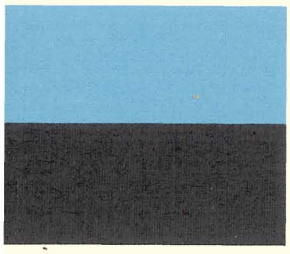
EPRI
Electric Power
Research Institute

Topics:
Fission products
Actinides
Cross sections
Nuclear data collections
ENDF/B file

EPRI NP-3787
Project 975-2
LA-UR 83-1285
ENDF-322
Final Report
December 1984



Summary of ENDF/B-V Data for Fission Products and Actinides

Prepared by
Los Alamos National Laboratory
Los Alamos, New Mexico

REPORT SUMMARY

SUBJECTS: Fuel and core management and development / Code development / Corrosion, chemistry, and radiation transport

TOPICS: Fission products; Actinides; Cross sections; Nuclear data collections; ENDF/B file

AUDIENCE: R&D analysts / Safety engineers

Summary of ENDF/B–V Data for Fission Products and Actinides

Most often, those engaged in reactor design, fuel-cycle optimization, and safety analysis use only a small subset of the evaluated nuclear data in the ENDF/B–V library. This summary of the yields, decay constants, and cross sections of fission-product and heavy-actinide nuclides offers those data in a convenient, concise format.

BACKGROUND: The ENDF/B–V national reference library of evaluated nuclear data contains extensive information on 877 fission-product and 60 heavy-actinide nuclides in a format designed for computer readability. A small subset of the data about these nuclides, which are produced in reactors during operation, is used often in core physics, safety, and accident consequence analyses.

OBJECTIVES: To review the ENDF/B–V fission-product and actinide data files and summarize the most frequently requested data in a convenient reference form.

APPROACH: After reviewing the data on fission products and actinides in the ENDF/B–V library (revision O), analysts selected areas such as nuclide half-lives, decay energies and decay modes, and Q-values for summarizing. For the longer-lived nuclides, they processed the cross-section files to produce resonance integrals and the few-group constants appropriate for thermal and fast reactor applications. They omitted the extensive files on decay spectra, charge distribution of mass chain yields, and energy-dependent cross sections. Comments and revisions to the library data were gathered from studies that had tested and evaluated the ENDF/B–V data.

RESULTS: In this report, the information selected from the ENDF/B–V library on fission products and actinides appears largely in table form. The report offers diagrams of possible decay and transmutations as well. The main text presents library data that, for the most part, are unrevised. The appendixes, which identify deficiencies in the library, augment and comment on those data.

EPRI PERSPECTIVE: This document is a relatively concise source of the ENDF/B–V nuclide data that are used most often. The appendixes, which amend the library material, add to the value of the document as a general reference. EPRI has already

employed the summarized information to update the nuclear data libraries used by two EPRI core physics computer programs, CELL-2 (RP452-1 and RP975-3) and CPM-2 (RP1750-4). Both of those codes are included in the Reactor Analysis Support Package (RASP), under development in EPRI project RP1761-1.

PROJECT RP975-2
EPRI Project Manager: O. Ozer
Nuclear Power Division
Contractor: Los Alamos National Laboratory

For further information on EPRI research programs, call EPRI Technical Information Specialists (415) 855-2411.

ORDERING INFORMATION EPRI NP-3787, Final Report, December 1984, 132 pages.

EPRI Members If this report is not available from your company libraries or your Technical Information Coordinator, you can order it from

Research Reports Center
P.O. Box 50490
Palo Alto, CA 94303
(415) 965-4081

Nonmembers You can order this report in print or microfiche from Research Reports Center.

Price: $14.50 Overseas price: $29.00
(California residents add sales tax.)
Payment must accompany order.

Summary of ENDF/B-V Data for Fission Products and Actinides

NP-3787
Research Project 975-2
LA-UR 83-1285
ENDF-322

Final Report, December 1984

Prepared by

LOS ALAMOS NATIONAL LABORATORY
Applied Nuclear Science Group
Theoretical Division
Building T2
University of California
Los Alamos, New Mexico 87545

Principal Investigators
T. R. England
W. B. Wilson
R. E. Schenter*
F. M. Mann*

*Hanford Engineering Development Laboratory
Operated by Westinghouse Hanford Co.
Richland, Washington 99352

Prepared for

Electric Power Research Institute
3412 Hillview Avenue
Palo Alto, California 94304

EPRI Project Manager
O. Ozer

Code Development and Validation Program
Nuclear Power Division

ORDERING INFORMATION

Requests for copies of this report should be directed to Research Reports Center (RRC), Box 50490, Palo Alto, CA 94303, (415) 965-4081. There is no charge for reports requested by EPRI member utilities and affiliates, U.S. utility associations, U.S. government agencies (federal, state, and local), media, and foreign organizations with which EPRI has an information exchange agreement. On request, RRC will send a catalog of EPRI reports.

Research Categories: Fuel and core management and development
Code development
Corrosion, chemistry, and radiation transport

NOTICE

Prepared by
Los Alamos National Laboratory
Los Alamos, New Mexico

ABSTRACT

A summary of the fission-product and actinide data contained in ENDF/B-V data files is presented. All fission products (877) and actinides (60) in Rev. "0" are included. Appendices contain some additional augmentation of these data along with a presentation of probable data changes, errors, or existing revisions to date. These result largely from our experience with ENDF/B-V data testing and comparisons with other international evaluations. The main text identifies data that are commented upon in the Appendices, but otherwise it consists of Rev. "0" data. (In the case of group cross sections processed from Rev. "0," error corrections are discussed in the main text.) Mass chain yields, decay parameters (half-lives, branchings, beta, gamma, and alpha energies), processed one-group cross sections for fast reactor spectra, four-group cross sections for thermal reactors, and the resonance integrals and 2200 m/s cross sections are included, as well as other information pertinent to the ENDF/B-V files. The extensive decay spectra, charge distribution of mass chain yields, and energy-dependent cross sections are not included; such inclusion would require over 4000 pages. Rather, we have prepared this document to serve as a relatively concise source for the most frequently requested data and as a convenient reference for the fission-product and actinide data contained in ENDF/B-V. The additional augmentation of these data, relegated to the appendices, should add to the utility of this document as a general reference.

ACKNOWLEDGMENT

The chain schematics in Appendices A and B were drafted by B. G. Attencio; we greatly appreciate his extensive work. The basic NJOY cross-section processing was done by R. M. Boicourt. Data processing, organization, and checking of these tables and schematics were accomplished using joint funding of the U.S. Department of Energy [Technology, Safety, and Physics Divison, Office of Breeder Technology Projects, Office of Nuclear Energy (P. B. Hemmig)] and the Electric Power Research Institute [Nuclear Power Division (O. Ozer)]. Many people contributed to the ENDF/B-V files. B. F. Rider's (General Electric Co.) contribution to the fission yields was exceptionally important, as were the spectral and other decay data contributions of C. W. Reich and R. L. Bunting (Idaho National Engineering Laboratory, EG&G). A. Tobias' (Berkeley Nuclear Laboratories, Glouchestershire, U. K.) assistance in reviewing the decay data is particularly appreciated.

CONTENTS

ILLUSTRATIONS

TABLES

SUMMARY

The main body of this document summarizes the content and major parameters for all fission products and actinides in ENDF/B-V, Rev. "0," along with processed reference cross-section sets appropriate for thermal and fast reactor studies. In an attempt to make this not only a reference document for ENDF/B-V fission products and actinides, but also a reasonably concise and accurate summary of the major data requested by a wide range of users, we have limited the main body to ENDF/B-V data and relegated additional useful information to appendices. The appendices include schematics of all fission-product and actinide chains as well as some yield, cross-section, and all decay branching fraction data. These chains are more extensive than they would be if limited to data in the decay file, as is noted in Appendices A and B. In addition, Appendix C lists comments on the questionable data in ENDF/B-V or errors flagged in Table 2-1. Appendix C also provides a list of nuclides having average decay energies based on potentially incomplete decay spectra, and a comparison of ENDF/B-V values with some additional sources. For completeness, we have tabulated (n,2n) cross sections in Appendix D for all fission products and actinides that otherwise have some cross section data in ENDF/B-V. As noted, many of these are based only on model calculations and may therefore be more approximate than the evaluated ENDF/B-V values. Limited comparisons with evaluated (n,2n) cross sections indicate that these data are sufficiently accurate for reactor calculations.

Section 1

INTRODUCTION

The fission-product data in the Evaluated Nuclear Data files (ENDF/B-IV) (1) represented an enormous expansion over previous versions and proved to be very useful for many applications. The data in ENDF/B-V (1) was further expanded, particularly in fission yields and decay spectra data, and all parameters were revised and updated. In addition, decay data for 60 actinides were included for the first time. The expansion in types of data is indicated in Tables 1-1 and 1-2.

This report has been prepared as a reference to ENDF/B-V for fission products and actinides and as a summary listing of the most useful parameters, similar to the information for ENDF/B-IV in Ref. (2). We have expanded the content to include processed reference cross section sets appropriate for fast- and thermal-reactors, mass-chain fission-product yields, and schematics of the decay chains. Tables listing decay and cross-section parameters and the chain schematics include all heavy nuclides, generally referred to as actinides, in addition to fission products developed in current reactor fuels.

One table, central to this document, lists reference parameters on one to, at most, four lines for each of the 877 fission products and 60 actinides. The ENDF/B-V files for these contain more than 260 000, 80-column records, or about 2.5-million words. This is too extensive for most users to process or even to interrogate for the frequently requested parameters. As Ref. (2) served for ENDF/B-IV, we anticipate that this document also will be useful to a wide range of users; the inclusion of additional processed data, (n,2n) cross sections and chain schematics should extend its utility. Microscopic, energy-dependent cross sections, detailed spectral data, and yield distributions are not included. Processed multigroup cross sections are available in Ref. (3). Multigroup decay spectra files have been generated and used (4), but not otherwise published. Yield distributions are available on microfiche in Ref. (5).

We do not attempt to summarize for the user of this document the extensive data-testing results. This is generally available in other reports (6,7). However, we have indicated those nuclides containing known errors or needed corrections in the ENDF/B-V files, including those that do not affect the listed data in this document and those corrected before the second release of ENDF/B-V. To be complete, we have also included in the chain schematics all fission products having fission yields, an additional 84 actinides, and a table of approximate (n,2n) cross sections.

The main body of this document generally contains a summary of only the ENDF/B-V data or cross sections processed from the ENDF/B-V files; additions or corrections are relegated to appendices. Two exceptions to this division, as clearly noted in the report, are the (n,γ) reaction cross sections producing isomeric states (in the form of branching fractions) and corrections to the processed cross sections as explictly itemized. The (n,γ) branchings are needed for completeness in summation code files and the cross section files were necessarily corrected before final processing.

Table 1-1

ENDF/B-IV vs ENDF/B-V GROSS COMPARISON OF DATA CONTENT IN FILES

Type of Quantity	ENDF/B-IV	ENDF/B-V
FISSION PRODUCTS		
General Content		
Total nuclides	824	877
Nuclides having cross sections	181	196
Stable nuclides	113	127
Unstable nuclides	711	750
Total isomeric states (≧ 0.1s)	123	154
First isomeric states (≧ 0.1s)	117	148
Average energies derived from exp.	181	317
Delayed neutron precursors	57	105
Fission yield sets	10 (Direct-only)	20
FP Nuclides Having Detailed Spectral Data		
Beta and/or gamma	180	264
Electron related	163(β-only)	233
Photon related	172(γ-only)	247
Conversion electron	38	157
Positron or EC	0	12
X-ray	0	166
Discrete electron	0	166
ACTINIDES		
Total actinides with decay spec. (41 Have cross sections in ENDF/B-V)	0	60

Table 1-2

COMPARISON OF FP YIELDS IN ENDF/B-IV AND ENDF/B-V*

Characteristic Neutron Incident Energy

Target Nuclide	Thermal	Fast	High (14 MeV)	Spontaneous
^{232}Th		4,5	5	
^{233}U	4,5	5	5	
^{235}U	4,5	4,5	4,5	
^{236}U		5		
^{238}U		4,5	4,5	
^{237}Np		5		
^{239}Pu	4,5	4,5	5	
^{240}Pu		5		
^{241}Pu	4,5	5		
^{242}Pu		5		
^{252}Cf				5

*10 sets of direct yields in ENDF/B-IV (~ 11 000 yields),
20 sets of direct and cumulative (by A and Z yields) in ENDF/B-V,
now including uncertainties (~ 44 000 yields plus uncertainties).

