03
15	16.500	1.527327E 00	1.341480E 00	6.471171E-01	4.164180E-03
16	17.500	1.678474E 00	1.448542E 00	7.604772E-01	6.276596E-03
17	18.500	1.810727E 00	1.543009E 00	8.801351E-01	1.093646E-02
18	19.795	2.375365E 00	1.890044E 00	1.261906E 00	1.944051E-02
3000	17.675	1.694666E 00	1.456700E 00	7.729010E-01	7.244269E-03
2500	17.831	1.722841E 00	1.475567E 00	7.932127E-01	7.833684E-03
2000	18.016	1.759120E 00	1.500719E 00	8.191142E-01	8.593967E-03
1500	18.243	1.839743E 00	1.535295E 00	8.552744E-01	9.627122E-03
1000	18.537	1.885939E 00	1.587466E 00	9.100937E-01	1.115481E-02
500	18.959	2.023979E 00	1.681751E 00	1.008521E 00	1.375303E-02
68	19.555	2.303166E 00	1.873464E 00	1.209116E 00	1.855106E-02

DESIGNATION	FORMULA	CODE	DENSITY
*PLEXIGLAS	*C5H8O2	2.5500	1.18000
CODE	2.0400	3.3000	3.6000
DESIGNATION	BND HYDROGEN	CARBON	OXYGEN
WEIGHT	0.081500	0.587000	0.331500
FRACTION			
N/CC - EACH			
CONSTITUENT	0.0574797	0.0347350	0.0147256

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	1.198097E-01	6.479876E-02	7.977801E-02	9.598446E-07
1	0.500	1.314153E-01	8.555607E-02	7.683079E-02	1.230815E-06
2	1.000	2.150785E-01	1.320322E-01	1.314624E-01	1.580022E-06
3	1.500	2.414011E-01	1.731124E-01	1.297502E-01	2.022734E-06
4	2.000	3.340100E-01	2.353012E-01	1.823745E-01	2.614289E-06
5	2.500	4.539738E-01	3.011932E-01	2.610589E-01	3.339420E-06
6	3.000	5.340703E-01	3.823718E-01	2.872079E-01	4.293539E-06
7	3.500	6.538417E-01	4.934011E-01	3.334522E-01	5.514813E-06
8	4.000	7.759051E-01	6.046547E-01	3.819691E-01	7.079569E-06
9	6.000	1.247362E 00	1.061504E 00	5.495356E-01	1.927322E-05
10	8.000	1.342204E 00	1.156346E 00	5.810920E-01	5.228577E-05
11	10.000	1.368070E 00	1.182211E 00	5.897139E-01	1.423547E-04
12	12.000	1.368070E 00	1.182211E 00	5.897139E-01	3.873727E-04
13	14.000	1.368070E 00	1.187959E 00	5.921281E-01	1.051440E-03
14	15.500	1.400283E 00	1.211503E 00	6.011550E-01	1.978845E-03
15	16.500	1.496031E 00	1.211503E 00	6.528868E-01	3.799305E-03
16	17.500	1.681934E 00	1.234495E 00	8.828056E-01	5.726628E-03
17	18.500	2.194239E 00	1.292064E 00	1.308861E 00	9.978186E-03
18	19.795	2.916351E 00	1.350808E 00	2.306433E 00	1.773709E-02
3000	17.675	1.753238E 00	1.243690E 00	9.621582E-01	6.609516E-03
2500	17.831	1.813634E 00	1.252886E 00	1.017381E 00	7.147204E-03
2000	18.016	1.891294E 00	1.264382E 00	1.089868E 00	7.840928E-03
1500	18.243	1.996577E 00	1.276452E 00	1.189978E 00	8.783552E-03
1000	18.537	2.146773E 00	1.287948E 00	1.338451E 00	1.017744E-02
500	18.959	2.393205E 00	1.294860E 00	1.590051E 00	1.254795E-02
68	19.555	2.824131E 00	1.306077E 00	2.035334E 00	1.692561E-02

DESIGNATION	FORMULA	CODE	DENSITY
*POLYETHYLEN	*CH2	2.5700	0.92000
CODE	3.3000	2.0400	
DESIGNATION	CARBON	BND HYDROGEN	
WEIGHT	0.856300	0.143700	
FRACTION			
N/CC - EACH			
CONSTITUENT	0.0395059	0.0790168	

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	1.442012E-01	8.605156E-02	9.023300E-02	1.317959E-06
1	0.500	1.501291E-01	1.135779E-01	7.650143E-02	1.690027E-06
2	1.000	2.350703E-01	1.735978E-01	1.228825E-01	2.169523E-06
3	1.500	2.943329E-01	2.328604E-01	1.426367E-01	2.777408E-06
4	2.000	3.871768E-01	3.146743E-01	1.820020E-01	3.589669E-06
5	2.500	4.918724E-01	3.971715E-01	2.325554E-01	4.585344E-06
6	3.000	6.250143E-01	5.113732E-01	2.906346E-01	5.895442E-06
7	3.500	7.913436E-01	6.640789E-01	3.558635E-01	7.572368E-06
8	4.000	9.560927E-01	8.165335E-01	4.196798E-01	9.720929E-06
9	6.000	1.600078E 00	1.443905E 00	6.461408E-01	2.646398E-05
10	8.000	1.730456E 00	1.574283E 00	6.895210E-01	7.179338E-05
11	10.000	1.766014E 00	1.609840E 00	7.013735E-01	1.954667E-04
12	12.000	1.766014E 00	1.609840E 00	7.013735E-01	5.318999E-04
13	14.000	1.766014E 00	1.617742E 00	7.046922E-01	1.443728E-03
14	15.500	1.809473E 00	1.649976E 00	7.163232E-01	2.717144E-03
15	16.500	1.817374E 00	1.649976E 00	7.874384E-01	5.216811E-03
16	17.500	2.196655E 00	1.681583E 00	1.103506E 00	7.863210E-03
17	18.500	2.899905E 00	1.760600E 00	1.688230E 00	1.370101E-02
18	19.795	3.883664E 00	1.840245E 00	3.051048E 00	2.435473E-02
3000	17.675	2.294462E 00	1.694190E 00	1.212386E 00	9.075477E-03
2500	17.831	2.377272E 00	1.706816E 00	1.288092E 00	9.813884E-03
2000	18.016	2.483707E 00	1.722582E 00	1.387429E 00	1.076643E-02
1500	18.243	2.627937E 00	1.739116E 00	1.524568E 00	1.206073E-02
1000	18.537	2.833562E 00	1.754823E 00	1.727857E 00	1.397451E-02
500	18.959	3.170664E 00	1.764132E 00	2.072131E 00	1.722961E-02
68	19.555	3.759489E 00	1.770890E 00	2.680835E 00	2.324042E-02

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
DEUTERIUM	D(HVY WATER)	3.1000	0.	1	2.015	0.72610	0.66620

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0 0.	9.800000E-01	7.115780E-01	6.528760E-01	2.313800E-08
1 0.500	1.390000E 00	1.009279E 00	9.260180E-01	2.967000E-08
2 1.000	1.900000E 00	1.379590E 00	1.265780E 00	3.808800E-08
3 1.500	2.490000E 00	1.800728E 00	1.652176E 00	4.876000E-08
4 2.000	2.920000E 00	2.120212E 00	1.945304E 00	6.302000E-08
5 2.500	3.280000E 00	2.381608E 00	2.185136E 00	8.050000E-08
6 3.000	3.350000E 00	2.432435E 00	2.231770E 00	1.035000E-07
7 3.500	3.350000E 00	2.432435E 00	2.231770E 00	1.329400E-07
8 4.000	3.350000E 00	2.432435E 00	2.231770E 00	1.706600E-07
9 6.000	3.350000E 00	2.432435E 00	2.231770E 00	4.646000E-07
10 8.000	3.350000E 00	2.432435E 00	2.231770E 00	1.260400E-06
11 10.000	3.350000E 00	2.432435E 00	2.231770E 00	3.431600E-06
12 12.000	3.350000E 00	2.432435E 00	2.231770E 00	9.338000E-06
13 14.000	3.350000E 00	2.432435E 00	2.231770E 00	2.534600E-05
14 15.500	3.350000E 00	2.432435E 00	2.231770E 00	4.770200E-05
15 16.500	3.350000E 00	2.432435E 00	2.231770E 00	9.158600E-05
16 17.500	3.700000E 00	2.432435E 00	2.464940E 00	1.380460E-04
17 18.500	4.250000E 00	2.686570E 00	2.831350E 00	2.405340E-04
18 19.795	5.100000E 00	3.700000E 00	3.400000E 00	4.275700E-04
3000 17.675	3.771000E 00	2.825000E 00	2.437000E 00	1.600000E-04
2500 17.831	3.833000E 00	2.861000E 00	2.482000E 00	1.700000E-04
2000 18.016	3.913000E 00	2.908000E 00	2.541000E 00	1.900000E-04
1500 18.243	4.022000E 00	2.973000E 00	2.619000E 00	2.100000E-04
1000 18.537	4.181000E 00	3.065000E 00	2.733000E 00	2.500000E-04
500 18.959	4.447000E 00	3.232000E 00	2.924000E 00	3.000000E-04
68 19.555	4.899000E 00	3.517000E 00	3.241000E 00	4.100000E-04

DESIGNATION	FORMULA	CODE	DENSITY
*HVY WATER	*O2O	3.1100	1.11100

CODE 3.8000
DESIGNATION HVY WATER/D
WEIGHT 1.000000
FRACTION
N/CC - EACH
CONSTITUENT 0.0668208

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0 0.	7.550753E-02	4.877920E-02	5.278845E-02	1.882209E-09
1 0.500	1.282960E-01	7.149828E-02	9.627198E-02	7.413568E-09
2 1.000	2.017989E-01	1.015676E 01	1.563607E-01	3.090348E-09
3 1.500	2.024671E-01	1.249549E-01	1.456694E-01	3.966484E-09
4 2.000	2.839885E-01	1.523515E-01	2.151630E-01	5.126493E-09
5 2.500	3.982521E-01	1.804162E-01	3.160625E-01	6.548440E-09
6 3.000	3.574914E-01	1.784116E-01	2.773064E-01	8.419423E-09
7 3.500	3.494729E-01	1.777434E-01	2.692879E-01	1.081428E-08
8 4.000	3.494729E-01	1.777434E-01	2.692879E-01	1.388269E-08
9 6.000	3.494729E-01	1.777434E-01	2.692879E-01	3.779385E-08
10 8.000	3.494729E-01	1.777434E-01	2.692879E-01	1.025299E-07
11 10.000	3.494729E-01	1.777434E-01	2.692879E-01	2.791506E-07
12 12.000	3.494729E-01	1.777434E-01	2.692879E-01	7.596190E-07
13 14.000	3.494729E-01	1.777434E-01	2.692879E-01	2.061823E-06
14 15.500	3.494729E-01	1.777434E-01	2.692879E-01	3.880419E-06
15 16.500	3.494729E-01	1.777434E-01	2.692879E-01	7.450254E-06
16 17.500	3.728602E-01	1.951168E-01	2.846567E-01	1.122964E-05
17 18.500	4.109480E-01	2.218451E-01	3.107168E-01	1.956674E-05
18 19.795	4.811099E-01	2.639422E-01	3.615006E-01	3.478157E-05
3000 17.675	3.776713E-01	2.039371E-01	2.832534E-01	1.269596E-05
2500 17.831	3.822151E-01	2.064095E-01	2.866613E-01	1.403237E-05
2000 18.016	3.882290E-01	2.096169E-01	2.912051E-01	1.536879E-05
1500 18.243	3.964479E-01	2.140939E-01	2.973526E-01	1.737341E-05
1000 18.537	4.086761E-01	2.207092E-01	3.065071E-01	2.004625E-05
500 18.959	4.295910E-01	2.320019E-01	3.222100E-01	2.472370E-05
68 19.555	4.664093E-01	2.518477E-01	3.498070E-01	3.341041E-05

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CF CARBON	C CFINE	3.3010	1.6	6	12.014	0.15890	0.94400
N/CC - SOLID MATERIAL	0.0802357						
LETHARGY	SIGMA	XI SIGMA	SIGMA	SIGMA			
LEVEL	SCATTER	SCATTER	TRANSPORT	ABSORPTION			
0 0.	1.322011E 00	3.662838E-01	9.293193E-01	1.821592E-07			
1 0.500	1.153196E 00	3.557747E-01	8.940456E-01	2.201645E-07			
2 1.000	1.955487E 00	3.208233E-01	1.890080E 00	2.826917E-07			
3 1.500	1.824409E 00	2.771130E-01	1.612857E 00	3.629803E-07			
4 2.000	2.215466E 00	3.473801E-01	2.064675E 00	4.661066E-07			
5 2.500	2.834329E 00	4.504158E-01	2.675607E 00	5.986342E-07			
6 3.000	3.405833E 00	5.411869E-01	3.215107E 00	7.690351E-07			
7 3.500	3.917899E 00	6.225542E-01	3.698497E 00	9.894919E-07			
8 4.000	4.368005E 00	6.940759E-01	4.123396E 00	1.552645E-06			
9 4.600	4.649416E 00	7.387923E-01	4.389049E 00	1.690966E-05			
10 8.000	4.715912E 00	7.493584E-01	4.451821E 00	1.619097E-04			
11 10.000	4.733736E 00	7.521906E-01	4.468646E 00	3.389979E-04			
12 12.000	4.751569E 00	7.550242E-01	4.485481E 00	5.160852E-04			
13 14.000	4.768284E 00	7.576802E-01	4.501260E 00	6.821046E-04			
14 15.500	4.781655E 00	7.598050E-01	4.513883E 00	8.149200E-04			
15 16.500	4.791684E 00	7.613986E-01	4.523349E 00	9.145317E-04			
16 17.500	4.809855E 00	7.642859E-01	4.540503E 00	1.130046E-03			
17 18.500	4.832871E 00	7.679431E-01	4.562230E 00	1.804954E-03			
18 19.795	4.717665E 00	7.496370E-01	4.453476E 00	2.624485E-03			
3000 17.675	4.795600E 00	7.620208E-01	4.527046E 00	1.110000E-03			
2500 17.831	4.791600E 00	7.613852E-01	4.523270E 00	1.200000E-03			
2000 18.016	4.785600E 00	7.604318E-01	4.517606E 00	1.310000E-03			
1500 18.243	4.776200E 00	7.589382E-01	4.508733E 00	1.470000E-03			
1000 18.537	4.760800E 00	7.564911E-01	4.494195E 00	1.710000E-03			
500 18.959	4.733200E 00	7.521055E-01	4.468141E 00	2.100000E-03			
68 19.555	4.677000E 00	7.431753E-01	4.415088E 00	2.840000E-03			

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CF LITHIUM	LI CFINE	3.4010	0.53	3	6.940	0.	0.
N/CC - SOLID MATERIAL	0.0460100						
LETHARGY	SIGMA	XI SIGMA	SIGMA	SIGMA			
LEVEL	SCATTER	SCATTER	TRANSPORT	ABSORPTION			
0 0.	1.826539E 00	9.455868E-01	1.417273E 00	3.810993E-03			
1 0.500	2.174146E 00	8.668099E-01	1.679927E 00	4.758338E-03			
2 1.000	2.244740E 00	5.559556E-01	1.778053E 00	9.064029E-03			
3 1.500	1.783376E 00	5.002974E-01	1.550699E 00	1.468488E-02			
4 2.000	1.581772E 00	4.691881E-01	1.280264E 00	1.855200E-02			
5 2.500	1.351812E 00	4.840927E-01	1.316888E 00	2.446737E-02			
6 3.000	1.173660E 00	4.055343E-01	1.315288E 00	4.646959E-02			
7 3.500	4.325968E 00	1.143353E 00	3.906781E 00	1.531890E-01			
8 4.000	1.372725E 00	3.628112E-01	1.239708E 00	7.873153E-02			
9 6.000	1.012185E 00	2.675205E-01	9.141042E-01	7.574722E-02			
10 8.000	1.119995E 00	2.960146E-01	1.011467E 00	1.031573E-01			
11 10.000	1.119999E 00	2.960157E-01	1.011471E 00	3.107732E-01			
12 12.000	1.119999E 00	2.960158E-01	1.011472E 00	1.089062E 00			
13 14.000	1.120000E 00	2.960160E-01	1.011472E 00	3.278577E 00			
14 15.500	1.120000E 00	2.960160E-01	1.011472E 00	7.462594E 00			
15 16.500	1.120000E 00	2.960160E-01	1.011472E 00	1.383801E 01			
16 17.500	1.120000E 00	2.960160E-01	1.011472E 00	2.280731E 01			
17 18.500	1.120000E 00	2.960160E-01	1.011472E 00	3.760654E 01			
18 19.795	1.119483E 00	2.958795E-01	1.011006E 00	5.506369E 01			
3000 17.675	1.100000E 00	2.907300E-01	9.934100E-01	2.459200E 01			
2500 17.831	1.100000E 00	2.907300E-01	9.934100E-01	2.658800E 01			
2000 18.016	1.100000E 00	2.907300E-01	9.934100E-01	2.916500E 01			
1500 18.243	1.100000E 00	2.907300E-01	9.934100E-01	3.267600E 01			
1000 18.537	1.100000E 00	2.907300E-01	9.934100E-01	3.786000E 01			
500 18.959	1.100000E 00	2.907300E-01	9.934100E-01	4.669200E 01			
68 19.555	1.100000E 00	2.907300E-01	9.934100E-01	6.296800E 01			

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CF 6 LITHIUM N/CC - SOLID MATERIAL	LI 6 CFINE 0.0460589	3.4210	0.46	3	6.017	0.	0.

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	1.695514E 00	1.098878E 00	1.345414E 00	4.394917E-02
1	0.500	1.861534E 00	8.440007E-01	1.489797E 00	6.813237E-02
2	1.000	1.871645E 00	5.444757E-01	1.524515E 00	1.201601E-01
3	1.500	1.319576E 00	3.515017E-01	1.151652E 00	1.998224E-01
4	2.000	1.136834E 00	3.004651E-01	1.026674E 00	2.537819E-01
5	2.500	1.275717E 00	3.371720E-01	1.152100E 00	3.225099E-01
6	3.000	1.741411E 00	4.602548E-01	1.572668E 00	5.504264E-01
7	3.500	5.002515E 00	1.322165E 00	4.517771E 00	1.996045E 00
8	4.000	1.825543E 00	4.824911E-01	1.648648E 00	1.014590E 00
9	6.000	8.717847E-01	2.304127E-01	7.873088E-01	1.028549E 00
10	8.000	1.199963E 00	3.171503E-01	1.083687E 00	2.718594E 00
11	10.000	1.199999E 00	3.171597E-01	1.083719E 00	7.359604E 00
12	12.000	1.179977E 00	3.171598E-01	1.083720E 00	1.999560E 01
13	14.000	1.200000E 00	3.171600E-01	1.083720E 00	5.055128E 01
14	15.500	1.200000E 00	3.171600E-01	1.083720E 00	1.053837E 02
15	16.500	1.200000E 00	3.171600E-01	1.083720E 00	1.838473E 02
16	17.500	1.200000E 00	3.171600E-01	1.083720E 00	3.031351E 02
17	18.500	1.200000E 00	3.171600E-01	1.083720E 00	4.998338E 02
18	19.795	1.323948E 00	3.555437E-01	1.193349E 00	7.318677E 02
3000	17.675	6.000000E 00	1.803600E 00	5.329200E 00	3.174900E 02
2500	17.831	6.000000E 00	1.803600E 00	5.329200E 00	3.449100E 02
2000	18.016	6.000000E 00	1.803600E 00	5.329200E 00	3.802900E 02
1500	18.243	6.000000E 00	1.803600E 00	5.329200E 00	4.283600E 02
1000	18.537	6.000000E 00	1.803600E 00	5.329200E 00	4.991200E 02
500	18.959	6.000000E 00	1.803600E 00	5.329200E 00	6.188500E 02
68	19.555	6.000000E 00	1.803600E 00	5.329200E 00	8.372500E 02

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CF OXYGEN	O CFINE	3.6010	0.	8	16.004	0.12090	0.95800

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	9.265122E-01	4.342565E-01	1.044189E-01	2.505446E-01
1	0.500	1.248041E 00	2.392801E-01	1.022573E 00	1.639934E-01
2	1.000	2.194486E 00	2.321665E-01	1.707991E 00	2.631528E-02
3	1.500	1.357525E 00	2.089150E-01	1.262953E 00	10.000000E-09
4	2.000	2.717204E 00	4.169699E-01	2.602899E 00	10.000000E-09
5	2.500	4.076000E 00	6.247430E-01	3.826620E 00	10.000000E-09
6	3.000	6.673061E 00	8.152686E-01	5.117871E 00	10.000000E-09
7	3.500	3.721941E 00	5.910943E-01	3.898390E 00	10.000000E-09
8	4.000	3.424297E 00	4.142240E-01	3.282807E 00	1.928170E-08
9	6.000	3.477060E 00	4.203765E-01	3.331023E 00	2.106748E-07
10	8.000	3.766352E 00	4.553520E-01	3.608166E 00	5.726709E-07
11	10.000	3.799996E 00	4.594196E-01	3.640396E 00	1.555988E-06
12	12.000	3.799996E 00	4.594194E-01	3.640396E 00	4.229475E-06
13	14.000	3.799989E 00	4.594187E-01	3.640389E 00	1.069687E-05
14	15.500	3.799978E 00	4.594173E-01	3.640378E 00	2.229761E-05
15	16.500	3.799961E 00	4.594153E-01	3.640363E 00	3.890675E-05
16	17.500	3.799936E 00	4.594122E-01	3.640338E 00	6.414776E-05
17	18.500	3.851354E 00	4.656287E-01	3.689597E 00	1.057649E-04
18	19.795	4.034293E 00	4.877460E-01	3.864852E 00	1.550284E-04
3000	17.675	3.762400E 00	4.548742E-01	3.604379E 00	7.000000E-05
2500	17.831	3.774700E 00	4.563612E-01	3.616163E 00	7.000000E-05
2000	18.016	3.793100E 00	4.585858E-01	3.633790E 00	8.000000E-05
1500	18.243	3.821700E 00	4.620435E-01	3.661188E 00	9.000000E-05
1000	18.537	3.869900E 00	4.678709E-01	3.707364E 00	1.100000E-04
500	18.959	4.062400E 00	4.791751E-01	3.796937E 00	1.300000E-04
68	19.555	4.162400E 00	5.032341E-01	3.987579E 00	1.800000E-04

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
HVY WATER/D N/CC - SOLID MATERIAL	DD1/2 0.0668208	3.8000	1.111	5	10.017	0.54000	0.75000

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	1.130000E 00	7.300000E-01	7.900000E-01	2.816800E-08
1	0.500	1.920000E 00	1.070000E 00	1.440000E 00	3.612000E-08
2	1.000	3.020000E 00	1.520000E 00	2.340000E 00	4.636800E-08
3	1.500	3.030000E 00	1.870000E 00	2.180000E 00	5.436000E-08
4	2.000	4.250000E 00	2.280000E 00	3.220000E 00	7.672000E-08
5	2.500	5.960000E 00	2.700000E 00	4.730000E 00	9.800000E-08
6	3.000	5.350000E 00	2.670000E 00	4.150000E 00	1.260000E-07
7	3.500	5.230000E 00	2.660000E 00	4.030000E 00	1.618400E-07
8	4.000	5.230000E 00	2.660000E 00	4.030000E 00	2.077600E-07
9	6.000	5.230000E 00	2.660000E 00	4.030000E 00	5.656000E-07
10	8.000	5.230000E 00	2.660000E 00	4.030000E 00	1.534400E-06
11	10.000	5.230000E 00	2.660000E 00	4.030000E 00	4.177600E-06
12	12.000	5.230000E 00	2.660000E 00	4.030000E 00	1.136800E-05
13	14.000	5.230000E 00	2.660000E 00	4.030000E 00	3.085600E-05
14	15.500	5.230000E 00	2.660000E 00	4.030000E 00	5.807200E-05
15	16.500	5.230000E 00	2.660000E 00	4.030000E 00	1.114960E-04
16	17.500	5.580000E 00	2.920000E 00	4.260000E 00	1.680560E-04
17	18.500	6.150000E 00	3.320000E 00	4.650000E 00	2.928240E-04
18	19.795	7.200000E 00	3.950000E 00	5.410000E 00	5.205200E-04
3000	17.675	5.652000E 00	3.052000E 00	4.239000E 00	1.900000E-04
2500	17.831	5.720000E 00	3.089000E 00	4.290000E 00	2.100000E-04
2000	18.016	5.810000E 00	3.137000E 00	4.358000E 00	2.300000E-04
1500	18.243	5.933000E 00	3.204000E 00	4.450000E 00	2.600000E-04
1000	18.537	6.116000E 00	3.303000E 00	4.587000E 00	3.000000E-04
500	18.959	6.429000E 00	3.472000E 00	4.822000E 00	3.700000E-04
68	19.555	6.980000E 00	3.765000E 00	5.235000E 00	5.000000E-04

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
RHENIUM N/CC - SOLID MATERIAL	RE 0.0664060	3.9000	20.53	75	186.259	0.01070	0.99640

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	5.020000E 00	5.370000E-02	5.000000E 00	8.000000E-02
1	0.500	5.400000E 00	5.780000E-02	5.380000E 00	10.000000E-02
2	1.000	6.970000E 00	7.470000E-02	6.940000E 00	1.300000E-01
3	1.500	6.230000E 00	6.670000E-02	6.210000E 00	1.700000E-01
4	2.000	6.080000E 00	6.510000E-02	6.060000E 00	2.200000E-01
5	2.500	6.020000E 00	6.440000E-02	6.000000E 00	2.800000E-01
6	3.000	6.940000E 00	7.430000E-02	6.920000E 00	3.600000E-01
7	3.500	7.140000E 00	7.640000E-02	7.110000E 00	4.600000E-01
8	4.000	8.910000E 00	9.530000E-02	8.880000E 00	5.900000E-01
9	6.000	1.240000E 01	1.327000E-01	1.236000E 01	1.600000E 00
10	8.000	4.062000E 01	4.347000E-01	4.047000E 01	4.380000E 00
11	10.000	5.976000E 01	6.325000E-01	5.885000E 01	1.194000E 01
12	12.000	7.614000E 01	8.148000E-01	7.587000E 01	3.248000E 01
13	14.000	7.870000E 01	8.422000E-01	7.842000E 01	4.515800E 02
14	15.500	1.270000E 01	1.359000E-01	1.265000E 01	1.133000E 02
15	16.500	7.800000E 00	8.350000E-02	7.770000E 00	2.620000E 01
16	17.500	8.000000E 00	8.560000E-02	7.970000E 00	3.200000E 01
17	18.500	8.000000E 00	8.560000E-02	7.970000E 00	4.700000E 01
18	19.795	1.400000E 01	1.498000E-01	1.395000E 01	8.600000E 01
3000	17.675	8.260000E 00	8.840000E-02	8.230000E 00	3.612000E 01
2500	17.831	8.300000E 00	8.880000E-02	8.270000E 00	3.739000E 01
2000	18.016	8.380000E 00	8.970000E-02	8.350000E 00	3.955000E 01
1500	18.243	8.550000E 00	9.150000E-02	8.520000E 00	4.291000E 01
1000	18.537	8.880000E 00	9.500000E-02	8.850000E 00	4.825000E 01
500	18.959	9.590000E 00	1.026000E-01	9.560000E 00	5.775000E 01
68	19.555	1.110000E 01	1.188000E-01	1.106000E 01	7.566000E 01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CF IRGN	FE CFINE	4.0020	7.87	26	55.860	0.	0.
N/CC - SOLID MATERIAL	0.0848808						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	3.266809E 00	3.357819E 00	1.648800E 00	1.643909E-02
1	0.500	3.635574E 00	3.070748E 00	1.840125E 00	1.829469E-02
2	1.000	3.471712E 00	2.474070E 00	2.295127E 00	1.748842E-02
3	1.500	2.981845E 00	1.640986E 00	2.334632E 00	1.500213E-02
4	2.000	2.741463E 00	9.058794E-01	2.329719E 00	1.380062E-02
5	2.500	2.723424E 00	4.649042E-01	2.317536E 00	1.356996E-02
6	3.000	3.250767E 00	2.678747E-01	2.948007E 00	1.634224E-02
7	3.500	3.018783E 00	1.057665E-01	2.560209E 00	1.516441E-02
8	4.000	5.427853E 00	1.915952E-01	5.277310E 00	2.360711E-02
9	6.000	9.314316E 00	3.325211E-01	9.202544E 00	4.643603E-02
10	8.000	7.777270E 00	2.776485E-01	7.683943E 00	1.876446E-02
11	10.000	1.035946E 01	3.698329E-01	1.023515E 01	1.974682E-02
12	12.000	1.134440E 01	4.047701E-01	1.120835E 01	5.551430E-02
13	14.000	1.126208E 01	4.020562E-01	1.112693E 01	1.389542E-01
14	15.500	1.115413E 01	3.982024E-01	1.102028E 01	2.996990E-01
15	16.500	1.104132E 01	3.941751E-01	1.090882E 01	5.006877E-01
16	17.500	1.092912E 01	3.901696E-01	1.079797E 01	8.131154E-01
17	18.500	1.073051E 01	3.830794E-01	1.060175E 01	1.340025E 00
18	19.795	1.065813E 01	3.804954E-01	1.053024E 01	1.961229E 00
3000	17.675	1.081970E 01	3.824800E-01	1.069069E 01	8.707700E-01
2500	17.831	1.081040E 01	3.821500E-01	1.068150E 01	9.416800E-01
2000	18.016	1.080020E 01	3.817900E-01	1.067142E 01	1.033400E 00
1500	18.243	1.078520E 01	3.812600E-01	1.065660E 01	1.158480E 00
1000	18.537	1.076720E 01	3.806200E-01	1.063881E 01	1.344190E 00
500	18.959	1.075820E 01	3.803100E-01	1.062992E 01	1.663760E 00
68	19.555	1.075330E 01	3.801300E-01	1.062508E 01	2.256290E 00

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CF1 IRON	CF1 IRON	4.0030	7.87	26	55.860	0.	0.
N/CC - SOLID MATERIAL	0.0848808						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	3.266809E 00	3.357819E 00	1.648800E 00	5.000000E-02
1	0.500	3.635574E 00	3.070748E 00	1.840125E 00	1.700000E-02
2	1.000	3.471712E 00	2.474070E 00	2.295127E 00	3.000000E-03
3	1.500	2.981845E 00	1.640986E 00	2.334632E 00	3.500000E-03
4	2.000	2.741463E 00	9.058794E-01	2.329719E 00	4.000000E-03
5	2.500	2.723424E 00	4.649042E-01	2.317536E 00	4.500000E-03
6	3.000	3.250767E 00	2.678747E-01	2.948007E 00	5.000000E-03
7	3.500	3.018783E 00	1.057665E-01	2.560209E 00	6.000000E-03
8	4.000	5.427853E 00	1.915952E-01	5.277310E 00	7.500000E-03
9	6.000	9.314316E 00	3.325211E-01	9.202544E 00	2.000000E-02
10	8.000	7.777270E 00	2.776485E-01	7.683943E 00	4.000000E-01
11	10.000	1.035946E 01	3.698329E-01	1.023515E 01	2.146000E-02
12	12.000	1.134440E 01	4.049981E-01	1.120835E 01	6.034000E-02
13	14.000	1.126208E 01	4.020562E-01	1.112693E 01	1.510000E-01
14	15.500	1.115413E 01	3.982024E-01	1.102028E 01	3.258000E-01
15	16.500	1.104132E 01	3.941751E-01	1.090882E 01	5.443000E-01
16	17.500	1.092912E 01	3.901696E-01	1.079797E 01	8.842000E-01
17	18.500	1.073051E 01	3.830794E-01	1.060175E 01	1.456000E 00
18	19.795	1.065813E 01	3.804954E-01	1.053024E 01	2.132000E 00
3000	17.675	1.081970E 01	3.824800E-01	1.069069E 01	9.526000E-01
2500	17.831	1.081040E 01	3.821500E-01	1.068150E 01	1.030000E 00
2000	18.016	1.080020E 01	3.817900E-01	1.067142E 01	1.130000E 00
1500	18.243	1.078520E 01	3.812600E-01	1.065660E 01	1.266000E 00
1000	18.537	1.076720E 01	3.806200E-01	1.063881E 01	1.466000E 00
500	18.959	1.075820E 01	3.803100E-01	1.062992E 01	1.808000E 00
68	19.555	1.075330E 01	3.801300E-01	1.062508E 01	2.439000E 00

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CF NICKEL	NI CFINE	4.1020	8.2	28	58.720	0.	0.
N/CC - SOLID MATERIAL	0.0841324						

LETHARGY LEVEL		SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	3.346795E 00	3.543367E 00	1.726827E 00	1.684349E-02
1	0.500	3.610646E 00	3.369730E 00	1.939146E 00	1.817052E-02
2	1.000	3.410443E 00	2.646408E 00	2.302146E 00	1.714983E-02
3	1.500	3.222648E 00	1.314535E 00	2.400650E 00	1.620251E-02
4	2.000	3.258024E 00	3.185074E-01	2.519757E 00	1.639307E-02
5	2.500	3.398158E 00	1.013509E-01	2.779361E 00	1.707617E-02
6	3.000	3.937613E 00	1.247899E-01	3.408215E 00	2.000362E-02
7	3.500	4.926429E 00	1.633481E-01	4.467934E 00	2.476188E-02
8	4.000	6.515159E 00	2.290968E-01	6.313160E 00	3.274418E-02
9	6.000	2.078073E 01	7.418720E-01	2.053136E 01	1.044946E-01
10	8.000	3.186472E 01	1.137570E 00	3.140234E 01	2.536577E-01
11	10.000	1.614146E 01	5.762498E-01	1.594776E 01	3.784431E-02
12	12.000	1.711615E 01	6.110462E-01	1.691075E 01	1.055136E-01
13	14.000	1.728461E 01	6.170607E-01	1.707720E 01	2.616449E-01
14	15.500	1.731624E 01	6.181898E-01	1.710845E 01	5.480808E-01
15	16.500	1.729210E 01	6.173279E-01	1.708459E 01	9.650265E-01
16	17.500	1.739456E 01	6.209858E-01	1.718583E 01	1.580145E 00
17	18.500	1.725406E 01	6.159699E-01	1.704701E 01	2.560387E 00
18	19.795	1.679039E 01	5.979874E-01	1.658932E 01	3.713425E 00
3000	17.675	1.746420E 01	5.876500E-01	1.726609E 01	1.660190E 00
2500	17.831	1.747400E 01	5.879800E-01	1.727578E 01	1.795320E 00
2000	18.016	1.747830E 01	5.881300E-01	1.728004E 01	1.970220E 00
1500	18.243	1.746680E 01	5.877400E-01	1.726867E 01	2.208380E 00
1000	18.537	1.743280E 01	5.865900E-01	1.723505E 01	2.560520E 00
500	18.959	1.737180E 01	5.845400E-01	1.717474E 01	3.162040E 00
68	19.555	1.727430E 01	5.812600E-01	1.707835E 01	4.271350E 00