Users interested in the evaluation of ENDF/B-V data should consult Refs. (8-10) for spectra, Ref. (11) for theoretical estimates of average energies and halflives, Refs. (5, 12, 13) for fission yields, and (14) for fission product cross sections. There were many other contributions to evaluated cross sections, as indicated in the data testing report, Ref. (7); it includes most, but not all, of the fission product testing described in Ref. (6). Tests of the buildup and decay of the heavy nuclides (actinides) are less complete than for fission products. Some relevant information can be found in Ref. (7) and (15). There are many other references to test results subsequent to the general Ref. (7). The evaluation procedures, problems, and some test results are included in other papers in the two conferences noted in Refs. (12) and (13).

Section 2

SUMMARY DATA

Table 2-1 lists the halflives, decay energies, decay modes, branching factions, Q-values, the (n,γ) σ(.0253 eV) and resonance integrals, and other information for 877 fission products and 60 actinides. All nuclides have been grouped by increasing mass number, then charge and state per mass. The first column is simply a sequence number for the ordering of data. All other columns have specific meanings in the ENDF/B Formats Manual (16) and are briefly summarized below. The nuclides having evaluated cross sections (196 fission products and 41 actinides) are identified by an inserted line listing the cross section at 0.0253 eV, resonance integral and an (n,γ) branching fraction to the ground, first, and second isomeric state, if any. The branchings are approximate values and not part of the ENDF files. For all fission products having evaluated cross sections, the σ(.0253 eV) and resonance integral values apply at infinite dilution and zero degrees; all actinide values were obtained using the processing code NJOY (17) at inifinte dilution and 900 K. (Other processed cross sections appropriate for most thermal and three fast reactor spectra are included in subsequent tables.)

The column headings in Table 2-1 apply to all quantities except the lines listing the cross sections and (n,γ) branching. The meaning and/or units for each quantity are:

Col. Heading	Quantity
Symbol	Chemical symbol preceded by the Z value and followed by the atomic number. Nuclides that are isomeric states have m, n,... following the atomic number meaning 1st, 2nd,... isomeric states (the files generally include isomeric states having halflives ≧ 0.1 s).
ZZAAAS	is a numeric identifier consisting of the quantity Z x 10000 + A x 10 + S, where S is the isomeric state number (0 = ground, 1 = 1st isomeric state, etc.).
Halflife	the total decay halflife in seconds.
E-beta, E-gamma, E-alpha	These generally are aveage beta, gamma, and alpha decay energies, but have more precise definitions. Thus E-beta is the total electron-related radiation such as β^-, β^+, conversion electron, Auger, etc. E-gamma is the average energy of all

Col. Heading	Quantity
	"electromagnetic" radiation such as gamma rays, X rays, and annihilation radiation. E-alpha is the average energy of all heavy charged particles and delayed neutrons. The alpha decay energy includes the recoil energy. The sum of the three average energies is the recoverable energy per decay (neutrino energies are excluded). All values are given in units of eV. The user of ENDF/B-V should be aware that the energy from spontaneous fission should be included, by definition, in the E-alpha value but is not so included.
RTYP	identifies the initial or primary decay mode for the listed line of data (see below).
RFS	identifies the daughter state following the decay (0. = ground, 1. = 1st isomeric state, etc.).
Q	is the total Q-value for the decay mode.
AWR	is the "Atomic Weight Ratio," meaning the ratio of the atomic mass to the mass of a neutron.
Branching	is the fraction of decays from type RTYP to state RFS.
NDK	is the number of decay modes.
NSP	is the number of spectral types included in the ENDF/B files. (The -0 identifies those nuclides having decay energies based on beta strength functions.)
MAT	is the material identification number assignment in the ENDF/B files.

The decay mode identification, RTYP, has the following definitions.

RTYP	Decay Mode	
1.	β^-	Beta decay
2.	e.c., (β^+)	Electron capture and/or positron emission
3.	IT	Isomeric Transition
4.	α	Alpha decay
5.	n	Neutron emission but not delayed neutron decay (see below)

RTYP	Decay Mode	
6.	SF	Spontaneous fission
7.	p	Proton emission
10.	—	Unknown

Multiple particle emission is also defined by combining the RTYP indicators as decimal digits in the sequence in which particles are emitted. Thus, for beta decay followed by a delayed neutron, RTYP = 1.5, and a positron followed by alpha decay is 2.4, etc. Such compound RTYP values therefore indicate intermediate states having lifetimes that are too short for explicit inclusion in the files. The Q-value for such cases is the energy difference based on masses of the initial and final states.

Spectral files contain a particle indicator, STYP, defined similarly to RTYP, but with the added values of 0. = γ-rays, 8. = discrete electrons, and 9. = x rays. In this report, we do not include the average energies for each type of spectra. As can be be seen from the NSP column, many nuclides do not have spectra in the files. Most of these have average energies, and in some cases halflives, based on systematics (11). In 38 cases, identified by NSP = -0, the average energies are based on beta strength functions; these 38 and those having spectra are discussed in Refs. (8-10). All 60 actinides have spectral data, and essentially all unstable fission products that are significant contributors to the total decay energy have spectra (264 of the 711 unstable fission products).

The "b" preceding some sequence numbers identifies nuclides having data errors, errors in some part of the ENDF/B-V file, or simply nuclides having questionable data based on comparisons with other compilations or more recent measurements. Many of these have no effect on the listed data in Table 2-1. All are included in Appendix C with comments on the error or data in question. Those nuclides having a "c" preceding the sequence number have been identified as probable cases requiring investigation for the so-called "Pandemonium Problem (18)." A number of publications such as Ref. (6) have noted that integral tests suggest that this is a real problem in the ENDF/B files, as noted initially in tests of the Japanese files (19-21). Briefly, for some high-Q (> 5 MeV) nuclides, there appears to be a systematic biasing of average decay energies in complex decay schemes due to the experimental failure to observe all of the gamma transitions. This failure usually causes an increase in the evaluated beta energy and a decrease in the average gamma energy. The total decay energy is, of course, less affected.

Table 2-1

SUMMARY OF FISSION PRODUCT AND ACTINIDE DATA, ENDF/B-V REV "0" [a]
(CROSS SECTIONS INCLUDED)

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
1	27-Co- 72	270720	1.2355e-01	4.5115e+06	4.0483e+06	0.	1.	0.	1.3568e+07	1.0000e+00	7.1339e+01	1	0	9001
2	28-Ni- 72	280720	3.8306e+00	1.7510e+06	9.5888e+05	0.	1.	0.	4.9211e+06	1.0000e+00	7.1324e+01	1	0	9005
3	29-Cu- 72	290720	6.4891e+00	2.8913e+06	1.7859e+06	0.	1.	0.	8.0524e+06	1.0000e+00	7.1318e+01	1	0	9012
4	30-Zn- 72	300720	1.6740e+05	1.1016e+05	8.8480e+04	0.	1.	0.	4.5700e+05	1.0000e+00	7.1309e+01	1	0	9022
5	31-Ga- 72	310720	5.0760e+04	4.9800e+05	2.7110e+06	0.	1.	0.	3.9916e+06	1.0000e+00	7.1309e+01	1	2	9034
b 6	31-Ga- 72m	310721	3.7000e-02	0.	1.1920e+05	0.	3.	0.	5.0000e+04	1.0000e+00	7.1381e+01	1	0	9035
7	32-Ge- 72	320720	stable								7.1304e+01	0	0	9050
	Sigma(.0253) and RI=			9.8000e-01	1.0600e+00		B1, B2 and B3=		9.6800e-01	3.2000e-02	0.			H9050
8	27-Co- 73	270730	1.2898e-01	4.0356e+06	3.0653e+06	0.	1.	0.	1.1631e+07	1.0000e+00	7.2333e+01	1	0	9002
9	28-Ni- 73	280730	4.9059e-01	2.9778e+06	1.9571e+06	0.	1.	0.	8.3984e+06	1.0000e+00	7.2320e+01	1	0	9006
10	29-Cu- 73	290730	5.1136e+00	2.0244e+06	1.1855e+06	0.	1.	0.	5.7024e+06	1.0000e+00	7.2310e+01	1	0	9013
11	30-Zn- 73	300730	2.4000e+01	1.6585e+06	9.2706e+05	0.	1.	0.	4.7000e+06	1.0000e+00	7.2304e+01	1	0	9023
12	31-Ga- 73	310730	1.7532e+04	4.8059e+05	2.7076e+05	0.	1.	1.	1.5635e+06	1.0000e+00	7.2299e+01	1	0	9036
13	32-Ge- 73	320730	stable								7.2297e+01	0	0	9051
	Sigma(.0253) and RI=			1.5001e+01	6.9722e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9051
14	32-Ge- 73m	320731	5.0000e-01	0.	6.6730e+04	0.	3.	0.	6.6730e+04	1.0000e+00	7.2297e+01	1	0	9052
15	27-Co- 74	270740	9.1963e-02	4.7698e+06	4.6215e+06	0.	1.	0.	1.4659e+07	1.0000e+00	7.3329e+01	1	0	9003
16	28-Ni- 74	280740	9.0015e-01	2.3270e+06	1.3315e+06	0.	1.	0.	6.4611e+06	1.0000e+00	7.3312e+01	1	0	9007
17	29-Cu- 74	290740	6.4818e-01	3.2264e+06	2.2392e+06	0.	1.	0.	9.1797e+06	1.0000e+00	7.3305e+01	1	0	9014
18	30-Zn- 74	300740	9.6000e+01	7.6381e+05	4.3553e+05	0.	1.	1.	2.3500e+06	1.0000e+00	7.3295e+01	1	0	9024
19	31-Ga- 74	310740	4.8600e+02	1.9902e+06	9.5432e+05	0.	1.	0.	5.4021e+06	1.0000e+00	7.3292e+01	1	0	9037
20	31-Ga- 74m	310741	1.0000e+01	0.	5.9700e+04	0.	3.	0.	5.9700e+04	1.0000e+00	7.3364e+01	1	0	9038
21	32-Ge- 74	320740	stable								7.3286e+01	0	0	9053
	Sigma(.0253) and RI=			3.8301e-01	6.1100e-01		B1, B2 and B3=		6.5600e-01	3.4400e-01	0.			H9053
b 22	34-Se- 74	340740	stable								7.3287e+01	0	0	9089
	Sigma(.0253) and RI=			5.1709e+01	5.7615e+02		B1, B2 and B3=		1.0000e+00	0.	0.			H9089
23	27-Co- 75	270750	8.1657e-02	4.5206e+06	3.8009e+06	0.	1.	0.	1.3339e+07	1.0000e+00	7.4323e+01	1	0	9004
24	28-Ni- 75	280750	2.3118e-01	3.3355e+06	2.3285e+06	0.	1.	0.	9.4889e+06	1.0000e+00	7.4308e+01	1	0	9008
25	29-Cu- 75	290750	9.2736e-01	2.5686e+06	1.6253e+06	0.	1.	0.	7.2424e+06	1.0000e+00	7.4297e+01	1	0	9015
26	30-Zn- 75	300750	1.0200e+01	2.0650e+06	1.2282e+06	0.	1.	0.	5.8274e+06	1.0000e+00	7.4289e+01	1	0	9025
27	31-Ga- 75	310750	1.2660e+02	1.1357e+06	5.9823e+05	0.	1.	0.	3.2961e+06	1.0000e+00	7.4283e+01	1	0	9039
28	32-Ge- 75	320750	4.8000e+01	3.4102e+05	2.9000e+04	0.	1.	0.	1.1777e+06	1.0000e+00	7.4279e+01	1	0	9054
29	32-Ge- 75m	320751	4.8900e+01	8.0500e+04	5.8900e+04	0.	3.	0.	1.3940e+05	1.0000e+00	7.4280e+01	1	0	9055
30	33-As- 75	330750	stable								7.4278e+01	0	0	9071
	Sigma(.0253) and RI=			4.3006e+00	6.5636e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9071

Note: Units and parameter definitions are included in the main text and at the end of this table.

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
31	34-Se- 75	340750	1.0238e+07	0.	3.9300e+05	0.	2.	0.	8.6490e+05	1.0000e+00	7.4367e+01	1	0	9090
32	28-Ni- 76	280760	3.0456e-01	2.9366e+06	1.8103e+06	0.	1.	0.	8.1689e+06	1.0000e+00	7.5301e+01	1	0	9009
33	29-Cu- 76	290760	2.6025e-01	3.5347e+06	2.7100e+06	0.	1.	0.	1.0270e+07	1.0000e+00	7.5292e+01	1	0	9016
34	30-Zn- 76	300760	5.7000e+00	1.4160e+06	6.1400e+05	0.	1.	0.	3.8900e+06	1.0000e+00	7.5280e+01	1	-0	9026
35	31-Ga- 76	310760	2.7100e+01	1.9180e+06	2.7900e+06	0.	1.	0.	6.7700e+06	1.0000e+00	7.5276e+01	1	2	9040
36	32-Ge- 76	320760	stable								7.5269e+01	0	0	9056
	Sigma(.0253) and RI=			1.4201e-01	1.3389e+00		B1, B2 and B3=		4.6000e-01	5.4000e-01	0.			H9056
37	33-As- 76	330760	9.4752e+04	1.0640e+06	4.3000e+05	0.	1.	0.	2.9689e+06	1.0000e+00	7.5270e+01	1	2	9072
38	34-Se- 76	340760	stable								7.5267e+01	0	0	9091
	Sigma(.0253) and RI=			8.5000e+01	4.4514e+01		B1, B2 and B3=		7.3600e-01	2.6400e-01	0.			H9091
39	28-Ni- 77	280770	1.0331e-01	4.0728e+06	3.2318e+06	0.	1.	0.	1.1872e+07	1.0000e+00	7.6298e+01	1	0	9010
40	29-Cu- 77	290770	3.0522e-01	3.1459e+06	2.1709e+06	0.	1.	0.	8.9502e+06	1.0000e+00	7.6285e+01	1	0	9017
41	30-Zn- 77	300770	1.4000e+00	1.8270e+06	2.7810e+06	0.	1.	0.	6.9100e+06	1.0000e+00	7.6276e+01	1	-0	9027
42	31-Ga- 77	310770	1.3000e+01	2.0830e+06	6.7200e+05	0.	1.	0.	5.3400e+06	1.2000e-01	7.6268e+01	2	-0	9041
							1.	1.	5.1800e+06	8.8000e-01				
43	32-Ge- 77	320770	4.0680e+04	9.1092e+05	4.7392e+05	0.	1.	0.	2.7014e+06	1.0000e+00	7.6263e+01	1	0	9057
44	32-Ge- 77m	320771	5.3000e+01	7.7690e+05	7.7195e+04	0.	1.	0.	2.8611e+06	8.0000e-01	7.6263e+01	2	0	9058
							3.	0.	1.5970e+05	2.0000e-01				
45	33-As- 77	330770	1.3968e+05	2.2880e+05	9.0000e+03	0.	1.	0.	6.9000e+05	1.0000e+00	7.6260e+01	1	4	9073
46	34-Se- 77	340770	stable								7.6259e+01	0	0	9092
	Sigma(.0253) and RI=			4.2000e+01	3.6495e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9092
47	34-Se- 77m	340771	1.7500e+01	7.4400e+04	8.7400e+04	0.	3.	0.	1.6180e+05	1.0000e+00	7.6259e+01	1	0	9093
48	28-Ni- 78	280780	1.3179e-01	3.5705e+06	2.4417e+06	0.	1.	0.	1.0074e+07	1.0000e+00	7.7291e+01	1	0	9011
49	29-Cu- 78	290780	1.1787e-01	4.1860e+06	3.7860e+06	0.	1.	0.	1.2653e+07	1.0000e+00	7.7281e+01	1	0	9018
50	30-Zn- 78	300780	1.9855e+00	1.9986e+06	1.1329e+06	0.	1.	0.	5.5979e+06	1.0000e+00	7.7268e+01	1	0	9028
51	31-Ga- 78	310780	5.0900e+00	2.4850e+06	2.5880e+06	0.	1.	0.	8.0800e+06	1.0000e+00	7.7262e+01	1	-0	9042
52	32-Ge- 78	320780	5.2200e+03	2.6961e+05	1.8571e+05	0.	1.	0.	9.8000e+05	1.0000e+00	7.7254e+01	1	0	9059
53	33-As- 78	330780	5.4540e+03	1.5655e+06	7.0750e+05	0.	1.	0.	4.2915e+06	1.0000e+00	7.7253e+01	1	0	9074
54	34-Se- 78	340780	stable								7.7248e+01	0	0	9094
	Sigma(.0253) and RI=			4.0002e-01	4.5621e+00		B1, B2 and B3=		2.5900e-01	7.4100e-01	0.			H9094
55	36-Kr- 78	360780	stable								7.7330e+01	0	0	9135
	Sigma(.0253) and RI=			4.8460e+00	2.3670e+01		B1, B2 and B3=		9.5500e-01	4.5000e-02	0.			H1330
56	29-Cu- 79	290790	1.3506e-01	3.7469e+06	2.8687e+06	0.	1.	0.	1.0855e+07	1.0000e+00	7.8274e+01	1	0	9019
57	30-Zn- 79	300790	3.1251e-01	3.2516e+06	2.3092e+06	0.	1.	0.	9.3009e+06	9.8900e-01	7.8263e+01	2	0	9029
							1.5	0.	6.5000e+05	1.1000e-02				
58	31-Ga- 79	310790	3.0000e+00	2.5810e+06	1.0650e+06	0.	1.	1.	6.7600e+06	9.9850e-01	7.8254e+01	2	-0	9043
							1.5	0.	8.8000e+05	1.5000e-03				
59	32-Ge- 79	320790	4.2000e+01	1.7760e+06	2.5100e+05	0.	1.	0.	4.1500e+06	1.0000e+00	7.8247e+01	1	2	9060
60	32-Ge- 79m	320791	1.9100e+01	1.6300e+06	4.1700e+05	0.	1.	0.	4.1500e+06	1.0000e+00	7.8321e+01	1	-0	9061
61	33-As- 79	330790	5.4000e+02	7.2065e+05	3.7865e+05	0.	1.	1.	2.2006e+06	1.0000e+00	7.8243e+01	1	0	9075
62	34-Se- 79	340790	2.0500e+12	3.2124e+04	0.	0.	1.	0.	1.4938e+05	1.0000e+00	7.8241e+01	1	0	9095
63	34-Se- 79m	340791	2.3340e+02	8.1700e+04	1.4000e+04	0.	3.	0.	9.5700e+04	1.0000e+00	7.8241e+01	1	0	9096

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
64	35-Br- 79	350790	stable								7.8240e+01	0	0	9113
	Sigma(.0253) and RI=			1.1101e+01	1.3701e+02		B1, B2 and B3=		7.4300e-01	2.5700e-01	0.			H9113
65	35-Br- 79m	350791	4.9000e+00	0.	2.0700e+05	0.	3.	0.	2.0700e+05	1.0000e+00	7.8241e+01	1	0	9114
66	36-Kr- 79	360790	1.2600e+05	0.	6.8400e+04	0.	2.	0.	1.6310e+06	1.0000e+00	7.8367e+01	1	0	9136
67	36-Kr- 79m	360791	5.0000e+01	0.	1.2950e+05	0.	3.	0.	1.2950e+05	1.0000e+00	7.8321e+01	1	0	9137
68	29-Cu- 80	290800	8.9877e-02	4.8229e+06	5.1255e+06	0.	1.	0.	1.5269e+07	1.0000e+00	7.9272e+01	1	0	9020
69	30-Zn- 80	300800	4.8734e-01	2.6883e+06	1.6444e+06	0.	1.	0.	7.5029e+06	1.0000e+00	7.9256e+01	1	0	9030
70	31-Ga- 80	310800	1.6600e+00	2.1300e+06	4.6490e+06	0.	1.	0.	9.4000e+06	9.9080e-01	7.9248e+01	2	-0	9044
							1.5	0.	1.4700e+06	9.2000e-03				
71	32-Ge- 80	320800	2.9500e+01	7.2276e+05	4.1900e+05	0.	1.	0.	2.2451e+06	1.0000e+00	7.9238e+01	1	0	9062
c 72	33-As- 80	330800	1.6500e+01	2.4550e+06	6.1000e+05	0.	1.	0.	6.0000e+06	1.0000e+00	7.9236e+01	1	4	9076
73	34-Se- 80	340800	stable								7.9230e+01	0	0	9097
	Sigma(.0253) and RI=			6.1007e-01	1.0821e+00		B1, B2 and B3=		8.6900e-01	1.3100e-01	0.			H9097
74	35-Br- 80	350800	1.0600e+03	6.4888e+05	4.4600e+02	0.	1.	0.	2.0060e+06	1.0000e+00	7.9232e+01	1	0	9115
75	35-Br- 80m	350801	1.5900e+04	0.	8.6300e+04	0.	3.	0.	8.6300e+04	1.0000e+00	7.9232e+01	1	0	9116
76	36-Kr- 80	360800	stable								7.9230e+01	0	0	9138
	Sigma(.0253) and RI=			1.1740e+01	6.8600e+01		B1, B2 and B3=		6.3500e-01	3.6500e-01	0.			H1331
77	29-Cu- 81	290810	7.4209e-02	4.6980e+06	4.4005e+06	0.	1.	0.	1.4294e+07	1.0000e+00	8.0269e+01	1	0	9021
78	30-Zn- 81	300810	1.2275e-01	4.0490e+06	3.3246e+06	0.	1.	0.	1.1917e+07	1.0000e+00	8.0253e+01	1	0	9031
79	31-Ga- 81	310810	1.2300e+00	2.6380e+06	1.5880e+06	0.	1.	0.	7.4000e+06	9.5000e-01	8.0241e+01	2	-0	9045
							1.5	0.	2.4200e+06	5.0000e-02				
80	32-Ge- 81	320810	1.0100e+01	2.2740e+06	5.1000e+05	0.	1.	0.	5.5750e+06	1.0000e+00	8.0233e+01	1	-0	9063
81	33-As- 81	330810	3.3000e+01	1.5040e+06	2.2800e+05	0.	1.	0.	3.7500e+06	9.8700e-01	8.0227e+01	2	2	9077
							1.	1.	3.6470e+06	1.3000e-02				
82	34-Se- 81	340810	1.1100e+03	4.8851e+05	9.1000e+03	0.	1.	0.	1.5850e+06	1.0000e+00	8.0223e+01	1	0	9098
83	34-Se- 81m	340811	3.4400e+03	0.	1.0310e+05	0.	3.	0.	1.0310e+05	1.0000e+00	8.0223e+01	1	0	9099
84	35-Br- 81	350810	stable								8.0221e+01	0	0	9117
	Sigma(.0253) and RI=			2.6904e+00	4.9901e+01		B1, B2 and B3=		1.4900e-01	8.5100e-01	0.			H9117
85	36-Kr- 81	360810	6.6270e+12	4.9100e+03	1.2000e+04	0.	2.	0.	2.8400e+05	1.0000e+00	8.0222e+01	1	4	9139
	b													
86	36-Kr- 81m	360811	1.3000e+01	0.	1.9030e+05	0.	3.	0.	1.9030e+05	1.0000e+00	8.0222e+01	1	0	9140
87	30-Zn- 82	300820	1.2676e-01	3.8158e+06	2.8163e+06	0.	1.	0.	1.0941e+07	1.0000e+00	8.1249e+01	1	0	9032
88	31-Ga- 82	310820	6.0000e-01	4.2501e+06	4.0836e+06	0.	1.	0.	1.3079e+07	7.9000e-01	8.1237e+01	2	0	9046
							1.5	0.	4.1500e+06	2.1000e-01				
89	32-Ge- 82	320820	4.6000e+00	1.4470e+06	8.0921e+05	0.	1.	0.	4.1501e+06	1.0000e+00	8.1224e+01	1	0	9064
c 90	33-As- 82	330820	2.1000e+01	3.1550e+06	4.0000e+05	0.	1.	0.	7.2000e+06	1.0000e+00	8.1221e+01	1	2	9078
c 91	33-As- 82m	330821	1.3000e+01	1.8080e+06	3.1000e+06	0.	1.	0.	7.2000e+06	1.0000e+00	8.1221e+01	1	2	9079
92	34-Se- 82	340820	stable								8.1213e+01	0	0	9100
	Sigma(.0253) and RI=			4.5004e-02	9.3510e-02		B1, B2 and B3=		1.2900e-01	8.7100e-01	0.			H9100
93	35-Br- 82	350820	1.2708e+05	1.3894e+05	2.6490e+06	0.	1.	0.	3.0926e+06	1.0000e+00	8.1213e+01	1	4	9118
d 94	35-Br- 82m	350821	3.6780e+02	3.2000e+04	2.2000e+03	0.	1.	0.	3.1386e+06	2.4000e-02	8.1213e+01	2	2	9119
							3.	0.	4.6000e+04	9.7600e-01				
95	36-Kr- 82	360820	stable								8.1210e+01	0	0	9141
	Sigma(.0253) and RI=			3.0170e+01	1.8360e+02		B1, B2 and B3=		5.5600e-01	4.4400e-01	0.			H1332