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CF1 NICKEL	CF1 NICKEL	4.1030	8.2	28	58.720	0.	0.
N/CC - SOLID MATERIAL	0.0841324						

LETHARGY LEVEL		SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	3.346795E 00	3.543367E 00	1.726827E 00	3.000000E-03
1	0.500	3.610646E 00	3.369731E 00	1.939146E 00	3.500000E-03
2	1.000	3.410443E 00	2.646408E 00	2.302146E 00	4.500000E-03
3	1.500	3.222648E 00	1.314535E 00	2.400650E 00	5.000000E-03
4	2.000	3.258024E 00	3.185074E-01	2.519757E 00	6.000000E-03
5	2.500	3.398158E 00	1.013509E-01	2.779361E 00	7.000000E-03
6	3.000	3.937613E 00	1.247899E-01	3.408215E 00	8.000000E-03
7	3.500	4.926429E 00	1.633481E-01	4.467934E 00	9.000000E-03
8	4.000	6.515159E 00	2.290968E-01	6.313160E 00	1.100000E-02
9	6.000	2.078073E 01	7.418720E-01	2.053136E 01	3.400000E-02
10	8.000	3.186472E 01	1.137570E 00	3.148234E 01	5.000000E-01
11	10.000	1.614146E 01	5.762498E-01	1.594776E 01	3.784430E-02
12	12.000	1.711615E 01	6.110462E-01	1.691075E 01	1.055136E-01
13	14.000	1.728461E 01	6.170607E-01	1.707720E 01	2.616449E-01
14	15.500	1.731624E 01	6.181898E-01	1.710845E 01	5.480808E-01
15	16.500	1.729210E 01	6.173279E-01	1.708459E 01	9.650265E-01
16	17.500	1.739456E 01	6.209858E-01	1.718583E 01	1.580145E 00
17	18.500	1.725406E 01	6.159699E-01	1.704701E 01	2.560387E 00
18	19.795	1.679039E 01	5.979874E-01	1.658932E 01	3.713425E 00
3000	17.675	1.746420E 01	5.876500E-01	1.726609E 01	1.660190E 00
2500	17.831	1.747400E 01	5.879800E-01	1.727578E 01	1.795320E 00
2000	18.016	1.747830E 01	5.881300E-01	1.728004E 01	1.970220E 00
1500	18.243	1.746680E 01	5.877400E-01	1.726867E 01	2.208380E 00
1000	18.537	1.743280E 01	5.865900E-01	1.723505E 01	2.560520E 00
500	18.959	1.737180E 01	5.845400E-01	1.717474E 01	3.162040E 00
68	19.555	1.727430E 01	5.812600E-01	1.707835E 01	4.271350E 00

DESIGNATION	FORMULA	CODE	DENSITY
*CF IRON	*FE CFINE	4.1120	7.87000
CODE	4.0020		
DESIGNATION	CF IRON		
WEIGHT	1.000000		
FRACTION			
N/CC - EACH			
CONSTITUENT	C.0642608		

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	2.772892E-01	2.850142E-01	1.399514E-01	1.395363E-03
1	0.500	3.085903E-01	2.606474E-01	1.561912E-01	1.552867E-03
2	1.000	2.946815E-01	2.100009E-01	1.948121E-01	1.484430E-03
3	1.500	2.531013E-01	1.392882E-01	1.981653E-01	1.273392E-03
4	2.000	2.326975E-01	7.689172E-02	1.977483E-01	1.171407E-03
5	2.500	2.311662E-01	3.946142E-02	1.967142E-01	1.151828E-03
6	3.000	2.759276E-01	2.273740E-02	2.502290E-01	1.307142E-03
7	3.500	2.562366E-01	8.977538E-03	2.173125E-01	1.287167E-03
8	4.000	4.607202E-01	1.626275E-02	4.479420E-01	2.003790E-03
9	6.000	7.906051E-01	2.822464E-02	7.811188E-01	3.941525E-03
10	8.000	6.601405E-01	2.356702E-02	6.522188E-01	1.592741E-03
11	10.000	0.773191E-01	3.139169E-02	6.681612E-01	1.676725E-03
12	12.000	9.629283E-01	3.437654E-02	9.513731E-01	4.712095E-03
13	14.000	9.559336E-01	3.412683E-02	9.444625E-01	1.179454E-02
14	15.500	9.467709E-01	3.379972E-02	9.354096E-01	2.543867E-02
15	16.500	9.371954E-01	3.345788E-02	9.259491E-01	4.249874E-02
16	17.500	9.276719E-01	3.311788E-02	9.163398E-01	6.904331E-02
17	18.500	9.108141E-01	3.251606E-02	8.998843E-01	1.137423E-01
18	19.795	9.046705E-01	3.229674E-02	8.930144E-01	1.664706E-01
3000	17.675	9.183843E-01	3.246519E-02	9.074338E-01	7.391161E-02
2500	17.831	9.175949E-01	3.243718E-02	9.066537E-01	7.993050E-02
2000	18.016	9.167291E-01	3.240662E-02	9.057981E-01	8.771577E-02
1500	18.243	9.154559E-01	3.236163E-02	9.045402E-01	9.833265E-02
1000	18.537	9.139280E-01	3.230731E-02	9.030302E-01	1.140959E-01
500	18.959	9.131641E-01	3.228100E-02	9.022756E-01	1.412212E-01
68	19.555	9.127482E-01	3.226572E-02	9.018648E-01	1.915156E-01

DESIGNATION	FORMULA	CODE	DENSITY
*CF1 IRON	*CF1 IRON	4.1130	7.87000
CODE	4.0030		
DESIGNATION	CF1 IRON		
WEIGHT	1.000000		
FRACTION			
N/CC - EACH			
CONSTITUENT	C.0642608		

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	2.772892E-01	2.850142E-01	1.399514E-01	4.244000E-03
1	0.500	3.085903E-01	2.606474E-01	1.561912E-01	1.443000E-03
2	1.000	2.946815E-01	2.100009E-01	1.948121E-01	2.546000E-04
3	1.500	2.531013E-01	1.392882E-01	1.981653E-01	2.971000E-04
4	2.000	2.326975E-01	7.689170E-02	1.977483E-01	3.395000E-04
5	2.500	2.311662E-01	3.946140E-02	1.967142E-01	3.820000E-04
6	3.000	2.759276E-01	2.273740E-02	2.502290E-01	4.244000E-04
7	3.500	2.562366E-01	8.977500E-03	2.173125E-01	5.093000E-04
8	4.000	4.607202E-01	1.626270E-02	4.479420E-01	8.386000E-04
9	6.000	7.906061E-01	2.822460E-02	7.811188E-01	1.697600E-03
10	8.000	6.601405E-01	2.356700E-02	6.522188E-01	3.395230E-02
11	10.000	8.793191E-01	3.139170E-02	8.687672E-01	1.821500E-03
12	12.000	9.629283E-01	3.437650E-02	9.513731E-01	5.121700E-03
13	14.000	9.559336E-01	3.412680E-02	9.444625E-01	1.281700E-02
14	15.500	9.467709E-01	3.379970E-02	9.354096E-01	2.783420E-02
15	16.500	9.371954E-01	3.345790E-02	9.259491E-01	4.620060E-02
16	17.500	9.276719E-01	3.311790E-02	9.165398E-01	7.505160E-02
17	18.500	9.108141E-01	3.251610E-02	8.998843E-01	1.235864E-01
18	19.795	9.046705E-01	3.229670E-02	8.938144E-01	1.809659E-01
3000	17.675	9.183843E-01	3.246520E-02	9.074338E-01	8.085740E-02
2500	17.831	9.175949E-01	3.243720E-02	9.066537E-01	8.742720E-02
2000	18.016	9.167291E-01	3.240660E-02	9.057982E-01	9.591530E-02
1500	18.243	9.154559E-01	3.236160E-02	9.045402E-01	1.074591E-01
1000	18.537	9.139280E-01	3.230730E-02	9.030302E-01	1.244352E-01
500	18.959	9.131641E-01	3.228100E-02	9.022756E-01	1.534645E-01
68	19.555	9.127482E-01	3.226570E-02	9.018648E-01	2.070243E-01

DESIGNATION	FORMULA	CODE	DENSITY	
*CF304 SS	*CF304 SS	4.1510	7.94000	
CODE	3.3010	4.0020	4.1020	4.2020
DESIGNATION	CF CARBON	CF IRON	CF NICKEL	CF CHROMIUM
WEIGHT	0.000800	0.714200	0.095000	0.190000
FRACTION				
N/CC - EACH				
CONSTITUENT	0.0003185	0.0611610	0.0077392	0.0174752

LEVEL	LETHARGY	SIGMA SCATTER	SI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	2.823571E-01	2.864401E-01	1.411730E-01	1.418759E-03
1	0.500	3.132979E-01	2.623756E-01	1.579990E-01	1.574784E-03
2	1.000	3.050541E-01	2.129931E-01	2.003458E-01	1.532838E-03
3	1.500	2.695812E-01	1.386771E-01	2.090724E-01	1.353276E-03
4	2.000	2.423566E-01	6.352231E-02	2.004730E-01	1.216256E-03
5	2.500	2.426645E-01	3.081884E-02	2.040683E-01	1.208200E-03
6	3.000	2.898487E-01	1.940968E-02	2.592722E-01	1.453616E-03
7	3.500	2.727792E-01	9.547371E-03	2.365294E-01	1.367786E-03
8	4.000	4.715886E-01	1.680687E-02	4.580084E-01	2.046239E-03
9	6.000	8.182301E-01	2.939327E-02	8.083462E-01	4.063182E-03
10	8.000	1.256463E 00	4.504079E-02	1.241319E 00	5.218942E-03
11	10.000	8.345556E-01	2.997940E-02	8.244746E-01	2.291910E-03
12	12.000	9.021600E-01	3.239358E-02	8.912674E-01	5.601258E-03
13	14.000	8.977743E-01	3.223767E-02	8.869343E-01	1.348960E-02
14	15.500	8.910331E-01	3.195753E-02	8.802736E-01	2.869140E-02
15	16.500	8.821576E-01	3.168107E-02	8.715045E-01	4.868365E-02
16	17.500	8.765747E-01	3.148247E-02	8.659883E-01	7.951957E-02
17	18.500	8.641087E-01	3.103834E-02	8.536717E-01	1.305514E-01
18	19.795	8.554724E-01	3.072414E-02	8.451404E-01	1.905803E-01
3000	17.675	8.691972E-01	3.087086E-02	8.587808E-01	8.442476E-02
2500	17.831	8.694986E-01	3.088326E-02	8.590780E-01	9.138937E-02
2000	18.016	8.693429E-01	3.087870E-02	8.589238E-01	1.003412E-01
1500	18.243	8.684979E-01	3.084908E-02	8.580889E-01	1.125128E-01
1000	18.537	8.671073E-01	3.079938E-02	8.567145E-01	1.305633E-01
500	18.959	8.658157E-01	3.075337E-02	8.554389E-01	1.616016E-01
68	19.555	8.638690E-01	3.069076E-02	8.535167E-01	2.192533E-01

DESIGNATION	FORMULA	CODE	DENSITY	
*R CF 304SS	*R CF 304SS	4.1520	7.94000	
CODE	4.0020	4.1020	4.2020	4.4010
DESIGNATION	CF IRON	CF NICKEL	CF CHROMIUM	CF MANGANESE
WEIGHT	0.705000	0.095000	0.190000	0.010000
FRACTION				
N/CC - EACH				
CONSTITUENT	0.0603732	0.0077392	0.0174752	0.0008707

LEVEL	LETHARGY	SIGMA SCATTER	SI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	2.821200E-01	2.866120E-01	1.410070E-01	1.406830E-03
1	0.500	3.132080E-01	2.625550E-01	1.578760E-01	1.561580E-03
2	1.000	3.049370E-01	2.132490E-01	2.000850E-01	1.520680E-03
3	1.500	2.698210E-01	1.390630E-01	2.091590E-01	1.343710E-03
4	2.000	2.424720E-01	6.385790E-02	2.004150E-01	1.208370E-03
5	2.500	2.423890E-01	3.098940E-02	2.097470E-01	1.201050E-03
6	3.000	2.894200E-01	1.942770E-02	2.587510E-01	1.444990E-03
7	3.500	2.722650E-01	9.518120E-03	2.361720E-01	1.362830E-03
8	4.000	4.704010E-01	1.662140E-02	4.568880E-01	2.041330E-03
9	6.000	8.217480E-01	2.934370E-02	8.118850E-01	4.051510E-03
10	8.000	1.311600E 00	4.686160E-02	1.295850E 00	5.302400E-03
11	10.000	1.038590E 00	3.720570E-02	1.026080E 00	6.608730E-03
12	12.000	8.954180E-01	3.196850E-02	8.846730E-01	5.855720E-03
13	14.000	8.895860E-01	3.175940E-02	8.789110E-01	1.399850E-02
14	15.500	8.828310E-01	3.151820E-02	8.722370E-01	2.975130E-02
15	16.500	8.740780E-01	3.120580E-02	8.635890E-01	5.053980E-02
16	17.500	8.687610E-01	3.101600E-02	8.583350E-01	8.261480E-02
17	18.500	8.567210E-01	3.058640E-02	8.464390E-01	1.356250E-01
18	19.795	8.482330E-01	3.028200E-02	8.380530E-01	1.980040E-01
3000	17.675	8.624050E-01	3.078920E-02	8.520560E-01	1.105970E-01
2500	17.831	8.618150E-01	3.042500E-02	8.515520E-01	9.496820E-02
2000	18.016	8.617030E-01	3.042230E-02	8.514420E-01	1.042670E-01
1500	18.243	8.609130E-01	3.039550E-02	8.506610E-01	1.169100E-01
1000	18.537	8.595840E-01	3.034310E-02	8.493470E-01	1.356570E-01
500	18.959	8.583330E-01	3.030470E-02	8.481110E-01	1.678790E-01
68	19.555	8.563230E-01	3.023200E-02	8.461260E-01	2.277120E-01

DESIGNATION	FORMULA	CODE	DENSITY
*CF310 SS	*CF310 SS	4.1710	7.98000
CODE	4.0020	4.1020	4.2020
DESIGNATION	CF IRCN	CF NICKEL	CF CHROMIUM
WEIGHT	0.559000	0.191000	0.250000
FRACTION			
N/CC - EACH			
CONSTITUENT	0.0481115	0.0156382	0.0231095

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	2.838727E-01	2.877547E-01	1.416002E-01	1.428520E-03
1	0.500	3.142022E-01	2.644044E-01	1.587438E-01	1.581215E-03
2	1.000	3.072502E-01	2.147587E-01	2.013762E-01	1.546650E-03
3	1.500	2.754331E-01	1.366024E-01	2.122709E-01	1.385548E-03
4	2.000	2.473343E-01	5.589316E-02	2.015132E-01	1.244752E-03
5	2.500	2.488291E-01	2.587892E-02	2.078123E-01	1.245348E-03
6	3.000	2.966202E-01	1.733612E-02	2.633261E-01	1.494865E-03
7	3.500	2.867768E-01	9.780214E-03	2.514811E-01	1.445670E-03
8	4.000	4.791387E-01	1.689295E-02	4.651247E-01	2.107344E-03
9	4.500	8.871578E-01	3.167153E-02	8.765119E-01	4.416224E-03
10	5.000	1.576919E 00	5.629601E-02	1.557996E 00	7.657370E-03
11	10.000	8.493935E-01	3.032334E-02	8.392008E-01	2.588140E-03
12	12.000	9.117761E-01	3.255040E-02	9.008348E-01	6.158014E-03
13	14.000	9.095802E-01	3.247201E-02	8.986652E-01	1.469909E-02
14	15.500	9.043680E-01	3.228594E-02	8.935156E-01	3.108256E-02
15	16.500	8.961929E-01	3.199409E-02	8.854386E-01	5.318753E-02
16	17.500	8.930326E-01	3.188126E-02	8.823162E-01	8.704162E-02
17	18.500	8.822866E-01	3.149763E-02	8.716992E-01	1.425673E-01
18	19.795	8.707805E-01	3.107733E-02	8.603332E-01	2.078248E-01
3000	17.675	8.872445E-01	3.114525E-02	8.767397E-01	9.208144E-02
2500	17.831	8.880024E-01	3.117451E-02	8.774870E-01	9.969809E-02
2000	18.016	8.881564E-01	3.118149E-02	8.776396E-01	1.094756E-01
1500	18.243	8.874724E-01	3.115821E-02	8.769634E-01	1.227598E-01
1000	18.537	8.860461E-01	3.110828E-02	8.755534E-01	1.424473E-01
500	18.959	8.843150E-01	3.104837E-02	8.738428E-01	1.762713E-01
68	19.555	8.813979E-01	3.094428E-02	8.709610E-01	2.390885E-01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CF CHROMIUM	CR CFINE	4.2020	6.92	24	52.010	0.	0.
N/CC - SOLID MATERIAL	0.0801594						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	3.217002E 00	3.069973E 00	1.526189E 00	1.619281E-02
1	0.500	3.584030E 00	2.768106E 00	1.726036E 00	1.803913E-02
2	1.000	3.759023E 00	2.351514E 00	2.377926E 00	1.891267E-02
3	1.500	3.529955E 00	1.605188E 00	2.700459E 00	1.775867E-02
4	2.000	2.790569E 00	3.171438E-01	2.164583E 00	1.403859E-02
5	2.500	2.797982E 00	8.337358E-02	2.286848E 00	1.408236E-02
6	3.000	3.403088E 00	1.080407E-01	2.950934E 00	1.712691E-02
7	3.500	2.790978E 00	9.247964E-02	2.528620E 00	1.423033E-02
8	4.000	5.024389E 00	1.770850E-01	4.868077E 00	1.997059E-02
9	4.500	4.935599E 00	1.762009E-01	4.876372E 00	2.371368E-02
10	5.000	3.048252E 01	1.088226E 00	3.011673E 01	1.206360E-01
11	10.000	4.264955E 00	1.522588E-01	4.213775E 00	4.527456E-02
12	12.000	4.254113E 00	1.518718E-01	4.203064E 00	7.949518E-02
13	14.000	4.216649E 00	1.505344E-01	4.166049E 00	1.697196E-01
14	15.500	4.194440E 00	1.497415E-01	4.144107E 00	3.501848E-01
15	16.500	4.091882E 00	1.460802E-01	4.042779E 00	6.061325E-01
16	17.500	4.119382E 00	1.470619E-01	4.069950E 00	1.003758E 00
17	18.500	4.142931E 00	1.486166E-01	4.112976E 00	1.646005E 00
18	19.795	4.129487E 00	1.479776E-01	4.079741E 00	2.397100E 00
3000	17.675	4.049590E 00	1.537800E-01	3.997670E 00	1.048270E 00
2500	17.831	4.095120E 00	1.555100E-01	4.042620E 00	1.138790E 00
2000	18.016	4.120110E 00	1.564600E-01	4.067290E 00	1.252580E 00
1500	18.243	4.129520E 00	1.568200E-01	4.076580E 00	1.405850E 00
1000	18.537	4.128280E 00	1.567700E-01	4.075350E 00	1.632850E 00
500	18.959	4.113390E 00	1.562100E-01	4.060650E 00	2.024130E 00
68	19.555	4.063340E 00	1.543090E-01	4.011250E 00	2.758120E 00

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
CF1 CHROMIUM	CF1 CHROMIUM	4.2030	6.92	24	52.010	0.	0.
N/CC - SOLID MATERIAL	0.0801594						

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0 0.	3.217882E 00	3.063373E 00	1.526189E 00	2.500000E-03
1 0.500	3.584030E 00	2.768106E 00	1.726036E 00	3.000000E-03
2 1.000	3.759823E 00	2.351514E 00	2.377926E 00	3.500000E-03
3 1.500	3.529955E 00	1.605188E 00	2.700459E 00	4.000000E-03
4 2.000	2.790569E 00	3.171438E-01	2.164583E 00	4.000000E-03
5 2.500	2.797982E 00	8.337360E-02	2.286848E 00	5.000000E-03
6 3.000	3.403088E 00	1.080407E-01	2.950934E 00	5.000000E-03
7 3.500	2.790978E 00	9.247960E-02	2.528620E 00	5.000000E-03
8 4.000	5.024389E 00	1.770850E-01	4.868077E 00	6.000000E-03
9 6.000	4.935599E 00	1.762009E-01	4.876372E 00	1.400000E-02
10 8.000	3.048252E 01	1.088226E 00	3.011673E 01	4.500000E-01
11 10.000	4.264955E 00	1.522588E-01	4.213775E 00	4.527460E-02
12 12.000	4.254113E 00	1.518718E-01	4.203064E 00	7.949520E-02
13 14.000	4.216649E 00	1.505344E-01	4.166049E 00	1.697196E-01
14 15.500	4.194440E 00	1.497415E-01	4.144107E 00	3.501848E-01
15 16.500	4.091882E 00	1.460802E-01	4.042779E 00	6.061325E-01
16 17.500	4.119382E 00	1.470619E-01	4.069950E 00	1.003758E 00
17 18.500	4.162931E 00	1.486166E-01	4.112976E 00	1.646805E 00
18 19.795	4.129487E 00	1.479776E-01	4.079741E 00	2.397100E 00
3000 17.675	4.049590E 00	1.537800E-01	3.997670E 00	1.048270E 00
2500 17.831	4.095120E 00	1.555100E-01	4.042620E 00	1.138790E 00
2000 18.016	4.120110E 00	1.564600E-01	4.067290E 00	1.252580E 00
1500 18.243	4.129520E 00	1.568200E-01	4.076580E 00	1.405850E 00
1000 18.537	4.128280E 00	1.567700E-01	4.075350E 00	1.632850E 00
500 18.959	4.113390E 00	1.562100E-01	4.060650E 00	2.024130E 00
68 19.555	4.063340E 00	1.543000E-01	4.011250E 00	2.758120E 00

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
CF TITANIUM	TI CFINE	4.3010	4.507	22	47.900	0.04150	0.98600
N/CC - SOLID MATERIAL	0.0566875						

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0 0.	2.823705E 00	2.762750E 00	1.418028E 00	3.701561E-03
1 0.500	3.282403E 00	2.521939E 00	1.578751E 00	3.828539E-03
2 1.000	3.511150E 00	2.043758E 00	2.189156E 00	3.996149E-03
3 1.500	3.813316E 00	1.291004E 00	2.686767E 00	4.173488E-03
4 2.000	3.314161E 00	5.696236E-01	2.463598E 00	4.373181E-03
5 2.500	3.080365E 00	2.444067E-01	2.468664E 00	4.588796E-03
6 3.000	2.496870E 00	9.382886E-02	2.116520E 00	4.805772E-03
7 3.500	3.499338E 00	1.360098E-01	3.154255E 00	5.038148E-03
8 4.000	3.949299E 00	1.617259E-01	3.823576E 00	5.675843E-03
9 6.000	3.777923E 01	1.567838E 00	3.725037E 01	1.037834E-02
10 8.000	4.134246E 01	1.715712E 00	4.076367E 01	3.291972E-01
11 10.000	4.253123E 00	1.765046E-01	4.193579E 00	4.561084E-02
12 12.000	4.147183E 00	1.721080E-01	4.089122E 00	1.235628E-01
13 14.000	4.090304E 00	1.697476E-01	4.033040E 00	3.117195E-01
14 15.500	4.106480E 00	1.704189E-01	4.048989E 00	6.536448E-01
15 16.500	4.095544E 00	1.699651E-01	4.038206E 00	1.131276E 00
16 17.500	4.122251E 00	1.710734E-01	4.064539E 00	1.877986E 00
17 18.500	4.261032E 00	1.768328E-01	4.201378E 00	3.081238E 00
18 19.795	4.549688E 00	1.888121E-01	4.485993E 00	4.499429E 00
3000 17.675	4.235000E 00	1.757525E-01	4.175710E 00	1.940000E 00
2500 17.831	4.255000E 00	1.765825E-01	4.195430E 00	2.097000E 00
2000 18.016	4.285000E 00	1.778275E-01	4.225010E 00	2.300000E 00
1500 18.243	4.331000E 00	1.797365E-01	4.270366E 00	2.577000E 00
1000 18.537	4.410000E 00	1.830150E-01	4.348260E 00	2.986000E 00
500 18.959	4.577000E 00	1.899455E-01	4.512922E 00	3.683000E 00
68 19.555	4.964000E 00	2.060060E-01	4.894504E 00	4.967000E 00

DESIGNATION	FORMULA	CODE	DENSITY		
*CF .8NI.2CR	*CF .8NI.2CR	4.3110	8.44000		
CODE	4.0020	4.1020	4.2020	4.4010	5.5000
DESIGNATION	CF IRON	CF NICKEL	CF CHROMIUM	CF MANGANESE	SILICON
WEIGHT	0.002900	0.786500	0.198500	0.000500	0.012500
FRACTION					
N/CC - EACH					
CONSTITUENT	0.0001821	0.0681068	0.0194067	0.0000463	0.0022628

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	2.933610E-01	3.018490E-01	1.497090E-01	1.465230E-03
1	0.500	3.189290E-01	2.842470E-01	1.684830E-01	1.591860E-03
2	1.000	3.090300E-01	2.267640E-01	2.063350E-01	1.539150E-03
3	1.500	2.924960E-01	1.213930E-01	2.201320E-01	1.451780E-03
4	2.000	2.812520E-01	2.839710E-02	2.185800E-01	1.392350E-03
5	2.500	2.906860E-01	8.936990E-03	2.383990E-01	1.439740E-03
6	3.000	3.390830E-01	1.094680E-02	2.940590E-01	1.698890E-03
7	3.500	3.952980E-01	1.328870E-02	3.587510E-01	1.966820E-03
8	4.000	5.469000E-01	1.938620E-02	5.299660E-01	2.624120E-03
9	6.000	1.516240E 00	5.419960E-02	1.498020E 00	7.590820E-03
10	8.000	2.770440E 00	9.899110E-02	2.737170E 00	1.963630E-02
11	10.000	1.198470E 00	4.287850E-02	1.184050E 00	3.692990E-03
12	12.000	1.253010E 00	4.404170E 02	1.230740E 00	0.762730E-03
13	14.000	1.264570E 00	4.523920E-02	1.249360E 00	2.119150E-02
14	15.500	1.266270E 00	4.529980E-02	1.251040E 00	4.428760E-02
15	16.500	1.262600E 00	4.516850E-02	1.247470E 00	7.777100E-02
16	17.500	1.270090E 00	4.543560E-02	1.254820E 00	1.275590E-01
17	18.500	1.261310E 00	4.512060E-02	1.246140E 00	2.071000E-01
18	19.795	1.228970E 00	4.387720E-02	1.214220E 00	3.005680E-01
3000	17.675	1.273350E 00	4.328520E-02	1.258760E 00	1.339100E-01
2500	17.831	1.274910E 00	4.334130E-02	1.260290E 00	1.449160E-01
2000	18.016	1.275680E 00	4.337000E-02	1.261060E 00	1.590820E-01
1500	18.243	1.275980E 00	4.335040E-02	1.260470E 00	1.783480E-01
1000	18.537	1.272740E 00	4.327100E-02	1.258150E 00	2.068420E-01
500	18.959	1.268290E 00	4.312050E-02	1.253750E 00	2.555830E-01
68	19.555	1.260670E 00	4.285970E-02	1.246220E 00	3.457110E-01

DESIGNATION	FORMULA	CODE	DENSITY			
*CF X INC	*CF X INC	4.3310	8.30000			
CODE	4.0020	4.1020	4.2020	4.3010	4.4010	5.3610
DESIGNATION	CF IRON	CF NICKEL	CF CHROMIUM	CF TITANIUM	CF MANGANESE	CF NIOBIUM
WEIGHT	0.070000	0.730000	0.150000	0.025000	0.005000	0.010000
FRACTION						
N/CC - EACH						
CONSTITUENT	0.0062663	0.0621656	0.0144217	0.0026099	0.0004551	0.0005382

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	2.857081E-01	2.961786E-01	1.451277E-01	1.398388E-03
1	0.500	3.110565E-01	2.704539E-01	1.630960E-01	1.520375E-03
2	1.000	3.009413E-01	2.219946E-01	2.00653E-01	1.466360E-03
3	1.500	2.841412E-01	1.204243E-01	2.129203E-01	1.378067E-03
4	2.000	2.735044E-01	3.258281E-02	2.123896E-01	1.336053E-03
5	2.500	2.822609E-01	1.152022E-02	2.307196E-01	1.392110E-03
6	3.000	3.270290E-01	1.154902E-02	2.833132E-01	1.644573E-03
7	3.500	3.809472E-01	1.274252E-02	3.439085E-01	1.899405E-03
8	4.000	5.289803E-01	1.862192E-02	5.124215E-01	2.545474E-03
9	6.000	1.530416E 00	5.515576E-02	1.511812E 00	7.324007E-03
10	8.000	2.613439E 00	9.389575E-02	2.581872E 00	1.880711E-02
11	10.000	1.256383E 00	4.493198E-02	1.241279E 00	6.684097E-03
12	12.000	1.212608E 00	4.330643E-02	1.198050E 00	8.813851E-03
13	14.000	1.221035E 00	4.360669E-02	1.206376E 00	2.075251E-02
14	15.500	1.221966E 00	4.364059E-02	1.207297E 00	4.345138E-02
15	16.500	1.218207E 00	4.350712E-02	1.203583E 00	7.611533E-02
16	17.500	1.224349E 00	4.372802E-02	1.209650E 00	1.248505E-01
17	18.500	1.215379E 00	4.341173E-02	1.200786E 00	2.028766E-01
18	19.795	1.196256E 00	4.229751E-02	1.172034E 00	2.945990E-01
3000	17.675	1.227280E 00	4.171472E-02	1.213224E 00	1.311300E-01
2500	17.831	1.228546E 00	4.176046E-02	1.214466E 00	1.418755E-01
2000	18.016	1.229185E 00	4.178468E-02	1.215097E 00	1.557333E-01
1500	18.243	1.228623E 00	4.176743E-02	1.214542E 00	1.745822E-01
1000	18.537	1.226564E 00	4.169964E-02	1.212505E 00	2.024601E-01
500	18.959	1.222876E 00	4.157918E-02	1.208857E 00	2.501394E-01
68	19.555	1.216893E 00	4.138402E-02	1.202940E 00	3.382639E-01

DESIGNATION	FORMULA	CODE	DENSITY
*CF1 FECRAL	*CF1 FECRAL	4.3520	7.20000
CODE	4.0030	4.2030	5.1010
DESIGNATION	CF1 IRON	CF1 CHROMIUM	CF ALUMINUM
WEIGHT	0.700000	0.250000	0.050000
FRACTION			
N/CC - EACH			
CONSTITUENT	0.0543582	0.0208507	0.0080389

LETHARGY LEVEL		SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	2.571650E-01	2.597860E-01	1.302240E-01	3.917000E-03
1	0.500	2.889090E-01	2.369980E-01	1.471340E-01	1.444500E-03
2	1.000	2.867090E-01	1.918020E-01	1.887910E-01	3.191000E-04
3	1.500	2.587630E-01	1.265030E-01	1.976460E-01	3.055000E-04
4	2.000	2.323390E-01	5.789040E-02	1.874700E-01	3.325000E-04
5	2.500	2.352240E-01	2.857280E-02	1.935120E-01	3.563000E-04
6	3.000	2.791440E-01	1.859730E-02	2.455970E-01	3.841000E-04
7	3.500	2.513220E-01	9.459280E-03	2.157040E-01	4.429000E-04
8	4.000	4.567270E-01	1.809550E-02	4.416710E-01	5.566000E-04
9	4.000	6.409880E-01	2.406480E-02	6.328880E-01	1.417300E-03
10	8.000	1.070440E 00	3.866280E-02	1.057440E 00	3.115880E-02
11	10.000	6.634240E-01	2.410470E-02	6.553180E-01	2.140100E-03
12	12.000	7.167580E-01	2.600900E-02	7.080110E-01	4.978800E-03
13	14.000	7.114850E-01	2.582030E-02	7.028020E-01	1.184930E-02
14	15.500	7.053420E-01	2.560800E-02	6.967300E-01	2.522150E-02
15	16.500	6.972760E-01	2.532770E-02	6.887580E-01	4.259400E-02
16	17.500	6.920030E-01	2.514890E-02	6.835450E-01	6.960810E-02
17	18.500	6.817270E-01	2.476770E-02	6.733980E-01	1.144808E-01
18	19.795	6.768970E-01	2.459950E-02	6.686240E-01	1.673320E-01
3000	17.675	6.865790E-01	2.494770E-02	6.781890E-01	7.428910E-02
2500	17.831	6.849720E-01	2.488400E-02	6.765750E-01	8.043610E-02
2000	18.016	6.849570E-01	2.488560E-02	6.765590E-01	8.831310E-02
1500	18.243	6.843590E-01	2.486580E-02	6.759680E-01	9.899460E-02
1000	18.537	6.833790E-01	2.483180E-02	6.749990E-01	1.147356E-01
500	18.959	6.826010E-01	2.480480E-02	6.742300E-01	1.417188E-01
68	19.555	6.812200E-01	2.475000E-02	6.728670E-01	1.917530E-01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
CF MANGANESE	MN CFINE	4.4010	7.2	25	54.940	0.03630	0.98780
N/CC - SOLID MATERIAL	0.0789549						

LETHARGY LEVEL		SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	3.112031E 00	3.311759E 00	1.612593E 00	8.945082E-04
1	0.500	3.546922E 00	3.061518E 00	1.819438E 00	1.080479E-03
2	1.000	3.663702E 00	2.607267E 00	2.429476E 00	1.565437E-03
3	1.500	3.589656E 00	2.002587E 00	2.762644E 00	2.326585E-03
4	2.000	3.374364E 00	1.319534E 00	2.758199E 00	3.179721E-03
5	2.500	3.135296E 00	7.647730E-01	2.665425E 00	3.822257E-03
6	3.000	3.637431E 00	4.571601E-01	3.193125E 00	4.585125E-03
7	3.500	3.514026E 00	2.878091E-01	3.207205E 00	7.724917E-03
8	4.000	5.048356E 00	2.102071E-01	4.902244E 00	1.528047E-02
9	6.000	1.395939E 01	5.067260E-01	1.378909E 01	2.757211E-02
10	0.000	7.184463E 01	7.607996E 00	7.096803E 01	1.115081E-01
11	10.000	2.452374E 02	8.902103E 00	2.422455E 02	4.975462E 00
12	12.000	4.042044E 00	1.467261E-01	3.992731E 00	3.415096E-01
13	14.000	2.312537E 00	8.394510E-02	2.284324E 00	7.075109E-01
14	15.500	2.204764E 00	8.003293E-02	2.177866E 00	1.482604E 00
15	16.500	2.249130E 00	8.164343E-02	2.221691E 00	2.574629E 00
16	17.500	2.459704E 00	8.928727E-02	2.429696E 00	4.274036E 00
17	18.500	2.780675E 00	1.009385E-01	2.746751E 00	7.012474E 00
18	19.795	2.845876E 00	1.033053E-01	2.811156E 00	1.026037E 01
3000	17.675	2.464000E 00	8.944320E-02	2.433939E 00	4.572000E 00
2500	17.831	2.496000E 00	9.060480E-02	2.465549E 00	4.943000E 00
2000	18.016	2.536000E 00	9.205680E-02	2.505061E 00	5.422000E 00
1500	18.243	2.582000E 00	9.372660E-02	2.550500E 00	6.075000E 00
1000	18.537	2.631000E 00	9.550530E-02	2.598902E 00	7.039000E 00
500	18.959	2.660000E 00	9.655800E-02	2.627548E 00	8.681000E 00
68	19.555	2.563000E 00	9.303690E-02	2.531731E 00	1.171000E 01