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
96	30-Zn- 83	300830	8.3639e-02	4.3206e+06	3.8181e+06	0.	1.	0.	1.2955e+07	1.0000e+00	8.2247e+01	1	0	9033
97	31-Ga- 83	310830	3.1000e-01	4.0836e+06	3.4412e+06	0.	1.	0.	1.2103e+07	4.4000e-01	8.2233e+01	2	0	9047
							1.5	0.	8.2000e+06	5.6000e-01				
98	32-Ge- 83	320830	1.9000e+00	2.9892e+06	2.1002e+06	0.	1.	0.	8.5641e+06	9.9830e-01	8.2221e+01	2	0	9065
							1.5	0.	2.3000e+05	1.7000e-03				
b 99	33-As- 83	330830	6.5000e+00	1.8330e+06	1.3070e+06	0.	1.	0.	5.4600e+06	3.6000e-01	8.2212e+01	2	-0	9080
							1.	1.	5.2400e+06	6.4000e-01				
100	34-Se- 83	340830	1.3500e+03	4.6100e+05	2.5590e+06	0.	1.	0.	3.6150e+06	1.0000e+00	8.2207e+01	1	2	9101
101	34-Se- 83m	340831	7.0000e+01	1.2550e+06	9.0900e+05	0.	1.	0.	3.8350e+06	1.0000e+00	8.2207e+01	1	2	9102
102	35-Br- 83	350830	8.6040e+03	3.2000e+05	8.0000e+03	0.	1.	0.	9.6000e+05	5.9000e-03	8.2203e+01	2	2	9120
							1.	1.	9.1800e+05	9.9410e-01				
103	36-Kr- 83	360830	stable								8.2202e+01	0	0	9142
	Sigma(.0253) and RI=			2.0770e+02	1.8870e+02		B1, B2 and B3=		1.0000e+00	0.	0.			H1333
104	36-Kr- 83m	360831	6.6960e+03	3.8600e+04	2.4200e+03	0.	3.	0.	4.1560e+04	1.0000e+00	8.2202e+01	1	3	9143
105	31-Ga- 84	310840	9.8378e-02	4.4849e+06	4.6509e+06	0.	1.	0.	1.4117e+07	1.0000e+00	8.3230e+01	1	0	9048
106	32-Ge- 84	320840	1.2000e+00	2.7058e+06	1.6948e+06	0.	1.	0.	7.5884e+06	9.0000e-01	8.3215e+01	2	0	9066
							1.5	0.	3.0600e+06	1.0000e-01				
b107	33-As- 84	330840	3.0000e-01	3.4085e+06	2.7638e+06	0.	1.	0.	1.0070e+07	9.9870e-01	8.3207e+01	2	0	9081
							1.5	0.	8.4000e+05	1.3000e-03				
108	33-As- 84m	330841	6.0000e-01	3.4085e+06	2.7638e+06	0.	1.	0.	1.0070e+07	1.0000e+00	8.3208e+01	1	0	9082
109	34-Se- 84	340840	1.9800e+02	5.3900e+05	4.0770e+05	0.	1.	0.	1.8180e+06	1.0000e+00	8.3197e+01	1	2	9103
110	35-Br- 84	350840	1.9080e+03	1.2490e+06	1.7540e+06	0.	1.	0.	4.6720e+06	1.0000e+00	8.3196e+01	1	2	9121
111	35-Br- 84m	350841	3.6000e+02	7.5800e+05	2.7684e+06	0.	1.	0.	4.6730e+06	1.0000e+00	8.3196e+01	1	2	9122
112	36-Kr- 84	360840	stable								8.3191e+01	0	0	9144
	Sigma(.0253) and RI=			8.2880e-02	3.4900e+00		B1, B2 and B3=		3.1800e-01	6.8200e-01	0.			H1334
b113	38-Sr- 84	380840	stable								8.3193e+01	0	0	9179
	Sigma(.0253) and RI=			8.1426e-01	1.0624e+01		B1, B2 and B3=		3.5900e-01	6.4100e-01	0.			H9179
114	31-Ga- 85	310850	8.6969e-02	4.4618e+06	4.1602e+06	0.	1.	0.	1.3580e+07	1.0000e+00	8.4226e+01	1	0	9049
115	32-Ge- 85	320850	2.4996e-01	3.3157e+06	2.4821e+06	0.	1.	0.	9.6024e+06	8.0000e-01	8.4213e+01	2	0	9067
							1.5	0.	4.5700e+06	2.0000e-01				
116	33-As- 85	330850	2.0300e+00	3.1532e+06	2.3007e+06	0.	1.	0.	1.4300e+07	7.8000e-01	8.4202e+01	2	0	9083
							1.5	0.	1.0350e+07	2.2000e-01				
b117	34-Se- 85	340850	3.1000e+01	2.1848e+06	1.3894e+06	0.	1.	0.	6.2310e+06	1.0000e+00	8.4192e+01	1	0	9104
118	35-Br- 85	350850	1.7200e+02	1.0240e+06	2.1000e+04	0.	1.	1.	2.4950e+06	1.0000e+00	8.4186e+01	1	2	9123
119	36-Kr- 85	360850	3.3829e+08	2.5060e+05	2.2100e+03	0.	1.	0.	6.8720e+05	1.0000e+00	8.4183e+01	1	4	9145
	Sigma(.0253) and RI=			1.6600e+00	1.6713e+00		B1, B2 and B3=		1.0000e+00	0.	0.			H9145
120	36-Kr- 85m	360851	1.6128e+04	2.5530e+05	1.5810e+05	0.	1.	0.	9.9200e+05	7.8900e-01	8.4183e+01	2	4	9146
							3.	0.	3.0487e+05	2.1100e-01				
121	37-Rb- 85	370850	stable								8.4182e+01	0	0	9160
	Sigma(.0253) and RI=			4.6001e-01	5.9073e+00		B1, B2 and B3=		8.9100e-01	1.0900e-01	0.			H9160
b122	38-Sr- 85	380850	5.6000e+05	0.	5.1400e+04	0.	2.	0.	1.0640e+06	1.0000e+00	8.4288e+01	1	0	9180
123	38-Sr- 85m	380851	4.0800e+03	0.	2.2730e+05	0.	2.	0.	1.3027e+06	1.3000e-01	8.4288e+01	2	0	9181
							3.	0.	2.3870e+05	8.7000e-01				

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
124	32-Ge- 86	320860	2.4676e-01	3.1977e+06	2.1821e+06	0.	1.	0.	9.0654e+06	7.8000e-01	8.5207e+01	2	0	9068
							1.5	0.	4.7100e+06	2.2000e-01				
125	33-As- 86	330860	9.0000e-01	3.6812e+06	3.2542e+06	0.	1.	0.	1.2860e+07	8.9500e-01	8.5198e+01	2	0	9084
							1.5	0.	1.0580e+07	1.0500e-01				
126	34-Se- 86	340860	1.5000e+01	1.8591e+06	1.0737e+06	0.	1.	0.	5.2553e+06	1.0000e+00	8.5186e+01	1	0	9105
127	35-Br- 86	350860	5.5000e+01	1.7800e+06	3.3000e+06	0.	1.	0.	7.3000e+06	1.0000e+00	8.5181e+01	1	2	9124
128	36-Kr- 86	360860	stable								8.5173e+01	0	0	9147
	Sigma(.0253) and RI=			6.1450e-02	1.4110e-01		B1, B2 and B3=		1.0000e+00	0.	0.			H1336
129	37-Rb- 86	370860	1.6122e+06	6.6770e+05	9.4300e+04	0.	1.	0.	1.7744e+06	9.9995e-01	8.5173e+01	2	2	9161
							2.	0.	5.2600e+05	5.2000e-05				
	Sigma(.0253) and RI=			4.9000e+00	2.3931e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9161
130	37-Rb- 86m	370861	6.1080e+01	9.7000e+03	5.4630e+05	0.	3.	0.	5.5606e+05	1.0000e+00	8.5174e+01	1	0	9162
131	38-Sr- 86	380860	stable								8.5171e+01	0	0	9182
	Sigma(.0253) and RI=			2.8402e+00	5.2078e+00		B1, B2 and B3=		7.0400e-01	2.9600e-01	0.			H9182
132	32-Ge- 87	320870	1.3393e-01	3.6929e+06	2.9972e+06	0.	1.	0.	1.0875e+07	1.0000e+00	8.6204e+01	1	0	9069
133	33-As- 87	330870	3.0000e-01	3.6022e+06	2.8754e+06	0.	1.	0.	1.5820e+07	5.6000e-01	8.6193e+01	2	0	9085
							1.5	0.	7.7500e+06	4.4000e-01				
134	34-Se- 87	340870	5.6000e+00	2.5386e+06	1.7130e+06	0.	1.	0.	7.2693e+06	9.9810e-01	8.6181e+01	2	0	9106
							1.5	0.	1.0000e+06	1.9000e-03				
c135	35-Br- 87	350870	5.5700e+01	2.4960e+06	1.5540e+06	0.	1.	0.	6.8400e+06	9.7630e-01	8.6174e+01	2	2	9125
							1.5	0.	1.3250e+06	2.3700e-02				
136	36-Kr- 87	360870	4.5780e+03	1.3280e+06	7.9300e+05	0.	1.	0.	3.8890e+06	1.0000e+00	8.6167e+01	1	4	9148
137	37-Rb- 87	370870	1.4832e+18	7.8800e+04	0.	0.	1.	0.	2.7330e+05	1.0000e+00	8.6163e+01	1	1	9163
	Sigma(.0253) and RI=			1.1998e-01	2.1000e+00		B1, B2 and B3=		1.0000e+00	0.	0.			H9163
138	38-Sr- 87	380870	stable								8.6162e+01	0	0	9183
	Sigma(.0253) and RI=			1.6003e+01	1.1826e+02		B1, B2 and B3=		1.0000e+00	0.	0.			H9183
139	38-Sr- 87m	380871	1.0098e+04	6.4900e+04	3.2100e+05	0.	3.	0.	3.8840e+05	9.9700e-01	8.6163e+01	2	4	9184
							2.	0.	1.1480e+05	3.0000e-03				
140	32-Ge- 88	320880	1.2900e-01	3.6267e+06	2.7181e+06	0.	1.	0.	1.0463e+07	1.0000e+00	8.7200e+01	1	0	9070
141	33-As- 88	330880	1.3483e-01	3.9998e+06	3.8879e+06	0.	1.	0.	1.2381e+07	1.0000e+00	8.7189e+01	1	0	9086
142	34-Se- 88	340880	1.5000e+00	2.3931e+06	1.4694e+06	0.	1.	0.	6.7323e+06	9.9500e-01	8.7175e+01	2	0	9107
							1.5	0.	1.4100e+06	5.0000e-03				
c143	35-Br- 88	350880	1.6000e+01	2.5400e+06	3.0000e+06	0.	1.	0.	8.6000e+06	9.3200e-01	8.7169e+01	2	2	9126
							1.5	0.	5.5600e+05	6.8000e-02				
144	36-Kr- 88	360880	1.0224e+04	3.4800e+05	2.0200e+06	0.	1.	0.	2.9130e+06	1.0000e+00	8.7159e+01	1	2	9149
145	37-Rb- 88	370880	1.0680e+03	2.0560e+06	6.5800e+05	0.	1.	0.	5.3090e+06	1.0000e+00	8.7156e+01	1	4	9164
146	38-Sr- 88	380880	stable								8.7151e+01	0	0	9185
	Sigma(.0253) and RI=			5.8000e-03	1.2387e-02		B1, B2 and B3=		1.0000e+00	0.	0.			H9185
147	33-As- 89	330890	1.2125e-01	3.9892e+06	3.4969e+06	0.	1.	0.	1.1969e+07	1.0000e+00	8.8184e+01	1	0	9087
148	34-Se- 89	340890	4.1000e-01	2.9554e+06	2.1465e+06	0.	1.	0.	8.5423e+06	9.5000e-01	8.8171e+01	2	0	9108
							1.5	0.	2.7500e+06	5.0000e-02				
149	35-Br- 89	350890	4.3800e+00	2.6310e+06	2.2210e+06	0.	1.	0.	8.0400e+06	8.7000e-01	8.8162e+01	2	-0	9127
							1.5	0.	2.8700e+06	1.3000e-01				