DESIGNATION	FORMULA	CODE	DENSITY
*CF NICKEL	*NI CFINE	4.4120	8.20000
CODE	4.1020		
DESIGNATION	CF NICKEL		
WEIGHT	1.000000		
FRACTION			
N/CC - EACH			
CONSTITUENT	0.0841324		

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	2.815739E-01	2.981119E-01	1.452821E-01	1.417083E-03
1	0.500	3.037723E-01	2.835035E-01	1.631450E-01	1.528730E-03
2	1.000	2.869287E-01	2.226487E-01	1.936850E-01	1.442856E-03
3	1.500	2.711291E-01	1.105949E-01	2.019724E-01	1.363156E-03
4	2.000	2.741053E-01	2.679679E-02	2.119931E-01	1.379188E-03
5	2.500	2.858951E-01	8.526895E-03	2.338343E-01	1.436559E-03
6	3.000	3.312808E-01	1.049887E-02	2.867413E-01	1.682952E-03
7	3.500	4.144722E-01	1.374290E-02	3.758919E-01	2.043776E-03
8	4.000	5.481359E-01	1.927446E-02	5.311412E-01	2.754846E-03
9	6.000	1.748332E 00	6.241546E-02	1.727352E 00	8.791379E-03
10	8.000	2.680855E 00	9.570652E-02	2.648685E 00	2.134083E-02
11	10.000	1.358019E 00	4.848127E-02	1.341723E 00	3.183932E-03
12	12.000	1.440022E 00	5.140878E-02	1.422742E 00	8.877113E-03
13	14.000	1.454196E 00	5.191479E-02	1.436745E 00	2.201281E-02
14	15.500	1.456857E 00	5.200979E-02	1.439374E 00	4.611135E-02
15	16.500	1.454826E 00	5.193727E-02	1.437368E 00	8.118998E-02
16	17.500	1.463446E 00	5.224502E-02	1.445885E 00	1.329413E-01
17	18.500	1.451625E 00	5.182302E-02	1.434206E 00	2.154115E-01
18	19.795	1.412615E 00	5.031011E-02	1.395699E 00	3.124193E-01
3000	17.675	1.469305E 00	4.944040E-02	1.452637E 00	1.396757E-01
2500	17.831	1.470129E 00	4.946816E-02	1.453453E 00	1.510446E-01
2000	18.016	1.470491E 00	4.948078E-02	1.453811E 00	1.657593E-01
1500	18.243	1.469524E 00	4.944797E-02	1.452854E 00	1.857963E-01
1000	18.537	1.466663E 00	4.935122E-02	1.450026E 00	2.154227E-01
500	18.959	1.461531E 00	4.917875E-02	1.444952E 00	2.660300E-01
68	19.555	1.453328E 00	4.890279E-02	1.436842E 00	3.593589E-01

DESIGNATION	FORMULA	CODE	DENSITY
*CF1 NICKEL	*CF1 NICKEL	4.4130	8.20000
CODE	4.1030		
DESIGNATION	CF1 NICKEL		
WEIGHT	1.000000		
FRACTION			
N/CC - EACH			
CONSTITUENT	0.0841324		

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	2.815739E-01	2.981119E-01	1.452821E-01	2.524000E-04
1	0.500	3.037723E-01	2.835035E-01	1.631450E-01	2.945000E-04
2	1.000	2.869287E-01	2.226487E-01	1.936850E-01	3.786000E-04
3	1.500	2.711291E-01	1.105949E-01	2.019725E-01	4.207000E-04
4	2.000	2.741053E-01	2.679680E-02	2.119931E-01	5.048000E-04
5	2.500	2.858951E-01	8.526900E-03	2.338343E-01	5.889000E-04
6	3.000	3.312808E-01	1.049890E-02	2.867413E-01	6.730000E-04
7	3.500	4.144722E-01	1.374290E-02	3.758919E-01	7.572000E-04
8	4.000	5.481359E-01	1.927450E-02	5.311412E-01	9.254000E-04
9	6.000	1.748332E 00	6.241550E-02	1.727352E 00	2.860500E-03
10	8.000	2.680855E 00	9.570650E-02	2.648685E 00	4.206620E-02
11	10.000	1.358019E 00	4.848130E-02	1.341723E 00	3.183900E-03
12	12.000	1.440022E 00	5.140880E-02	1.422742E 00	8.877100E-03
13	14.000	1.454196E 00	5.191480E-02	1.436745E 00	2.201280E-02
14	15.500	1.456857E 00	5.200980E-02	1.439374E 00	4.611130E-02
15	16.500	1.454826E 00	5.193730E-02	1.437368E 00	8.119000E-02
16	17.500	1.463446E 00	5.224500E-02	1.445885E 00	1.329413E-01
17	18.500	1.451625E 00	5.182300E-02	1.434206E 00	2.154115E-01
18	19.795	1.412615E 00	5.031010E-02	1.395699E 00	3.124193E-01
3000	17.675	1.469305E 00	4.944040E-02	1.452637E 00	1.396757E-01
2500	17.831	1.470129E 00	4.946820E-02	1.453453E 00	1.510446E-01
2000	18.016	1.470491E 00	4.948080E-02	1.453811E 00	1.657593E-01
1500	18.243	1.469524E 00	4.944800E-02	1.452854E 00	1.857963E-01
1000	18.537	1.466663E 00	4.935120E-02	1.450026E 00	2.154227E-01
500	18.959	1.461531E 00	4.917870E-02	1.444952E 00	2.660300E-01
68	19.555	1.453328E 00	4.890280E-02	1.436842E 00	3.593589E-01

DESIGNATION	FORMULA	CODE	DENSITY
*CF CHROMIUM	*CR CFINE	4.4320	6.92000

CODE 4.2020
 DESIGNATION CF CHROMIUM
 WEIGHT 1.000000
 FRACTION
 N/CC - EACH
 CONSTITUENT 0.0801594

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	2.579436E-01	2.455582E-01	1.223385E-01	1.298006E-03
1	0.500	2.872938E-01	2.218898E-01	1.383581E-01	1.446007E-03
2	1.000	3.013853E-01	1.884960E-01	1.906132E-01	1.516029E-03
3	1.500	2.829592E-01	1.286709E-01	2.164672E-01	1.423525E-03
4	2.000	2.236904E-01	2.542207E-02	1.735117E-01	1.125325E-03
5	2.500	2.242846E-01	6.683179E-03	1.833125E-01	1.128834E-03
6	3.000	2.727896E-01	8.660485E-03	2.365452E-01	1.372883E-03
7	3.500	2.237232E-01	7.413115E-03	2.026927E-01	1.140695E-03
8	4.000	4.027522E-01	1.419504E-02	3.902223E-01	1.600831E-03
9	6.000	3.956348E-01	1.412416E-02	3.908872E-01	1.900875E-03
10	8.000	2.443462E-00	8.723157E-02	2.414140E-00	9.670112E-03
11	10.000	3.418763E-01	1.220498E-02	3.377738E-01	3.629183E-03
12	12.000	3.410073E-01	1.217396E-02	3.369152E-01	6.372289E-03
13	14.000	3.380042E-01	1.206675E-02	3.339482E-01	1.360463E-02
14	15.500	3.362240E-01	1.200320E-02	3.321893E-01	2.807061E-02
15	16.500	3.280029E-01	1.170970E-02	3.240669E-01	4.858724E-02
16	17.500	3.302074E-01	1.178840E-02	3.262449E-01	8.046071E-02
17	18.500	3.336982E-01	1.191303E-02	3.296938E-01	1.320070E-01
18	19.795	3.310174E-01	1.186180E-02	3.270297E-01	1.921502E-01
3000	17.675	3.246128E-01	1.232692E-02	3.204510E-01	8.402873E-02
2500	17.831	3.282625E-01	1.246559E-02	3.240541E-01	9.128476E-02
2000	18.016	3.302657E-01	1.254175E-02	3.260317E-01	1.004061E-01
1500	18.243	3.310200E-01	1.257060E-02	3.267763E-01	1.126921E-01
1000	18.537	3.309206E-01	1.256659E-02	3.266778E-01	1.308883E-01
500	18.959	3.297270E-01	1.252171E-02	3.254994E-01	1.622531E-01
68	19.555	3.257150E-01	1.236860E-02	3.215395E-01	2.210893E-01

DESIGNATION	FORMULA	CODE	DENSITY
*CF1 CHROM	*CF1 CHROM	4.4330	6.92000

CODE 4.2030
 DESIGNATION CF1 CHROMIUM
 WEIGHT 1.000000
 FRACTION
 N/CC - EACH
 CONSTITUENT 0.0801594

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	2.579436E-01	2.455582E-01	1.223385E-01	2.000000E-04
1	0.500	2.872938E-01	2.218898E-01	1.383581E-01	2.400000E-04
2	1.000	3.013853E-01	1.884960E-01	1.906132E-01	2.800000E-04
3	1.500	2.829592E-01	1.286709E-01	2.164672E-01	3.200000E-04
4	2.000	2.236904E-01	2.542210E-02	1.735117E-01	3.200000E-04
5	2.500	2.242847E-01	6.683200E-03	1.833125E-01	4.000000E-04
6	3.000	2.727896E-01	8.660500E-03	2.365452E-01	4.000000E-04
7	3.500	2.237232E-01	7.413100E-03	2.026927E-01	4.000000E-04
8	4.000	4.027522E-01	1.419500E-02	3.902223E-01	4.800000E-04
9	6.000	3.956348E-01	1.412420E-02	3.908872E-01	1.120000E-03
10	8.000	2.443462E-00	8.723160E-02	2.414140E-00	3.607000E-02
11	10.000	3.418764E-01	1.220500E-02	3.377738E-01	3.629200E-03
12	12.000	3.410073E-01	1.217400E-02	3.369152E-01	6.372300E-03
13	14.000	3.380042E-01	1.206670E-02	3.339482E-01	1.360460E-02
14	15.500	3.362240E-01	1.200320E-02	3.321893E-01	2.807060E-02
15	16.500	3.280029E-01	1.170970E-02	3.240669E-01	4.858720E-02
16	17.500	3.302074E-01	1.178840E-02	3.262449E-01	8.046070E-02
17	18.500	3.336982E-01	1.191300E-02	3.296938E-01	1.320070E-01
18	19.795	3.310174E-01	1.186180E-02	3.270297E-01	1.921502E-01
3000	17.675	3.246128E-01	1.232690E-02	3.204510E-01	8.402870E-02
2500	17.831	3.282625E-01	1.246560E-02	3.240541E-01	9.128480E-02
2000	18.016	3.302657E-01	1.254170E-02	3.260317E-01	1.004061E-01
1500	18.243	3.310200E-01	1.257060E-02	3.267764E-01	1.126921E-01
1000	18.537	3.309206E-01	1.256660E-02	3.266778E-01	1.308883E-01
500	18.959	3.297270E-01	1.252170E-02	3.254994E-01	1.622531E-01
68	19.555	3.257150E-01	1.236860E-02	3.215395E-01	2.210893E-01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CF COBALT	CO CFINE	4.5010	8.71	27	58.952	0.03380	0.99850
N/CC - SOLID MATERIAL	0.0890133						

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0 0.	3.387953E 00	3.311759E 00	1.612593E 00	8.945082E-04
1 0.500	3.667716E 00	3.061518E 00	1.819438E 00	1.080479E-03
2 1.000	3.617216E 00	2.607267E 00	2.429476E 00	1.565437E-03
3 1.500	3.406158E 00	2.002587E 00	2.762644E 00	2.326585E-03
4 2.000	3.345938E 00	1.319534E 00	2.756199E 00	3.179721E-03
5 2.500	3.568821E 00	7.647730E-01	2.665425E 00	3.822257E-03
6 3.000	3.972000E 00	4.571601E-01	3.193125E 00	4.585125E-03
7 3.500	4.301283E 00	2.878091E-01	3.207205E 00	7.724917E-03
8 4.000	5.780635E 00	2.121696E-01	5.186386E 00	1.526522E-02
9 4.000	8.922198E 00	3.015703E-01	8.820485E 00	2.609486E-02
10 8.000	3.766788E 01	1.273174E 00	3.723846E 01	6.152347E-02
11 10.000	1.308567E 01	4.422956E-01	1.293649E 01	4.545927E-01
12 12.000	2.687923E 02	9.085181E 00	2.657281E 02	2.737316E 01
13 14.000	7.174162E 00	2.424867E-01	7.092377E 00	1.988386E 00
14 15.500	6.012177E 00	2.502510E-01	6.734918E 00	4.169803E 00
15 16.500	6.311410E 00	2.133250E-01	6.239460E 00	7.217777E 00
16 17.500	6.252441E 00	2.118663E-01	6.182152E 00	1.190025E 01
17 18.500	5.804222E 00	1.961827E-01	5.738053E 00	1.965618E 01
18 19.795	5.765298E 00	1.948671E-01	5.701059E 00	2.875967E 01
3000 17.675	4.620000E 00	1.561560E-01	4.613070E 00	1.281569E 01
2500 17.831	4.340000E 00	1.466920E-01	4.333490E 00	1.385576E 01
2000 18.016	4.330000E 00	1.463540E-01	4.323550E 00	1.519886E 01
1500 18.243	3.800000E 00	1.284400E-01	3.794300E 00	1.702814E 01
1000 18.537	3.200000E 00	1.081600E-01	3.195200E 00	1.972988E 01
500 18.959	2.560000E 00	8.654800E-02	2.556160E 00	2.433268E 01
68 19.555	3.000000E 00	1.014000E-01	2.995500E 00	3.281456E 01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
VANADIUM	V	4.6000	5.87	23	50.950	0.03870	0.98690
N/CC - SOLID MATERIAL	0.0694112						

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0 0.	2.500000E 00	9.675000E-02	2.467250E 00	2.504940E-04
1 0.500	2.800000E 00	1.083600E-01	2.763320E 00	3.212100E-04
2 1.000	3.200000E 00	1.238400E-01	3.158080E 00	4.123440E-04
3 1.500	2.800000E 00	1.083600E-01	2.763320E 00	5.278800E-04
4 2.000	2.990000E 00	1.157130E-01	2.950831E 00	6.822600E-04
5 2.500	2.500000E 00	9.675000E-02	2.467250E 00	8.715000E-04
6 3.000	2.000000E 00	7.740000E-02	1.973800E 00	1.120500E-03
7 3.500	5.300000E 00	2.051100E-01	5.230570E 00	1.439220E-03
8 4.000	7.190000E 00	2.782530E-01	7.095811E 00	1.847580E-03
9 4.000	1.470000E 01	5.688900E-01	1.450743E 01	5.029800E-03
10 8.000	3.090000E 01	1.195830E 00	3.049521E 01	1.364520E-02
11 10.000	6.000000E 00	2.322000E-01	5.921400E 00	3.715080E-02
12 12.000	5.110000E 00	1.977570E-01	5.043059E 00	1.010940E-01
13 14.000	5.020000E 00	1.942740E-01	4.954238E 00	2.743980E-01
14 15.500	4.830000E 00	1.869210E-01	4.766727E 00	5.164260E-01
15 16.500	5.008500E 00	1.938289E-01	4.942889E 00	9.915180E-01
16 17.500	5.006500E 00	1.927128E-01	4.937920E 00	1.474470E 00
17 18.500	4.996000E 00	1.933452E-01	4.930552E 00	2.604042E 00
18 19.795	5.371100E 00	2.078616E-01	5.300738E 00	4.628910E 00
3000 17.675	5.075100E 00	1.964064E-01	5.008616E 00	1.724923E 00
2500 17.831	5.135100E 00	1.987284E-01	5.067830E 00	1.864910E 00
2000 18.016	5.004300E 00	1.936664E-01	4.938744E 00	2.045684E 00
1500 18.243	4.858000E 00	1.880046E-01	4.794360E 00	2.291896E 00
1000 18.537	4.844500E 00	1.874821E-01	4.781037E 00	2.655535E 00
500 18.959	4.874000E 00	1.886625E-01	4.811177E 00	3.275047E 00
68 19.555	5.083300E 00	1.967237E-01	5.016709E 00	4.416662E 00

DESIGNATION	FORMULA	CODE	DENSITY
*CF AL203	*CF AL203	4.6310	3.97000
CODE	3.6010	5.1010	
DESIGNATION	CF OXYGEN	CF ALUMINUM	
WEIGHT	0.470800	0.529200	
FRACTION			
N/CC - EACH			
CONSTITUENT	0.0703613	0.0469141	

LETHARGY		SIGMA	XI SIGMA	SIGMA	SIGMA
LEVEL		SCATTER	SCATTER	TRANSPORT	ABSORPTION
0	0.	1.378983E-01	1.084847E-01	1.006853E-01	2.431922E-02
1	0.500	1.842213E-01	8.878855E-02	1.367295E-01	1.420976E-02
2	1.000	2.685723E-01	6.454125E-02	2.043761E-01	2.336338E-03
3	1.500	2.299920E-01	3.697073E-02	1.729568E-01	1.855697E-04
4	2.000	3.376951E-01	4.116662E-02	2.746140E-01	1.848069E-04
5	2.500	4.550169E-01	5.305299E-02	3.849639E-01	4.301336E-05
6	3.000	6.544610E-01	6.775525E-02	4.989370E-01	4.671028E-05
7	3.500	4.311339E-01	5.198201E-02	4.131101E-01	7.262934E-05
8	4.000	5.727764E-01	5.240963E-02	5.417435E-01	1.384548E-04
9	4.500	4.295057E-01	4.307267E-02	4.146275E-01	2.219322E-04
10	5.000	3.351162E-01	3.715724E-02	3.222402E-01	1.670406E-04
11	5.500	3.331565E-01	3.712758E-02	3.202888E-01	1.713460E-04
12	6.000	3.331940E-01	3.713031E-02	3.203254E-01	2.377034E-04
13	6.500	3.331236E-01	3.712515E-02	3.202568E-01	5.895320E-04
14	7.000	3.342287E-01	3.720578E-02	3.213343E-01	1.208009E-03
15	7.500	3.354270E-01	3.729320E-02	3.225029E-01	2.121146E-03
16	8.000	3.369048E-01	3.740099E-02	3.239439E-01	3.544195E-03
17	8.500	3.382705E-01	3.767399E-02	3.252137E-01	5.746868E-03
18	9.000	3.499904E-01	3.914610E-02	3.364216E-01	8.400120E-03
3000	17.675	3.337709E-01	3.704572E-02	3.209331E-01	3.743983E-03
2500	17.831	3.347208E-01	3.715651E-02	3.218446E-01	4.044233E-03
2000	18.016	3.361233E-01	3.732091E-02	3.231901E-01	4.439016E-03
1500	18.243	3.382576E-01	3.757310E-02	3.252368E-01	4.974540E-03
1000	18.537	3.417945E-01	3.799374E-02	3.286276E-01	5.759414E-03
500	18.959	3.484952E-01	3.879803E-02	3.350490E-01	7.107257E-03
68	19.555	3.620843E-01	4.046071E-02	3.480603E-01	9.583150E-03

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
RHODIUM	RH	4.7000	12.44	45	102.937	0.	0.
N/CC - SOLID MATERIAL	0.0728089						

LETHARGY		SIGMA	XI SIGMA	SIGMA	SIGMA
LEVEL		SCATTER	SCATTER	TRANSPORT	ABSORPTION
0	C.	4.100000E 00	4.007160E 00	1.365390E 00	1.900000E-02
1	C.500	4.274600E 00	4.177810E 00	3.120100E 00	2.035940E-02
2	1.000	5.057750E 00	3.536270E 00	3.141230E 00	3.607520E-02
3	1.500	4.944060E 00	3.132010E 00	3.542710E 00	4.521890E-02
4	2.000	5.986810E 00	2.279010E 00	4.530620E 00	7.251140E-02
5	2.500	6.934390E 00	1.890190E 00	4.872600E 00	8.739620E-02
6	3.000	7.292910E 00	1.852910E 00	6.100000E 00	1.583700E-01
7	3.500	7.401480E 00	1.404500E-01	6.035430E 00	2.512200E-01
8	4.000	7.159400E 00	1.626900E-01	6.845660E 00	4.432600E-01
9	4.500	7.027670E 00	1.450000E-01	6.605230E 00	1.045030E 00
10	5.000	2.500000E 00	4.065130E-02	2.599740E 00	3.165930E 00
11	5.500	2.410010E 00	4.651320E-02	2.394390E 00	1.808570E 00
12	6.000	4.900000E 00	9.457000E-02	4.868250E 00	4.305900E-01
13	6.500	4.879940E 00	9.418280E-02	4.848320E 00	2.500000E-01
14	7.000	6.352440E 00	1.226000E-01	6.311280E 00	3.013250E 02
15	7.500	6.377480E 00	1.230900E-01	6.336150E 00	9.367820E 01
16	8.000	3.838760E 00	7.408810E-02	3.813880E 00	7.479610E 01
17	8.500	3.827020E 00	7.386150E-02	3.802220E 00	7.740660E 01
18	9.000	4.000000E 00	7.720000E-02	3.974080E 00	1.490000E 02
3000	17.675	3.756220E 00	7.249490E-02	3.731880E 00	1.177110E 02
2500	17.831	3.735480E 00	7.209470E-02	3.711270E 00	9.825770E 01
2000	18.016	3.756580E 00	7.250190E-02	3.732230E 00	8.849110E 01
1500	18.243	3.798670E 00	7.331430E-02	3.774050E 00	8.696460E 01
1000	18.537	3.843350E 00	7.417670E-02	3.818450E 00	9.199230E 01
500	18.959	3.883320E 00	7.494810E-02	3.858160E 00	1.052990E 02
68	19.555	3.914010E 00	7.554050E-02	3.888650E 00	1.339910E 02

DESIGNATION	FORMULA	CODE	DENSITY
*RHODIUM	*RH	4.7100	12.44000
CODE	4.7000		
DESIGNATION	RHODIUM		
WEIGHT	1.000000		
FRACTION			
N/CC - EACH			
CONSTITUENT	0.0728089		

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	2.985164E-01	2.917568E-01	9.941250E-02	1.383369E-03
1	0.500	3.112288E-01	3.041816E-01	2.271710E-01	1.482345E-03
2	1.000	3.682491E-01	2.574718E-01	2.287094E-01	2.626595E-03
3	1.500	3.599714E-01	2.280381E-01	2.579407E-01	3.292337E-03
4	2.000	4.358929E-01	1.659321E-01	3.298693E-01	5.279473E-03
5	2.500	5.048851E-01	1.376226E-01	3.547685E-01	6.363218E-03
6	3.000	5.309885E-01	1.349083E-01	4.441341E-01	1.153074E-02
7	3.500	5.388934E-01	1.022601E-02	4.394328E-01	1.829104E-02
8	4.000	5.212678E-01	1.184527E-02	4.984248E-01	3.227326E-02
9	4.500	5.116767E-01	1.055129E-02	4.867440E-01	7.614570E-02
10	5.000	1.820222E-01	2.955775E-03	1.892841E-01	2.305078E-01
11	10.000	1.754701E-01	3.306073E-03	1.743328E-01	1.916799E-01
12	12.000	3.567635E-01	6.885535E-03	3.544518E-01	3.135077E-02
13	14.000	3.553029E-01	6.857343E-03	3.530007E-01	1.820222E-02
14	15.500	4.625140E-01	8.926367E-03	4.595172E-01	2.193913E-01
15	16.500	4.643371E-01	8.962044E-03	4.613279E-01	6.820604E-00
16	17.500	2.794958E-01	5.394271E-03	2.776843E-01	5.445819E-00
17	18.500	2.786410E-01	5.377772E-03	2.768353E-01	5.635887E-00
18	19.795	2.912355E-01	5.620845E-03	2.893483E-01	1.084852E-01
3000	17.675	2.734861E-01	5.278272E-03	2.717140E-01	8.570405E-00
2500	17.831	2.719761E-01	5.249134E-03	2.702134E-01	7.154032E-00
2000	18.016	2.735123E-01	5.278781E-03	2.717394E-01	6.442937E-00
1500	18.243	2.765769E-01	5.337931E-03	2.747843E-01	6.331794E-00
1000	18.537	2.798300E-01	5.406722E-03	2.780170E-01	6.697855E-00
500	18.959	2.827401E-01	5.456886E-03	2.809083E-01	7.666701E-00
68	19.555	2.849746E-01	5.500018E-03	2.831282E-01	9.755733E-00

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
PLATINUM	PT	4.8000	21.37	78	195.090	0.01031	0.99655
N/CC - SOLID MATERIAL	0.0659941						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	5.183100E-00	4.350000E-00	5.145200E-00	8.116700E-04
1	0.500	5.828800E-00	4.465000E-00	5.808100E-00	4.401100E-03
2	1.000	6.352200E-00	4.273800E-00	6.330300E-00	1.341500E-02
3	1.500	6.107900E-00	3.700300E-00	6.086900E-00	3.111700E-02
4	2.000	5.434600E-00	2.699400E-00	5.415900E-00	5.404100E-02
5	2.500	5.499600E-00	1.580500E-00	5.480600E-00	8.266900E-02
6	3.000	6.157700E-00	5.974900E-01	6.136400E-00	1.172100E-01
7	3.500	7.226000E-00	7.448500E-02	7.201100E-00	1.629000E-01
8	4.000	9.250700E-00	9.535500E-02	9.218800E-00	2.360000E-01
9	4.500	1.315400E-01	1.355900E-01	1.310800E-01	5.123700E-01
10	5.000	1.725500E-01	1.778600E-01	1.719600E-01	1.996900E-00
11	10.000	1.928000E-01	1.987400E-01	1.921380E-01	5.397100E-00
12	12.000	3.227200E-01	3.326500E-01	3.216000E-01	1.756500E-01
13	14.000	1.121360E-01	1.155900E-01	1.117500E-01	1.560500E-01
14	15.500	1.134400E-01	1.169300E-01	1.130500E-01	1.204400E-00
15	16.500	1.157800E-01	1.193500E-01	1.153800E-01	1.558700E-00
16	17.500	1.131600E-01	1.166500E-01	1.127700E-01	2.708700E-00
17	18.500	1.084200E-01	1.117600E-01	1.080500E-01	4.587600E-00
18	19.795	9.798000E-00	1.003800E-01	9.704400E-00	7.112000E-00
3000	17.675	1.127700E-01	1.167400E-01	1.123800E-01	2.809500E-00
2500	17.831	1.122900E-01	1.157500E-01	1.119000E-01	3.145600E-00
2000	18.016	1.116900E-01	1.151300E-01	1.113000E-01	3.450600E-00
1500	18.243	1.108900E-01	1.143100E-01	1.105100E-01	3.865800E-00
1000	18.537	1.098400E-01	1.132200E-01	1.094600E-01	4.479200E-00
500	18.959	1.084700E-01	1.118100E-01	1.081000E-01	5.524200E-00
68	19.555	1.078500E-01	1.111700E-01	1.074800E-01	7.449800E-00

DESIGNATION	FORMULA	CODE	DENSITY
*PLATINUM	*PT	4.8100	21.37000

CODE	4.8000
DESIGNATION	PLATINUM
WEIGHT	1.000000
FRACTION	
N/CC - EACH	
CONSTITUENT	0.0659941

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	3.420539E-01	2.877276E-01	3.408726E-01	5.356541E-05
1	0.500	3.846662E-01	2.947031E-01	3.833398E-01	2.908425E-04
2	1.000	4.192075E-01	2.820455E-01	4.177623E-01	8.853105E-04
3	1.500	4.030852E-01	2.441979E-01	4.016993E-01	2.053538E-03
4	2.000	3.586514E-01	1.781444E-01	3.574173E-01	3.566386E-03
5	2.500	3.629410E-01	1.043036E-01	3.616871E-01	5.455664E-03
6	3.000	4.063717E-01	3.943080E-02	4.049660E-01	7.735165E-03
7	3.500	4.768732E-01	4.915568E-03	4.752299E-01	1.075043E-02
8	4.000	6.104914E-01	6.292865E-03	6.083861E-01	1.557460E-02
9	4.000	8.680860E-01	8.948136E-03	8.650503E-01	3.381338E-02
10	8.000	1.138728E 00	1.173771E-02	1.134834E 00	1.317836E-01
11	10.000	1.272366E 00	1.311566E-02	1.267997E 00	3.561766E-01
12	12.000	2.129761E 00	2.195293E-02	2.122369E 00	1.159186E 00
13	14.000	7.400311E-01	7.628255E-03	7.374838E-01	1.029837E 00
14	15.500	7.486368E-01	7.716687E-03	7.460630E-01	7.948326E-02
15	16.500	7.640794E-01	7.876392E-03	7.614396E-01	1.028650E-01
16	17.500	7.467889E-01	7.698208E-03	7.442151E-01	1.787581E-01
17	18.500	7.155077E-01	7.375498E-03	7.130660E-01	3.027544E-01
18	19.795	6.426503E-01	6.624485E-03	6.404329E-01	4.693498E-01
3000	17.675	7.442151E-01	7.671151E-03	7.416414E-01	1.920098E-01
2500	17.831	7.410474E-01	7.638814E-03	7.384737E-01	2.075910E-01
2000	18.016	7.370878E-01	7.597898E-03	7.345140E-01	2.277191E-01
1500	18.243	7.318083E-01	7.543782E-03	7.293005E-01	2.551199E-01
1000	18.537	7.248789E-01	7.471849E-03	7.223711E-01	2.956006E-01
500	18.959	7.158377E-01	7.378797E-03	7.133959E-01	3.645645E-01
68	19.555	7.117461E-01	7.336561E-03	7.093043E-01	4.916426E-01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
TANTALUM	TA	4.9000	16.6	73	181.003	0.	0.

N/CC - SOLID MATERIAL	0.0552532
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LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	4.835000E 00	5.745700E 00	2.743700E 00	1.800000E-02
1	0.500	5.197800E 00	5.532700E 00	2.947700E 00	2.558200E-02
2	1.000	6.438000E 00	5.501700E 00	3.581700E 00	4.165400E-02
3	1.500	7.259400E 00	4.818900E 00	3.906700E 00	6.562600E-02
4	2.000	7.372400E 00	3.709100E 00	4.535500E 00	1.335100E-01
5	2.500	7.644000E 00	2.554100E 00	5.748900E 00	1.604700E-01
6	3.000	7.543200E 00	1.184500E 00	6.071100E 00	2.326500E-01
7	3.500	7.812600E 00	6.521200E-01	6.251500E 00	2.755500E-01
8	4.000	7.836000E 00	1.262400E-01	6.967700E 00	3.160500E-01
9	6.000	9.209200E 00	1.020200E-01	9.151100E 00	6.851700E-01
10	8.000	1.170120E 01	1.302400E-01	1.165710E 01	3.785400E 00
11	10.000	1.643680E 01	1.822800E-01	1.637630E 01	1.277380E 01
12	12.000	4.588040E 01	5.088100E-01	4.571140E 01	5.037260E 01
13	14.000	4.512780E 01	5.017000E-01	4.496160E 01	2.035625E 02
14	15.500	2.977200E 00	3.301600E-02	2.966200E 00	8.440000E 00
15	16.500	6.755000E 00	7.491400E-02	6.730200E 00	3.400800E 00
16	17.500	5.633200E 00	6.247200E-02	5.612400E 00	7.642400E 00
17	18.500	5.157600E 00	5.719800E-02	5.138600E 00	9.949000E 00
18	19.795	5.000000E 00	5.545000E-02	4.981600E 00	2.100000E 01
3000	17.675	5.725500E 00	6.349600E-02	5.704400E 00	7.540200E 00
2500	17.831	5.676100E 00	6.294000E-02	5.655200E 00	8.058600E 00
2000	18.016	5.593300E 00	6.203200E-02	5.574700E 00	8.762400E 00
1500	18.243	5.484300E 00	6.082100E-02	5.464100E 00	9.760000E 00
1000	18.537	5.355800E 00	5.939600E-02	5.336100E 00	1.126490E 01
500	18.959	5.228400E 00	5.798300E-02	5.209100E 00	1.384530E 01
68	19.555	5.096800E 00	5.652400E-02	5.078000E 00	1.861350E 01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
REV TANTALUM N/CC - SOLID MATERIAL	TA1 0.0552532	4.9010	16.6	73	181.003	0.	0.

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0 C.	4.835000E 00	5.745700E 00	2.743700E 00	1.800000E-02
1 0.500	5.197800E 00	5.532700E 00	2.947700E 00	2.558200E-02
2 1.000	6.438000E 00	5.501700E 00	3.581700E 00	4.165400E-02
3 1.500	7.259400E 00	4.818900E 00	3.906700E 00	6.562600E-02
4 2.000	7.372400E 00	3.709100E 00	4.535500E 00	1.335100E-01
5 2.500	7.644000E 00	2.554100E 00	5.748900E 00	1.604700E-01
6 3.000	7.543200E 00	1.184500E 00	6.071100E 00	2.326500E-01
7 3.500	7.812600E 00	6.521200E-01	6.251500E 00	2.755500E-01
8 4.000	7.836000E 00	1.262400E-01	6.967700E 00	3.160500E-01
9 6.000	9.209200E 00	1.020200E-01	9.151100E 00	6.851700E-01
10 8.000	1.170120E 01	1.302400E-01	1.165710E 01	3.785400E 00
11 10.000	1.960000E 01	2.174000E-01	1.953000E 01	1.750000E 01
12 12.000	4.820000E 01	5.345000E-01	4.802000E 01	7.770000E 01
13 14.000	2.600000E 01	2.883000E-01	2.590000E 01	3.114000E 02
14 15.500	4.400000E 00	4.880000E-02	4.380000E 00	6.400000E 00
15 16.500	6.755000E 00	7.491400E-02	6.730200E 00	3.400800E 00
16 17.500	5.633200E 00	6.247200E-02	5.612400E 00	7.642400E 00
17 18.500	5.157600E 00	5.719800E-02	5.138600E 00	9.949000E 00
18 19.795	5.000000E 00	5.545000E-02	4.981600E 00	2.100000E 01
3000 17.675	5.725500E 00	6.349600E-02	5.704400E 00	7.540200E 00
2500 17.831	5.676100E 00	6.294800E-02	5.655200E 00	8.058600E 00
2000 18.016	5.595300E 00	6.205200E-02	5.574700E 00	8.763400E 00
1500 18.243	5.484300E 00	6.082100E-02	5.464100E 00	9.760000E 00
1000 18.537	5.355800E 00	5.939600E-02	5.336100E 00	1.126490E 01
500 18.959	5.228400E 00	5.798300E-02	5.209100E 00	1.384530E 01
68 19.555	5.096800E 00	5.652400E-02	5.078000E 00	1.861350E 01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
R2TANTALUM N/CC - SOLID MATERIAL	TA2 0.0552532	4.9020	16.6	73	181.003	0.	0.