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
150	36-Kr- 89	360890	1.8960e+02	1.3460e+06	1.8700e+06	0.	1.	0.	4.9300e+06	1.0000e+00	8.8153e+01	1	2	9150
151	37-Rb- 89	370890	9.1200e+02	1.0280e+06	2.0700e+06	0.	1.	0.	4.4860e+06	1.0000e+00	8.8148e+01	1	2	9165
152	38-Sr- 89	380890	4.3632e+06	5.8330e+05	1.4000e+02	0.	1.	1.	5.8300e+05	1.5000e-04	8.8144e+01	2	2	9186
							1.	0.	1.4921e+06	9.9985e-01				
	Sigma(.0253) and RI=			4.2000e-01	5.2665e-01		B1, B2 and B3=		1.0000e+00	0.	0.			H9186
153	39- Y- 89	390890	stable								8.8142e+01	0	0	9202
	Sigma(.0253) and RI=			1.2799e+00	9.8172e-01		B1, B2 and B3=		9.9900e-01	1.0000e-03	0.			H9202
154	39- Y- 89m	390891	1.6100e+01	0.	9.0920e+05	0.	3.	0.	9.0920e+05	1.0000e+00	8.8142e+01	1	0	9203
155	33-As- 90	330900	9.1116e-02	4.5210e+06	5.1018e+06	0.	1.	0.	1.4640e+07	1.0000e+00	8.9181e+01	1	0	9088
156	34-Se- 90	340900	4.2721e-01	2.8706e+06	1.9050e+06	0.	1.	0.	8.1303e+06	8.9000e-01	8.9166e+01	2	0	9109
							1.5	0.	3.4400e+06	1.1000e-01				
157	35-Br- 90	350900	1.8000e+00	3.2080e+06	2.6241e+06	0.	1.	0.	9.5271e+06	7.8800e-01	8.9158e+01	2	0	9128
							1.5	0.	3.9100e+06	2.1200e-01				
158	36-Kr- 90	360900	3.2320e+01	1.2890e+06	1.3250e+06	0.	1.	0.	4.3900e+06	8.8400e-01	8.9147e+01	2	2	9151
							1.	1.	4.2830e+06	1.1600e-01				
159	37-Rb- 90	370900	1.5300e+02	2.2030e+06	1.0620e+06	0.	1.	0.	6.3600e+06	1.0000e+00	8.9142e+01	1	4	9166
160	37-Rb- 90m	370901	2.5800e+02	1.3560e+06	3.0980e+06	0.	1.	0.	6.4670e+06	9.7400e-01	8.9143e+01	2	4	9167
							3.	0.	1.0692e+05	2.6000e-02				
161	38-Sr- 90	380900	9.1894e+08	1.9580e+05	0.	0.	1.	0.	5.4600e+05	1.0000e+00	8.9135e+01	1	1	9187
	Sigma(.0253) and RI=			9.0000e-01	5.1058e-01		B1, B2 and B3=		1.0000e+00	0.	0.			H9187
162	39- Y- 90	390900	2.3040e+05	9.3680e+05	3.5000e+01	0.	1.	0.	2.2839e+06	1.0000e+00	8.9135e+01	1	3	9204
	Sigma(.0253) and RI=			3.5000e+00	4.7534e+00		B1, B2 and B3=		5.0000e-01	5.0000e-01	0.			H9204
163	39- Y- 90m	390901	1.1484e+04	4.5800e+04	6.3410e+05	0.	3.	0.	6.8204e+05	1.0000e+00	8.9135e+01	1	3	9205
164	40-Zr- 90	400900	stable								8.9132e+01	0	0	9228
	Sigma(.0253) and RI=			6.0870e-02	2.8590e-01		B1, B2 and B3=		1.0000e+00	0.	0.			H1385
165	40-Zr- 90m	400901	8.0920e-01	1.6000e+04	2.3040e+06	0.	3.	0.	2.3191e+06	1.0000e+00	8.9227e+01	1	3	9229
166	34-Se- 91	340910	2.7000e-01	3.6415e+06	3.0266e+06	0.	1.	0.	1.0801e+07	7.9000e-01	9.0163e+01	2	0	9110
							1.5	0.	4.8100e+06	2.1000e-01				
167	35-Br- 91	350910	6.0000e-01	3.1296e+06	2.3690e+06	0.	1.	0.	9.1151e+06	8.9100e-01	9.0152e+01	2	0	9129
							1.5	0.	5.0400e+06	1.0900e-01				
c168	36-Kr- 91	360910	8.5700e+00	1.9410e+06	1.7330e+06	0.	1.	0.	6.1200e+06	1.0000e+00	9.0142e+01	1	4	9152
169	37-Rb- 91	370910	5.8200e+01	1.4970e+06	2.2250e+06	0.	1.	0.	5.6800e+06	1.0000e+00	9.0135e+01	1	4	9168
170	38-Sr- 91	380910	3.4128e+04	6.5400e+05	6.9500e+05	0.	1.	0.	2.6840e+06	4.2400e-01	9.0129e+01	2	2	9188
							1.	1.	2.1260e+06	5.7600e-01				
171	39- Y- 91	390910	5.0553e+06	6.0230e+05	3.6000e+03	0.	1.	0.	1.5430e+06	1.0000e+00	9.0126e+01	1	2	9206
	Sigma(.0253) and RI=			1.4000e+00	1.6667e+00		B1, B2 and B3=		1.0000e+00	0.	0.			H9206
172	39- Y- 91m	390911	2.9826e+03	2.7200e+04	5.2769e+05	0.	3.	0.	5.5557e+05	1.0000e+00	9.0127e+01	1	3	9207
173	40-Zr- 91	400910	stable								9.0125e+01	0	0	9230
	Sigma(.0253) and RI=			9.9850e-01	5.6960e+00		B1, B2 and B3=		1.0000e+00	0.	0.			H1386
174	34-Se- 92	340920	1.6819e-01	3.4806e+06	2.6165e+06	0.	1.	0.	1.0068e+07	1.0000e+00	9.1157e+01	1	0	9111
175	35-Br- 92	350920	3.6000e-01	3.8046e+06	3.6847e+06	0.	1.	0.	1.1786e+07	7.8000e-01	9.1148e+01	2	0	9130
							1.5	0.	5.8700e+06	2.2000e-01				

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
c176	36-Kr- 92	360920	1.8400e+00	2.3680e+06	7.5200e+05	0.	1.	0.	5.9700e+06	9.9967e-01	9.1135e+01	2	2	9153
							1.5	0.	7.4000e+05	3.3000e-04				
c177	37-Rb- 92	370920	4.5300e+00	3.4810e+06	2.6100e+05	0.	1.	0.	7.7700e+06	9.9988e-01	9.1130e+01	2	2	9169
							1.5	0.	4.7000e+05	1.2000e-04				
178	38-Sr- 92	380920	9.7560e+03	1.9500e+05	1.3390e+06	0.	1.	0.	1.9300e+06	1.0000e+00	9.1121e+01	1	2	9189
179	39- Y- 92	390920	1.2744e+04	1.4470e+06	2.5100e+05	0.	1.	0.	3.6340e+06	1.0000e+00	9.1119e+01	1	2	9208
180	40-Zr- 92	400920	stable								9.1116e+01	0	0	9231
	Sigma(.0253) and RI=		1.5960e-01	6.9130e-01		B1, B2 and B3=			1.0000e+00	0.	0.			H1387
181	42-Mo- 92	420920	stable								9.0533e+01	0	0	9278
	Sigma(.0253) and RI=		4.4733e-02	9.3188e-01		B1, B2 and B3=			9.8000e-01	2.0000e-02	0.			H9278
182	34-Se- 93	340930	9.6767e-02	4.0359e+06	3.7203e+06	0.	1.	0.	1.2286e+07	1.0000e+00	9.2155e+01	1	0	9112
183	35-Br- 93	350930	1.7628e-01	3.6989e+06	3.1635e+06	0.	1.	0.	1.1053e+07	5.9000e-01	9.2143e+01	2	0	9131
							1.5	0.	7.1400e+06	4.1000e-01				
c184	36-Kr- 93	360930	1.2890e+00	2.3360e+06	2.2400e+06	0.	1.	0.	7.5100e+06	9.8000e-01	9.2132e+01	2	4	9154
							1.5	0.	1.6400e+06	2.0000e-02				
c185	37-Rb- 93	370930	5.8600e+00	2.6050e+06	1.3200e+06	0.	1.	0.	7.3600e+06	9.8580e-01	9.2123e+01	2	4	9170
							1.5	0.	1.9000e+06	1.4200e-02				
186	38-Sr- 93	380930	4.3920e+02	6.9700e+05	1.9300e+06	0.	1.	0.	3.9500e+06	6.5000e-01	9.2117e+01	2	4	9190
							1.	1.	3.1910e+06	3.5000e-01				
187	39- Y- 93	390930	3.6720e+04	1.1730e+06	8.9100e+04	0.	1.	0.	2.8900e+06	1.0000e+00	9.2111e+01	1	4	9209
188	39- Y- 93m	390931	8.2000e-01	7.7000e+04	6.8100e+05	0.	3.	0.	7.5897e+05	1.0000e+00	9.2112e+01	1	3	9210
d189	40-Zr- 93	400930	4.8282e+13	1.9600e+04	0.	0.	1.	1.	9.2400e+04	1.0000e+00	9.2108e+01	1	1	9232
	Sigma(.0253) and RI=		2.5000e+00	2.8040e+01		B1, B2 and B3=			1.0000e+00	0.	0.			H9232
190	41-Nb- 93	410930	stable								9.2105e+01	0	0	9249
	Sigma(.0253) and RI=		1.1500e+00	9.4290e+00		B1, B2 and B3=			1.0000e+00	0.	0.			H1189
191	41-Nb- 93m	410931	4.2917e+08	2.7900e+04	1.8800e+03	0.	3.	0.	3.0400e+04	1.0000e+00	9.2201e+01	1	3	9250
192	42-Mo- 93	420930	9.4000e+10	0.	3.0400e+04	0.	2.	1.	3.7610e+05	1.0000e+00	9.2181e+01	1	0	9279
193	42-Mo- 93m	420931	2.5000e+04	0.	2.4248e+06	0.	3.	0.	2.4248e+06	1.0000e+00	9.2201e+01	1	0	9280
194	35-Br- 94	350940	1.1080e-01	4.1517e+06	4.4734e+06	0.	1.	0.	1.3271e+07	1.0000e+00	9.3140e+01	1	0	9132
195	36-Kr- 94	360940	2.1000e-01	2.7205e+06	1.8031e+06	0.	1.	0.	7.7260e+06	9.4300e-01	9.3125e+01	2	0	9155
							1.5	0.	2.4200e+06	5.7000e-02				
196	37-Rb- 94	370940	2.7600e+00	2.7960e+06	3.2780e+06	0.	1.	0.	9.4500e+06	8.9600e-01	9.3118e+01	2	-0	9171
							1.5	0.	2.6900e+06	1.0400e-01				
197	38-Sr- 94	380940	7.5600e+01	8.9800e+05	1.2420e+06	0.	1.	0.	3.4200e+06	1.0000e+00	9.3109e+01	1	2	9191
198	39- Y- 94	390940	1.1160e+03	1.7980e+06	7.7200e+05	0.	1.	0.	4.8820e+06	1.0000e+00	9.3105e+01	1	4	9211
199	40-Zr- 94	400940	stable								9.3100e+01	0	0	9233
	Sigma(.0253) and RI=		5.5880e-02	3.9250e-01		B1, B2 and B3=			1.0000e+00	0.	0.			H1388
200	41-Nb- 94	410940	6.4061e+11	1.4780e+05	1.5737e+06	0.	1.	0.	2.0450e+06	1.0000e+00	9.3101e+01	1	2	9251
	Sigma(.0253) and RI=		1.3601e+01	1.1698e+02		B1, B2 and B3=			9.6100e-01	3.9000e-02	0.			H9251
201	41-Nb- 94m	410941	3.7560e+02	3.6000e+04	1.1800e+04	0.	1.	0.	2.0860e+06	4.8000e-03	9.3193e+01	2	4	9252
							3.	0.	4.1500e+04	9.9520e-01				
202	42-Mo- 94	420940	stable								9.3098e+01	0	0	9281
	Sigma(.0253) and RI=		1.5980e-02	1.1010e+00		B1, B2 and B3=			1.0000e+00	0.	0.			H9281

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
203	35-Br- 95	350950	1.0688e-01	3.9872e+06	3.7070e+06	0.	1.	0.	1.2175e+07	1.0000e+00	9.4134e+01	1	0	9133
204	36-Kr- 95	360950	7.8000e-01	3.3622e+06	2.7306e+06	0.	1.	0.	9.9440e+06	9.0500e-01	9.4122e+01	2	0	9156
							1.5	0.	3.6500e+06	9.5000e-02				
205	37-Rb- 95	370950	3.8000e-01	3.1662e+06	2.4785e+06	0.	1.	0.	9.2980e+06	9.1200e-01	9.4112e+01	2	0	9172
							1.5	0.	3.8000e+06	8.8000e-02				
206	38-Sr- 95	380950	2.6000e+01	2.1132e+06	1.3966e+06	0.	1.	0.	6.0930e+06	1.0000e+00	9.4103e+01	1	0	9192
207	39- Y- 95	390950	6.4200e+02	1.4790e+06	1.2700e+06	0.	1.	0.	4.4300e+06	1.0000e+00	9.4097e+01	1	2	9212
208	40-Zr- 95	400950	5.5382e+06	1.1750e+05	7.3300e+05	0.	1.	1.	8.8800e+05	9.5000e-03	9.4093e+01	2	4	9234
							1.	0.	1.1230e+06	9.9050e-01				
	Sigma(.0253) and RI=		4.9190e-01	5.2060e+00		B1, B2 and B3=			1.0000e+00	0.	0.			H9234
209	41-Nb- 95	410950	3.0326e+06	4.4560e+04	7.6440e+05	0.	1.	0.	9.2560e+05	1.0000e+00	9.4092e+01	1	4	9253
	Sigma(.0253) and RI=		1.5000e+00	2.1920e+01		B1, B2 and B3=			1.0000e+00	0.	0.			H9253
210	41-Nb- 95m	410951	3.1320e+05	1.6100e+05	6.9000e+04	0.	3.	0.	2.3470e+05	9.9000e-01	9.4184e+01	2	4	9254
							1.	0.	1.1603e+06	1.0000e-02				
211	42-Mo- 95	420950	stable								9.4091e+01	0	0	9282
	Sigma(.0253) and RI=		1.4469e+01	1.1197e+02		B1, B2 and B3=			1.0000e+00	0.	0.			H9282
212	35-Br- 96	350960	8.8815e-02	4.5579e+06	5.6272e+06	0.	1.	0.	1.5239e+07	1.0000e+00	9.5132e+01	1	0	9134
213	36-Kr- 96	360960	2.9310e-01	3.0802e+06	2.2012e+06	0.	1.	0.	8.8480e+06	1.0000e+00	9.5116e+01	1	0	9157
214	37-Rb- 96	370960	2.0400e-01	3.6968e+06	3.6311e+06	0.	1.	0.	1.1516e+07	8.6100e-01	9.5108e+01	2	0	9173
							1.5	0.	4.7100e+06	1.3900e-01				
215	38-Sr- 96	380960	1.1000e+00	1.8837e+06	1.1285e+06	0.	1.	0.	5.3600e+06	1.0000e+00	9.5096e+01	1	0	9193
c216	39- Y- 96	390960	6.0000e+00	3.1470e+06	2.6000e+03	0.	1.	0.	6.5000e+06	1.0000e+00	9.5092e+01	1	3	9213
c217	39- Y- 96m	390961	1.0000e+01	1.1070e+06	4.0310e+06	0.	1.	0.	7.0000e+06	1.0000e+00	9.5175e+01	1	2	9214
218	40-Zr- 96	400960	stable								9.5084e+01	0	0	9235
	Sigma(.0253) and RI=		2.3970e-02	5.2580e+00		B1, B2 and B3=			1.0000e+00	0.	0.			H1389
219	41-Nb- 96	410960	8.4060e+04	2.5350e+05	2.5530e+06	0.	1.	0.	3.1870e+06	1.0000e+00	9.5084e+01	1	4	9255
220	42-Mo- 96	420960	stable								9.5081e+01	0	0	9283
	Sigma(.0253) and RI=		1.0001e+00	1.9200e+01		B1, B2 and B3=			1.0000e+00	0.	0.			H9283
b221	44-Ru- 96	440960	stable								9.5084e+01	0	0	9325
	Sigma(.0253) and RI=		2.4994e-01	1.2942e+01		B1, B2 and B3=			1.0000e+00	0.	0.			H9325
222	36-Kr- 97	360970	1.0000e-01	3.8996e+06	3.6199e+06	0.	1.	0.	1.1912e+07	1.0000e+00	9.6113e+01	1	0	9158
223	37-Rb- 97	370970	1.7000e-01	3.4890e+06	2.9519e+06	0.	1.	0.	1.0420e+07	7.2200e-01	9.6102e+01	2	0	9174
							1.5	0.	5.8000e+06	2.7800e-01				
c224	38-Sr- 97	380970	4.0000e-01	2.6200e+06	1.4900e+06	0.	1.	0.	7.4000e+06	8.8000e-01	9.6092e+01	3	2	9194
							1.	1.	6.7320e+06	1.2000e-01				
							1.5	0.	1.4700e+06	1.0000e-03				
c225	39- Y- 97	390970	3.7000e+00	2.1540e+06	1.8000e+06	0.	1.	0.	6.6700e+06	9.9670e-01	9.6085e+01	2	2	9215
							1.5	0.	1.0900e+06	3.3000e-03				
c226	39- Y- 97m	390971	1.1100e+00	2.4230e+06	1.8208e+06	0.	1.	0.	7.3370e+06	9.7700e-01	9.6167e+01	3	2	9216
							3.	0.	6.6750e+05	7.0000e-03				
							1.5	0.	1.7560e+06	1.6000e-02				
227	40-Zr- 97	400970	6.0840e+04	6.9700e+05	1.7900e+05	0.	1.	0.	2.6574e+06	5.4000e-02	9.6079e+01	2	4	9236
							1.	1.	1.9140e+06	9.4600e-01				
228	41-Nb- 97	410970	4.3260e+03	4.6770e+05	6.6670e+05	0.	1.	0.	1.9329e+06	1.0000e+00	9.6076e+01	1	4	9256
229	41-Nb- 97m	410971	6.0000e+01	1.4900e+04	7.2830e+05	0.	3.	0.	7.4336e+05	1.0000e+00	9.6167e+01	1	3	9257

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
230	42-Mo- 97	420970	stable								9.6074e+01	0	0	9284
	Sigma(.0253) and RI=			2.1737e+00	1.6610e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9284
b231	44-Ru- 97	440970	2.5000e+05	0.	2.3180e+05	0.	2.	0.	1.1500e+06	1.0000e+00	9.6139e+01	1	0	9326
232	36-Kr- 98	360980	1.6023e-01	3.3915e+06	2.6223e+06	0.	1.	0.	9.8946e+06	1.0000e+00	9.7108e+01	1	0	9159
233	37-Rb- 98	370980	1.1000e-01	4.1528e+06	4.6843e+06	0.	1.	0.	1.3484e+07	8.4000e-01	9.7098e+01	2	0	9175
							1.5	0.	6.6100e+06	1.6000e-01				
c234	38-Sr- 98	380980	6.5000e-01	2.5270e+06	1.7560e+05	0.	1.	1.	5.8100e+06	9.9470e-01	9.7085e+01	2	2	9195
							1.5	0.	8.3000e+05	5.3000e-03				
c235	39- Y- 98	390980	2.0000e+00	1.8060e+06	3.1507e+06	0.	1.	0.	7.3000e+06	9.9460e-01	9.7080e+01	2	2	9217
							1.5	0.	8.9000e+05	5.4000e-03				
c236	39- Y- 98m	390981	6.5000e-01	2.9830e+06	8.1400e+05	0.	1.	0.	7.3000e+06	9.6000e-01	9.7158e+01	2	4	9218
							1.5	0.	8.9000e+05	4.0000e-02				
237	40-Zr- 98	400980	3.0700e+01	9.0600e+05	0.	0.	1.	0.	2.2390e+06	1.0000e+00	9.7071e+01	1	1	9237
c238	41-Nb- 98	410980	2.8600e+00	1.9590e+06	8.0000e+04	0.	1.	0.	4.5850e+06	1.0000e+00	9.7069e+01	1	2	9258
239	41-Nb- 98m	410981	3.0780e+03	8.3400e+05	2.5900e+06	0.	1.	0.	4.6690e+06	1.0000e+00	9.7158e+01	1	2	9259
240	42-Mo- 98	420980	stable								9.7064e+01	0	0	9285
	Sigma(.0253) and RI=			1.2717e-01	6.8980e+00		B1, B2 and B3=		1.0000e+00	0.	0.			H9285
b241	44-Ru- 98	440980	stable								9.7064e+01	0	0	9327
	Sigma(.0253) and RI=			7.9979e+00	1.3806e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9327
242	37-Rb- 99	370990	1.4486e-01	3.7644e+06	3.4462e+06	0.	1.	0.	1.1467e+07	8.5000e-01	9.8093e+01	2	0	9176
							1.5	0.	7.5600e+06	1.5000e-01				
243	38-Sr- 99	380990	6.0000e-01	3.2201e+06	2.6182e+06	0.	1.	0.	9.5460e+06	9.6600e-01	9.8082e+01	2	0	9196
							1.5	0.	2.3500e+06	3.4000e-02				
c244	39- Y- 99	390990	1.4000e+00	2.6060e+06	6.1100e+05	0.	1.	0.	6.3900e+06	9.8800e-01	9.8073e+01	2	2	9219
							1.5	0.	1.7200e+06	1.2000e-02				
c245	40-Zr- 99	400990	2.1000e+00	1.4870e+06	8.2270e+05	0.	1.	0.	4.4450e+06	6.3000e-01	9.8066e+01	2	2	9238
							1.	1.	4.0800e+06	3.7000e-01				
246	41-Nb- 99	410990	1.5000e+01	1.6167e+06	1.6759e+05	0.	1.	0.	3.6240e+06	1.0000e+00	9.8061e+01	1	0	9260
247	41-Nb- 99m	410991	1.5600e+02	1.3462e+06	8.1436e+05	0.	1.	0.	3.9930e+06	1.0000e+00	9.8062e+01	1	0	9261
248	42-Mo- 99	420990	2.3760e+05	3.9260e+05	1.4940e+05	0.	1.	0.	1.3567e+06	1.2400e-01	9.8058e+01	2	4	9286
							1.	1.	1.2140e+06	8.7600e-01				
	Sigma(.0253) and RI=			1.7000e+00	2.7354e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9286
249	43-Tc- 99	430990	6.7216e+12	8.4700e+04	0.	0.	1.	0.	2.9360e+05	1.0000e+00	9.8150e+01	1	1	9303
	Sigma(.0253) and RI=			1.9490e+01	3.5000e+02		B1, B2 and B3=		1.0000e+00	0.	0.			H1308
250	43-Tc- 99m	430991	2.1672e+04	1.5800e+04	1.2640e+05	0.	3.	0.	1.4268e+05	1.0000e+00	9.8149e+01	1	3	9304
251	44-Ru- 99	440990	stable								9.8056e+01	0	0	9328
	Sigma(.0253) and RI=			5.0010e+00	1.3724e+02		B1, B2 and B3=		1.0000e+00	0.	0.			H9328
252	37-Rb-100	371000	9.8438e-02	4.3481e+06	5.3127e+06	0.	1.	0.	1.4504e+07	1.0000e+00	9.9090e+01	1	0	9177
253	38-Sr-100	381000	6.1795e-01	2.6349e+06	1.7783e+06	0.	1.	0.	7.5286e+06	9.5000e-01	9.9076e+01	2	0	9197
							1.5	0.	2.6700e+06	5.0000e-02				
254	39- Y-100	391000	8.0000e-01	3.4926e+06	3.3852e+06	0.	1.	0.	1.0860e+07	9.4500e-01	9.9069e+01	2	0	9220
							1.5	0.	2.5500e+06	5.5000e-02				
255	40-Zr-100	401000	7.1000e+00	1.1923e+06	6.9361e+05	0		0.	3.3600e+06	1.0000e+00	9.9059e+01	1	0	9239