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0 C.	4.835000E 00	2.872800E 00	2.743700E 00	1.800000E-02
1 C.500	5.197800E 00	2.766300E 00	2.947700E 00	2.558200E-02
2 1.000	6.438000E 00	2.758800E 00	3.581700E 00	4.165400E-02
3 1.500	7.259400E 00	2.409400E 00	3.906700E 00	6.562600E-02
4 2.000	7.372400E 00	1.854600E 00	4.535500E 00	1.335100E-01
5 2.500	7.644000E 00	1.277000E 00	5.748900E 00	1.604700E-01
6 3.000	7.543200E 00	5.922000E-01	6.071100E 00	2.326500E-01
7 3.500	7.812600E 00	3.266600E-01	6.251500E 00	2.755500E-01
8 4.000	7.836000E 00	10.000000E-02	6.967700E 00	3.160500E-01
9 6.000	9.209200E 00	1.020200E-01	9.151100E 00	6.851700E-01
10 8.000	1.170120E 01	1.302400E-01	1.165710E 01	3.785400E 00
11 10.000	1.960000E 01	2.174000E-01	1.953000E 01	1.750000E 01
12 12.000	4.820000E 01	5.345000E-01	4.802000E 01	7.770000E 01
13 14.000	2.600000E 01	2.883000E-01	2.590000E 01	3.114000E 02
14 15.500	4.400000E 00	4.880000E-02	4.380000E 00	6.400000E 00
15 16.500	6.755000E 00	7.491400E-02	6.730200E 00	3.400800E 00
16 17.500	5.633200E 00	6.247200E-02	5.612400E 00	7.642400E 00
17 18.500	5.157600E 00	5.719800E-02	5.138600E 00	9.949000E 00
18 19.795	5.000000E 00	5.545000E-02	4.981600E 00	2.100000E 01
3000 17.675	5.725500E 00	6.349600E-02	5.704400E 00	7.540200E 00
2500 17.831	5.676100E 00	6.294800E-02	5.655200E 00	8.058600E 00
2000 18.016	5.595300E 00	6.205200E-02	5.574700E 00	8.763400E 00
1500 18.243	5.484300E 00	6.082100E-02	5.464100E 00	9.760000E 00
1000 18.537	5.355800E 00	5.939600E-02	5.336100E 00	1.126490E 01
500 18.959	5.228400E 00	5.798300E-02	5.209100E 00	1.384530E 01
68 19.555	5.096800E 00	5.652400E-02	5.078000E 00	1.861350E 01

DESIGNATION	FORMULA	CODE	DENSITY
*TANTALUM	*TA	4.9100	16.60000

CODE	4.9000
DESIGNATION	TANTALUM
WEIGHT	1.000000
FRACTION	
N/CC - EACH	
CONSTITUENT	0.0552532

LEVEL	LETHARGY	SIGMA SCATTER	XI SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	2.671494E-01	3.174685E-01	1.515983E-01	9.945583E-04
1	0.500	2.871953E-01	3.056996E-01	1.628700E-01	1.413488E-03
2	1.000	3.557203E-01	3.039867E-01	1.979005E-01	2.301518E-03
3	1.500	4.011054E-01	2.662598E-01	2.158578E-01	3.626049E-03
4	2.000	4.073490E-01	2.049398E-01	2.506011E-01	7.376860E-03
5	2.500	4.223557E-01	1.411223E-01	3.176453E-01	8.866487E-03
6	3.000	4.167862E-01	6.544746E-02	3.354479E-01	1.285467E-02
7	3.500	4.316714E-01	3.603174E-02	3.454156E-01	1.522503E-02
8	4.000	4.329644E-01	6.975169E-03	3.849880E-01	1.746279E-02
9	4.500	5.080301E-01	5.636935E-03	5.056279E-01	3.785786E-02
10	5.000	6.465292E-01	7.196182E-03	6.440925E-01	2.091556E-01
11	6.000	9.081864E-01	1.007156E-02	9.048436E-01	7.057938E-01
12	7.000	2.535041E 00	2.811340E-02	2.525703E 00	2.783249E 00
13	8.000	2.493457E 00	2.772497E-02	2.484274E 00	1.124749E 01
14	9.000	1.644999E-01	1.824241E-03	1.638922E-01	4.663373E-01
15	10.000	3.732356E-01	4.139241E-03	3.718653E-01	1.879052E-01
16	11.000	3.112525E-01	3.451780E-03	3.101033E-01	4.222673E-01
17	12.000	2.849741E-01	3.160375E-03	2.839243E-01	5.497145E-01
18	13.000	2.762662E-01	3.063792E-03	2.752495E-01	1.160318E 00
3000	17.675	3.163524E-01	3.508360E-03	3.151866E-01	4.166205E-01
2500	17.831	3.136229E-01	3.478081E-03	3.124681E-01	4.452637E-01
2000	18.016	3.091584E-01	3.428574E-03	3.080202E-01	4.842062E-01
1500	18.243	3.030253E-01	3.360557E-03	3.019092E-01	5.392716E-01
1000	18.537	2.959253E-01	3.281821E-03	2.948368E-01	6.224222E-01
500	18.959	2.888860E-01	3.203748E-03	2.878196E-01	7.649976E-01
68	19.555	2.816147E-01	3.123134E-03	2.805759E-01	1.028456E 00

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CF ALUMINUM	AL CFINE	5.1010	2.7	13	26.980	0.07300	0.97510
N/CC - SOLID MATERIAL	0.06029117						

LEVEL	LETHARGY	SIGMA SCATTER	XI SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	1.549804E 00	1.661116E 00	1.089682E 00	1.426132E-01
1	0.500	2.054978E 00	1.533706E 00	1.380820E 00	5.693313E-02
2	1.000	2.433498E 00	1.027531E 00	1.794760E 00	1.033294E-02
3	1.500	2.866402E 00	4.747225E-01	1.792504E 00	3.955502E-03
4	2.000	3.122921E 00	2.521218E-01	1.949746E 00	3.939243E-03
5	2.500	3.584577E 00	1.938704E-01	2.466590E 00	9.168377E-04
6	3.000	3.912010E 00	2.215088E-01	2.959385E 00	9.956396E-04
7	3.500	3.607723E 00	2.215077E-01	2.958901E 00	1.548118E-03
8	4.000	7.073314E 00	4.958907E-01	6.624036E 00	2.951120E-03
9	4.500	3.940288E 00	2.876410E-01	3.842175E 00	4.730288E-03
10	5.000	1.494447E 00	1.090746E-01	1.457236E 00	3.559700E-03
11	6.000	1.402218E 00	1.023619E-01	1.367302E 00	3.649998E-03
12	7.000	1.403018E 00	1.024203E-01	1.368083E 00	5.060432E-03
13	8.000	1.401528E 00	1.023115E-01	1.366630E 00	1.255014E-02
14	9.000	1.425100E 00	1.040323E-01	1.389615E 00	2.571591E-02
15	10.000	1.450668E 00	1.058988E-01	1.414547E 00	4.515501E-02
16	11.000	1.482205E 00	1.082010E-01	1.445298E 00	7.545020E-02
17	12.000	1.434199E 00	1.046965E-01	1.398487E 00	1.223389E-01
18	13.000	1.409646E 00	1.029041E-01	1.374545E 00	1.788205E-01
3000	17.675	1.471700E 00	1.074341E-01	1.435055E 00	7.970000E-02
2500	17.831	1.473500E 00	1.075655E-01	1.436810E 00	8.610000E-02
2000	18.016	1.475800E 00	1.077334E-01	1.439053E 00	9.450000E-02
1500	18.243	1.478400E 00	1.079232E-01	1.441588E 00	1.059000E-01
1000	18.537	1.481500E 00	1.081495E-01	1.444611E 00	1.226000E-01
500	18.959	1.484100E 00	1.083393E-01	1.447146E 00	1.513000E-01
68	19.555	1.475300E 00	1.076969E-01	1.438565E 00	2.040000E-01

DESIGNATION	FORMULA	CODE	DENSITY
*AL CF	*AL CF	5.1110	2.70000
CODE	5.1010		
DESIGNATION	CF ALUMINUM		
WEIGHT	1.000000		
FRACTION			
N/CC - EACH			
CONSTITUENT	0.06029117		

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0 0.	9.344030E-02	1.001510E-01	6.569870E-02	8.598390E-03
1 0.500	1.238980E-01	9.246970E-02	8.325190E-02	3.432590E-03
2 1.000	1.467200E-01	6.195150E-02	1.082090E-01	6.229900E-04
3 1.500	1.728200E-01	2.862180E-02	1.080730E-01	2.384840E-04
4 2.000	1.882860E-01	1.520080E-02	1.175530E-01	2.375040E-04
5 2.500	2.161200E-01	1.168880E-02	1.487150E-01	5.527770E-05
6 3.000	2.358620E-01	1.335510E-02	1.784260E-01	6.002880E-05
7 3.500	2.175160E-01	1.335510E-02	1.783970E-01	9.333860E-05
8 4.000	4.264620E-01	2.989810E-02	3.993740E-01	1.779280E-04
9 6.000	2.315670E-01	1.134240E-02	2.316510E-01	2.851970E-04
10 8.000	9.010270E-02	6.571500E-03	8.785920E-02	2.146200E-04
11 10.000	0.454200E-02	0.171570E-03	8.249690E-02	2.200650E-04
12 12.000	8.459030E-02	6.175090E-03	8.248400E-02	3.051020E-04
13 14.000	8.450050E-02	6.168530E-03	8.239640E-02	7.566700E-04
14 15.500	8.592170E-02	6.272280E-03	8.378220E-02	1.550460E-03
15 16.500	8.746320E-02	6.384820E-03	8.528540E-02	2.722470E-03
16 17.500	8.936460E-02	6.523620E-03	8.713940E-02	4.549020E-03
17 18.500	8.647030E-02	6.312330E-03	8.431720E-02	7.376020E-03
18 19.795	8.458990E-02	6.204260E-03	8.287370E-02	1.078140E-02
3000 17.675	8.873120E-02	6.477400E-03	8.652180E-02	4.805200E-03
2500 17.831	8.883980E-02	6.485300E-03	8.662760E-02	5.191100E-03
2000 18.016	8.897840E-02	6.495400E-03	8.676290E-02	5.697600E-03
1500 18.243	8.913520E-02	6.506900E-03	8.691570E-02	6.384900E-03
1000 18.537	8.932210E-02	6.520500E-03	8.709800E-02	7.391800E-03
500 18.959	8.947890E-02	6.493200E-03	8.725080E-02	9.122100E-03
68 19.555	8.894830E-02	6.493230E-03	8.673350E-02	1.229950E-02

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
MAGNESIUM	MG	5.1400	1.74	12	24.320	0.08070	0.97240
N/CC - SOLID							
MATERIAL	0.0431044						

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0 0.	1.600000E 00	1.291200E-01	1.555840E 00	3.168900E-06
1 0.500	1.650000E 00	1.331560E-01	1.604460E 00	4.063500E-06
2 1.000	1.850000E 00	1.492950E-01	1.798940E 00	5.216400E-06
3 1.500	2.700000E 00	2.178900E-01	2.625480E 00	6.678000E-06
4 2.000	2.650000E 00	2.138550E-01	2.576860E 00	8.631000E-06
5 2.500	3.300000E 00	2.663100E-01	3.208920E 00	1.102500E-05
6 3.000	5.309000E 00	4.277100E-01	5.153720E 00	1.417500E-05
7 3.500	8.350000E 00	6.738450E-01	8.119540E 00	1.820700E-05
8 4.000	9.100000E 00	7.343700E-01	8.848840E 00	2.337300E-05
9 6.000	3.400000E 00	2.743800E-01	3.306160E 00	6.363000E-05
10 8.000	3.400000E 00	2.743800E-01	3.306160E 00	1.726200E-04
11 10.000	3.400000E 00	2.743800E-01	3.306160E 00	4.699800E-04
12 12.000	3.400000E 00	2.743800E-01	3.306160E 00	1.278900E-03
13 14.000	3.400000E 00	2.743800E-01	3.306160E 00	3.471300E-03
14 15.500	3.400000E 00	2.743800E-01	3.306160E 00	6.533100E-03
15 16.500	3.400000E 00	2.743800E-01	3.306160E 00	1.254330E-02
16 17.500	3.400000E 00	2.743800E-01	3.306160E 00	1.890630E-02
17 18.500	3.400000E 00	2.743800E-01	3.306160E 00	3.294270E-02
18 19.795	3.109000E 00	2.501700E-01	3.014440E 00	5.855850E-02
3000 17.675	3.365500E 00	2.715958E-01	3.272612E 00	2.180000E-02
2500 17.831	3.359800E 00	2.711359E-01	3.267069E 00	2.360000E-02
2000 18.016	3.351300E 00	2.704499E-01	3.258804E 00	2.580000E-02
1500 18.243	3.337600E 00	2.693443E-01	3.245482E 00	2.900000E-02
1000 18.537	3.313000E 00	2.673591E-01	3.221561E 00	3.360000E-02
500 18.959	3.260500E 00	2.631223E-01	3.170510E 00	4.140000E-02
68 19.555	3.139200E 00	2.533334E-01	3.052558E 00	5.590000E-02

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
NDA MG N/CC - SOLID MATERIAL	NDA MG 0.0431044	5.1420	1.74	12	24.320	0.07997	0.97299

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	1.370000E 00	1.820000E 00	1.100000E 00	2.670000E-01
1	0.500	1.590000E 00	1.800000E 00	1.290000E 00	4.320000E-02
2	1.000	1.990000E 00	7.630000E-01	1.360000E 00	2.710000E-04
3	1.500	2.510000E 00	4.690000E-01	1.510000E 00	2.700000E-04
4	2.000	2.990000E 00	4.650000E-01	1.710000E 00	3.390000E-04
5	2.500	3.270000E 00	2.300000E-01	2.160000E 00	5.950000E-04
6	3.000	5.460000E 00	2.670000E-01	3.300000E 00	1.330000E-04
7	3.500	9.760000E 00	6.820000E-01	8.240000E 00	5.710000E-05
8	4.000	6.820000E 00	5.120000E-01	6.710000E 00	5.600000E-05
9	6.000	4.810000E 00	4.420000E-01	4.790000E 00	4.810000E-04
10	8.000	3.400000E 00	2.390000E-01	3.500000E 00	5.310000E-04
11	10.000	4.040000E 00	3.020000E-01	3.950000E 00	2.440000E-04
12	12.000	2.950000E 00	2.740000E-01	2.750000E 00	4.520000E-01
13	14.000	3.400000E 00	2.690000E-01	3.310000E 00	9.280000E-04
14	15.500	3.400000E 00	2.740000E-01	3.300000E 00	9.590000E-03
15	16.500	3.390000E 00	2.680000E-01	3.290000E 00	9.780000E-03
16	17.900	3.390000E 00	2.730000E-01	3.270000E 00	2.220000E-02
17	18.500	3.360000E 00	2.660000E-01	3.270000E 00	3.060000E-02
18	19.795	3.340000E 00	2.710000E-01	3.240000E 00	6.360000E-02
3000	17.675	3.380000E 00	2.700000E-01	3.280000E 00	2.180000E-02
2500	17.831	3.380000E 00	2.700000E-01	3.280000E 00	2.360000E-02
2000	18.016	3.370000E 00	2.700000E-01	3.280000E 00	2.590000E-02
1500	18.243	3.370000E 00	2.690000E-01	3.280000E 00	2.900000E-02
1000	18.537	3.370000E 00	2.690000E-01	3.270000E 00	3.360000E-02
500	18.959	3.360000E 00	2.690000E-01	3.270000E 00	4.140000E-02
68	19.555	3.340000E 00	2.680000E-01	3.250000E 00	5.580000E-02

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
CF ZIRCONIUM N/CC - SOLID MATERIAL	ZR CFINE 0.0430619	5.2010	6.52	40	91.220	0.02200	0.99260

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	4.237778E 00	4.180429E 00	2.137158E 00	4.613269E-03
1	0.500	4.007074E 00	3.748984E 00	2.412091E 00	5.360524E-03
2	1.000	4.142041E 00	2.954238E 00	2.826137E 00	6.560908E-03
3	1.500	4.714687E 00	1.775413E 00	3.299178E 00	7.802182E-03
4	2.000	6.094472E 00	7.934331E-01	4.076785E 00	9.508654E-03
5	2.500	7.693597E 00	2.195378E-01	5.200368E 00	1.150493E-02
6	3.000	8.671676E 00	1.907769E-01	6.536500E 00	1.388951E-02
7	3.500	7.974335E 00	1.754354E-01	6.812213E 00	1.683037E-02
8	4.000	8.465046E 00	1.862310E-01	7.841430E 00	2.346164E-02
9	6.000	8.313422E 00	1.828953E-01	8.173438E 00	3.834398E-02
10	8.000	7.501808E 00	1.650398E-01	7.446295E 00	3.771221E-02
11	10.000	7.407478E 00	1.629644E-01	7.352663E 00	3.066588E-01
12	12.000	6.197256E 00	1.363397E-01	6.151396E 00	4.191134E-03
13	14.000	6.221521E 00	1.368735E-01	6.175482E 00	9.662304E-03
14	15.500	6.274483E 00	1.380386E-01	6.228051E 00	2.021732E-02
15	16.500	6.195621E 00	1.363037E-01	6.149113E 00	3.904911E-02
16	17.500	6.147254E 00	1.352396E-01	6.101764E 00	5.799354E-02
17	18.500	6.107550E 00	1.343661E-01	6.062354E 00	9.547284E-02
18	19.795	6.079500E 00	1.337490E-01	6.034512E 00	1.395350E-01
3000	17.675	6.157930E 00	1.354738E-01	6.112331E 00	6.230000E-02
2500	17.831	6.152800E 00	1.353616E-01	6.107269E 00	6.740000E-02
2000	18.016	6.146000E 00	1.352120E-01	6.100519E 00	7.390000E-02
1500	18.243	6.135700E 00	1.349854E-01	6.090296E 00	8.280000E-02
1000	18.537	6.120400E 00	1.346488E-01	6.075109E 00	9.600000E-02
500	18.959	6.091800E 00	1.340196E-01	6.046721E 00	1.184000E-01
68	19.555	6.025300E 00	1.325566E-01	5.980713E 00	1.596000E-01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CF YTTRIUM N/CC - SOLID MATERIAL	Y.CFINE 0.0302861	5.2450	4.47	39	88.920	0.02250	0.99240

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	3.982706E 00	3.925519E 00	2.008137E 00	4.256721E-03
1	0.500	4.066530E 00	3.803084E 00	2.455671E 00	5.256872E-03
2	1.000	4.227736E 00	3.030468E 00	2.882413E 00	6.047035E-03
3	1.500	4.611896E 00	1.738790E 00	3.220289E 00	6.486930E-03
4	2.000	5.899549E 00	7.694872E-01	3.940070E 00	6.816654E-03
5	2.500	7.486069E 00	2.241789E-01	5.080970E 00	7.074048E-03
6	3.000	8.755712E 00	1.970035E-01	6.599108E 00	7.094486E-03
7	3.500	8.467430E 00	1.905172E-01	7.246622E 00	6.977539E-03
8	4.000	7.548542E 00	1.698422E-01	6.987604E 00	6.911015E-03
9	6.000	7.551120E 00	1.699002E-01	7.418586E 00	2.025995E-02
10	8.000	7.637423E 00	1.718420E-01	7.579379E 00	4.787042E-02
11	10.000	6.377005E 00	1.434826E-01	6.328541E 00	1.025586E-02
12	12.000	6.874244E 00	1.546705E-01	6.821999E 00	2.790315E-02
13	14.000	7.351039E 00	1.653984E-01	7.295171E 00	7.040561E-02
14	15.500	7.413554E 00	1.668050E-01	7.357211E 00	1.476336E-01
15	16.500	7.420135E 00	1.669530E-01	7.363742E 00	2.555124E-01
16	17.500	7.457202E 00	1.677870E-01	7.400528E 00	4.241657E-01
17	18.500	7.351347E 00	1.654053E-01	7.295477E 00	6.959349E-01
18	19.795	7.156093E 00	1.610121E-01	7.101706E 00	1.013373E 00
3000	17.675	6.200000E 00	1.395000E-01	6.152880E 00	4.156000E-01
2500	17.831	6.200000E 00	1.395000E-01	6.152880E 00	4.494000E-01
2000	18.016	6.200000E 00	1.395000E-01	6.152880E 00	4.929000E-01
1500	18.243	6.200000E 00	1.395000E-01	6.152880E 00	5.523000E-01
1000	18.537	6.200000E 00	1.395000E-01	6.152880E 00	6.399000E-01
500	18.959	6.200000E 00	1.395000E-01	6.152880E 00	7.892000E-01
68	19.555	6.200000E 00	1.395000E-01	6.152880E 00	1.064300E 00

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
MOLYBDENUM N/CC - SOLID MATERIAL	MC 0.0640458	5.3000	10.2	42	95.950	0.02090	0.99300

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	1.209000E 00	2.508000E-02	1.191600E 00	1.860000E-03
1	0.500	2.350000E 00	4.911500E-02	2.333500E 00	2.350000E-03
2	1.000	3.500000E 00	7.315000E-02	3.475500E 00	3.020000E-03
3	1.500	4.600000E 00	9.614000E-02	4.567800E 00	3.870000E-03
4	2.000	5.850000E 00	1.222650E-01	5.809050E 00	5.000000E-03
5	2.500	6.850000E 00	1.431650E-01	6.802050E 00	6.390000E-03
6	3.000	8.000000E 00	1.672000E-01	7.944000E 00	8.210000E-03
7	3.500	9.150000E 00	1.912350E-01	9.085950E 00	1.050000E-02
8	4.000	9.950000E 00	1.860100E-01	8.837700E 00	1.350000E-02
9	6.000	7.700000E 00	1.609300E-01	7.646100E 00	3.690000E-02
10	8.000	7.200000E 00	1.500000E-01	7.150000E 00	10.000000E-02
11	10.000	1.140000E 01	2.380000E-01	1.130000E 01	9.300000E-01
12	12.000	1.550000E 01	3.240000E-01	1.540000E 01	7.000000E 00
13	14.000	1.020000E 01	2.130000E-01	1.010000E 01	3.100000E 00
14	15.500	6.150000E 00	1.296000E-01	6.110000E 00	2.592000E-01
15	16.500	6.050000E 00	1.260000E-01	6.010000E 00	4.978000E-01
16	17.500	6.000000E 00	1.250000E-01	5.960000E 00	7.502000E-01
17	18.500	6.000000E 00	1.250000E-01	5.960000E 00	1.307000E 00
18	19.795	5.500000E 00	1.150000E-01	5.460000E 00	2.324000E 00
3000	17.675	5.832200E 00	1.218930E-01	5.791375E 00	8.659000E-01
2500	17.831	5.815400E 00	1.215419E-01	5.774692E 00	9.362000E-01
2000	18.016	5.787100E 00	1.209504E-01	5.746590E 00	1.027000E 00
1500	18.243	5.742600E 00	1.200203E-01	5.702402E 00	1.150600E 00
1000	18.537	5.666100E 00	1.184215E-01	5.626437E 00	1.333100E 00
500	18.959	5.520700E 00	1.153826E-01	5.482055E 00	1.644100E 00
68	19.555	5.236000E 00	1.094324E-01	5.199348E 00	2.217200E 00

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CF MOLY	CF MO	5.3010	10.2	42	95.950	0.	0.
N/CC - SOLID MATERIAL	0.0640/58						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	G.	4.114563E 00	4.061470E 00	2.072981E 00	1.018725E-02
1	0.500	3.930974E 00	3.680957E 00	2.367655E 00	9.724048E-03
2	1.000	4.011964E 00	2.851376E 00	2.738405E 00	9.352568E-03
3	1.500	4.811193E 00	1.803350E 00	3.366405E 00	1.016719E-02
4	2.000	6.040471E 00	8.149107E-01	4.044464E 00	1.304827E-02
5	2.500	7.214428E 00	2.025328E-01	4.875632E 00	1.802544E-02
6	3.000	8.162489E 00	1.705960E-01	6.162022E 00	2.682809E-02
7	3.500	8.847543E 00	1.849136E-01	7.589053E 00	3.183501E-02
8	4.000	8.837311E 00	1.846998E-01	8.179815E 00	3.310142E-02
9	6.000	7.446699E 00	1.556360E-01	7.320929E 00	3.434335E-02
10	8.000	6.657991E 00	1.391520E-01	6.611385E 00	3.619320E-02
11	10.000	8.952791E 00	1.871133E-01	8.890119E 00	1.013972E 00
12	12.000	1.394475E 01	2.914450E-01	1.384713E 01	1.040503E 01
13	14.000	5.445964E 00	1.138206E-01	5.407842E 00	1.481155E-01
14	15.500	5.662903E 00	1.183547E-01	5.623262E 00	3.042829E-01
15	16.500	5.843220E 00	1.221233E-01	5.802317E 00	5.266286E-01
16	17.500	5.849474E 00	1.222530E-01	5.808478E 00	8.742346E-01
17	18.500	5.625373E 00	1.175703E-01	5.585996E 00	1.434370E 00
18	19.795	5.243526E 00	1.095897E-01	5.206821E 00	2.089811E 00
3000	17.675	5.832200E 00	1.218930E-01	5.791374E 00	8.659000E-01
2500	17.831	5.815400E 00	1.215419E-01	5.774692E 00	9.362000E-01
2000	18.016	5.787100E 00	1.209504E-01	5.746590E 00	1.027000E 00
1500	18.243	5.742600E 00	1.200203E-01	5.702402E 00	1.150600E 00
1000	18.537	5.666100E 00	1.184215E-01	5.626437E 00	1.333100E 00
500	18.959	5.520700E 00	1.153826E-01	5.482055E 00	1.644100E 00
68	19.555	5.236000E 00	1.094324E-01	5.199348E 00	2.217200E 00

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CF NICKELIUM	NE CFINE	5.3610	8.57	41	92.910	0.	0.
N/CC - SOLID MATERIAL	0.0355717						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	G.	3.694583E 00	3.647712E 00	1.860785E 00	8.721186E-03
1	0.500	3.619627E 00	3.407880E 00	2.186862E 00	1.024467E-02
2	1.000	3.939129E 00	2.865673E 00	2.705548E 00	1.253700E-02
3	1.500	4.875827E 00	1.843488E 00	3.415500E 00	1.627225E-02
4	2.000	6.240011E 00	8.271599E-01	4.176111E 00	2.818193E-02
5	2.500	7.670864E 00	2.195359E-01	5.165792E 00	5.335880E-02
6	3.000	8.591854E 00	1.890208E-01	6.376126E 00	6.874974E-02
7	3.500	8.906144E 00	1.959352E-01	7.347916E 00	8.017693E-02
8	4.000	9.074138E 00	1.996310E-01	8.314025E 00	9.699654E-02
9	6.000	7.564887E 00	1.664275E-01	7.398671E 00	2.887870E-01
10	8.000	6.706184E 00	1.475360E-01	6.656556E 00	5.036091E-01
11	10.000	7.081219E 00	1.557868E-01	7.028818E 00	2.176657E 00
12	12.000	6.445549E 00	1.418021E-01	6.397852E 00	5.245239E-01
13	14.000	6.345792E 00	1.396974E-01	6.298833E 00	6.185350E-02
14	15.500	6.288120E 00	1.383386E-01	6.241588E 00	1.313110E-01
15	16.500	6.169942E 00	1.357307E-01	6.124204E 00	2.243530E-01
16	17.500	6.007641E 00	1.321681E-01	5.963184E 00	3.723592E-01
17	18.500	5.771188E 00	1.259661E-01	5.728481E 00	6.109352E-01
18	19.795	5.500745E 00	1.209075E-01	5.460094E 00	8.907046E-01
3000	17.675	6.019000E 00	1.285600E-01	5.975800E 00	3.810000E-01
2500	17.831	5.988100E 00	1.279000E-01	5.945200E 00	4.119300E-01
2000	18.016	5.948100E 00	1.270500E-01	5.905400E 00	4.518600E-01
1500	18.243	5.893800E 00	1.258900E-01	5.851500E 00	5.062300E-01
1000	18.537	5.813400E 00	1.241700E-01	5.771700E 00	5.865500E-01
500	18.959	5.676600E 00	1.212500E-01	5.635900E 00	7.233700E-01
68	19.555	5.424500E 00	1.158700E-01	5.385600E 00	9.755100E-01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CALCIUM	CA	5.4000	1.55	20	40.080	0.04950	0.98320
N/CC - SOLID MATERIAL	0.0232991						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	3.000000E 00	1.485000E-01	2.949600E 00	2.162900E-05
1	0.500	3.000000E 00	1.485000E-01	2.949600E 00	2.773500E-05
2	1.000	3.000000E 00	1.485000E-01	2.949600E 00	3.560400E-05
3	1.500	3.000000E 00	1.485000E-01	2.949600E 00	4.558000E-05
4	2.000	3.000000E 00	1.485000E-01	2.949600E 00	5.891000E-05
5	2.500	3.000000E 00	1.485000E-01	2.949600E 00	7.525000E-05
6	3.000	3.000000E 00	1.485000E-01	2.949600E 00	9.675000E-05
7	3.500	3.000000E 00	1.485000E-01	2.949600E 00	1.242700E-04
8	4.000	3.000000E 00	1.485000E-01	2.949600E 00	1.595300E-04
9	6.000	3.000000E 00	1.485000E-01	2.949600E 00	4.343000E-04
10	8.000	3.000000E 00	1.485000E-01	2.949600E 00	1.178200E-03
11	10.000	3.000000E 00	1.485000E-01	2.949600E 00	3.207800E-03
12	12.000	3.000000E 00	1.485000E-01	2.949600E 00	8.729000E-03
13	14.000	3.000000E 00	1.485000E-01	2.949600E 00	2.369300E-02
14	15.500	3.000000E 00	1.485000E-01	2.949600E 00	4.491000E-02
15	16.500	3.000000E 00	1.485000E-01	2.949600E 00	8.561300E-02
16	17.500	3.000000E 00	1.485000E-01	2.949600E 00	1.290430E-01
17	18.500	3.000000E 00	1.485000E-01	2.949600E 00	2.248470E-01
18	19.795	3.000000E 00	1.485000E-01	2.949600E 00	3.996850E-01
3000	17.675	3.000000E 00	1.485000E-01	2.949600E 00	1.409400E-01
2500	17.831	3.000000E 00	1.485000E-01	2.949600E 00	1.610300E-01
2000	18.016	3.000000E 00	1.485000E-01	2.949600E 00	1.766300E-01
1500	18.243	3.000000E 00	1.485000E-01	2.949600E 00	1.978900E-01
1000	18.537	3.000000E 00	1.485000E-01	2.949600E 00	2.292900E-01
500	18.959	3.000000E 00	1.485000E-01	2.949600E 00	2.827800E-01
68	19.555	3.000000E 00	1.485000E-01	2.949600E 00	3.813600E-01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
BARIUM	BA	5.4200	3.5	56	137.360	0.01460	0.99510
N/CC - SOLID MATERIAL	0.0153512						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	5.500000E 00	8.030000E-02	5.473050E 00	5.885100E-05
1	0.500	5.500000E 00	8.030000E-02	5.473050E 00	7.546500E-05
2	1.000	5.500000E 00	8.030000E-02	5.473050E 00	9.687600E-05
3	1.500	6.000000E 00	8.760000E-02	5.970600E 00	1.240200E-04
4	2.000	7.500000E 00	1.095000E-01	7.463250E 00	1.602900E-04
5	2.500	6.500000E 00	9.490000E-02	6.468150E 00	2.047500E-04
6	3.000	5.700000E 00	8.322000E-02	5.672070E 00	2.632500E-04
7	3.500	5.200000E 00	7.592000E-02	5.174520E 00	3.381300E-04
8	4.000	4.900000E 00	7.154000E-02	4.875990E 00	4.340700E-04
9	6.000	8.000000E 00	1.168000E-01	7.960800E 00	1.181700E-03
10	8.000	7.000000E 00	1.022000E-01	6.965700E 00	3.205800E-03
11	10.000	8.000000E 00	1.168000E-01	7.960800E 00	8.728200E-03
12	12.000	9.000000E 00	1.314000E-01	8.955900E 00	2.375100E-02
13	14.000	1.000000E 01	1.460000E-01	9.951000E 00	6.446700E-02
14	15.500	9.500000E 00	1.387000E-01	9.453450E 00	1.213290E-01
15	16.500	9.500000E 00	1.387000E-01	9.453450E 00	2.329470E-01
16	17.500	1.000000E 01	1.460000E-01	9.951000E 00	3.511170E-01
17	18.500	1.090000E 01	1.503000E-01	1.024950E 01	6.117730E-01
18	19.795	1.540000E 01	2.248400E-01	1.532454E 01	1.087515E 00
3000	17.675	1.067800E 01	1.558988E-01	1.062568E 01	4.053000E-01
2500	17.831	1.095700E 01	1.599722E-01	1.090331E 01	4.381000E-01
2000	18.016	1.128500E 01	1.647610E-01	1.122970E 01	4.806000E-01
1500	18.243	1.169400E 01	1.707324E-01	1.163670E 01	5.385000E-01
1000	18.537	1.227400E 01	1.742004E-01	1.221386E 01	6.239000E-01
500	18.959	1.322900E 01	1.931434E-01	1.316418E 01	7.694000E-01
68	19.555	1.492100E 01	2.178466E-01	1.484789E 01	1.037600E 00

DESIGNATION	FORMULA	CODE	DENSITY
*CF HASTA	*CF HASTA	5.4710	8.22000
CODE	4.2020	4.5010	5.3010
DESIGNATION	CF CHROMIUM	CF COBALT	CF MOLY
WEIGHT	0.220000	0.015000	0.090000
FRACTION			
N/CC - EACH			
CONSTITUENT	0.0209480	0.0012601	0.0046452
			0.0001616
			0.0164013
			0.0408194