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
256	41-Nb-100	411000	3.1000e+00	2.1867e+06	1.3848e+06	0.	1.	0.	6.2290e+06	1.0000e+00	9.9056e+01	1	0	9262
257	41-Nb-100m	411001	1.5000e+00	2.1867e+06	1.3848e+06	0.	1.	0.	6.2290e+06	1.0000e+00	9.9056e+01	1	0	9263
258	42-Mo-100	421000	stable								9.9049e+01	0	0	9287
		Sigma(.0253) and RI=		1.9892e-01	3.9220e+00		B1, B2 and B3=		1.0000e+00	0.	0.			H9287
259	43-Tc-100	431000	1.5800e+01	2.7984e+05	1.8004e+05	0.	1.	0.	1.0000e+06	1.0000e+00	9.9050e+01	1	0	9305
260	44-Ru-100	441000	stable								9.9046e+01	0	0	9329
		Sigma(.0253) and RI=		5.8000e+00	8.1640e+00		B1, B2 and B3=		1.0000e+00	0.	0.			H9329
261	37-Rb-101	371010	9.3851e-02	4.0113e+06	3.9930e+06	0.	1.	0.	1.2509e+07	1.0000e+00	1.0008e+02	1	0	9178
262	38-Sr-101	381010	1.9415e-01	3.5031e+06	3.0697e+06	0.	1.	0.	1.0566e+07	1.0000e+00	1.0007e+02	1	0	9198
263	39- Y-101	391010	6.0707e-01	2.9965e+06	2.3646e+06	0.	1.	0.	8.8428e+06	1.0000e+00	1.0006e+02	1	0	9221
264	40-Zr-101	401010	2.0000e+00	2.2124e+06	1.5269e+06	0.	1.	0.	6.4240e+06	1.0000e+00	1.0005e+02	1	0	9240
c265	41-Nb-101	411010	7.0000e+00	1.8480e+06	3.1700e+05	0.	1.	0.	4.5700e+06	1.0000e+00	1.0005e+02	1	2	9264
266	42-Mo-101	421010	8.7600e+02	5.8500e+05	1.3860e+06	0.	1.	0.	2.8110e+06	1.0000e+00	1.0004e+02	1	2	9288
267	43-Tc-101	431010	8.5200e+02	4.7600e+05	3.3400e+05	0.	1.	0.	1.6250e+06	1.0000e+00	1.0004e+02	1	4	9306
268	44-Ru-101	441010	stable								1.0004e+02	0	0	9330
		Sigma(.0253) and RI=		3.1007e+00	1.0040e+02		B1, B2 and B3=		1.0000e+00	0.	0.			H9330
269	38-Sr-102	381020	2.8711e-01	2.9659e+06	2.1540e+06	0.	1.	0.	8.5706e+06	1.0000e+00	1.0107e+02	1	0	9199
270	39- Y-102	391020	9.0000e-01	3.7319e+06	3.9249e+06	0.	1.	0.	1.1880e+07	1.0000e+00	1.0106e+02	1	0	9222
271	40-Zr-102	401020	2.9000e+00	1.5263e+06	9.0374e+05	0.	1.	0.	4.4066e+06	1.0000e+00	1.0105e+02	1	0	9241
272	41-Nb-102	411020	4.3000e+00	2.5938e+06	1.9637e+06	0.	1.	0.	7.6300e+06	1.0000e+00	1.0104e+02	1	0	9265
273	41-Nb-102m	411021	1.3000e+00	2.5938e+06	1.9637e+06	0.	1.	0.	7.6300e+06	1.0000e+00	1.0104e+02	1	0	9266
274	42-Mo-102	421020	6.6600e+02	4.4000e+05	0.	0.	1.	0.	1.2000e+06	1.0000e+00	1.0104e+02	1	1	9289
c275	43-Tc-102	431020	5.2800e+00	1.7000e+06	4.6900e+05	0.	1.	0.	4.5000e+06	1.0000e+00	1.0103e+02	1	4	9307
c276	43-Tc-102m	431021	2.6100e+02	9.4000e+05	2.3770e+06	0.	1.	0.	5.0000e+06	9.5000e-01	1.0112e+02	2	4	9308
							3.	0.	5.0000e+05	5.0000e-02				
277	44-Ru-102	441020	stable								1.0103e+02	0	0	9331
		Sigma(.0253) and RI=		1.2999e+00	3.6130e+00		B1, B2 and B3=		1.0000e+00	0.	0.			H9331
b278	46-Pd-102	461020	stable								1.0103e+02	0	0	9379
		Sigma(.0253) and RI=		4.7988e+00	1.3856e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9379
279	38-Sr-103	381030	1.1960e-01	3.7194e+06	3.4928e+06	0.	1.	0.	1.1423e+07	1.0000e+00	1.0206e+02	1	0	9200
280	39- Y-103	391030	2.6041e-01	3.2969e+06	2.8029e+06	0.	1.	0.	9.8848e+06	1.0000e+00	1.0205e+02	1	0	9223
281	40-Zr-103	401030	1.3377e+00	2.5455e+06	1.8738e+06	0.	1.	0.	7.4436e+06	1.0000e+00	1.0204e+02	1	0	9242
282	41-Nb-103	411030	1.5000e+00	1.9307e+06	1.2863e+06	0.	1.	0.	5.6126e+06	9.9870e-01	1.0204e+02	2	0	9267
							1.5	0.	1.0600e+06	1.3000e-03				
283	42-Mo-103	421030	6.6000e+01	1.3265e+06	7.9979e+05	0.	1.	0.	3.8917e+06	1.0000e+00	1.0203e+02	1	0	9290
284	43-Tc-103	431030	5.4000e+01	7.7044e+05	4.2312e+05	0.	1.	0.	2.3514e+06	1.0000e+00	1.0203e+02	1	0	9309
285	44-Ru-103	441030	3.3938e+06	7.5000e+04	4.6900e+05	0.	1.	1.	7.2220e+05	9.9750e-01	1.0202e+02	2	4	9332
							1.	0.	7.6290e+05	2.5000e-03				
		Sigma(.0253) and RI=		7.7000e+00	7.0296e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9332
286	45-Rh-103	451030	stable								1.0202e+02	0	0	9351
		Sigma(.0253) and RI=		1.4630e+02	1.0320e+03		B1, B2 and B3=		9.0800e-01	9.2000e-02	0.			H1310
287	45-Rh-103m	451031	3.3672e+03	3.7300e+04	1.8900e+03	0.	3.	0.	3.9750e+04	1.0000e+00	1.0212e+02	1	3	9352

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
288	46-Pd-103	461030	1.5000e+06	0.	1.0000e+02	0.	2.	1.	5.0630e+05	1.0000e+00	1.0210e+02	1	0	9380
289	38-Sr-104	381040	1.6292e-01	3.2461e+06	2.5407e+06	0.	1.	0.	9.5206e+06	1.0000e+00	1.0306e+02	1	0	9201
290	39- Y-104	391040	1.2825e-01	3.9144e+06	4.4157e+06	0.	1.	0.	1.2737e+07	1.0000e+00	1.0305e+02	1	0	9224
291	40-Zr-104	401040	2.5728e+00	1.9043e+06	1.1755e+06	0.	1.	0.	5.4486e+06	9.9890e-01	1.0304e+02	2	0	9243
							1.5	0.	1.0400e+06	1.1000e-03				
292	41-Nb-104	411040	4.8000e+00	2.8709e+06	2.4250e+06	0.	1.	0.	8.6496e+06	9.9290e-01	1.0303e+02	2	0	9268
							1.5	0.	1.5000e+06	7.1000e-03				
293	41-Nb-104m	411041	1.0000e+00	2.8709e+06	2.4250e+06	0.	1.	0.	8.6496e+06	1.0000e+00	1.0303e+02	1	0	9269
294	42-Mo-104	421040	6.0000e+01	5.8086e+05	3.5815e+05	0.	1.	0.	1.8744e+06	1.0000e+00	1.0302e+02	1	0	9291
c295	43-Tc-104	431040	1.0920e+03	1.5820e+06	1.9400e+06	0.	1.	0.	5.4000e+06	1.0000e+00	1.0302e+02	1	4	9310
296	44-Ru-104	441040	stable								1.0301e+02	0	0	9333
	Sigma(.0253) and RI=			4.3685e-01	6.5590e+00		B1, B2 and B3=		1.0000e+00	0.	0.			H9333
297	45-Rh-104	451040	4.2300e+01	9.9000e+05	1.2000e+04	0.	1.	0.	2.4480e+06	9.9550e-01	1.0301e+02	2	5	9353
							2.	0.	1.1460e+06	4.5000e-03				
298	45-Rh-104m	451041	2.6040e+02	8.4000e+04	5.4600e+04	0.	1.	0.	2.5770e+06	1.3000e-03	1.0311e+02	2	4	9354
							3.	0.	1.2896e+05	9.9870e-01				
299	46-Pd-104	461040	stable								1.0301e+02	0	0	9381
	Sigma(.0253) and RI=			3.8702e-01	1.8630e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9381
300	39- Y-105	391050	1.4688e-01	3.5483e+06	3.2482e+06	0.	1.	0.	1.0835e+07	1.0000e+00	1.0404e+02	1	0	9225
301	40-Zr-105	401050	4.9263e-01	2.8114e+06	2.1951e+06	0.	1.	0.	8.3006e+06	9.8600e-01	1.0403e+02	2	0	9244
							1.5	0.	2.0700e+06	1.4000e-02				
302	41-Nb-105	411050	2.8000e+00	2.2799e+06	1.6211e+06	0.	1.	0.	6.6546e+06	9.7100e-01	1.0402e+02	2	0	9270
							1.5	0.	2.7700e+06	2.9000e-02				
303	42-Mo-105	421050	4.0000e+01	1.6839e+06	1.0873e+06	0.	1.	0.	4.9114e+06	1.0000e+00	1.0402e+02	1	0	9292
304	43-Tc-105	431050	4.6200e+02	1.1482e+06	6.7483e+05	0.	1.	0.	3.3980e+06	1.0000e+00	1.0401e+02	1	0	9311
305	44-Ru-105	441050	1.5984e+04	4.4410e+05	7.4900e+05	0.	1.	0.	1.9170e+06	7.1400e-01	1.0401e+02	2	4	9334
							1.	1.	1.7870e+06	2.8600e-01				
	Sigma(.0253) and RI=			2.0000e-01	7.3480e+00		B1, B2 and B3=		1.0000e+00	0.	0.			H9334
b306	45-Rh-105	451050	1.2730e+05	1.5370e+05	7.7700e+04	0.	1.	0.	5.6690e+05	1.0000e+00	1.0401e+02	1	4	9355
	Sigma(.0253) and RI=			1.6000e+04	1.5762e+04		B1, B2 and B3=		6.8800e-01	3.1200e-01	0.			H9355
307	45-Rh-105m	451051	4.5000e+01	9.4000e+04	3.5200e+04	0.	3.	0.	1.2970e+05	1.0000e+00	1.0410e+02	1	3	9356
308	46-Pd-105	461050	stable								1.0400e+02	0	0	9382
	Sigma(.0253) and RI=			1.4000e+01	9.6630e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9382
309	39- Y-106	391060	8.9428e-02	4.0992e+06	4.9921e+06	0.	1.	0.	1.3684e+07	1.0000e+00	1.0504e+02	1	0	9226
310	40-Zr-106	401060	9.0709e-01	2.2355e+06	1.4545e+06	0.	1.	0.	6.3986e+06	1.0000e+00	1.0503e+02	1	0	9245
311	41-Nb-106	411060	1.0000e+00	3.0920e+06	2.8371e+06	0.	1.	0.	9.5066e+06	9.4500e-01	1.0502e+02	2	0	9271
							1.5	0.	3.0300e+06	5.5000e-02				
312	42-Mo-106	421060	9.0000e+00	9.6704e+05	5.7092e+05	0.	1.	0.	2.9164e+06	1.0000e+00	1.0501e+02	1	0	9293
313	43-Tc-106	431060	3.6000e+01	2.2265e+06	1.5105e+06	0.	1.	0.	6.4350e+06	1.0000e+00	1.0501e+02	1	0	9312
d314	44-Ru-106	441060	3.1812e+07	1.0030e+04	0.	0.	1.	0.	3.9400e+04	1.0000e+00	1.0500e+02	1	1	9335
	Sigma(.0253) and RI=			1.4600e-01	2.0915e+00		B1, B2 and B3=		1.0000e+00	0.	0.			H9335
315	45-Rh-106	451060	2.9900e+01	1.4140e+06	2.0500e+05	0.	1.	0.	3.5400e+06	1.0000e+00	1.0500e+02	1	4	9357