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	2.818021E-01	2.878564E-01	1.416461E-01	1.346252E-03
1	C.500	3.058504E-01	2.677274E-01	1.592896E-01	1.468314E-03
2	1.000	2.991308E-01	2.151728E-01	1.977771E-01	1.431813E-03
3	1.500	2.871604E-01	1.257791E-01	2.126361E-01	1.333811E-03
4	2.000	2.698045E-01	4.049875E-02	2.094193E-01	1.260771E-03
5	2.500	2.811168E-01	1.578749E-02	2.261909E-01	1.311690E-03
6	3.000	3.294102E-01	1.333541E-02	2.828411E-01	1.584691E-03
7	3.500	3.568317E-01	1.165341E-02	3.176885E-01	1.729105E-03
8	4.000	5.099826E-01	1.735118E-02	4.921534E-01	2.336356E-03
9	6.000	1.152073E 00	4.055045E-02	1.138101E 00	5.765698E-03
10	8.000	2.147438E 00	7.606004E-02	2.121871E 00	1.351958E-02
11	10.000	9.828578E-01	3.427637E-02	9.713365E-01	8.539013E-03
12	12.000	1.385286E 00	4.765513E-02	1.369256E 00	9.202405E-02
13	14.000	1.090679E 00	3.661744E-02	1.078368E 00	4.665696E-02
14	15.500	1.013371E 00	3.575098E-02	1.001354E 00	4.212649E-02
15	16.500	1.008575E 00	3.556902E-02	9.466189E-01	7.244612E-02
16	17.500	1.011441E 00	3.567126E-02	9.994509E-01	1.190299E-01
17	18.500	1.001706E 00	3.534139E-02	9.898272E-01	1.940682E-01
18	19.795	9.789811E-01	3.451190E-02	9.673801E-01	2.823190E-01
3000	17.675	1.008882E 00	3.425380E-02	9.973902E-01	1.252543E-01
2500	17.831	1.009647E 00	3.428449E-02	9.981417E-01	1.355531E-01
2000	18.016	1.010026E 00	3.430134E-02	9.985156E-01	1.488068E-01
1500	18.243	1.008620E 00	3.425723E-02	9.971171E-01	1.668221E-01
1000	18.537	1.005775E 00	3.416550E-02	9.942957E-01	1.934742E-01
500	18.959	1.001297E 00	3.402315E-02	9.898578E-01	2.390912E-01
68	19.555	9.953255E-01	3.383634E-02	9.839546E-01	3.235083E-01

DESIGNATION	FORMULA	CODE	DENSITY
*CF RENE 41	*CF RENE 41	5.4750	8.25000
CODE	4.0020	4.2020	4.5010
DESIGNATION	CF IRON	CF CHROMIUM	CF COBALT
WEIGHT	0.050000	0.190000	0.110000
FRACTION			
N/CC - EACH			
CONSTITUENT	0.0044490	0.0181575	0.0092744
			0.0050507
			0.0032686
			0.0441002

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	2.819891E-01	2.870833E-01	1.412615E-01	1.181807E-03
1	C.500	3.050806E-01	2.677577E-01	1.590367E-01	1.281910E-03
2	1.000	2.994030E-01	2.156743E-01	1.984315E-01	1.252341E-03
3	1.500	2.878348E-01	1.262188E-01	2.166959E-01	1.190302E-03
4	2.000	2.789187E-01	4.205059E-02	2.148320E-01	1.148929E-03
5	2.500	2.923852E-01	1.696638E-02	2.318190E-01	1.210624E-03
6	3.000	3.361290E-01	1.406496E-02	2.846549E-01	1.459585E-03
7	3.500	3.773801E-01	1.340119E-02	3.327253E-01	1.666758E-03
8	4.000	5.138536E-01	1.760027E-02	4.921944E-01	2.238981E-03
9	6.000	1.291337E 00	4.610308E-02	1.275460E 00	5.694804E-03
10	8.000	2.511435E 00	8.928056E-02	2.481405E 00	1.528971E-02
11	10.000	1.015853E 00	3.544675E-02	1.003934E 00	1.206524E-02
12	12.000	3.459426E 00	1.178006E-01	3.419713E 00	3.131686E-01
13	14.000	9.963352E-01	3.511321E-02	9.845299E-01	3.544649E-02
14	15.500	9.946379E-01	3.504309E-02	9.828564E-01	7.420796E-02
15	16.500	9.874399E-01	3.478125E-02	9.757465E-01	1.290797E-01
16	17.500	9.915396E-01	3.492868E-02	9.797967E-01	2.131925E-01
17	18.500	9.804064E-01	3.455852E-02	9.687881E-01	3.483918E-01
18	19.795	9.576830E-01	3.372903E-02	9.463543E-01	5.080033E-01
3000	17.675	9.779891E-01	3.304777E-02	9.672714E-01	2.256947E-01
2500	17.831	9.765903E-01	3.300543E-02	9.658613E-01	2.441273E-01
2000	18.016	9.770507E-01	3.302564E-02	9.663149E-01	2.678931E-01
1500	18.243	9.716579E-01	3.284802E-02	9.609328E-01	3.002306E-01
1000	18.537	9.643631E-01	3.260811E-02	9.536633E-01	3.480236E-01
500	18.959	9.552384E-01	3.231302E-02	9.445795E-01	4.296142E-01
68	19.555	9.539158E-01	3.229308E-02	9.433041E-01	5.802541E-01

DESIGNATION	FORMULA	CODE	DENSITY
*CF DCM	*CF OCM	5.4760	7.91600
CODE	4.2020	4.3010	5.1010
DESIGNATION	CF CHROMIUM	CF TITANIUM	CF ALUMINUM
WEIGHT	0.150000	0.035000	0.046000
FRACTION			
N/CC - EACH			
CONSTITUENT	0.0137545	0.0034848	0.0081312
			0.0026095
			0.0042688
			0.0541322

LETHARGY	SIGMA	XI SIGMA	SIGMA	SIGMA
LEVEL	SCATTER	SCATTER	TRANSPORT	ABSORPTION
0	0.	2.725539E-01	2.820121E-01	1.407187E-01
1	0.500	2.986741E-01	2.644580E-01	1.594739E-01
2	1.000	2.936415E-01	2.090789E-01	1.964931E-01
3	1.500	2.848815E-01	1.133071E-01	2.097847E-01
4	2.000	2.791545E-01	3.163228E-02	2.111108E-01
5	2.500	2.927678E-01	1.157433E-02	2.331826E-01
6	3.000	3.356460E-01	1.195799E-02	2.851861E-01
7	3.500	3.825707E-01	1.332353E-02	3.424229E-01
8	4.000	5.392964E-01	2.073287E-02	5.197621E-01
9	6.000	1.415677E 00	5.221073E-02	1.397917E 00
10	8.000	2.350973E 00	0.496145E-02	2.322403E 00
11	10.000	1.026242E 00	3.680232E-02	1.013867E 00
12	12.000	1.095724E 00	3.908813E-02	1.082581E 00
13	14.000	1.081588E 00	3.891013E-02	1.068505E 00
14	15.500	1.083348E 00	3.897206E-02	1.070244E 00
15	16.500	1.080790E 00	3.888128E-02	1.067716E 00
16	17.500	1.086601E 00	3.909862E-02	1.073454E 00
17	18.500	1.078255E 00	3.879757E-02	1.065210E 00
18	19.795	1.052196E 00	3.781066E-02	1.039479E 00
3000	17.675	1.089206E 00	3.736279E-02	1.076608E 00
2500	17.831	1.090364E 00	3.740608E-02	1.077749E 00
2000	18.016	1.090946E 00	3.742989E-02	1.078324E 00
1500	18.243	1.090454E 00	3.741724E-02	1.077837E 00
1000	18.537	1.088621E 00	3.736066E-02	1.076022E 00
500	18.959	1.085299E 00	3.725843E-02	1.072734E 00
68	19.555	1.079846E 00	3.708905E-02	1.067339E 00

DESIGNATION	FORMULA	CODE	DENSITY
*CF A286	*CF A286	5.4770	7.94400
CODE	4.4010	4.2020	4.1020
DESIGNATION	CF MANGANESE	CF CHROMIUM	CF NICKEL
WEIGHT	0.015000	0.150000	0.250000
FRACTION			
N/CC - EACH			
CONSTITUENT	0.0013067	0.0138032	0.0203765
			0.0006235
			0.0019983
			0.0473376

LETHARGY	SIGMA	XI SIGMA	SIGMA	SIGMA
LEVEL	SCATTER	SCATTER	TRANSPORT	ABSORPTION
0	0.	2.795303E-01	2.858173E-01	1.405365E-01
1	0.500	3.087875E-01	2.635689E-01	1.574534E-01
2	1.000	3.000380E-01	2.127682E-01	1.976349E-01
3	1.500	2.708548E-01	1.329436E-01	2.077855E-01
4	2.000	2.494783E-01	5.712042E-02	2.025515E-01
5	2.500	2.515345E-01	2.683745E-02	2.093620E-01
6	3.000	2.959234E-01	1.760586E-02	2.619751E-01
7	3.500	2.989105E-01	1.037487E-02	2.623637E-01
8	4.000	4.790486E-01	1.689611E-02	4.647965E-01
9	6.000	1.030861E 00	3.718185E-02	1.018313E 00
10	8.000	1.618850E 00	5.826700E-02	1.599260E 00
11	10.000	1.212701E 00	4.345237E-02	1.198096E 00
12	12.000	9.667708E-01	3.443627E-02	9.551954E-01
13	14.000	9.581129E-01	3.420360E-02	9.466156E-01
14	15.500	9.533676E-01	3.403229E-02	9.419278E-01
15	16.500	9.462684E-01	3.377709E-02	9.349144E-01
16	17.500	9.437569E-01	3.368785E-02	9.324330E-01
17	18.500	9.326507E-01	3.325529E-02	9.214587E-01
18	19.795	9.197387E-01	3.281978E-02	9.087052E-01
3000	17.675	9.392531E-01	3.274664E-02	9.282094E-01
2500	17.831	9.397123E-01	3.276458E-02	9.286626E-01
2000	18.016	9.397566E-01	3.276772E-02	9.287060E-01
1500	18.243	9.390664E-01	3.274507E-02	9.280235E-01
1000	18.537	9.376786E-01	3.269853E-02	9.266508E-01
500	18.959	9.360850E-01	3.264769E-02	9.250746E-01
68	19.555	9.336446E-01	3.256975E-02	9.226606E-01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
SILICON	SI	5.5000	2.33	14	28.090	0.07016	0.97610
N/CC - SOLID MATERIAL	0.0499735						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	1.700000E-00	1.193400E-01	1.659200E-00	6.539000E-06
1	0.500	2.020000E-00	1.418040E-01	1.971520E-00	8.385000E-06
2	1.000	2.310000E-00	1.621620E-01	2.254560E-00	1.076400E-05
3	1.500	2.980000E-00	2.091960E-01	2.908480E-00	1.378000E-05
4	2.000	3.600000E-00	2.527200E-01	3.513600E-00	1.781000E-05
5	2.500	3.400000E-00	2.386800E-01	3.318400E-00	2.275000E-05
6	3.000	3.210000E-00	2.253420E-01	3.132960E-00	2.925000E-05
7	3.500	3.840000E-00	2.695680E-01	3.747840E-00	3.757000E-05
8	4.000	3.400000E-00	2.386800E-01	3.318400E-00	4.823000E-05
9	6.000	1.650000E-00	1.158300E-01	1.610400E-00	1.313000E-04
10	8.000	2.000000E-00	1.404000E-01	1.952000E-00	3.562000E-04
11	10.000	2.050000E-00	1.439100E-01	2.000800E-00	9.698000E-04
12	12.000	2.150000E-00	1.509300E-01	2.098400E-00	2.639000E-03
13	14.000	2.230000E-00	1.565460E-01	2.176480E-00	7.163000E-03
14	15.500	2.230000E-00	1.565460E-01	2.176480E-00	1.348100E-02
15	16.500	2.220000E-00	1.558440E-01	2.166720E-00	2.588300E-02
16	17.500	2.210000E-00	1.551420E-01	2.156960E-00	3.901300E-02
17	18.500	2.180000E-00	1.530360E-01	2.127680E-00	6.797700E-02
18	19.795	2.120000E-00	1.487392E-01	2.069332E-00	1.208350E-01
3000	17.675	2.120000E-00	1.487392E-01	2.069332E-00	4.503000E-02
2500	17.831	2.120000E-00	1.487392E-01	2.069332E-00	4.868000E-02
2000	18.016	2.120000E-00	1.487392E-01	2.069332E-00	5.340000E-02
1500	18.243	2.120000E-00	1.487392E-01	2.069332E-00	5.983000E-02
1000	18.537	2.120000E-00	1.487392E-01	2.069332E-00	6.932000E-02
500	18.959	2.120000E-00	1.487392E-01	2.069332E-00	8.549000E-02
68	19.555	2.120000E-00	1.487392E-01	2.069332E-00	1.152900E-01

DESIGNATION	FORMULA	CODE	DENSITY
*SIL DIOXIDE	*SiO2	5.5100	2.65000

CODE	3.6000	5.5000
DESIGNATION	OXYGEN	SILICON
WEIGHT	0.532800	0.467200
FRACTION		
N/CC - EACH		
CONSTITUENT	0.0531517	0.0265541

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	6.108755E-02	5.096783E-03	5.933443E-02	1.741723E-07
1	0.500	1.099802E-01	1.057708E-02	1.063265E-01	2.233422E-07
2	1.000	1.803998E-01	1.870040E-02	1.739272E-01	2.867090E-07
3	1.500	1.375982E-01	1.262366E-02	1.332434E-01	3.670430E-07
4	2.000	2.369784E-01	2.380402E-02	2.287460E-01	4.743857E-07
5	2.500	3.757086E-01	4.084577E-02	3.615539E-01	6.059672E-07
6	3.000	2.978455E-01	3.168792E-02	2.868703E-01	7.791006E-07
7	3.500	3.012867E-01	3.125579E-02	2.904681E-01	1.000711E-06
8	4.000	2.896029E-01	3.043558E-02	2.790647E-01	1.284650E-06
9	6.000	2.431331E-01	2.717341E-02	2.337102E-01	3.497296E-06
10	8.000	2.524271E-01	2.782584E-02	2.427811E-01	9.487714E-06
11	10.000	2.537548E-01	2.791905E-02	2.440769E-01	2.583151E-05
12	12.000	2.564102E-01	2.810546E-02	2.466686E-01	7.029219E-05
13	14.000	2.585345E-01	2.825459E-02	2.487420E-01	1.907931E-04
14	15.500	2.585345E-01	2.825459E-02	2.487420E-01	3.590788E-04
15	16.500	2.582690E-01	2.823594E-02	2.484828E-01	6.894175E-04
16	17.500	2.580034E-01	2.821730E-02	2.482236E-01	1.039147E-03
17	18.500	2.598644E-01	2.848268E-02	2.499921E-01	1.810630E-03
18	19.795	2.795318E-01	3.093900E-02	2.688104E-01	3.218551E-03
3000	17.675	2.562726E-01	2.812697E-02	2.465281E-01	1.199454E-03
2500	17.831	2.569264E-01	2.820601E-02	2.471544E-01	1.296377E-03
2000	18.016	2.579044E-01	2.832425E-02	2.480914E-01	1.422244E-03
1500	18.243	2.594245E-01	2.850803E-02	2.495476E-01	1.593518E-03
1000	18.537	2.619865E-01	2.881777E-02	2.520020E-01	1.846580E-03
500	18.959	2.669561E-01	2.941860E-02	2.567629E-01	2.277024E-03
68	19.555	2.775333E-01	3.069738E-02	2.668959E-01	3.070995E-03

DESIGNATION	FORMULA	CODE	DENSITY
*SIL CARBIDE	*SIC	5.5300	3.21000
CODE	3.3000	5.5000	
DESIGNATION	CARBON	SILICON	
WEIGHT	0.299740	0.700260	
FRACTION			
N/CC - EACH			
CONSTITUENT	0.0482500		

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	1.663966E-01	1.917065E-02	1.597011E-01	3.230194E-07
1	0.500	1.504617E-01	1.527016E-02	1.451522E-01	4.142098E-07
2	1.000	2.006304E-01	2.200184E-02	1.929589E-01	5.317298E-07
3	1.500	2.329319E-01	2.426941E-02	2.244852E-01	6.807168E-07
4	2.000	2.797104E-01	2.905118E-02	2.696005E-01	8.797944E-07
5	2.500	3.014307E-01	3.335780E-02	2.897959E-01	1.123825E-06
6	3.000	3.197731E-01	3.700491E-02	3.060100E-01	1.444918E-06
7	3.500	3.699286E-01	4.236054E-02	3.551368E-01	1.855917E-06
8	4.000	3.665602E-01	4.370819E-02	3.512878E-01	2.382509E-06
9	6.000	3.063236E-01	4.161887E-02	2.917150E-01	6.486076E-06
10	8.000	3.231975E-01	4.280342E-02	3.081840E-01	1.759589E-05
11	10.000	3.256081E-01	4.297264E-02	3.105367E-01	4.750705E-05
12	12.000	3.304292E-01	4.331108E-02	3.152421E-01	1.303637E-04
13	14.000	3.342861E-01	4.358184E-02	3.190064E-01	3.538443E-04
14	15.500	3.391111E-01	4.434853E-02	3.235612E-01	6.659466E-04
15	16.500	3.386290E-01	4.431468E-02	3.230907E-01	1.278592E-03
16	17.500	3.381469E-01	4.428084E-02	3.226202E-01	1.927199E-03
17	18.500	3.367005E-01	4.417931E-02	3.212085E-01	3.357989E-03
18	19.795	3.386329E-01	4.473885E-02	3.229503E-01	5.969116E-03
3000	17.675	3.335956E-01	4.393842E-02	3.181951E-01	2.224508E-03
2500	17.831	3.334026E-01	4.390775E-02	3.180129E-01	2.404822E-03
2000	18.016	3.331131E-01	4.386175E-02	3.177396E-01	2.637686E-03
1500	18.243	3.326595E-01	4.378968E-02	3.173115E-01	2.955404E-03
1000	18.537	3.319165E-01	4.367161E-02	3.166100E-01	3.424509E-03
500	18.959	3.305848E-01	4.346000E-02	3.153529E-01	4.222901E-03
68	19.555	3.278731E-01	4.302912E-02	3.127931E-01	5.695300E-03

DESIGNATION	FORMULA	CODE	DENSITY
*THERMOFLEX	*AL2O3+SiO2	5.5500	0.22400
CODE	3.6000	5.1000	5.5000
DESIGNATION	OXYGEN	ALUMINUM	SILICON
WEIGHT	0.501780	0.264590	0.233610
FRACTION			
N/CC - EACH			
CONSTITUENT	0.0042312	0.0013235	0.0011223
			0.000000287

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	5.693106E-03	4.711767E-04	5.064540E-03	3.372917E-08
1	0.500	9.400347E-03	8.948339E-04	8.495753E-03	4.325112E-08
2	1.000	1.518191E-02	1.555135E-03	1.359659E-02	5.552236E-08
3	1.500	1.236755E-02	1.116530E-03	9.709479E-03	7.107936E-08
4	2.000	1.820833E-02	1.857134E-03	1.710918E-02	9.186672E-08
5	2.500	3.064166E-02	3.914649E-03	2.066926E-02	1.179400E-07
6	3.000	2.780794E-02	2.830718E-03	2.423126E-02	1.508760E-07
7	3.500	2.275888E-02	2.409487E-03	2.192277E-02	1.937918E-07
8	4.000	3.027206E-02	2.959332E-03	2.925034E-02	2.407777E-07
9	6.000	1.975834E-02	2.197330E-03	1.899665E-02	6.772656E-07
10	8.000	1.989969E-02	2.204549E-03	1.913484E-02	1.837334E-06
11	10.000	1.995581E-02	2.210489E-03	1.918961E-02	5.002377E-06
12	12.000	2.006804E-02	2.218367E-03	1.929915E-02	1.361237E-05
13	14.000	2.014460E-02	2.223704E-03	1.937388E-02	3.694785E-05
14	15.500	2.025047E-02	2.231433E-03	1.947712E-02	6.053707E-05
15	16.500	2.029219E-02	2.234510E-03	1.951778E-02	1.335085E-04
16	17.500	2.024126E-02	2.230824E-03	1.946812E-02	2.012350E-04
17	18.500	2.036622E-02	2.250174E-03	1.958631E-02	3.506358E-04
18	19.795	2.199137E-02	2.449974E-03	2.114224E-02	6.232855E-04
3000	17.675	2.024791E-02	2.234010E-03	1.947385E-02	2.323134E-04
2500	17.831	2.030234E-02	2.240476E-03	1.952603E-02	2.510470E-04
2000	18.016	2.038323E-02	2.250111E-03	1.960358E-02	2.754695E-04
1500	18.243	2.050769E-02	2.264993E-03	1.972287E-02	3.086646E-04
1000	18.537	2.071574E-02	2.289949E-03	1.992225E-02	3.575235E-04
500	18.959	2.111480E-02	2.338031E-03	2.030461E-02	4.410342E-04
68	19.555	2.194517E-02	2.438981E-03	2.109990E-02	5.947344E-04

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
SCANDIUM N/CC - SOLID MATERIAL	SC 0.0428804	5.6000	3.2	21	44.960	0.04422	0.98500

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	2.800000E 00	1.238160E-01	2.758000E 00	1.207200E-03
1	0.500	2.800000E 00	1.238160E-01	2.758000E 00	1.548000E-03
2	1.000	2.800000E 00	1.238160E-01	2.758000E 00	1.987200E-03
3	1.500	2.800000E 00	1.238160E-01	2.758000E 00	2.544000E-03
4	2.000	2.800000E 00	1.238160E-01	2.758000E 00	3.288000E-03
5	2.500	2.800000E 00	1.238160E-01	2.758000E 00	4.200000E-03
6	3.000	2.800000E 00	1.238160E-01	2.758000E 00	5.400000E-03
7	3.500	2.800000E 00	1.238160E-01	2.758000E 00	6.936000E-03
8	4.000	2.800000E 00	1.238160E-01	2.758000E 00	8.904000E-03
9	6.000	3.600000E 00	1.591920E-01	3.546000E 00	2.424000E-02
10	8.000	1.950000E 01	8.622900E-01	1.920750E 01	6.576000E-02
11	10.000	3.000000E 00	1.326600E-01	2.955000E 00	1.790400E-01
12	12.000	1.800000E 01	7.959600E-01	1.773000E 01	4.872000E-01
13	14.000	2.350000E 01	1.039170E 00	2.314750E 01	1.322400E 00
14	15.500	2.400000E 01	1.061280E 00	2.364000E 01	2.488800E 00
15	16.500	2.400000E 01	1.061280E 00	2.364000E 01	4.778400E 00
16	17.500	2.400000E 01	1.061280E 00	2.364000E 01	7.202400E 00
17	18.500	2.480000E 01	1.096656E 00	2.442800E 01	1.254960E 01
18	19.795	2.520000E 01	1.114344E 00	2.482200E 01	2.230800E 01
3000	17.675	2.446900E 01	1.082019E 00	2.410196E 01	8.279500E 00
2500	17.831	2.454800E 01	1.085513E 00	2.417978E 01	8.974700E 00
2000	18.016	2.464900E 01	1.089935E 00	2.427828E 01	9.865200E 00
1500	18.243	2.478500E 01	1.095993E 00	2.441322E 01	1.106700E 01
1000	18.537	2.498900E 01	1.105014E 00	2.461416E 01	1.282900E 01
500	18.959	2.535500E 01	1.121198E 00	2.497467E 01	1.586700E 01
68	19.555	2.604900E 01	1.151887E 00	2.565826E 01	2.127900E 01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
FLUORINE	F	6.0000	0.	9	19.000	0.10250	0.96460

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	1.000000E 00	1.025000E-01	9.646000E-01	5.030000E-07
1	0.500	1.150000E 00	1.178750E-01	1.109290E 00	6.450000E-07
2	1.000	1.450000E 00	1.486250E-01	1.398670E 00	8.280000E-07
3	1.500	2.150000E 00	2.203750E-01	2.073890E 00	1.060000E-06
4	2.000	2.700000E 00	2.767500E-01	2.604420E 00	1.370000E-06
5	2.500	2.600000E 00	2.665000E-01	2.507960E 00	1.750000E-06
6	3.000	5.800000E 00	5.945000E-01	5.594680E 00	2.250000E-06
7	3.500	8.350000E 00	8.558750E-01	8.054410E 00	2.890000E-06
8	4.000	7.450000E 00	7.636250E-01	7.186270E 00	3.710000E-06
9	6.000	3.800000E 00	3.995000E-01	3.665480E 00	1.010000E-05
10	8.000	3.500000E 00	3.587500E-01	3.376100E 00	2.740000E-05
11	10.000	3.400000E 00	3.485000E-01	3.279640E 00	7.460000E-05
12	12.000	3.400000E 00	3.485000E-01	3.279640E 00	2.030000E-04
13	14.000	3.400000E 00	3.485000E-01	3.279640E 00	5.510000E-04
14	15.500	3.400000E 00	3.485000E-01	3.279640E 00	1.037000E-03
15	16.500	3.400000E 00	3.485000E-01	3.279640E 00	1.991000E-03
16	17.500	3.500000E 00	3.587500E-01	3.376100E 00	3.001000E-03
17	18.500	3.500000E 00	3.587500E-01	3.376100E 00	5.229000E-03
18	19.795	3.970000E 00	4.069250E-01	3.829462E 00	9.295000E-03
3000	17.675	3.479000E 00	3.565975E-01	3.355843E 00	3.500000E-03
2500	17.831	3.494000E 00	3.581350E-01	3.370312E 00	3.700000E-03
2000	18.016	3.514000E 00	3.601850E-01	3.389604E 00	4.100000E-03
1500	18.243	3.541000E 00	3.629525E-01	3.415649E 00	4.600000E-03
1000	18.537	3.583000E 00	3.672575E-01	3.456162E 00	5.300000E-03
500	18.959	3.662000E 00	3.753550E-01	3.532365E 00	6.600000E-03
68	19.555	3.825000E 00	3.920625E-01	3.689595E 00	8.900000E-03

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
SULPHUR	S	6.1000	2.046	16	32.066	0.06160	0.97900
N/CC - SOLID MATERIAL	0.0384411						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	1.500000E 00	9.240000E-02	1.468500E 00	4.000000E-01
1	0.500	2.050000E 00	1.262800E-01	2.006950E 00	4.000000E-01
2	1.000	2.550000E 00	1.570800E-01	2.496450E 00	4.000000E-01
3	1.500	2.850000E 00	1.755600E-01	2.790150E 00	1.200000E-01
4	2.000	2.300000E 00	1.416800E-01	2.251700E 00	2.400000E-02
5	2.500	2.000000E 00	1.232000E-01	1.958000E 00	8.600000E-05
6	3.000	3.350000E 00	2.063600E-01	3.279650E 00	1.104000E-04
7	3.500	1.500000E 00	9.240000E-02	1.468500E 00	1.418000E-04
8	4.000	5.000000E 00	3.080000E-01	4.895000E 00	1.821000E-04
9	6.000	1.000000E 00	6.160000E-02	9.790000E-01	4.949000E-04
10	8.000	1.000000E 00	6.160000E-02	9.790000E-01	1.346000E-03
11	10.000	1.000000E 00	6.160000E-02	9.790000E-01	3.658000E-03
12	12.000	1.000000E 00	6.160000E-02	9.790000E-01	9.942000E-03
13	14.000	1.000000E 00	6.160000E-02	9.790000E-01	2.703000E-02
14	15.500	1.000000E 00	6.160000E-02	9.790000E-01	5.723000E-02
15	16.500	1.040000E 00	6.406400E-02	1.018160E 00	7.432000E-02
16	17.500	1.040000E 00	6.406400E-02	1.018160E 00	1.556000E-01
17	18.500	1.040000E 00	6.406400E-02	1.018160E 00	2.564000E-01
18	19.795	1.160000E 00	7.145600E-02	1.135640E 00	4.900000E-01
3000	17.675	1.057400E 00	6.513584E-02	1.035195E 00	1.697000E-01
2500	17.831	1.057800E 00	6.516048E-02	1.035586E 00	1.835000E-01
2000	18.016	1.058500E 00	6.520360E-02	1.036271E 00	2.013000E-01
1500	18.243	1.059300E 00	6.525288E-02	1.037055E 00	2.255000E-01
1000	18.537	1.060300E 00	6.531448E-02	1.038034E 00	2.613000E-01
500	18.959	1.061500E 00	6.538840E-02	1.039208E 00	3.222000E-01
68	19.555	1.062600E 00	6.545616E-02	1.040285E 00	4.346000E-01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
PHOSPHORUS	P	6.2000	2.2	15	30.975	0.06370	0.97830
N/CC - SOLID MATERIAL	0.0427904						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	2.100000E 00	1.377700E-01	2.054430E 00	9.557000E-06
1	0.500	2.300000E 00	1.465100E-01	2.250090E 00	1.225500E-05
2	1.000	2.700000E 00	1.715900E-01	2.641410E 00	1.573200E-05
3	1.500	3.100000E 00	1.974700E-01	3.032730E 00	2.014000E-05
4	2.000	3.050000E 00	1.942850E-01	2.983815E 00	2.603000E-05
5	2.500	2.650000E 00	1.688050E-01	2.592495E 00	3.325000E-05
6	3.000	2.950000E 00	1.874140E-01	2.885985E 00	4.275000E-05
7	3.500	2.850000E 00	1.815450E-01	2.788155E 00	5.491000E-05
8	4.000	3.100000E 00	1.974700E-01	3.032730E 00	7.049000E-05
9	6.000	3.400000E 00	2.165800E-01	3.326220E 00	1.919000E-04
10	8.000	3.400000E 00	2.165800E-01	3.326220E 00	5.206000E-04
11	10.000	3.400000E 00	2.165800E-01	3.326220E 00	1.417400E-03
12	12.000	3.400000E 00	2.165800E-01	3.326220E 00	3.857000E-03
13	14.000	3.400000E 00	2.165800E-01	3.326220E 00	1.046900E-02
14	15.500	3.400000E 00	2.165800E-01	3.326220E 00	1.970300E-02
15	16.500	3.400000E 00	2.165800E-01	3.326220E 00	3.782900E-02
16	17.500	3.400000E 00	2.165800E-01	3.326220E 00	5.701900E-02
17	18.500	3.500000E 00	2.229500E-01	3.424050E 00	9.935100E-02
18	19.795	4.000000E 00	2.548000E-01	3.913200E 00	1.766050E-01
3000	17.675	3.448000E 00	2.196316E-01	3.373178E 00	6.580000E-02
2500	17.831	3.463000E 00	2.205931E-01	3.397853E 00	7.120000E-02
2000	18.016	3.484000E 00	2.219308E-01	3.408397E 00	7.800000E-02
1500	18.243	3.515000E 00	2.235055E-01	3.438724E 00	8.740000E-02
1000	18.537	3.562000E 00	2.268994E-01	3.484705E 00	1.013000E-01
500	18.959	3.644000E 00	2.321228E-01	3.564925E 00	1.250000E-01
68	19.555	3.798000E 00	2.414326E-01	3.715583E 00	1.685000E-01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
NITROGEN	N	6.3000	0.	7	14.008	0.13730	0.95200

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	1.830000E 00	2.512590E-01	1.742160E 00	9.456400E-05
1	0.500	1.900000E 00	2.608700E-01	1.808800E 00	1.212600E-04
2	1.000	1.800000E 00	2.471400E-01	1.713600E 00	1.556640E-04
3	1.500	1.650000E 00	2.265450E-01	1.570800E 00	1.992800E-04
4	2.000	2.200000E 00	3.020600E-01	2.094400E 00	2.575600E-04
5	2.500	1.350000E 00	1.853550E-01	1.285200E 00	3.290000E-04
6	3.000	2.650000E 00	3.638450E-01	2.522800E 00	4.230000E-04
7	3.500	3.200000E 00	4.393600E-01	3.046400E 00	5.433200E-04
8	4.000	3.950000E 00	5.423350E-01	3.760400E 00	6.974800E-04
9	4.500	5.350000E 00	7.345550E-01	5.093200E 00	1.898800E-03
10	5.000	5.800000E 00	7.963400E-01	5.521600E 00	5.151200E-03
11	10.000	9.240000E 00	1.268652E 00	8.796480E 00	1.402480E-02
12	12.000	9.960000E 00	1.367508E 00	9.481920E 00	3.816400E-02
13	14.000	9.950000E 00	1.366135E 00	9.472400E 00	1.035880E-01
14	15.500	1.004000E 01	1.378492E 00	9.558080E 00	1.949560E-01
15	16.500	1.005000E 01	1.379865E 00	9.567600E 00	3.743080E-01
16	17.500	1.008000E 01	1.383984E 00	9.596160E 00	5.641880E-01
17	18.500	1.022000E 01	1.403206E 00	9.729440E 00	9.830520E-01
18	19.795	1.090000E 01	1.496570E 00	1.037680E 01	1.747460E 00
3000	17.675	1.024600E 01	1.406776E 00	9.754192E 00	6.512000E-01
2500	17.831	1.027100E 01	1.410208E 00	9.777992E 00	7.040000E-01
2000	18.016	1.030700E 01	1.415151E 00	9.812264E 00	7.723000E-01
1500	18.243	1.035800E 01	1.422153E 00	9.860816E 00	8.652000E-01
1000	18.537	1.044000E 01	1.433412E 00	9.938880E 00	1.002500E 00
500	18.959	1.059600E 01	1.454831E 00	1.008739E 01	1.236400E 00
68	19.555	1.093400E 01	1.501238E 00	1.040917E 01	1.667300E 00

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
SODIUM	NA	7.3000	0.971	11	22.991	0.08520	0.97080
N/CC - SOLID MATERIAL	C.0254447						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	2.100000E 00	1.789200E-01	2.038680E 00	2.540150E-05
1	0.500	2.250000E 00	1.917000E-01	2.184300E 00	3.257250E-05
2	1.000	2.400000E 00	2.044800E-01	2.329920E 00	4.181400E-05
3	1.500	3.000000E 00	2.556000E-01	2.912400E 00	5.353000E-05
4	2.000	1.600000E 00	1.362200E-01	1.553280E 00	6.918500E-05
5	2.500	5.700000E 00	4.856400E-01	5.533560E 00	8.837500E-05
6	3.000	4.500000E 00	3.834000E-01	4.368600E 00	1.136250E-04
7	3.500	3.000000E 00	2.556000E-01	2.912400E 00	1.459450E-04
8	4.000	4.900000E 00	4.174800E-01	4.756920E 00	1.873550E-04
9	4.500	3.500000E 00	2.982000E-01	3.397800E 00	5.100500E-04
10	5.000	4.700000E 01	4.004400E 00	4.562760E 01	1.383700E-03
11	10.000	3.000000E 00	2.556000E-01	2.912400E 00	3.767300E-03
12	12.000	3.100000E 00	2.641200E-01	3.009480E 00	1.025150E-02
13	14.000	3.150000E 00	2.683800E-01	3.058020E 00	2.782550E-02
14	15.500	3.200000E 00	2.726400E-01	3.106560E 00	5.236850E-02
15	16.500	3.290000E 00	2.803080E-01	3.193932E 00	1.005435E-01
16	17.500	3.340000E 00	2.845680E-01	3.242472E 00	1.515505E-01
17	18.500	3.330000E 00	2.837160E-01	3.232764E 00	2.640645E-01
18	19.795	3.320000E 00	2.828640E-01	3.223056E 00	4.693975E-01
3000	17.675	3.263000E 00	2.780076E-01	3.167720E 00	1.749000E-01
2500	17.831	3.272000E 00	2.787744E-01	3.176458E 00	1.891000E-01
2000	18.016	3.282000E 00	2.796264E-01	3.186166E 00	2.074000E-01
1500	18.243	3.297000E 00	2.809044E-01	3.200728E 00	2.324000E-01
1000	18.537	3.317000E 00	2.826084E-01	3.220144E 00	2.693000E-01
500	18.959	3.343000E 00	2.848236E-01	3.245384E 00	3.321000E-01
68	19.555	3.375000E 00	2.875500E-01	3.276450E 00	4.479000E-01

DESIGNATION	FORMULA	CODE	DENSITY
*SODIUM	*NA	7.3100	0.97100
CODE	7.3000		
DESIGNATION	SODIUM		
WEIGHT	1.000000		
FRACTION			
N/CC - EACH			
CONSTITUENT	0.0254447		

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	5.343380E-02	4.552560E-03	5.187353E-02	6.463327E-07
1	0.500	5.725050E-02	4.877743E-03	5.557879E-02	8.287964E-07
2	1.000	6.106720E-02	5.202925E-03	5.928404E-02	1.063943E-06
3	1.500	7.633400E-02	6.503657E-03	7.410505E-02	1.362053E-06
4	2.000	4.071147E-02	3.468617E-03	3.952269E-02	1.760389E-06
5	2.500	1.450346E-01	1.235695E-02	1.407996E-01	2.248672E-06
6	3.000	1.145010E-01	9.755405E-03	1.111576E-01	2.891150E-06
7	3.500	7.633400E-02	6.503657E-03	7.410505E-02	3.713522E-06
8	4.000	1.246789E-01	1.062264E-02	1.210382E-01	4.767185E-06
9	6.000	9.905633E-02	7.587600E-03	8.645589E-02	1.297805E-05
10	8.000	1.195892E-00	1.018906E-01	1.160979E-00	3.520778E-05
11	10.000	7.633400E-02	6.503657E-03	7.410505E-02	9.585769E-05
12	12.000	7.887847E-02	6.720446E-03	7.657522E-02	2.608460E-04
13	14.000	8.015070E-02	6.828840E-03	7.781030E-02	7.080106E-04
14	15.500	8.142293E-02	6.937234E-03	7.904539E-02	1.332499E-03
15	16.500	8.371295E-02	7.132344E-03	8.126854E-02	2.558347E-03
16	17.500	8.498519E-02	7.240738E-03	8.250362E-02	3.856152E-03
17	18.500	8.473074E-02	7.219059E-03	8.225660E-02	6.719033E-03
18	19.795	8.447630E-02	7.197380E-03	8.200958E-02	1.194366E-02
3000	17.675	8.302595E-02	7.073811E-03	8.060159E-02	4.450272E-03
2500	17.831	8.325495E-02	7.093322E-03	8.082391E-02	4.811587E-03
2000	18.016	8.350940E-02	7.115001E-03	8.107092E-02	5.277224E-03
1500	18.243	8.389107E-02	7.147519E-03	8.144145E-02	5.913341E-03
1000	18.537	8.439996E-02	7.190877E-03	8.193548E-02	6.852249E-03
500	18.959	8.506152E-02	7.247242E-03	8.257773E-02	8.450174E-03
68	19.555	8.587575E-02	7.316614E-03	8.336818E-02	1.139667E-02

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
POTASSIUM	K	7.4000	0.87	19	39.111	0.05070	0.98280

N/CC - SOLID MATERIAL		0.0134053			
LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	2.500000E 00	1.267500E-01	2.457000E 00	9.909100E-05
1	0.500	3.060000E 00	1.551420E-01	3.007368E 00	1.270650E-04
2	1.000	3.350000E 00	1.698450E-01	3.292380E 00	1.631160E-04
3	1.500	3.350000E 00	1.698450E-01	3.292380E 00	2.088200E-04
4	2.000	2.930000E 00	1.485510E-01	2.879604E 00	2.698900E-04
5	2.500	2.400000E 00	1.216800E-01	2.358720E 00	3.447500E-04
6	3.000	1.980000E 00	1.003860E-01	1.945944E 00	4.432500E-04
7	3.500	1.800000E 00	9.126000E-02	1.769040E 00	5.693300E-04
8	4.000	2.300000E 00	1.166100E-01	2.260440E 00	7.308700E-04
9	6.000	1.500000E 00	7.605000E-02	1.474200E 00	1.989700E-03
10	8.000	1.520000E 00	7.706400E-02	1.493856E 00	5.397800E-03
11	10.000	1.670000E 00	8.466900E-02	1.641276E 00	1.469620E-02
12	12.000	1.850000E 00	9.379500E-02	1.818180E 00	3.999100E-02
13	14.000	2.040000E 00	1.034280E-01	2.004912E 00	1.085470E-01
14	15.500	2.050000E 00	1.039350E-01	2.014740E 00	2.042890E-01
15	16.500	2.050000E 00	1.039350E-01	2.014740E 00	3.922270E-01
16	17.500	2.100000E 00	1.064700E-01	2.063880E 00	5.911970E-01
17	18.500	2.200000E 00	1.115400E-01	2.162160E 00	1.030113E 00
18	19.795	2.350000E 00	1.191450E-01	2.309580E 00	1.831115E 00
3000	17.675	2.114800E 00	1.072204E-01	2.078425E 00	6.823000E-01
2500	17.831	2.125100E 00	1.077426E-01	2.080548E 00	7.377000E-01
2000	18.016	2.138000E 00	1.083966E-01	2.101226E 00	8.092000E-01
1500	18.243	2.154800E 00	1.092484E-01	2.117737E 00	9.066000E-01
1000	18.537	2.177300E 00	1.103891E-01	2.139850E 00	1.050500E 00
500	18.959	2.210400E 00	1.120673E-01	2.172381E 00	1.295600E 00
68	19.555	2.261500E 00	1.146580E-01	2.222602E 00	1.747200E 00

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
BISMUTH	BI	7.5000	9.747	83	209.000	0.00960	0.99680
N/CC - SOLID MATERIAL	0.0280970						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	4.800000E 00	4.608000E-02	4.784640E 00	1.609600E-06
1	0.500	6.400000E 00	6.144000E-02	6.379520E 00	2.064000E-06
2	1.000	8.200000E 00	7.872000E-02	8.173760E 00	2.649600E-06
3	1.500	6.300000E 00	6.048000E-02	6.279840E 00	3.392000E-06
4	2.000	4.400000E 00	4.224000E-02	4.385920E 00	4.384000E-06
5	2.500	4.600000E 00	4.416000E-02	4.585280E 00	5.600000E-06
6	3.000	6.200000E 00	5.952000E-02	6.180160E 00	7.200000E-06
7	3.500	7.200000E 00	6.912000E-02	7.176960E 00	9.248000E-06
8	4.000	8.100000E 00	7.776000E-02	8.074080E 00	1.187200E-05
9	6.000	1.080000E 01	1.036800E-01	1.076544E 01	3.232000E-05
10	8.000	1.140000E 01	1.094400E-01	1.136352E 01	8.768000E-05
11	10.000	9.000000E 00	8.640000E-02	8.971200E 00	2.387200E-04
12	12.000	9.200000E 00	8.832000E-02	9.170560E 00	6.496000E-04
13	14.000	9.200000E 00	8.832000E-02	9.170560E 00	1.763200E-03
14	15.500	9.200000E 00	8.832000E-02	9.170560E 00	3.318400E-03
15	16.500	8.990000E 00	8.630400E-02	8.961232E 00	6.371200E-03
16	17.500	8.690000E 00	8.342400E-02	8.662192E 00	9.603200E-03
17	18.500	8.480000E 00	8.140800E-02	8.452864E 00	1.673280E-02
18	19.795	9.000000E 00	8.640000E-02	8.971200E 00	2.974400E-02
3000	17.675	9.111000E 00	8.746560E-02	9.081845E 00	1.110000E-02
2500	17.831	9.099800E 00	8.735808E-02	9.070680E 00	1.200000E-02
2000	18.016	9.085000E 00	8.721600E-02	9.055928E 00	1.310000E-02
1500	18.243	9.064500E 00	8.701920E-02	9.035493E 00	1.470000E-02
1000	18.537	9.034000E 00	8.672640E-02	9.005091E 00	1.710000E-02
500	18.959	8.977500E 00	8.618400E-02	8.948772E 00	2.100000E-02
68	19.555	8.832600E 00	8.479296E-02	8.804336E 00	2.840000E-02

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
LEAD	PB	7.6000	11.35	82	207.210	0.00970	0.99680
N/CC - SOLID MATERIAL	0.0330005						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	4.000000E 00	3.880000E-02	3.987200E 00	8.551000E-06
1	0.500	6.450000E 00	6.256500E-02	6.429360E 00	1.096500E-05
2	1.000	7.850000E 00	7.614500E-02	7.824880E 00	1.407600E-05
3	1.500	6.600000E 00	6.402000E-02	6.578880E 00	1.802000E-05
4	2.000	5.400000E 00	5.238000E-02	5.382720E 00	2.329000E-05
5	2.500	5.650000E 00	5.480500E-02	5.631920E 00	2.975000E-05
6	3.000	5.900000E 00	5.723000E-02	5.881120E 00	3.825000E-05
7	3.500	6.150000E 00	5.965500E-02	6.130320E 00	4.913000E-05
8	4.000	1.000000E 01	9.700000E-02	9.968000E 00	6.307000E-05
9	6.000	1.080000E 01	1.047600E-01	1.076544E 01	1.717000E-04
10	8.000	1.140000E 01	1.105800E-01	1.136352E 01	4.658000E-04
11	10.000	1.140000E 01	1.105800E-01	1.136352E 01	1.268200E-03
12	12.000	1.140000E 01	1.105800E-01	1.136352E 01	3.451000E-03
13	14.000	1.140000E 01	1.105800E-01	1.136352E 01	9.367000E-03
14	15.500	1.140000E 01	1.105800E-01	1.136352E 01	1.762900E-02
15	16.500	1.135000E 01	1.100950E-01	1.131368E 01	3.384700E-02
16	17.500	1.120000E 01	1.086400E-01	1.116416E 01	5.101700E-02
17	18.500	1.060000E 01	1.028200E-01	1.056608E 01	8.889300E-02
18	19.795	8.000000E 00	7.760000E-02	7.974400E 00	1.580150E-01
3000	17.675	1.075520E 01	1.043254E-01	1.072078E 01	5.890000E-02
2500	17.831	1.068180E 01	1.036135E-01	1.064762E 01	6.370000E-02
2000	18.016	1.057920E 01	1.026182E-01	1.054535E 01	6.980000E-02
1500	18.243	1.042590E 01	1.011312E-01	1.039254E 01	7.820000E-02
1000	18.537	1.017190E 01	9.866743E-02	1.013935E 01	9.070000E-02
500	18.959	9.665100E 00	9.375147E-02	9.634172E 00	1.118000E-01
68	19.555	8.544300E 00	8.287971E-02	8.516958E 00	1.508000E-01

DESIGNATION	FORMULA	CODE	DENSITY
*LEAD	*PB	7.6100	11.35000
CODE	7.6000		
DESIGNATION	LEAD		
WEIGHT	1.000000		
FRACTION			
N/CC - EACH			
CONSTITUENT	0.0330005		

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0 0.	1.320020E-01	1.280420E-03	1.315796E-01	2.821873E-07
1 0.500	2.128532E-01	2.064676E-03	2.121721E-01	3.618505E-07
2 1.000	2.590539E-01	2.512823E-03	2.582250E-01	4.645151E-07
3 1.500	2.178033E-01	2.112692E-03	2.171063E-01	5.946690E-07
4 2.000	1.782027E-01	1.728566E-03	1.776325E-01	7.685817E-07
5 2.500	1.864528E-01	1.808593E-03	1.858562E-01	9.817649E-07
6 3.000	1.947030E-01	1.888619E-03	1.940799E-01	1.262269E-06
7 3.500	2.029531E-01	1.968645E-03	2.023036E-01	1.621315E-06
8 4.000	3.300050E-01	3.201049E-03	3.209490E-01	2.081342E-06
9 6.000	3.464054E-01	3.457133E-03	3.552649E-01	5.666186E-06
10 8.000	3.762057E-01	3.649196E-03	3.750019E-01	1.537163E-05
11 10.000	3.762057E-01	3.649196E-03	3.750019E-01	4.185124E-05
12 12.000	3.762057E-01	3.649196E-03	3.750019E-01	1.138847E-04
13 14.000	3.762057E-01	3.649196E-03	3.750019E-01	3.091157E-04
14 15.500	3.762057E-01	3.649196E-03	3.750019E-01	5.817659E-04
15 16.500	3.745557E-01	3.633190E-03	3.733571E-01	1.116968E-03
16 17.500	3.696056E-01	3.585175E-03	3.684229E-01	1.683587E-03
17 18.500	3.498053E-01	3.393112E-03	3.486860E-01	2.933514E-03
18 19.795	2.640040E-01	2.560839E-03	2.631592E-01	5.214575E-03
3000 17.675	3.549270E-01	3.442792E-03	3.537912E-01	1.943730E-03
2500 17.831	3.525048E-01	3.419296E-03	3.513768E-01	2.102132E-03
2000 18.016	3.491189E-01	3.386453E-03	3.480017E-01	2.303435E-03
1500 18.243	3.440599E-01	3.337381E-03	3.429590E-01	2.580639E-03
1000 18.537	3.356778E-01	3.256075E-03	3.346036E-01	2.993146E-03
500 18.959	3.189532E-01	3.093846E-03	3.179325E-01	3.689456E-03
68 19.555	2.819662E-01	2.735072E-03	2.810639E-01	4.976476E-03

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
NDA MERCURY	NCA HG	7.7020	13.546	80	200.610	0.00993	0.99668
N/CC - SOLID MATERIAL	0.0406810						

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0 0.	4.440000E 00	6.770000E 00	3.400000E 00	1.500000E-02
1 0.500	6.070000E 00	6.790000E 00	3.520000E 00	1.860000E-02
2 1.000	7.240000E 00	3.440000E 00	4.280000E 00	2.830000E-02
3 1.500	6.610000E 00	1.880000E 00	4.280000E 00	3.720000E-02
4 2.000	5.360000E 00	1.860000E 00	4.100000E 00	5.370000E-02
5 2.500	5.340000E 00	7.750000E-01	4.090000E 00	7.230000E-02
6 3.000	6.640000E 00	1.770000E-01	5.020000E 00	9.680000E-02
7 3.500	8.270000E 00	2.050000E-01	5.930000E 00	1.413000E-01
8 4.000	9.200000E 00	7.510000E-02	9.110000E 00	2.370000E-01
9 6.000	1.000000E 01	9.300000E-02	9.320000E 00	1.110000E 00
10 8.000	1.260000E 01	1.250000E-01	1.260000E 01	7.240000E-01
11 10.000	1.700000E 01	1.680000E-01	1.670000E 01	9.840000E 00
12 12.000	1.770000E 01	2.840000E-01	1.760000E 01	8.210000E 00
13 14.000	1.490000E 01	1.940000E-02	1.400000E 01	5.460000E 00
14 15.500	1.600000E 01	1.550000E-01	1.650000E 01	2.960000E 00
15 16.500	1.940000E 01	2.020000E-01	1.940000E 01	4.260000E 01
16 17.500	3.080000E 01	2.970000E-01	3.070000E 01	8.680000E 01
17 18.500	3.100000E 01	3.170000E-01	3.090000E 01	1.850000E 02
18 19.795	3.330000E 01	3.170000E-01	3.310000E 01	3.540000E 02
3000 17.675	2.730000E 01	2.710000E-01	2.720000E 01	1.060000E 02
2500 17.831	2.810000E 01	2.800000E-01	2.800000E 01	1.180000E 02
2000 18.016	2.890000E 01	2.870000E-01	2.880000E 01	1.330000E 02
1500 18.243	2.970000E 01	2.950000E-01	2.960000E 01	1.540000E 02
1000 18.537	3.080000E 01	3.060000E-01	3.070000E 01	1.870000E 02
500 18.959	3.080000E 01	3.060000E-01	3.070000E 01	2.350000E 02
68 19.555	2.960000E 01	2.940000E-01	2.950000E 01	3.230000E 02

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CHLDRINE	CL	7.7400	0.	17	35.457	0.05585	0.98100

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	1.900000E 00	1.061150E-01	1.863900E 00	7.000000E-02
1	0.500	2.900000E 00	1.619650E-01	2.844900E 00	7.000000E-02
2	1.000	2.800000E 00	1.563800E-01	2.746800E 00	4.500000E-02
3	1.500	2.100000E 00	1.172850E-01	2.060100E 00	3.300000E-03
4	2.000	2.100000E 00	1.172850E-01	2.060100E 00	4.329200E-03
5	2.500	2.100000E 00	1.172850E-01	2.060100E 00	5.530000E-03
6	3.000	2.100000E 00	1.172850E-01	2.060100E 00	7.110000E-03
7	3.500	2.100000E 00	1.172850E-01	2.060100E 00	9.132400E-03
8	4.000	2.100000E 00	1.172850E-01	2.060100E 00	1.172360E-02
9	6.000	3.550000E 00	1.982675E-01	3.482550E 00	3.191600E-02
10	8.000	2.000000E 00	1.117000E-01	1.962000E 00	8.658400E-02
11	10.000	1.800000E 00	1.005300E-01	1.765800E 00	2.357360E-01
12	12.000	8.100000E 00	4.523850E-01	7.946100E 00	6.414800E-01
13	14.000	1.630000E 01	9.103550E-01	1.599030E 01	1.741160E 00
14	15.500	1.630000E 01	9.103550E-01	1.599030E 01	3.276920E 00
15	16.500	1.630000E 01	9.103550E-01	1.599030E 01	6.291560E 00
16	17.500	1.730000E 01	9.667050E-01	1.697130E 01	9.483160E 00
17	18.500	1.750000E 01	9.773750E-01	1.716750E 01	1.652364E 01
18	19.795	1.810000E 01	1.010885E 00	1.775610E 01	2.937220E 01
3000	17.675	1.599900E 01	8.935441E-01	1.569502E 01	1.094200E 01
2500	17.831	1.599900E 01	8.935441E-01	1.569502E 01	1.183000E 01
2000	18.016	1.599900E 01	8.935441E-01	1.569502E 01	1.297600E 01
1500	18.243	1.599900E 01	8.935441E-01	1.569502E 01	1.453800E 01
1000	18.537	1.599900E 01	8.935441E-01	1.569502E 01	1.684500E 01
500	18.959	1.599900E 01	8.935441E-01	1.569502E 01	2.077500E 01
68	19.555	1.599900E 01	8.935441E-01	1.569502E 01	2.801600E 01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CF BORON	B.CFINE	8.0010	2.45	5	10.820	0.	0.
N/CC - SOLID MATERIAL	C.1364188						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	1.358136E 00	1.180540E 00	1.136076E 00	5.873502E-02
1	0.500	1.459778E 00	8.209532E-01	1.158575E 00	6.096403E-02
2	1.000	1.529196E 00	5.318591E-01	1.466806E 00	5.294502E-02
3	1.500	2.024267E 00	3.902758E-01	1.658784E 00	6.503560E-02
4	2.000	2.467463E 00	2.793493E-01	1.262111E 00	4.312673E-02
5	2.500	1.971736E 00	2.641936E-01	1.362797E 00	5.309774E-02
6	3.000	3.662334E 00	6.393968E-01	3.415112E 00	1.285007E-01
7	3.500	3.399252E 00	5.969086E-01	3.188158E 00	2.186933E-01
8	4.000	3.901467E 00	6.850979E-01	3.659188E 00	3.322012E-01
9	6.000	4.463989E 00	7.838766E-01	4.186776E 00	7.354388E-01
10	8.000	4.400000E 00	7.726400E-01	4.126760E 00	1.478631E 00
11	10.000	4.399996E 00	7.726393E-01	4.126757E 00	2.914652E 00
12	12.000	4.399999E 00	7.726395E-01	4.126759E 00	1.118557E 01
13	14.000	4.400000E 00	7.726399E-01	4.126759E 00	3.584522E 01
14	15.500	4.400000E 00	7.726400E-01	4.126760E 00	8.221601E 01
15	16.500	4.400000E 00	7.726399E-01	4.126760E 00	1.460401E 02
16	17.500	4.400000E 00	7.726400E-01	4.126760E 00	2.421873E 02
17	18.500	4.400000E 00	7.726399E-01	4.126760E 00	3.993381E 02
18	19.795	4.389671E 00	7.708262E-01	4.117072E 00	5.847372E 02
3000	17.675	4.000000E 00	7.024000E-01	3.751600E 00	2.615100E 02
2500	17.831	4.000000E 00	7.024000E-01	3.751600E 00	2.827300E 02
2000	18.016	4.000000E 00	7.024000E-01	3.751600E 00	3.101400E 02
1500	18.243	4.000000E 00	7.024000E-01	3.751600E 00	3.474700E 02
1000	18.537	4.000000E 00	7.024000E-01	3.751600E 00	4.026000E 02
500	18.959	4.000000E 00	7.024000E-01	3.751600E 00	4.965200E 02
68	19.555	4.000000E 00	7.024000E-01	3.751600E 00	6.695900E 02

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
10 BORON	B 10	8.0200	2.45	5	10.016	0.18880	0.93280
N/CC - SOLID MATERIAL	0.1473694						

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0 C.	1.400000E 00	2.643200E-01	1.305920E 00	2.017030E-01
1 0.500	1.600000E 00	3.020800E-01	1.492480E 00	2.586450E-01
2 1.000	1.800000E 00	3.398400E-01	1.679040E 00	3.320280E-01
3 1.500	2.300000E 00	4.342400E-01	2.145440E 00	4.250600E-01
4 2.000	2.050000E 00	3.870400E-01	1.912240E 00	5.493700E-01
5 2.500	3.150000E 00	5.947200E-01	2.938320E 00	7.017500E-01
6 3.000	4.800000E 00	9.062400E-01	4.477440E 00	9.022500E-01
7 3.500	4.850000E 00	9.156800E-01	4.524080E 00	1.158890E 00
8 4.000	4.900000E 00	9.251200E-01	4.570720E 00	1.487710E 00
9 4.500	5.100000E 00	9.628800E-01	4.757280E 00	4.050100E 00
10 5.000	5.000000E 00	9.440000E-01	4.664000E 00	1.098740E 01
11 10.000	4.500000E 00	8.496000E-01	4.197600E 00	2.991460E 01
12 12.000	4.000000E 00	7.552000E-01	3.731200E 00	8.140300E 01
13 14.000	4.000000E 00	7.552000E-01	3.731200E 00	2.209510E 02
14 15.500	4.000000E 00	7.552000E-01	3.731200E 00	4.158170E 02
15 16.500	4.000000E 00	7.552000E-01	3.731200E 00	7.983910E 02
16 17.500	4.000000E 00	7.552000E-01	3.731200E 00	1.203401E 03
17 18.500	4.000000E 00	7.552000E-01	3.731200E 00	2.096829E 03
18 19.795	4.000000E 00	7.552000E-01	3.731200E 00	3.727295E 03
3000 17.675	4.000000E 00	7.552000E-01	3.731200E 00	1.388900E 03
2500 17.831	4.000000E 00	7.552000E-01	3.731200E 00	1.501700E 03
2000 18.016	4.000000E 00	7.552000E-01	3.731200E 00	1.647200E 03
1500 18.243	4.000000E 00	7.552000E-01	3.731200E 00	1.845500E 03
1000 18.537	4.000000E 00	7.552000E-01	3.731200E 00	2.138300E 03
500 18.959	4.000000E 00	7.552000E-01	3.731200E 00	2.637100E 03
68 19.555	4.000000E 00	7.552000E-01	3.731200E 00	3.556400E 03

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CF 10 BORON	B 10 CFINE	8.0210	2.45	5	10.016	0.	0.
N/CC - SOLID MATERIAL	0.1473694						

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0 0.	1.441785E 00	9.694629E-01	8.934764E-01	1.329460E-02
1 0.500	1.506134E 00	8.620322E-01	1.000338E 00	2.784158E-02
2 1.000	1.753640E 00	7.051461E-01	1.085404E 00	1.192292E-01
3 1.500	1.764054E 00	5.470276E-01	1.096834E 00	2.911770E-01
4 2.000	2.064233E 00	4.415455E-01	1.214948E 00	2.109933E-01
5 2.500	2.852536E 00	5.359558E-01	2.358319E 00	2.947295E-01
6 3.000	3.877234E 00	6.539903E-01	3.421421E 00	5.925973E-01
7 3.500	4.003564E 00	7.030258E-01	3.754943E 00	8.459459E-01
8 4.000	3.105899E 00	5.453959E-01	2.913023E 00	1.728713E 00
9 4.500	1.655568E 00	2.907177E-01	1.552757E 00	4.204739E 00
10 5.000	1.579439E 00	2.773495E-01	1.481356E 00	1.085285E 01
11 10.000	3.950898E 00	6.937771E-01	3.705546E 00	2.966902E 01
12 12.000	4.000000E 00	7.023995E-01	3.751599E 00	8.068068E 01
13 14.000	4.000000E 00	7.024000E-01	3.751600E 00	2.033704E 02
14 15.500	4.000000E 00	7.024000E-01	3.751600E 00	4.252149E 02
15 16.500	4.000000E 00	7.023999E-01	3.751600E 00	7.418094E 02
16 17.500	4.000000E 00	7.024000E-01	3.751600E 00	1.223126E 03
17 18.500	4.000000E 00	7.024000E-01	3.751600E 00	2.016790E 03
18 19.795	4.000000E 00	7.037634E-01	3.751073E 00	2.957629E 03
3000 17.676	4.000000E 00	7.552000E-01	3.731200E 00	1.388900E 03
2500 17.831	4.000000E 00	7.552000E-01	3.731200E 00	1.501700E 03
2000 18.016	4.000000E 00	7.552000E-01	3.731200E 00	1.647200E 03
1500 18.243	4.000000E 00	7.552000E-01	3.731200E 00	1.845500E 03
1000 18.537	4.000000E 00	7.552000E-01	3.731200E 00	2.138300E 03
500 18.959	4.000000E 00	7.552000E-01	3.731200E 00	2.637100E 03
68 19.555	4.000000E 00	7.552000E-01	3.731200E 00	3.556400E 03

DESIGNATION	FORMULA	CODE	DENSITY
*BOR CARBIDE	*B4C	8.0500	2.51900
CODE	3.3000	8.0000	
DESIGNATION	CARBON	BORON	
WEIGHT FRACTION	0.217230	0.782770	
N/CC - SOLID MATERIAL	0.0274407	0.1097920	

LETHARGY LEVEL		SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	4.871890E-01	8.474840E-02	4.572280E-01	4.169500E-03
1	C.500	4.693530E-01	8.191420E-02	4.403900E-01	5.346600E-03
2	1.000	4.899330E-01	8.518450E-02	4.598180E-01	6.863500E-03
3	1.500	4.899330E-01	8.518450E-02	4.598180E-01	8.786700E-03
4	2.000	4.995370E-01	8.671060E-02	4.688840E-01	1.135630E-02
5	2.500	5.173740E-01	8.954480E-02	4.857220E-01	1.450630E-02
6	3.000	5.330150E-01	9.203020E-02	5.004870E-01	1.865090E-02
7	3.500	5.442660E-01	9.381790E-02	5.111080E-01	2.395610E-02
8	4.000	5.544190E-01	9.543130E-02	5.206930E-01	3.075330E-02
9	6.000	5.681390E-01	9.761140E-02	5.336450E-01	8.372190E-02
10	8.000	5.681390E-01	9.761140E-02	5.336450E-01	2.271770E-01
11	10.000	5.681390E-01	9.761140E-02	5.336450E-01	6.183820E-01
12	12.000	5.681390E-01	9.761140E-02	5.336450E-01	1.682730E 00
13	14.000	5.681390E-01	9.761140E-02	5.336450E-01	4.567400E 00
14	15.500	5.708830E-01	9.804750E-02	5.362350E-01	8.596000E 00
15	16.500	5.708830E-01	9.804750E-02	5.362350E-01	1.650400E 01
16	17.500	5.708830E-01	9.804750E-02	5.362350E-01	2.487620E 01
17	18.500	5.708830E-01	9.804750E-02	5.362350E-01	4.334480E 01
18	19.795	5.736270E-01	9.848350E-02	5.388250E-01	7.704910E 01
3000	17.675	5.707630E-01	9.802830E-02	5.361210E-01	2.871170E 01
2500	17.831	5.706530E-01	9.801080E-02	5.360170E-01	3.104150E 01
2000	18.016	5.704880E-01	9.798470E-02	5.358620E-01	3.405090E 01
1500	18.243	5.702300E-01	9.794370E-02	5.356180E-01	3.814940E 01
1000	18.537	5.698080E-01	9.787650E-02	5.352200E-01	4.420230E 01
500	18.959	5.690500E-01	9.775620E-02	5.345050E-01	5.451400E 01
68	19.555	5.675080E-01	9.751110E-02	5.330490E-01	7.351570E 01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
R GADOLINIUM	REV GD	8.2040	7.868	64	156.900	0.01280	0.99570
N/CC - SOLID MATERIAL	0.0302118						

LETHARGY LEVEL		SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	8.000000E 00	1.024000E-01	7.965600E 00	3.720000E-02
1	C.500	8.000000E 00	1.024000E-01	7.965600E 00	4.770000E-02
2	1.000	7.000000E 00	8.960000E-02	6.969900E 00	6.120000E-02
3	1.500	6.000000E 00	7.680000E-02	5.974200E 00	7.830000E-02
4	2.000	5.000000E 00	6.400000E-02	4.978500E 00	1.010000E-01
5	2.500	5.000000E 00	6.400000E-02	4.978500E 00	1.290000E-01
6	3.000	5.000000E 00	6.400000E-02	4.978500E 00	1.670000E-01
7	3.500	5.000000E 00	6.400000E-02	4.978500E 00	2.130000E-01
8	4.000	5.000000E 00	6.400000E-02	4.978500E 00	2.750000E-01
9	6.000	5.000000E 00	6.400000E-02	4.978500E 00	7.470000E-01
10	8.000	5.000000E 00	6.400000E-02	4.978500E 00	2.025000E 00
11	10.000	5.000000E 00	6.400000E-02	4.978500E 00	5.505000E 00
12	12.000	1.000000E 01	1.280000E-01	9.957000E 00	1.500000E 01
13	14.000	2.000000E 01	2.560000E-01	1.991400E 01	5.000000E 01
14	15.500	5.500000E 01	7.040000E-01	5.476350E 01	1.500000E 02
15	16.500	1.000000E 01	1.280000E-01	9.957000E 00	4.000000E 01
16	17.500	4.000000E 01	5.120000E-01	3.982800E 01	9.600000E 02
17	18.500	1.200000E 02	1.536000E 00	1.194840E 02	1.138000E 04
18	19.795	1.633000E 02	2.090240E 00	1.625978E 02	4.600000E 04
3000	17.675	7.129000E 01	9.125120E-01	7.098345E 01	5.129000E 03
2500	17.831	7.914000E 01	1.012992E 00	7.874970E 01	6.357000E 03
2000	18.016	8.897000E 01	1.138816E 00	8.858743E 01	8.106000E 03
1500	18.243	1.014000E 02	1.297920E 00	1.009640E 02	1.073000E 04
1000	18.537	1.174000E 02	1.602770E 00	1.168952E 02	1.495800E 04
500	18.959	1.372000E 02	1.756160E 00	1.366100E 02	2.255200E 04
68	19.555	1.543000E 02	1.975040E 00	1.536365E 02	3.594300E 04

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
GD CFINE N/CC - SOLID MATERIAL	GD CFINE 0.0302118	8.2070	7.868	64	156.900	0.	0.

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0 0.	5.226122E 00	4.373752E 00	1.712041E 00	1.009543E-02
1 0.500	5.342967E 00	4.411704E 00	2.595722E 00	1.493843E-02
2 1.000	5.697935E 00	4.415947E 00	3.160139E 00	2.561926E-02
3 1.500	6.568459E 00	3.769802E 00	3.431181E 00	5.883824E-02
4 2.000	7.197342E 00	2.632007E 00	4.036480E 00	1.219759E-01
5 2.500	7.245276E 00	1.280429E 00	5.290737E 00	1.811033E-01
6 3.000	7.264292E 00	5.025002E-01	5.505376E 00	2.479980E-01
7 3.500	7.384434E 00	2.316186E-01	5.960405E 00	3.945766E-01
8 4.000	8.777656E 00	1.392298E-01	7.660912E 00	4.970472E-01
9 6.000	1.126847E 01	1.543781E-01	1.121664E 01	1.178409E 00
10 8.000	1.225512E 01	1.678951E-01	1.219874E 01	4.105411E 00
11 10.000	1.746989E 01	2.393376E-01	1.738953E 01	1.298148E 01
12 12.000	1.507965E 01	2.065911E-01	1.501028E 01	2.818009E 01
13 14.000	1.334149E 01	1.827783E-01	1.329011E 01	3.933678E 01
14 15.500	1.264371E 01	1.732189E-01	1.258555E 01	1.216183E 02
15 16.500	2.498026E 01	3.422295E-01	2.486535E 01	1.267334E 02
16 17.500	6.631609E 01	9.085305E-01	6.601104E 01	2.188572E 03
17 18.500	1.364906E 02	1.889921E 00	1.358627E 02	1.473954E 04
18 19.795	1.643202E 02	2.247600E 00	1.635655E 02	3.274337E 04
3000 17.675	7.129000E 01	9.125120E-01	7.098345E 01	5.129000E 03
2500 17.831	7.914000E 01	1.012992E 00	7.879970E 01	6.357000E 03
2000 18.016	8.897000E 01	1.138816E 00	8.858743E 01	8.106000E 03
1500 18.243	1.014000E 02	1.297920E 00	1.009640E 02	1.073000E 04
1000 18.537	1.174000E 02	1.502720E 00	1.168952E 02	1.495800E 04
500 18.959	1.372000E 02	1.756160E 00	1.366100E 02	2.255200E 04
68 19.555	1.543000E 02	1.975040E 00	1.536365E 02	3.594300E 04

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
R SAMARIUM N/CC - SOLID MATERIAL	R SM 0.0302141	8.2240	7.54	62	150.348	0.	0.

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0 0.	4.800000E 00	6.190000E 00	2.905000E 00	6.000000E-02
1 0.500	5.304000E 00	6.424000E 00	3.201000E 00	6.570000E-02
2 1.000	5.368000E 00	4.490000E 00	3.211000E 00	7.840000E-02
3 1.500	5.303000E 00	1.574000E 00	3.255000E 00	8.880000E-02
4 2.000	5.390000E 00	1.290000E 00	4.499000E 00	1.100000E-01
5 2.500	7.126000E 00	1.222000E 00	5.639000E 00	1.340000E-01
6 3.000	7.514000E 00	1.266000E 00	6.041000E 00	1.420000E-01
7 3.500	7.261000E 00	9.500000E-01	6.595000E 00	1.960000E-01
8 4.000	7.729000E 00	3.890000E-01	7.302000E 00	3.000000E-01
9 6.000	1.298200E 01	1.750000E-01	1.292400E 01	7.290000E-01
10 8.000	1.530400E 01	2.060000E-01	1.523500E 01	6.164000E 00
11 10.000	1.000000E 01	1.350000E-01	9.955000E 00	1.400000E 01
12 12.000	6.868000E 00	9.200000E-02	6.837000E 00	2.000000E 01
13 14.000	1.023000E 03	1.377000E 01	1.018397E 03	4.310000E 02
14 15.500	1.400000E 01	1.880000E-01	1.393700E 01	1.250000E 02
15 16.500	1.554600E 01	2.020000E-01	1.493300E 01	2.370000E 02
16 17.500	7.848000E 01	1.077000E 00	7.964000E 01	7.860000E 02
17 18.500	8.000000E 01	1.050000E 00	7.764900E 01	1.130100E 04
18 19.795	3.100000E 01	4.170000E-01	3.086100E 01	5.600000E 03
3000 17.675	4.333900E 01	5.830000E-01	4.314400E 01	2.699000E 03
2500 17.831	4.756300E 01	6.400000E-01	4.734900E 01	3.270490E 03
2000 18.016	5.302500E 01	7.140000E-01	5.278600E 01	4.050500E 03
1500 18.243	5.980100E 01	8.050000E-01	5.953200E 01	5.118210E 03
1000 18.537	6.697500E 01	9.010000E-01	6.667400E 01	6.519840E 03
500 18.959	6.915700E 01	9.310000E-01	6.884600E 01	7.952720E 03
68 19.555	5.205400E 01	7.010000E-01	5.182000E 01	7.759360E 03

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
149 SAMARIUM N/CC - SOLID MATERIAL	R SM 149 0.0304950	8.2250	7.54	62	148.963	0.	0.

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	4.800000E 00	6.190000E 00	2.905000E 00	1.200000E-01
1	0.500	5.304000E 00	6.424000E 00	3.201000E 00	1.320000E-01
2	1.000	5.368000E 00	4.490000E 00	3.211000E 00	1.560000E-01
3	1.500	6.303000E 00	1.574000E 00	3.255000E 00	1.780000E-01
4	2.000	7.390000E 00	1.290000E 00	4.499000E 00	2.200000E-01
5	2.500	7.126000E 00	1.222000E 00	5.639000E 00	2.680000E-01
6	3.000	7.514000E 00	1.266000E 00	6.041000E 00	2.840000E-01
7	3.500	7.261000E 00	9.500000E-01	6.595000E 00	3.920000E-01
8	4.000	7.729000E 00	3.890000E-01	7.302000E 00	6.910000E-01
9	6.000	1.298200E 01	1.750000E-01	1.292400E 01	1.300000E 00
10	8.000	1.530400E 01	2.060000E-01	1.523500E 01	2.862000E 00
11	10.000	3.919400E 01	5.280000E-01	3.901800E 01	1.275100E 01
12	12.000	9.200000E 01	1.238000E 00	9.158600E 01	1.780000E 02
13	14.000	2.600000E 01	3.500000E-01	2.588300E 01	2.170000E 02
14	15.500	1.586400E 01	2.140000E-01	1.557000E 01	1.550000E 02
15	16.500	9.200000E 01	1.238000E 00	9.158600E 01	1.957000E 03
16	17.500	1.490000E 02	2.006000E 00	1.483300E 02	6.482000E 03
17	18.500	3.565900E 02	4.800000E 00	3.549850E 02	8.158600E 04
18	19.795	2.100000E 02	2.827000E 00	2.090550E 02	4.080000E 04
3000	17.675	1.958020E 02	2.635000E 00	1.949210E 02	1.942450E 04
2500	17.831	2.262420E 02	3.045000E 00	2.252240E 02	2.354830E 04
2000	18.016	2.655960E 02	3.575000E 00	2.644010E 02	2.917690E 04
1500	18.243	3.144730E 02	4.233000E 00	3.130580E 02	3.688170E 04
1000	18.537	3.662350E 02	4.930000E 00	3.645870E 02	4.699440E 04
500	18.959	3.819220E 02	5.141000E 00	3.802030E 02	5.732240E 04
68	19.555	2.585270E 02	3.480000E 00	2.573640E 02	5.587900E 04

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
CF SAMARIUM N/CC - SOLID MATERIAL	SM CFINE 0.0302141	8.2260	7.54	62	150.348	0.	0.

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	5.226122E 00	4.373752E 00	1.712041E 00	1.009543E-02
1	0.500	5.342967E 00	4.411704E 00	2.595722E 00	1.493843E-02
2	1.000	5.697935E 00	4.415947E 00	3.160139E 00	2.561926E-02
3	1.500	6.568459E 00	3.769802E 00	3.431181E 00	5.883824E-02
4	2.000	7.197342E 00	2.632097E 00	4.036480E 00	1.219759E-01
5	2.500	7.245876E 00	1.280429E 00	5.290737E 00	1.911033E-01
6	3.000	7.264292E 00	5.025002E-01	5.505376E 00	2.479980E-01
7	3.500	7.384434E 00	2.316186E-01	5.960405E 00	3.945766E-01
8	4.000	8.777656E 00	1.385336E-01	7.661144E 00	4.970472E-01
9	6.000	1.187327E 01	1.591018E-01	1.181984E 01	1.150883E 00
10	8.000	1.441552E 01	1.931680E-01	1.435065E 01	2.556717E 00
11	10.000	4.886924E 01	6.548475E-01	4.864932E 01	1.520756E 01
12	12.000	6.837851E 01	9.162723E-01	6.807079E 01	4.474752E 01
13	14.000	6.616889E 02	8.866637E 00	6.587113E 02	5.080796E 02
14	15.500	1.151966E 01	1.543635E-01	1.146782E 01	3.415463E 01
15	16.500	1.503686E 01	2.014939E-01	1.496920E 01	3.223203E 02
16	17.500	2.412829E 01	3.233191E-01	2.401972E 01	8.207149E 02
17	18.500	9.237956E 01	1.237886E 00	9.196386E 01	1.118522E 04
18	19.795	3.257678E 01	4.365289E-01	3.243019E 01	6.582759E 03
3000	17.675	4.333900E 01	5.830000E-01	4.314400E 01	2.699000E 03
2500	17.831	4.756300E 01	6.400000E-01	4.734900E 01	3.270490E 03
2000	18.016	5.302500E 01	7.140000E-01	5.278600E 01	4.050500E 03
1500	18.243	5.980100E 01	8.050000E-01	5.953200E 01	5.118210E 03
1000	18.537	6.697500E 01	9.010000E-01	6.667400E 01	6.519840E 03
500	18.959	6.915700E 01	9.310000E-01	6.884600E 01	7.952720E 03
68	19.555	5.407000E 01	7.245380E-01	5.382668E 01	7.845000E 03

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CF 149 SM	CF 149 SM	8.2270	7.54	62	148.963	0.	0.
N/CC - SOLID MATERIAL	0.0304950						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	5.226122E 00	4.373752E 00	1.712041E 00	1.009543E-02
1	0.500	5.342967E 00	4.411704E 00	2.595722E 00	1.493843E-02
2	1.000	5.697935E 00	4.415947E 00	3.160139E 00	2.561926E-02
3	1.500	6.568459E 00	3.769802E 00	3.431181E 00	5.883824E-02
4	2.000	7.197342E 00	2.632007E 00	4.036480E 00	1.219759E-01
5	2.500	7.245876E 00	1.280429E 00	5.290737E 00	1.811033E-01
6	3.000	7.264292E 00	5.025002E-01	5.505376E 00	2.479980E-01
7	3.500	7.384434E 00	2.316186E-01	5.960405E 00	3.945766E-01
8	4.000	8.777656E 00	1.385336E-01	7.661144E 00	4.970472E-01
9	6.000	1.188786E 01	1.592974E-01	1.183437E 01	1.153670E 00
10	8.000	2.937990E 01	3.936907E-01	2.924769E 01	3.780906E 00
11	10.000	8.133413E 01	1.089878E 00	8.096814E 01	1.138706E 01
12	12.000	1.853113E 02	2.483973E 00	1.845371E 02	1.617771E 02
13	14.000	4.190552E 01	5.615344E-01	4.171694E 01	3.384576E 02
14	15.500	5.413334E 00	7.253444E-02	5.389974E 00	4.517513E 01
15	16.500	3.549886E 01	4.756847E-01	3.533911E 01	2.239541E 03
16	17.500	9.037722E 01	1.211055E 00	8.997052E 01	5.798825E 03
17	18.500	6.001165E 02	8.041562E 00	5.974160E 02	8.061029E 04
18	19.795	1.898458E 02	2.544341E 00	1.089915E 02	4.725087E 04
3000	17.675	1.958020E 02	2.635000E 00	1.949210E 02	1.942450E 04
2500	17.831	2.262420E 02	3.045000E 00	2.252240E 02	2.354830E 04
2000	18.016	2.655960E 02	3.575000E 00	2.644010E 02	2.917690E 04
1500	18.243	3.144730E 02	4.233000E 00	3.130580E 02	3.688170E 04
1000	18.537	3.662350E 02	4.930000E 00	3.645870E 02	4.699440E 04
500	18.959	3.819220E 02	5.141000E 00	3.802030E 02	5.732240E 04
60	19.555	2.585270E 02	3.480000E 00	2.573640E 02	5.587900E 04

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
TN EU	TN EU	9.2430	5.166	63	152.000	0.	0.
N/CC - SOLID MATERIAL	0.0204761						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	5.226120E 00	4.373750E 00	1.712040E 00	1.009500E-02
1	0.500	5.342970E 00	4.411700E 00	2.595720E 00	1.493800E-02
2	1.000	5.701800E 00	4.413170E 00	3.162160E 00	2.573200E-02
3	1.500	6.573770E 00	3.765760E 00	3.432000E 00	5.907600E-02
4	2.000	7.197340E 00	2.632010E 00	4.036480E 00	1.219760E-01
5	2.500	7.245880E 00	1.280430E 00	5.290740E 00	1.811030E-01
6	3.000	7.264290E 00	5.025000E-01	5.505370E 00	2.479980E-01
7	3.500	7.384430E 00	2.316180E-01	5.960410E 00	3.945760E-01
8	4.000	8.777660E 00	1.382300E-01	7.660910E 00	4.970470E-01
9	6.000	1.189240E 01	1.629270E-01	1.133770E 01	1.151890E 00
10	8.000	2.469960E 01	3.383550E-01	2.458600E 01	2.115830E 00
11	10.000	9.502030E 00	1.425000E-01	9.475000E 00	5.125400E 01
12	12.000	1.090000E 01	1.635000E-01	1.380000E 01	1.175800E 02
13	14.000	1.497830E 01	2.052020E-01	1.490940E 01	2.445000E 02
14	15.500	1.207430E 01	1.654190E-01	1.201880E 01	5.387000E 02
15	16.500	2.876850E 01	3.941280E-01	2.863610E 01	2.559130E 03
16	17.500	1.388320E 01	1.491000E-01	1.083310E 01	2.016700E 03
17	18.500	0.615980E 00	1.133130E-01	8.596250E 00	1.343480E 03
18	19.795	7.833990E 00	1.671990E-01	7.798010E 00	2.748180E 03
3000	17.675	2.537000E 01	3.349840E-01	2.525840E 01	2.578000E 03
2500	17.831	2.317000E 01	3.058440E-01	2.306800E 01	2.492000E 03
2000	18.016	2.006000E 01	2.647920E-01	1.997170E 01	2.333000E 03
1500	18.243	1.614000E 01	2.130480E-01	1.606900E 01	2.131000E 03
1000	18.537	1.217000E 01	1.606440E-01	1.211650E 01	2.028000E 03
500	18.959	9.880000E 00	1.304160E-01	9.836530E 00	2.397000E 03
60	19.555	1.056000E 01	1.393920E-01	1.031350E 01	3.807000E 03

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
TK EU N/CC - SOLID MATERIAL	TK EU 0.0204761	8.2440	5.166	63	152.000	0.	0.

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0 C.	5.226120E 00	4.373750E 00	1.712040E 00	1.009500E-02
1 0.500	5.342970E 00	4.411700E 00	2.595720E 00	1.493800E-02
2 1.000	5.701800E 00	4.413170E 00	3.162160E 00	2.573200E-02
3 1.500	6.573770E 00	3.765760E 00	3.432000E 00	5.907600E-02
4 2.000	7.197340E 00	2.632010E 00	4.036480E 00	1.219760E-01
5 2.500	7.245880E 00	1.280430E 00	5.290740E 00	1.811030E-01
6 3.000	7.264290E 00	5.025000E-01	5.505370E 00	2.479980E-01
7 3.500	7.384430E 00	2.316180E-01	5.960410E 00	3.945760E-01
8 4.000	8.777660E 00	1.392300E-01	7.660910E 00	4.970470E-01
9 6.000	1.189240E 01	1.629270E-01	1.103770E 01	1.151090E 00
10 8.000	2.469960E 01	3.383850E-01	2.458600E 01	2.115830E 00
11 10.000	9.502000E 00	1.425000E-01	9.475000E 00	5.125400E 01
12 12.000	1.090000E 01	1.635000E-01	1.080000E 01	1.110800E 02
13 14.000	1.497830E 01	2.052020E-01	1.490940E 01	7.747000E 01
14 15.500	1.207430E 01	1.654190E-01	1.201880E 01	4.606000E 01
15 16.500	2.876850E 01	3.941280E-01	2.863610E 01	2.503000E 03
16 17.500	1.088320E 01	1.491000E-01	1.083310E 01	2.016700E 03
17 18.500	8.635980E 00	1.183130E-01	8.596250E 00	1.343480E 03
18 19.795	7.833990E 00	1.071890E-01	7.798010E 00	2.748180E 03
3000 17.675	2.537000E 01	3.348840E-01	2.525840E 01	2.578000E 03
2500 17.831	2.317000E 01	3.058440E-01	2.306800E 01	2.492000E 03
2000 18.016	2.006000E 01	2.647920E-01	1.997170E 01	2.333000E 03
1500 18.243	1.614000E 01	2.130480E-01	1.606900E 01	2.131000E 03
1000 18.537	1.217000E 01	1.606440E-01	1.211650E 01	2.028000E 03
500 18.959	9.880000E 00	1.304160E-01	9.836530E 00	2.397000E 03
68 19.555	1.056000E 01	1.393920E-01	1.051350E 01	3.807000E 03

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
CF EUROPIUM N/CC - SOLID MATERIAL	EU CFINE 0.0204761	8.2450	5.166	63	152.000	0.	0.

LETHARGY LEVEL	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0 C.	5.226122E 00	4.373752E 00	1.712041E 00	1.009543E-02
1 0.500	5.342967E 00	4.411704E 00	2.595722E 00	1.493843E-02
2 1.000	5.697935E 00	4.415947E 00	3.160139E 00	2.561926E-02
3 1.500	6.568459E 00	3.769802E 00	3.431181E 00	5.883824E-02
4 2.000	7.197342E 00	2.632007E 00	4.036480E 00	1.219759E-01
5 2.500	7.245876E 00	1.280429E 00	5.290737E 00	1.811033E-01
6 3.000	7.264292E 00	5.025002E-01	5.505376E 00	2.479980E-01
7 3.500	7.384434E 00	2.316186E-01	5.960405E 00	3.945766E-01
8 4.000	8.777656E 00	1.392298E-01	7.660912E 00	4.970472E-01
9 6.000	1.188982E 01	1.628906E-01	1.183513E 01	1.154517E 00
10 8.000	2.194048E 01	3.005846E-01	2.183955E 01	4.875002E 00
11 10.000	3.948395E 01	5.409304E-01	3.930233E 01	2.127023E 01
12 12.000	3.750035E 01	5.137552E-01	3.732784E 01	9.101709E 01
13 14.000	1.447827E 01	2.052023E-01	1.490937E 01	2.192807E 02
14 15.500	1.207436E 01	1.654187E-01	1.201881E 01	5.386837E 02
15 16.500	2.876846E 01	3.941279E-01	2.863613E 01	2.559134E 03
16 17.500	1.088320E 01	1.490998E-01	1.083314E 01	2.016695E 03
17 18.500	8.635975E 00	1.183129E-01	8.596249E 00	1.343478E 03
18 19.795	7.833995E 00	1.071894E-01	7.798013E 00	2.748179E 03
3000 17.675	2.537000E 01	3.348840E-01	2.525837E 01	2.578000E 03
2500 17.831	2.317000E 01	3.058440E-01	2.306805E 01	2.492000E 03
2000 18.016	2.006000E 01	2.647920E-01	1.997174E 01	2.333000E 03
1500 18.243	1.614000E 01	2.130480E-01	1.606898E 01	2.131000E 03
1000 18.537	1.217000E 01	1.606440E-01	1.211645E 01	2.028000E 03
500 18.959	9.880000E 00	1.304160E-01	9.836528E 00	2.397000E 03
68 19.555	1.056000E 01	1.393920E-01	1.051354E 01	3.807000E 03

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
DYSPRCSIUM	DY	8.2600	8.562	66	162.510	0.01237	0.99590
N/CC - SOLID MATERIAL	0.0317417						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	1.000000E 01	1.237000E-01	9.959000E 00	2.477832E-02
1	C.500	1.000000E 01	1.237000E-01	9.959000E 00	3.177340E-02
2	1.000	1.000000E 01	1.237000E-01	9.959000E 00	4.078818E-02
3	1.500	1.000000E 01	1.237000E-01	9.959000E 00	5.221675E-02
4	2.000	1.000000E 01	1.237000E-01	9.959000E 00	6.748768E-02
5	2.500	1.000000E 01	1.237000E-01	9.959000E 00	8.620690E-02
6	3.000	1.000000E 01	1.237000E-01	9.959000E 00	1.108374E-01
7	3.500	1.000000E 01	1.237000E-01	9.959000E 00	1.423645E-01
8	4.000	1.000000E 01	1.237000E-01	9.959000E 00	1.827586E-01
9	4.500	1.000000E 01	1.237000E-01	9.959000E 00	2.300000E-01
10	5.000	1.000000E 01	1.237000E-01	9.959000E 00	2.800000E-01
11	5.500	1.000000E 01	1.237000E-01	9.959000E 00	3.300000E-01
12	6.000	1.000000E 01	1.237000E-01	9.959000E 00	3.800000E-01
13	6.500	1.000000E 01	1.237000E-01	9.959000E 00	4.300000E-01
14	7.000	1.000000E 01	1.237000E-01	9.959000E 00	4.800000E-01
15	7.500	1.000000E 01	1.237000E-01	9.959000E 00	5.300000E-01
16	8.000	1.000000E 01	1.237000E-01	9.959000E 00	5.800000E-01
17	8.500	1.000000E 01	1.237000E-01	9.959000E 00	6.300000E-01
18	9.000	1.000000E 01	1.237000E-01	9.959000E 00	6.800000E-01
3000	17.675	6.482700E 01	8.019100E-01	6.456121E 01	2.773800E 02
2500	17.831	6.704100E 01	8.292971E-01	6.676613E 01	3.075800E 02
2000	18.016	6.967100E 01	8.618302E-01	6.938535E 01	3.480000E 02
1500	18.243	7.290400E 01	9.018225E-01	7.260509E 01	4.043900E 02
1000	18.537	7.710000E 01	9.537270E-01	7.678389E 01	4.893500E 02
500	18.959	8.309400E 01	1.027873E 00	8.275331E 01	6.364800E 02
60	19.555	9.150000E 01	1.131855E 00	9.112485E 01	9.089800E 02

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
HAFNIUM	HF	8.2800	13.09	72	178.580	0.01130	0.99620
N/CC - SOLID MATERIAL	0.0441613						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	6.650000E 00	7.514500E-02	6.624730E 00	3.592857E-02
1	C.500	5.750000E 00	7.627500E-02	6.724350E 00	4.607143E-02
2	1.000	6.800000E 00	7.684000E-02	6.774160E 00	5.914286E-02
3	1.500	6.900000E 00	7.797000E-02	6.873780E 00	7.571428E-02
4	2.000	7.000000E 00	7.910000E-02	6.973400E 00	9.785714E-02
5	2.500	7.000000E 00	7.910000E-02	6.973400E 00	1.250000E-01
6	3.000	7.100000E 00	8.022000E-02	7.073020E 00	1.607143E-01
7	3.500	7.500000E 00	8.475000E-02	7.471500E 00	2.064286E-01
8	4.000	7.700000E 00	8.701000E-02	7.670740E 00	2.650000E-01
9	4.500	1.000000E 01	1.130000E-01	9.962000E 00	7.214286E-01
10	5.000	1.400000E 01	1.582000E-01	1.394680E 01	1.957143E 00
11	5.500	1.570000E 01	1.774100E-01	1.564034E 01	5.328571E 00
12	6.000	1.650000E 01	1.808000E-01	1.593920E 01	1.450000E 01
13	6.500	2.500000E 01	2.825000E-01	2.490500E 01	4.700000E 01
14	7.000	5.200000E 01	5.876000E-01	5.180240E 01	1.190000E 03
15	7.500	1.100000E 01	1.243000E-01	1.095820E 01	4.700000E 01
16	8.000	8.000000E 00	9.040000E-02	7.969600E 00	4.000000E 01
17	8.500	8.000000E 00	9.040000E-02	7.969600E 00	5.350000E 01
18	9.000	8.000000E 00	9.040000E-02	7.969600E 00	9.000000E 01
3000	17.675	1.021700E 01	1.154521E-01	1.017818E 01	1.091000E 02
2500	17.831	9.122900E 00	1.030888E-01	9.088233E 00	7.754300E 01
2000	18.016	8.437900E 00	9.534827E-02	8.405836E 00	6.108600E 01
1500	18.243	8.115400E 00	9.170402E-02	8.084561E 00	5.732200E 01
1000	18.537	8.015600E 00	9.357628E-02	7.985141E 00	6.151700E 01
500	18.959	8.000000E 00	9.040000E-02	7.969600E 00	7.240500E 01
60	19.555	7.999000E 00	9.039435E-02	7.969102E 00	9.455200E 01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
CADMIUM	CD	8.3000	8.648	48	112.410	0.01780	0.99400
N/CC - SOLID MATERIAL 0.0453649							

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	4.500000E 00	8.010000E-02	4.473000E 00	1.369328E-04
1	0.500	4.000000E 00	7.120000E-02	3.976000E 00	1.755898E-04
2	1.000	4.100000E 00	7.299000E-02	4.075400E 00	2.254083E-04
3	1.500	5.300000E 00	9.434000E-02	5.268200E 00	2.885662E-04
4	2.000	6.300000E 00	1.121400E-01	6.262200E 00	3.729582E-04
5	2.500	6.960000E 00	1.228200E-01	6.858600E 00	4.764065E-04
6	3.000	7.400000E 00	1.317200E-01	7.355600E 00	6.125227E-04
7	3.500	7.400000E 00	1.317200E-01	7.355600E 00	7.867513E-04
8	4.000	7.200000E 00	1.281600E-01	7.156800E 00	1.009982E-03
9	4.000	6.900000E 00	1.228200E-01	6.858600E 00	2.749546E-03
10	8.000	6.600000E 00	1.174800E-01	6.560400E 00	7.459165E-03
11	10.000	6.600000E 00	1.174800E-01	6.560400E 00	2.030853E-02
12	12.000	6.600000E 00	1.174800E-01	6.560400E 00	5.526316E-02
13	14.000	4.400000E 00	7.832000E-02	4.373600E 00	1.500000E-01
14	15.500	5.300000E 00	9.434000E-02	5.268200E 00	1.000000E 00
15	16.500	5.700000E 00	1.014600E-01	5.665800E 00	3.300000E 01
16	17.500	2.300000E 01	4.094000E-01	2.286200E 01	1.826000E 03
17	18.500	2.300000E 01	4.094000E-01	2.286200E 01	3.574000E 03
18	19.795	7.190000E 00	1.279820E-01	7.146860E 00	2.550000E 03
3000	17.675	1.953200E 01	3.476696E-01	1.941481E 01	2.437400E 03
2500	17.831	2.092600E 01	3.724828E-01	2.080044E 01	2.796100E 03
2000	18.016	2.220400E 01	3.952312E-01	2.207078E 01	3.196500E 03
1500	18.243	2.290000E 01	4.076200E-01	2.276260E 01	3.593400E 03
1000	18.537	2.193300E 01	3.904074E-01	2.180140E 01	3.847700E 03
500	18.959	1.733700E 01	3.085986E-01	1.723298E 01	3.641300E 03
68	19.555	1.030400E 01	1.834112E-01	1.024218E 01	3.004500E 03

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
INDIUM	IN	8.3200	7.31	49	114.850	0.01747	0.99410
N/CC - SOLID MATERIAL 0.0383462							

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	4.000000E 00	6.988000E-02	3.976400E 00	1.822464E-02
1	0.500	4.000000E 00	6.988000E-02	3.976400E 00	2.336956E-02
2	1.000	4.000000E 00	6.988000E-02	3.976400E 00	3.000000E-02
3	1.500	5.150000E 00	8.997050E-02	5.119615E 00	9.000000E-02
4	2.000	6.000000E 00	1.048200E-01	5.964600E 00	1.300000E-01
5	2.500	6.770000E 00	1.182719E-01	6.730057E 00	2.000000E-01
6	3.000	6.730000E 00	1.175731E-01	6.690293E 00	2.900000E-01
7	3.500	6.640000E 00	1.160008E-01	6.600824E 00	3.300000E-01
8	4.000	6.550000E 00	1.144285E-01	6.511355E 00	4.000000E-01
9	6.000	5.850000E 00	1.021995E-01	5.815485E 00	6.800000E-01
10	8.000	4.000000E 00	6.988000E-02	3.976400E 00	3.000000E 00
11	10.000	2.000000E 00	3.494000E-02	1.988200E 00	5.000000E 00
12	12.000	2.000000E 00	3.494000E-02	1.988200E 00	6.800000E 00
13	14.000	2.000000E 00	3.494000E-02	1.988200E 00	6.500000E 01
14	15.500	2.000000E 00	3.494000E-02	1.988200E 00	2.156200E 03
15	16.500	4.000000E 01	6.988000E-01	3.976400E 01	1.000000E 02
16	17.500	4.000000E 00	6.988000E-02	3.976400E 00	9.400000E 01
17	18.500	4.000000E 00	6.988000E-02	3.976400E 00	9.000000E 01
18	19.795	4.000000E 00	6.988000E-02	3.976400E 00	1.620000E 02
3000	17.675	5.156100E 00	9.007706E-02	5.125679E 00	1.197400E 02
2500	17.831	4.517700E 00	7.892422E-02	4.491045E 00	1.086000E 02
2000	18.016	4.187100E 00	7.314864E-02	4.162396E 00	1.051800E 02
1500	18.243	4.038500E 00	7.055259E-02	4.014673E 00	1.075900E 02
1000	18.537	3.972200E 00	6.939433E-02	3.948764E 00	1.156900E 02
500	18.959	3.919300E 00	6.847017E-02	3.896176E 00	1.336500E 02
68	19.555	3.789400E 00	6.620082E-02	3.767042E 00	1.720600E 02

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
GOLD	AU	8.3400	19.3	79	197.000	0.01021	0.99660
N/CC - SOLID MATERIAL	0.0590237						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	4.540000E 00	4.635340E-02	4.524564E 00	2.500000E-02
1	0.500	5.880300E 00	6.003480E-02	5.860008E 00	3.500000E-02
2	1.000	7.230000E 00	7.381830E-02	7.205418E 00	5.000000E-02
3	1.500	6.850000E 00	6.993850E-02	6.826710E 00	7.500000E-02
4	2.000	5.200000E 00	5.309200E-02	5.182320E 00	10.000000E-02
5	2.500	5.150000E 00	5.258150E-02	5.132490E 00	1.500000E-01
6	3.000	5.800000E 00	5.921800E-02	5.780280E 00	2.300000E-01
7	3.500	7.300000E 00	7.453300E-02	7.275180E 00	3.000000E-01
8	4.000	7.650000E 00	7.810650E-02	7.623990E 00	4.000000E-01
9	6.000	9.850000E 00	1.005685E-01	9.816510E 00	1.150000E 00
10	8.000	9.300000E 00	9.495300E-02	9.268380E 00	3.100000E 00
11	10.000	9.300000E 00	9.495300E-02	9.268380E 00	5.700000E 00
12	12.000	1.400000E 01	1.429400E-01	1.395240E 01	2.300000E 00
13	14.000	9.000000E 01	9.189000E-01	8.969400E 01	1.750000E 01
14	15.500	3.000000E 01	3.063000E-01	2.989800E 01	1.350000E 03
15	16.500	9.300000E 00	9.495300E-02	9.268380E 00	2.500000E 01
16	17.500	9.000000E 00	9.189000E-02	8.969400E 00	2.530000E 01
17	18.500	7.000000E 00	7.147000E-02	6.976200E 00	5.200000E 01
18	19.795	6.000000E 00	6.126000E-02	5.979600E 00	7.960000E 01
3000	17.675	8.195200E 00	8.367299E-02	8.167336E 00	3.556300E 01
2500	17.831	8.154500E 00	8.325744E-02	8.126774E 00	3.789500E 01
2000	18.016	8.059600E 00	8.228852E-02	8.032197E 00	4.104600E 01
1500	18.243	7.876700E 00	8.042111E-02	7.849919E 00	4.552300E 01
1000	18.537	7.552000E 00	7.710592E-02	7.526323E 00	5.239700E 01
500	18.959	7.015000E 00	7.162315E-02	6.991149E 00	6.443800E 01
68	19.555	6.374400E 00	6.508262E-02	6.352727E 00	8.684200E 01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
COPPER	CU	8.3600	8.94	29	63.540	0.03140	0.98940
N/CC - SOLID MATERIAL	0.0847668						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	3.380000E 00	1.061320E-01	3.344172E 00	1.856070E-04
1	0.500	4.000000E 00	1.256000E-01	3.957600E 00	2.380050E-04
2	1.000	3.520000E 00	1.105280E-01	3.482688E 00	3.055320E-04
3	1.500	3.000000E 00	9.420000E-02	2.968200E 00	3.911400E-04
4	2.000	3.270000E 00	1.026780E-01	3.235338E 00	5.055300E-04
5	2.500	3.700000E 00	1.161800E-01	3.660780E 00	4.465700E-04
6	3.000	4.370000E 00	1.372180E-01	4.323678E 00	8.302500E-04
7	3.500	4.930000E 00	1.548020E-01	4.877742E 00	1.066410E-03
8	4.000	5.580000E 00	1.752120E-01	5.520852E 00	1.368990E-03
9	6.000	7.750000E 00	2.433500E-01	7.667850E 00	3.726900E-03
10	8.000	1.165000E 01	3.658100E-01	1.152651E 01	1.011060E-02
11	10.000	7.450000E 00	2.339300E-01	7.371030E 00	2.752740E-02
12	12.000	7.100000E 00	2.229400E-01	7.024740E 00	7.490700E-02
13	14.000	7.450000E 00	2.339300E-01	7.371030E 00	2.033190E-01
14	15.500	7.630000E 00	2.395820E-01	7.549122E 00	3.826530E-01
15	16.500	7.630000E 00	2.395820E-01	7.549122E 00	7.346790E-01
16	17.500	7.520000E 00	2.361280E-01	7.440288E 00	1.107369E 00
17	18.500	7.500000E 00	2.355000E-01	7.420500E 00	1.929501E 00
18	19.795	6.890000E 00	2.163460E-01	6.816966E 00	3.429855E 00
3000	17.675	7.576700E 00	2.379084E-01	7.496387E 00	1.278000E 00
2500	17.831	7.558500E 00	2.373369E-01	7.478380E 00	1.382000E 00
2000	18.016	7.533800E 00	2.365613E-01	7.453942E 00	1.516000E 00
1500	18.243	7.496800E 00	2.353995E-01	7.417334E 00	1.698000E 00
1000	18.537	7.434200E 00	2.334339E-01	7.355397E 00	1.968000E 00
500	18.959	7.303000E 00	2.293142E-01	7.225500E 00	2.427000E 00
68	19.555	6.985900E 00	2.192573E-01	6.911849E 00	3.273000E 00

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
CF TUNGSTEN	W CFINE	8.5010	19.25	74	183.920	0.	0.
N/CC - SOLID MATERIAL	0.0630781						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	5.061535E 00	5.785260E 00	2.993162E 00	8.865520E-03
1	0.500	5.433026E 00	5.384230E 00	3.134778E 00	1.319722E-02
2	1.000	6.330579E 00	4.827212E 00	3.510611E 00	2.064289E-02
3	1.500	6.939753E 00	4.211613E 00	4.109850E 00	2.606304E-02
4	2.000	6.920983E 00	3.393141E 00	4.641011E 00	4.065864E-02
5	2.500	6.911936E 00	2.317304E 00	5.054266E 00	5.286116E-02
6	3.000	7.136848E 00	1.338930E 00	5.602065E 00	6.775911E-02
7	3.500	7.686879E 00	5.697203E-01	6.534935E 00	8.611351E-02
8	4.000	8.837294E 00	1.378900E-01	8.607342E 00	1.313980E-01
9	6.000	1.129154E 01	1.230778E-01	1.124976E 01	3.064728E-01
10	8.000	1.387337E 01	1.512198E-01	1.382204E 01	5.256859E-01
11	10.000	4.113531E 01	4.483751E-01	4.098311E 01	2.717372E 00
12	12.000	4.925719E 01	5.369038E-01	4.907494E 01	1.433045E 01
13	14.000	4.812543E 02	5.245665E 00	4.794737E 02	1.668059E 02
14	15.500	5.172009E 00	5.637490E-02	5.152872E 00	5.170036E 00
15	16.500	5.057021E 00	5.512152E-02	5.038310E 00	3.745248E 00
16	17.500	5.008702E 00	5.459485E-02	4.990169E 00	6.216780E 00
17	18.500	4.715034E 00	5.139387E-02	4.697589E 00	1.019996E 01
18	19.795	4.171881E 00	4.547350E-02	4.156445E 00	1.492208E 01
3000	17.675	4.967000E 00	5.414030E-02	4.948622E 00	6.649000E 00
2500	17.831	4.935000E 00	5.379150E-02	4.916740E 00	7.185000E 00
2000	18.016	4.883000E 00	5.322470E-02	4.864933E 00	7.879000E 00
1500	18.243	4.798000E 00	5.229820E-02	4.780247E 00	8.822000E 00
1000	18.537	4.650000E 00	5.068500E-02	4.632795E 00	1.021300E 01
500	18.959	4.362000E 00	4.754580E-02	4.345860E 00	1.257000E 01
68	19.555	3.773000E 00	4.112570E-02	3.759040E 00	1.685200E 01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
REV TUNG CF	W1 CFINE	8.5020	19.25	74	183.860	0.	0.
N/CC - SOLID MATERIAL	0.0630781						

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	5.141130E 00	5.889100E 00	2.929240E 00	1.137020E-02
1	0.500	5.412600E 00	5.323920E 00	3.138610E 00	1.692520E-02
2	1.000	6.050850E 00	4.758380E 00	3.580980E 00	2.643240E-02
3	1.500	6.411180E 00	4.117100E 00	4.114840E 00	3.913040E-02
4	2.000	6.538100E 00	3.357520E 00	4.803020E 00	5.643770E-02
5	2.500	6.582320E 00	2.108860E 00	5.306310E 00	7.673830E-02
6	3.000	7.394500E 00	9.327080E-01	6.234230E 00	8.687960E-02
7	3.500	8.346060E 00	4.176450E-01	7.329930E 00	1.046900E-01
8	4.000	8.709230E 00	1.924210E-01	8.058240E 00	1.492970E-01
9	6.000	1.070980E 01	1.356670E-01	1.044080E 01	3.564600E-01
10	8.000	1.300940E 01	1.422620E-01	1.296180E 01	1.218560E 00
11	10.000	5.272870E 01	5.766060E-01	5.253580E 01	5.957740E 00
12	12.000	4.472710E 01	4.891050E-01	4.456340E 01	2.122410E 01
13	14.000	4.518560E 02	4.941190E 00	4.502030E 02	1.668440E 02
14	15.500	5.073040E 00	5.547530E-02	5.054480E 00	6.142100E 00
15	16.500	5.203900E 00	5.690630E-02	5.184860E 00	3.607460E 00
16	17.500	5.285520E 00	5.779880E-02	5.266180E 00	6.055780E 00
17	18.500	4.889280E 00	5.346590E-02	4.871390E 00	1.050620E 01
18	19.795	4.230140E 00	4.625790E-02	4.214660E 00	1.647450E 01
3000	17.675	4.967000E 00	5.414000E-02	4.948600E 00	6.649000E 00
2500	17.831	4.935000E 00	5.379200E-02	4.916700E 00	7.185000E 00
2000	18.016	4.883000E 00	5.322500E-02	4.864900E 00	7.879000E 00
1500	18.243	4.798000E 00	5.229800E-02	4.780200E 00	8.822000E 00
1000	18.537	4.650000E 00	5.068500E-02	4.632800E 00	1.021300E 01
500	18.959	4.362000E 00	4.754600E-02	4.345900E 00	1.257000E 01
68	19.555	3.773000E 00	4.112600E-02	3.759000E 00	1.685200E 01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
R2CFTUNGSTEN N/CC - SOLID MATERIAL	W2 CFINE 0.0630781	8.5030	19.25	74	183.860	0.	0.

LETHARGY LEVEL		SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	5.141130E 00	2.940000E 00	2.929240E 00	1.137020E-02
1	0.500	5.412600E 00	2.660000E 00	3.138610E 00	1.692520E-02
2	1.000	6.050850E 00	2.380000E 00	3.580980E 00	2.643240E-02
3	1.500	6.411180E 00	2.060000E 00	4.114840E 00	3.913040E-02
4	2.000	6.538100E 00	1.680000E 00	4.803020E 00	5.643770E-02
5	2.500	6.582320E 00	1.050000E 00	5.306310E 00	7.673830E-02
6	3.000	7.394500E 00	4.660000E-01	6.234230E 00	8.687960E-02
7	3.500	8.346060E 00	2.090000E-01	7.329930E 00	1.046900E-01
8	4.000	8.709230E 00	10.000000E-02	8.058240E 00	1.492970E-01
9	6.000	1.070980E 01	1.356670E-01	1.044080E 01	3.564600E-01
10	8.000	1.300940E 01	1.422620E-01	1.296180E 01	1.218560E 00
11	10.000	5.272870E 01	5.766060E-01	5.253580E 01	5.957740E 00
12	12.000	4.472710E 01	4.891050E-01	4.456340E 01	2.122410E 01
13	14.000	4.518560E 02	4.941190E 00	4.502030E 02	1.668440E 02
14	15.500	5.073040E 00	5.547530E-02	5.054480E 00	6.142100E 00
15	16.500	5.203900E 00	5.690630E-02	5.184860E 00	3.607460E 00
16	17.500	5.285520E 00	5.779880E-02	5.266180E 00	6.055780E 00
17	18.500	4.899280E 00	5.346590E-02	4.871390E 00	1.050620E 01
18	19.795	4.230140E 00	4.625790E-02	4.214660E 00	1.647450E 01
3000	17.675	4.047000E 00	5.414000E-02	4.948600E 00	6.849000E 00
2500	17.931	4.935000E 00	5.379200E-02	4.916700E 00	7.185000E 00
2000	18.016	4.883000E 00	5.322500E-02	4.864900E 00	7.879000E 00
1500	18.243	4.798000E 00	5.229800E-02	4.780200E 00	8.822000E 00
1000	18.537	4.650000E 00	5.068500E-02	4.632800E 00	1.021300E 01
500	18.959	4.362000E 00	4.764600E-02	4.345700E 00	1.257000E 01
68	19.555	3.773000E 00	4.112000E-02	3.759000E 00	1.685200E 01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
XENON 135	XE 135	8.6000	0.	54	134.950	0.01488	0.99500

LETHARGY LEVEL		SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	2.500000E 01	3.720000E-01	2.487500E 01	4.929582E-03
1	0.500	2.500000E 01	3.720000E-01	2.487500E 01	6.321234E-03
2	1.000	2.500000E 01	3.720000E-01	2.487500E 01	8.114700E-03
3	1.500	2.500000E 01	3.720000E-01	2.487500E 01	1.038838E-02
4	2.000	2.500000E 01	3.720000E-01	2.487500E 01	1.342650E-02
5	2.500	2.500000E 01	3.720000E-01	2.487500E 01	1.715063E-02
6	3.000	2.500000E 01	3.720000E-01	2.487500E 01	2.205082E-02
7	3.500	2.500000E 01	3.720000E-01	2.487500E 01	2.832305E-02
8	4.000	2.500000E 01	3.720000E-01	2.487500E 01	3.635935E-02
9	6.000	2.500000E 01	3.720000E-01	2.487500E 01	9.898366E-02
10	8.000	2.500000E 01	3.720000E-01	2.487500E 01	2.685299E-01
11	10.000	2.500000E 01	3.720000E-01	2.487500E 01	7.311071E-01
12	12.000	3.000000E 01	4.464000E-01	2.985000E 01	1.989474E 00
13	14.000	1.100000E 02	1.636800E 00	1.094500E 02	5.400000E 00
14	15.500	7.700000E 02	1.145760E 01	7.661500E 02	4.300000E 02
15	16.500	5.100000E 03	7.588800E 01	5.074500E 03	8.200000E 03
16	17.500	5.100000E 03	7.588800E 01	5.074500E 03	8.200000E 03
17	18.500	4.900000E 05	7.291200E 03	4.875500E 05	2.330000E 06
18	19.795	3.040000E 05	4.523520E 03	3.024800E 05	2.610000E 06
3000	17.675	1.190400E 05	1.771315E 03	1.184448E 05	5.672000E 05
2500	17.831	1.431200E 05	2.129626E 03	1.424044E 05	6.976600E 05
2000	18.016	1.750700E 05	2.605042E 03	1.741946E 05	8.781600E 05
1500	18.243	2.179800E 05	3.243542E 03	2.168901E 05	1.135900E 06
1000	18.537	2.747200E 05	4.087834E 03	2.733464E 05	1.513900E 06
500	18.959	3.392200E 05	5.047594E 03	3.375239E 05	2.062000E 06
68	19.555	3.534300E 05	5.259038E 03	3.516628E 05	2.623400E 06

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
CF 135 XENON	CF XE 135	8.6010	0.	54	134.950	0.	0.

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	4.688832E 00	4.373752E 00	1.712041E 00	5.263862E-03
1	0.500	4.618687E 00	4.411704E 00	2.595722E 00	6.476489E-03
2	1.000	5.230664E 00	4.415947E 00	3.160139E 00	8.497486E-03
3	1.500	6.560484E 00	3.769802E 00	3.431181E 00	1.117376E-02
4	2.000	7.273673E 00	2.632007E 00	4.036480E 00	1.466725E-02
5	2.500	7.459483E 00	1.280429E 00	5.290737E 00	1.933298E-02
6	3.000	7.478790E 00	5.025002E-01	5.505376E 00	2.563563E-02
7	3.500	7.484017E 00	2.316186E-01	5.960405E 00	3.409416E-02
8	4.000	7.529093E 00	1.339775E-01	7.076774E 00	5.559017E-02
9	6.000	8.175041E 00	1.250781E-01	8.133348E 00	1.413984E-01
10	8.000	8.606276E 00	1.316760E-01	8.562383E 00	4.121033E-01
11	10.000	8.275673E 00	1.266178E-01	8.233465E 00	1.258439E 00
12	12.000	8.440413E 00	1.291383E-01	8.397368E 00	3.995398E 00
13	14.000	7.132222E 01	1.091230E 00	7.095847E 01	2.286582E 01
14	15.500	1.043699E 03	1.596859E 01	1.038376E 03	8.279338E 02
15	16.500	9.755805E 03	1.492638E 02	9.706051E 03	1.283209E 04
16	17.500	9.485382E 04	1.451263E 03	9.437007E 04	2.168910E 05
17	18.500	5.588031E 05	8.549688E 03	5.559532E 05	1.966054E 06
18	19.795	5.197673E 05	7.948607E 03	5.171174E 05	2.489305E 06
3000	17.675	1.190400E 05	1.771315E 03	1.184448E 05	5.672000E 05
2500	17.831	1.431200E 05	2.129626E 03	1.424044E 05	6.976600E 05
2000	18.016	1.750700E 05	2.605042E 03	1.741946E 05	8.781600E 05
1500	18.243	2.179800E 05	3.243542E 03	2.168901E 05	1.135900E 06
1000	18.537	2.747200E 05	4.087834E 03	2.733464E 05	1.513900E 06
500	18.959	3.392200E 05	5.047594E 03	3.375239E 05	2.062000E 06
68	19.555	3.534300E 05	5.259038E 03	3.516628E 05	2.623400E 06

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-8
SLAG	SLAG	9.0000	0.	0	235.117	0.	0.

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	0.	0.	0.	6.000000E-03
1	0.500	0.	0.	0.	2.350000E-02
2	1.000	0.	0.	0.	4.650000E-02
3	1.500	0.	0.	0.	6.950000E-02
4	2.000	0.	0.	0.	9.200000E-02
5	2.500	0.	0.	0.	1.165800E-01
6	3.000	0.	0.	0.	1.435000E-01
7	3.500	0.	0.	0.	1.705000E-01
8	4.000	0.	0.	0.	2.227932E-01
9	6.000	0.	0.	0.	4.211325E-01
10	8.000	0.	0.	0.	1.625000E 00
11	10.000	0.	0.	0.	7.028339E 00
12	12.000	0.	0.	0.	2.253787E 01
13	14.000	0.	0.	0.	4.259058E 01
14	15.500	0.	0.	0.	3.285133E 01
15	16.500	0.	0.	0.	1.485924E 01
16	17.500	0.	0.	0.	1.598032E 01
17	18.500	0.	0.	0.	2.740833E 01
18	19.795	0.	0.	0.	4.259620E 01
3000	17.675	0.	0.	0.	1.804867E 01
2500	17.831	0.	0.	0.	1.902448E 01
2000	18.016	0.	0.	0.	2.057717E 01
1500	18.243	0.	0.	0.	2.292264E 01
1000	18.537	0.	0.	0.	2.652441E 01
500	18.959	0.	0.	0.	3.270435E 01
68	19.555	0.	0.	0.	4.409760E 01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
FICTITUM	FI	9.0200	0.	120	320.000	0.	1.00000

LETHARGY LEVEL		SIGMA SCATTER	XI	SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	1.000000E 00	0.		1.000000E 00	5.030000E-25
1	0.500	1.000000E 00	0.		1.000000E 00	6.450000E-25
2	1.000	1.000000E 00	0.		1.000000E 00	8.280000E-25
3	1.500	1.000000E 00	0.		1.000000E 00	1.060000E-24
4	2.000	1.000000E 00	0.		1.000000E 00	1.370000E-24
5	2.500	1.000000E 00	0.		1.000000E 00	1.750000E-24
6	3.000	1.000000E 00	0.		1.000000E 00	2.250000E-24
7	3.500	1.000000E 00	0.		1.000000E 00	2.890000E-24
8	4.000	1.000000E 00	0.		1.000000E 00	3.710000E-24
9	6.000	1.000000E 00	0.		1.000000E 00	1.010000E-23
10	8.000	1.000000E 00	0.		1.000000E 00	2.740000E-23
11	10.000	1.000000E 00	0.		1.000000E 00	7.460000E-23
12	12.000	1.000000E 00	0.		1.000000E 00	2.030000E-22
13	14.000	1.000000E 00	0.		1.000000E 00	5.510000E-22
14	15.500	1.000000E 00	0.		1.000000E 00	1.037000E-21
15	16.500	1.000000E 00	0.		1.000000E 00	1.991000E-21
16	17.500	1.000000E 00	0.		1.000000E 00	3.001000E-21
17	18.500	1.000000E 00	0.		1.000000E 00	5.229000E-21
18	19.795	1.000000E 00	0.		1.000000E 00	9.295000E-21
3000	17.675	1.000000E 00	0.		1.000000E 00	0.
2500	17.831	1.000000E 00	0.		1.000000E 00	0.
2000	18.016	1.000000E 00	0.		1.000000E 00	0.
1500	18.243	1.000000E 00	0.		1.000000E 00	0.
1000	18.537	1.000000E 00	0.		1.000000E 00	0.
500	18.959	1.000000E 00	0.		1.000000E 00	0.
60	19.555	1.000000E 00	0.		1.000000E 00	0.

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
ENERGY	E (EV)	9.2000	0.	0	0.	0.	0.

LETHARGY LEVEL		SIGMA SCATTER	XI	SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	1.000000E 07	0.		0.	5.030000E-25
1	0.500	6.065000E 06	0.		0.	6.450000E-25
2	1.000	3.679000E 06	0.		0.	8.280000E-25
3	1.500	2.231000E 06	0.		0.	1.060000E-24
4	2.000	1.353000E 06	0.		0.	1.370000E-24
5	2.500	8.208000E 05	0.		0.	1.750000E-24
6	3.000	4.979000E 05	0.		0.	2.250000E-24
7	3.500	3.020000E 05	0.		0.	2.890000E-24
8	4.000	1.832000E 05	0.		0.	3.710000E-24
9	6.000	2.479000E 04	0.		0.	1.010000E-23
10	8.000	3.354000E 03	0.		0.	2.740000E-23
11	10.000	4.540000E 02	0.		0.	7.460000E-23
12	12.000	6.144000E 01	0.		0.	2.030000E-22
13	14.000	8.315000E 00	0.		0.	5.510000E-22
14	15.500	1.855000E 00	0.		0.	1.037000E-21
15	16.500	6.826000E-01	0.		0.	1.991000E-21
16	17.500	2.511000E-01	0.		0.	3.001000E-21
17	18.500	9.237000E-02	0.		0.	5.229000E-21
18	19.795	2.530000E-02	0.		0.	9.295000E-21
3000	17.675	2.109000E-01	0.		0.	0.
2500	17.831	1.804000E-01	0.		0.	0.
2000	18.016	1.499000E-01	0.		0.	0.
1500	18.243	1.194000E-01	0.		0.	0.
1000	18.537	8.900000E-02	0.		0.	0.
500	18.959	5.850000E-02	0.		0.	0.
60	19.555	9.220000E-02	0.		0.	0.

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
IMPORTANCE	IMP	-10.0000	0.	0	0.	0.	0.

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION	NU SIGMA FISSION
0	0.	0.	0.	0.	0.	2.292900E-03
1	0.500	0.	0.	0.	0.	1.942200E-03
2	1.000	0.	0.	0.	0.	1.661800E-03
3	1.500	0.	0.	0.	0.	1.462400E-03
4	2.000	0.	0.	0.	0.	1.246300E-03
5	2.500	0.	0.	0.	0.	1.163200E-03
6	3.000	0.	0.	0.	0.	1.163200E-03
7	3.500	0.	0.	0.	0.	1.332200E-03
8	4.000	0.	0.	0.	0.	1.390700E-03
9	4.500	0.	0.	0.	0.	2.398300E-03
10	5.000	0.	0.	0.	0.	3.844700E-03
11	10.000	0.	0.	0.	0.	8.517100E-03
12	12.000	0.	0.	0.	0.	3.237000E-02
13	14.000	0.	0.	0.	0.	5.781500E-02
14	15.500	0.	0.	0.	0.	1.959500E-02
15	16.500	0.	0.	0.	0.	6.473900E-02
16	17.500	0.	0.	0.	0.	1.388300E-01
17	18.500	0.	0.	0.	0.	2.154800E-01
18	19.795	0.	0.	0.	0.	4.971400E-01
3000	17.675	0.	0.	0.	0.	1.506000E-01
2500	17.831	0.	0.	0.	0.	1.651000E-01
2000	18.016	0.	0.	0.	0.	1.834500E-01
1500	18.243	0.	0.	0.	0.	2.077900E-01
1000	18.537	0.	0.	0.	0.	2.432800E-01
500	18.959	0.	0.	0.	0.	3.058000E-01
68	19.555	0.	0.	0.	0.	4.282500E-01

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
AG, AU, CU, IN	N-BETA	99.9970	0.	109	197.000	63.00000	115.00000

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	0.	1.820000E-03	2.560000E-02	1.520000E-04	1.500000E-02
1	0.500	2.430000E-03	3.540000E-02	2.620000E-04	3.150000E-02
2	1.000	3.020000E-03	5.260000E-02	4.550000E-04	4.730000E-02
3	1.500	3.610000E-03	7.390000E-02	7.810000E-04	7.230000E-02
4	2.000	4.050000E-03	1.080000E-01	1.380000E-03	9.630000E-02
5	2.500	4.410000E-03	1.550000E-01	2.300000E-03	1.350000E-01
6	3.000	4.420000E-03	2.240000E-01	4.110000E-03	1.750000E-01
7	3.500	4.430000E-03	3.190000E-01	7.050000E-03	2.250000E-01
8	4.000	5.790000E-03	4.470000E-01	1.220000E-02	2.850000E-01
9	4.500	2.410000E-02	1.330000E 00	4.350000E-02	6.310000E-01
10	5.000	6.140000E-02	4.060000E 00	10.000000E-03	1.400000E 00
11	10.000	1.900000E-01	1.130000E 01	2.520000E-01	3.260000E 00
12	12.000	4.960000E-01	4.100000E 01	3.900000E-02	9.480000E 00
13	14.000	5.390000E-01	8.110000E 02	5.600000E-02	3.180000E 01
14	15.500	2.520000E 01	1.370000E 01	2.380000E-01	2.220000E 03
15	16.500	3.520000E-01	1.610000E 01	2.670000E-01	7.100000E 01
16	17.500	7.360000E-01	3.320000E 01	5.590000E-01	6.780000E 01
17	18.500	1.070000E 00	4.760000E 01	7.870000E-01	7.300000E 01
18	19.795	1.910000E 00	8.540000E 01	1.410000E 00	1.250000E 02
3000	17.675	7.660000E-01	3.420000E 01	5.660000E-01	1.010000E 02
2500	17.831	8.280000E-01	3.760000E 01	6.120000E-01	8.390000E 01
2000	18.016	9.080000E-01	4.060000E 01	6.710000E-01	7.730000E 01
1500	18.243	1.070000E 00	4.550000E 01	7.520000E-01	7.820000E 01
1000	18.537	1.180000E 00	5.270000E 01	8.710000E-01	8.380000E 01
500	18.959	1.450000E 00	6.500000E 01	1.070000E 00	9.790000E 01
68	19.555	1.960000E 00	8.760000E 01	1.450000E 00	1.270000E 02

DESIGNATION	FORMULA	CODE	DENSITY	Z	A	XI	1-B
MN,	N-BETA	99.9980	0.	55	C.	0.	0.

LEVEL	LETHARGY	SIGMA SCATTER	XI SIGMA SCATTER	SIGMA TRANSPORT	SIGMA ABSORPTION
0	C.	2.710000E-02	0.	0.	C.
1	C.500	8.150000E-03	C.	0.	C.
2	1.000	2.000000E-03	0.	0.	0.
3	1.500	2.700000E-03	0.	0.	C.
4	2.000	2.450000E-03	0.	0.	C.
5	2.500	4.770000E-03	0.	0.	C.
6	3.000	5.480000E-03	0.	0.	C.
7	3.500	8.720000E-03	0.	0.	0.
8	4.000	1.110000E-02	0.	0.	C.
9	6.000	2.580000E-02	C.	0.	C.
10	8.000	2.960000E-02	C.	0.	0.
11	10.000	1.410000E 00	0.	0.	C.
12	12.000	3.830000E 00	0.	0.	C.
13	14.000	7.280000E-01	0.	0.	0.
14	15.500	1.450000E 00	C.	0.	0.
15	16.500	2.375000E 00	0.	0.	C.
16	17.500	4.080000E 00	0.	0.	C.
17	18.500	6.960000E 00	C.	0.	C.
18	19.795	1.240000E 01	0.	0.	C.
3000	17.675	4.590000E 00	0.	0.	0.
2500	17.831	4.970000E 00	0.	0.	0.
2000	18.016	5.450000E 00	0.	0.	0.
1500	18.243	6.100000E 00	0.	0.	0.
1000	18.537	7.070000E 00	0.	C.	C.
500	18.959	8.720000E 00	0.	0.	C.
68	19.555	1.180000E 01	0.	0.	0.

OTHER NUCLEAR DATA

Spectral values are normalized to a trapezoidally integrated value of unity.

Level	Lethargy LNE ZERO/E	Energy E(E)	1/v Factor V18/V (AVG)	U ²³⁵ Prompt Neutron Spectrum S(0)	U ²³⁵ Prompt Plus Delayed Neutron Spectrum S(2)	C-Fine U ²³⁵ Prompt Plus Delayed Neutron Spectrum S(CF)
0	0.	1.000 x 10 ⁷	5.030000E-05	0.	0.	1.999968E-02
1	0.500	6.065 x 10 ⁶	6.450000E-05	8.795602E-02	8.737815E-02	1.124604E-01
2	1.000	3.679 x 10 ⁶	8.280000E-05	3.778111E-01	3.753289E-01	3.281213E-01
3	1.500	2.231 x 10 ⁶	1.060000E-04	4.767616E-01	4.736545E-01	4.632090E-01
4	2.000	1.353 x 10 ⁶	1.370000E-04	4.277861E-01	4.256609E-01	4.203637E-01
5	2.500	8.208 x 10 ⁵	1.750000E-04	2.998501E-01	3.005973E-01	2.937576E-01
6	3.000	4.979 x 10 ⁵	2.250000E-04	1.539230E-01	1.554684E-01	1.759799E-01
7	3.500	3.020 x 10 ⁵	2.890000E-04	9.595200E-02	9.871010E-02	9.632766E-02
8	4.000	1.832 x 10 ⁵	3.710000E-04	3.198402E-02	3.297910E-02	3.301791E-02
9	6.000	24790	1.010000E-03	0.	1.624400E-04	4.050907E-03
10	8.000	3354	2.740000E-03	0.	2.258000E-05	2.411432E-04
11	10.000	454.0	7.460000E-03	0.	3.030000E-06	1.655779E-05
12	12.000	61.44	2.030000E-02	0.	4.700000E-07	7.034003E-07
13	14.000	8.315	5.510000E-02	0.	0.	0.
14	15.500	1.855	1.037000E-01	0.	0.	0.
15	16.500	0.6826	1.991000E-01	0.	0.	0.
16	17.500	0.2511	3.001000E-01	0.	0.	0.
17	18.500	0.09237	5.229000E-01	0.	0.	0.
18	19.795	0.02530	9.295000E-01	0.	0.	0.
3000	17.675	0.2109	3.463700E-01	0.	0.	0.
2500	17.831	0.1804	3.744800E-01	0.	0.	0.
2000	18.016	0.1499	4.107800E-01	0.	0.	0.
1500	18.243	0.1194	4.602200E-01	0.	0.	0.
1000	18.537	0.08897	5.332400E-01	0.	0.	0.
500	18.959	0.05850	6.576400E-01	0.	0.	0.
68	19.555	0.03216	8.868800E-01	0.	0.	0.

Level	Lethargy	Polonium Beryllium PO-BE
0	0.	0.
1	0.500	9.573034E-01
2	1.000	9.438202E-01
3	1.500	9.887640E-02
4	2.000	0.
5	2.500	0.
6	3.000	0.
7	3.500	0.
8	4.000	0.
9	6.000	0.
10	8.000	0.
11	10.000	0.
12	12.000	0.
13	14.000	0.
14	15.500	0.
15	16.500	0.
16	17.500	0.
17	18.500	0.
18	19.795	0.
3000	17.675	0.
2500	17.831	0.
2000	18.016	0.
1500	18.243	0.
1000	18.537	0.
500	18.959	0.
68	19.555	0.

U²³⁵ Delayed Neutron Data

Delay Group, j	Fraction, β_j , Of Total Fission Neutrons in Group	Group Decay Constant, ω_j (sec ⁻¹)
1	0.00023	0.0126
2	0.00142	0.0311
3	0.00126	0.1134
4	0.00264	0.306
5	0.00080	1.253
6	0.00022	3.381

SPECTRAL DATA

<u>Level</u>	<u>Lethargy</u>	<u>1 DELAY</u>	<u>2 DELAY</u>	<u>3 DELAY</u>	<u>4 DELAY</u>	<u>5 DELAY</u>	<u>6 DELAY</u>
0	0.	0.	0.	0.	0.	0.	0.
1	0.500	0.	0.	0.	0.	0.	0.
2	1.000	0.	0.	0.	0.	0.	0.
3	1.500	0.	0.	4.000000E-04	9.100000E-03	8.000000E-04	0.
4	2.000	0.	0.	7.420000E-02	1.947000E-01	9.730000E-02	0.
5	2.500	1.882000E-01	5.982000E-01	3.594000E-01	4.090000E-01	3.649000E-01	0.
6	3.000	2.908000E-01	5.116000E-01	3.830000E-01	3.675000E-01	3.881000E-01	0.
7	3.500	5.990000E-01	7.192000E-01	4.016000E-01	3.674000E-01	3.919000E-01	2.000000E 00
8	4.000	3.688000E-01	6.840000E-02	2.404000E-01	2.022000E-01	2.332000E-01	0.
9	6.000	0.	0.	3.890000E-02	3.160000E-02	3.750000E-02	0.
10	8.000	0.	0.	5.400000E-03	4.400000E-03	5.200000E-03	0.
11	10.000	0.	0.	7.000000E-04	6.000000E-04	7.000000E-04	0.
12	12.000	0.	0.	10.000000E-05	10.000000E-05	10.000000E-05	0.
13	14.000	0.	0.	0.	0.	0.	0.
14	15.500	0.	0.	0.	0.	0.	0.
15	16.500	0.	0.	0.	0.	0.	0.
16	17.500	0.	0.	0.	0.	0.	0.
17	18.500	0.	0.	0.	0.	0.	0.
18	19.795	0.	0.	0.	0.	0.	0.
3000	17.675	0.	0.	0.	0.	0.	0.
2500	17.831	0.	0.	0.	0.	0.	0.
2000	18.016	0.	0.	0.	0.	0.	0.
1500	18.243	0.	0.	0.	0.	0.	0.
1000	18.537	0.	0.	0.	0.	0.	0.
500	18.959	0.	0.	0.	0.	0.	0.
68	19.555	0.	0.	0.	0.	0.	0.

$\nu\sigma_f$ AND σ_c OF SELECTED FUEL MATERIALS

 $\nu\sigma_f$

LEVEL	233 URANIUM	234 URANIUM	U235M1	236 URANIUM	U238M1	FU239M1	PU240HAPO	CF THORIUM
0	6.830000	6.615644	5.891000	8.426705	3.760000	8.203000	6.337140	0.968746
1	4.220000	5.663071	4.019000	3.890212	2.403000	6.384000	4.611880	0.613614
2	4.320000	4.736332	3.366000	2.720637	1.684000	6.277000	4.008450	0.335269
3	4.930000	4.254583	3.423000	2.215721	1.553000	5.347000	3.829090	0.247535
4	4.950000	3.553834	3.247000	1.602018	0.458400	5.550000	3.697990	0.095928
5	4.980000	2.944192	3.026000	0.413697	0.019000	5.190000	2.734900	
6	5.380000	1.325130	3.073000	0.024092	0.000430	4.357000	0.636623	
7	6.070000	0.332880	3.375000			4.709000	0.186613	
8	5.490000	0.076046	4.246000			4.332780	0.035364	
9	9.930000		6.938890			6.432760	0.000099	
10	50.00000		13.10000			5.412470	0.000000	
11	105.0000		34.86000			37.02470	0.000000	
12	120.0000		86.78000			111.7530	0.000589	
13	200.0000		91.94650			195.4060	0.161315	
14	735.0000		67.62780			50.49080	0.139400	
15	279.0000		172.2000			365.7530	2.938010	
16	394.0000		418.7000			4341.690	0.056633	
17	686.0000		653.9000			1441.740	0.063577	
18	1300.000		1052.900			1858.020	0.088633	
3000	472.9000		423.5000			2723.400	0.287830	
2500	504.8600		466.1000			2827.700	0.170930	
2000	549.9200		519.0000			2855.400	0.099570	
1500	614.2900		588.8000			2746.300	0.070490	
1000	711.4400		690.1000			2409.000	0.066570	
500	878.0100		869.9000			1934.700	0.072840	
68	1189.200		1226.200			2038.300	0.087100	

LEVEL	σ_a							
	233 URANIUM	234 URANIUM	U235M1	236 URANIUM	U238M1	PU239M1	PU240HAPO	CF THORIUM
0	3.000000	1.742816	1.863920	2.234901	1.015000	2.257180	2.122700	0.319797
1	1.800000	1.665088	1.388580	1.149887	0.720000	1.888540	1.688730	0.235755
2	1.800000	1.553550	1.252140	0.918409	0.582200	1.909740	1.607320	0.169353
3	2.100000	1.530865	1.349390	0.805222	0.599100	1.977120	1.628820	0.169300
4	2.100000	1.414147	1.363570	0.658424	0.266600	1.928990	1.631720	0.145133
5	2.100000	1.257904	1.352100	0.294731	0.152300	1.837150	1.253310	0.141931
6	2.300000	0.636720	1.439420	0.136229	0.127100	1.790400	0.364753	0.167594
7	2.600000	0.260540	1.657550	0.133368	0.136900	1.804530	0.225934	0.192602
8	2.400000	0.259451	2.201830	0.231162	0.239700	1.955240	0.421329	0.330563
9	4.300000	0.465037	3.903970	0.465037	0.470400	2.971840	1.375380	0.523064
10	20.00000	1.134838	7.650000	1.134838	1.111000	4.988840	5.229960	0.424016
11	48.00000	7.477619	21.20000	6.396235	6.097000	21.84880	7.911840	3.954055
12	50.00000	30.65821	54.30000	34.53615	36.06000	80.31500	45.99320	31.07405
13	90.00000	331.3585	75.70070	132.8146	109.6350	116.4290	13.08060	10.65924
14	330.0000	6.132972	37.12220	1.515556	0.548600	19.74270	372.0940	0.849128
15	130.0000	12.96431	82.84000	1.661930	0.607300	182.2990	7848.590	1.472063
16	192.0000	28.02745	209.3000	2.663740	0.919000	2469.680	151.2890	2.430520
17	294.0000	52.34125	316.7000	4.377884	1.463000	735.1620	169.8390	4.003428
18	508.0000	79.96884	506.5000	6.409368	2.200000	880.2670	236.7910	5.845780
300Q	213.7700	30.95380	208.0000	2.880690	0.991900	1508.011	768.4800	2.422500
2500	225.9100	34.26120	228.8000	3.110300	1.064600	1574.281	457.1000	2.620700
2000	243.5200	38.51520	254.7000	3.408280	1.159400	1588.447	267.3400	2.875600
1500	269.2800	44.26800	288.3000	3.815080	1.289600	1508.008	190.7600	3.321000
1000	309.2700	52.68460	336.5000	4.417320	1.483800	1293.296	182.3800	3.728900
500	380.3700	66.81290	421.7000	5.444080	1.818300	1009.510	204.3400	4.591900
68	516.4600	92.29920	592.2000	7.329310	2.442500	995.4909	258.5300	6.182300

σ_a OF COMMONLY USED POISON MATERIALS

LEVEL	CF BORON	CF 10 BORON	GD CFINE	CF SAMARIUM	CF 149 SM	TK EU	HAFNIUM	SLAG
0	0.058735	0.013295	0.010095	0.010095	0.010095	0.010095	0.035929	0.006000
1	0.060964	0.027842	0.014938	0.014938	0.014938	0.014938	0.046071	0.023500
2	0.052945	0.119229	0.025619	0.025619	0.025619	0.025732	0.059143	0.046500
3	0.065036	0.291177	0.058838	0.058838	0.058838	0.059076	0.075714	0.069500
4	0.043127	0.210993	0.121976	0.121976	0.121976	0.121976	0.097857	0.092000
5	0.053098	0.294730	0.181103	0.181103	0.181103	0.181103	0.125000	0.116580
6	0.128501	0.592597	0.247998	0.247998	0.247998	0.247998	0.160714	0.143500
7	0.218693	0.845946	0.394577	0.394577	0.394577	0.394576	0.206429	0.170500
8	0.332201	1.728713	0.497047	0.497047	0.497047	0.497047	0.265000	0.222793
9	0.735439	4.204739	1.178409	1.150883	1.153670	1.151890	0.721429	0.421133
10	1.478631	10.85285	4.105411	2.556717	3.780906	2.115830	1.957143	1.625000
11	2.914652	29.66902	12.98148	15.20756	11.38706	51.25400	5.328571	7.028339
12	11.18557	80.68068	28.18009	44.74752	161.7771	111.0800	14.5000	22.53787
13	35.84522	203.9704	39.33678	508.0796	338.4576	77.47000	47.00000	42.59058
14	82.21601	425.2149	121.6183	34.15463	45.17513	46.06000	1190.000	32.85133
15	146.8481	741.8094	126.7334	322.3203	2239.541	2503.000	47.00000	14.85924
16	242.1873	1223.126	2188.572	820.7149	5798.825	2016.700	40.00000	15.98032
17	399.3381	2016.790	14739.54	11185.22	80610.29	1343.480	53.50000	27.40833
18	584.7372	2957.629	32743.37	6582.759	47250.87	2748.180	90.00000	42.59620
3000	261.5100	1388.900	5129.000	2699.000	19424.50	2518.000	109.1000	18.04867
2500	282.7300	1501.700	6357.000	3270.490	23548.30	2492.000	77.54300	19.02448
2000	310.1400	1647.200	8106.000	4050.500	29176.90	2333.000	61.08600	20.57717
1500	347.4700	1845.500	10730.00	5118.210	36881.70	2131.000	57.32200	22.92264
1000	402.6000	2138.300	14958.00	6519.840	46994.40	2028.000	61.51700	26.52441
500	496.5200	2637.100	22552.00	7952.720	57322.40	2397.000	72.40500	32.70435
68	669.5900	3556.400	35945.00	7845.000	55879.00	3807.000	94.55200	44.09760

RECORD OF TAPE NUMBERS

This page is included so that one may keep a record of the tape number, date, and tape density.

Tape Number	Date	Tape Density
7	3-19-64	5

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