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
316	45-Rh-106m	451061	7.9200e+03	3.2300e+05	2.7480e+06	0.	1.	0.	3.6790e+06	1.0000e+00	1.0509e+02	1	4	9358
317	46-Pd-106	461060	stable								1.0499e+02	0	0	9383
	Sigma(.0253) and RI=			2.3813e-01	8.6210e+00	B1, B2 and B3=			8.8400e-01	1.1600e-01	0.			H9383
b318	48-Cd-106	481060	stable								1.0500e+02	0	0	9440
	Sigma(.0253) and RI=			1.0997e+00	1.4978e+01	B1, B2 and B3=			1.0000e+00	0.	0.			H9440
319	39- Y-107	391070	9.2257e-02	3.8310e+06	3.8538e+06	0.	1.	0.	1.2008e+07	1.0000e+00	1.0603e+02	1	0	9227
320	40-Zr-107	401070	2.4295e-01	3.0894e+06	2.5831e+06	0.	1.	0.	9.2479e+06	1.0000e+00	1.0602e+02	1	0	9246
321	41-Nb-107	411070	7.6605e-01	2.5844e+06	1.9565e+06	0.	1.	0.	7.6046e+06	1.0000e+00	1.0601e+02	1	0	9272
322	42-Mo-107	421070	3.5000e+00	1.9765e+06	1.3493e+06	0.	1.	0.	5.7684e+06	1.0000e+00	1.0600e+02	1	0	9294
323	43-Tc-107	431070	2.1000e+01	1.5159e+06	9.5909e+05	0.	1.	0.	4.4400e+06	1.0000e+00	1.0600e+02	1	0	9313
c324	44-Ru-107	441070	2.5200e+02	1.2500e+06	1.8000e+05	0.	1.	0.	3.1500e+06	1.0000e+00	1.0599e+02	1	4	9336
325	45-Rh-107	451070	1.3020e+03	4.6500e+05	3.1500e+05	0.	1.	0.	1.5100e+06	1.0000e+00	1.0599e+02	1	4	9359
326	46-Pd-107	461070	2.0512e+14	9.2000e+03	0.	0.	1.	0.	3.3000e+04	1.0000e+00	1.0599e+02	1	1	9384
	Sigma(.0253) and RI=			1.0000e+01	7.6390e+01	B1, B2 and B3=			1.0000e+00	0.	0.			H9384
d327	46-Pd-107m	461071	2.1300e+01	0.	2.1490e+05	0.	3.	0.	2.1490e+05	1.0000e+00	1.0608e+02	1	0	9385
328	47-Ag-107	471070	stable								1.0599e+02	0	0	9407
	Sigma(.0253) and RI=			3.6850e+01	1.1520e+02	B1, B2 and B3=			9.5000e-01	5.0000e-02	0.			H1371
329	47-Ag-107m	471071	4.4300e+01	0.	9.3120e+04	0.	3.	0.	9.3120e+04	1.0000e+00	1.0608e+02	1	0	9408
330	48-Cd-107	481070	2.3400e+04	0.	4.6000e+02	0.	2.	1.	1.3240e+06	1.0000e+00	1.0605e+02	1	0	9441
331	40-Zr-108	401080	3.7807e-01	2.6238e+06	1.8435e+06	0.	1.	0.	7.5713e+06	1.0000e+00	1.0702e+02	1	0	9247
332	41-Nb-108	411080	2.4230e-01	3.3257e+06	3.3147e+06	0.	1.	0.	1.0454e+07	1.0000e+00	1.0701e+02	1	0	9273
333	42-Mo-108	421080	1.5000e+00	1.3211e+06	7.8482e+05	0.	1.	0.	3.8664e+06	1.0000e+00	1.0700e+02	1	0	9295
334	43-Tc-108	431080	5.0000e+00	2.4681e+06	1.8795e+06	0.	1.	0.	7.2920e+06	1.0000e+00	1.0699e+02	1	0	9314
335	44-Ru-108	441080	2.7000e+02	4.0000e+05	5.5000e+04	0.	1.	0.	1.2000e+06	1.0000e+00	1.0698e+02	1	2	9337
c336	45-Rh-108	451080	1.6800e+01	1.8000e+06	3.4700e+05	0.	1.	0.	4.5000e+06	1.0000e+00	1.0698e+02	1	4	9360
c337	45-Rh-108m	451081	3.5400e+02	7.8000e+05	2.5000e+06	0.	1.	0.	4.5000e+06	1.0000e+00	1.0707e+02	1	2	9361
338	46-Pd-108	461080	stable								1.0698e+02	0	0	9386
	Sigma(.0253) and RI=			1.2201e+01	2.2530e+02	B1, B2 and B3=			9.8400e-01	1.6000e-02	0.			H9386
339	47-Ag-108	471080	1.4220e+02	6.1050e+05	1.8000e+04	0.	1.	0.	1.6500e+06	9.7650e-01	1.0698e+02	2	5	9409
							2.	0.	1.9210e+06	2.3500e-02				
340	47-Ag-108m	471081	4.0077e+09	1.4860e+04	1.6270e+06	0.	2.	0.	2.0310e+06	9.1100e-01	1.0707e+02	2	4	9410
							3.	0.	1.0958e+05	8.9000e-02				
341	48-Cd-108	481080	stable								1.0698e+02	0	0	9442
	Sigma(.0253) and RI=			1.1000e+00	4.2840e+00	B1, B2 and B3=			1.0000e+00	0.	0.			H9442
342	40-Zr-109	401090	1.2998e-01	3.4474e+06	3.1800e+06	0.	1.	0.	1.0564e+07	1.0000e+00	1.0801e+02	1	0	9248
343	41-Nb-109	411090	3.1537e-01	2.9402e+06	2.4128e+06	0.	1.	0.	8.7773e+06	1.0000e+00	1.0800e+02	1	0	9274
344	42-Mo-109	421090	1.4085e+00	2.2899e+06	1.6621e+06	0.	1.	0.	6.7157e+06	9.9470e-01	1.0799e+02	2	0	9296
							1.5	0.	6.4000e+05	5.3000e-03				
345	43-Tc-109	431090	1.4000e+00	1.8432e+06	1.2415e+06	0.	1.	0.	5.3900e+06	9.8300e-01	1.0798e+02	2	0	9315
							1.5	0.	1.3500e+06	1.7000e-02				
346	44-Ru-109	441090	3.5000e+01	1.3347e+06	8.2376e+05	0.	1.	0.	3.9330e+06	5.0000e-01	1.0798e+02	2	0	9338
							1.	1.	3.9320e+06	5.0000e-01				

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
347	44-Ru-109m	441091	1.3000e+01	1.3349e+06	8.2389e+05	0.	1.	0.	3.9330e+06	1.0000e+00	1.0798e+02	1	0	9339
348	45-Rh-109	451090	8.0000e+01	8.4154e+05	4.7328e+05	0.	1.	0.	2.5530e+06	1.0000e+00	1.0797e+02	1	0	9362
349	45-Rh-109m	451091	5.0000e+01	0.	5.0000e+04	0.	3.	0.	5.0000e+04	1.0000e+00	1.0806e+02	1	0	9363
350	46-Pd-109	461090	4.8456e+04	3.6080e+05	6.4400e+02	0.	1.	0.	1.1160e+06	4.7000e-04	1.0797e+02	2	2	9387
							1.	1.	1.0280e+06	9.9960e-01				
351	46-Pd-109m	461091	2.8140e+02	7.5600e+04	1.1220e+05	0.	3.	0.	1.8890e+05	1.0000e+00	1.0806e+02	1	3	9388
352	47-Ag-109	471090	stable								1.0797e+02	0	0	9411
	Sigma(.0253) and RI=			9.1790e+01	1.4580e+03		B1, B2 and B3=		9.5000e-01	5.0000e-02	0.			H1373
353	47-Ag-109m	471091	3.9600e+01	7.5900e+04	1.1260e+04	0.	3.	0.	8.8032e+04	1.0000e+00	1.0806e+02	1	3	9412
d354	48-Cd-109	481090	3.9139e+07	4.7512e+03	1.4902e+04	0.	2.	1.	9.4000e+04	1.0000e+00	1.0797e+02	1	3	9443
355	41-Nb-110	411100	1.2979e-01	3.6319e+06	4.0158e+06	0.	1.	0.	1.1770e+07	1.0000e+00	1.0900e+02	1	0	9275
356	42-Mo-110	421100	2.7721e+00	1.7491e+06	1.0817e+06	0.	1.	0.	5.0391e+06	9.8700e-01	1.0899e+02	2	0	9297
							1.5	0.	9.9000e+05	1.3000e-02				
357	43-Tc-110	431100	8.3000e-01	2.7242e+06	2.3103e+06	0.	1.	0.	8.2393e+06	9.6900e-01	1.0898e+02	2	0	9316
							1.5	0.	1.8600e+06	3.1000e-02				
358	44-Ru-110	441100	1.5000e+01	6.3712e+05	3.9110e+05	0.	1.	1.	2.0316e+06	1.0000e+00	1.0897e+02	1	0	9340
c359	45-Rh-110	451100	2.8500e+01	1.1820e+06	2.4800e+06	0.	1.	0.	5.4000e+06	1.0000e+00	1.0897e+02	1	2	9364
c360	45-Rh-110m	451101	3.0000e+00	2.3670e+06	5.6300e+04	0.	1.	0.	5.4000e+06	1.0000e+00	1.0906e+02	1	2	9365
361	46-Pd-110	461100	stable								1.0896e+02	0	0	9389
	Sigma(.0253) and RI=			2.2000e-01	7.4990e+00		B1, B2 and B3=		9.1300e-01	8.7000e-02	0.			H9389
362	47-Ag-110	471100	2.4600e+01	1.1813e+06	3.0700e+04	0.	1.	0.	2.8928e+06	9.9700e-01	1.0896e+02	2	5	9413
							2.	0.	8.7900e+05	3.0000e-03				
363	47-Ag-110m	471101	2.1591e+07	6.7100e+04	2.7500e+06	0.	1.	0.	3.0106e+06	9.8670e-01	1.0906e+02	2	4	9414
							3.	0.	1.1776e+05	1.3300e-02				
364	48-Cd-110	481100	stable								1.0896e+02	0	0	9444
	Sigma(.0253) and RI=			1.1100e+01	4.2285e+01		B1, B2 and B3=		9.6900e-01	3.1000e-02	0.			H9444
365	41-Nb-111	411110	1.7183e-01	3.2178e+06	2.8476e+06	0.	1.	0.	9.7703e+06	1.0000e+00	1.0999e+02	1	0	9276
366	42-Mo-111	421110	4.6637e-01	2.7048e+06	2.1410e+06	0.	1.	0.	8.0317e+06	1.0000e+00	1.0998e+02	1	0	9298
367	43-Tc-111	431110	1.9824e+00	2.2344e+06	1.6213e+06	0.	1.	0.	6.5627e+06	1.0000e+00	1.0997e+02	1	0	9317
368	44-Ru-111	441110	1.6000e+00	1.6642e+06	1.0965e+06	0.	1.	0.	4.8803e+06	1.0000e+00	1.0997e+02	1	0	9341
369	45-Rh-111	451110	1.1000e+01	1.1806e+06	7.1264e+05	0.	1.	0.	3.5030e+06	1.0000e+00	1.0996e+02	1	0	9366
370	46-Pd-111	461110	1.3200e+03	8.3000e+05	5.2000e+04	0.	1.	0.	2.2000e+06	7.5000e-03	1.0996e+02	2	4	9390
							1.	1.	2.1400e+06	9.9250e-01				
371	46-Pd-111m	461111	1.9800e+04	2.2500e+05	3.4900e+05	0.	1.	0.	2.3720e+06	6.6000e-02	1.1005e+02	3	4	9391
							1.	1.	2.3120e+06	2.5400e-01				
							3.	0.	1.7220e+05	6.8000e-01				
d372	47-Ag-111	471110	6.4368e+05	3.5120e+05	2.4000e+04	0.	1.	0.	1.0280e+06	1.0000e+00	1.0995e+02	1	4	9415
	Sigma(.0253) and RI=			3.0000e+00	1.0388e+02		B1, B2 and B3=		1.0000e+00	0.	0.			H9415
373	47-Ag-111m	471111	7.4000e+01	5.5100e+04	5.4000e+03	0.	1.	0.	1.0876e+06	3.0000e-03	1.1005e+02	2	4	9416
							3.	0.	5.9850e+04	9.9700e-01				
374	48-Cd-111	481110	stable								1.0995e+02	0	0	9445
	Sigma(.0253) and RI=			2.4301e+01	5.4491e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9445
b375	48-Cd-111m	481111	2.9220e+03	0.	3.9600e+05	0.	3.	0.	5.0000e+04	1.0000e+00	1.0995e+02	1	0	9446

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
376	41-Nb-112	411120	8.6719e-02	3.8516e+06	4.6400e+06	0.	1.	0.	1.2835e+07	1.0000e+00	1.1099e+02	1	0	9277
377	42-Mo-112	421120	9.7537e-01	2.0970e+06	1.3685e+06	0.	1.	0.	6.0321e+06	1.0000e+00	1.1098e+02	1	0	9299
378	43-Tc-112	431120	4.3136e-01	3.0663e+06	2.9376e+06	0.	1.	0.	9.5553e+06	1.0000e+00	1.1097e+02	1	0	9318
379	44-Ru-112	441120	3.6000e+00	1.0721e+06	6.3835e+05	0.	1.	0.	3.2037e+06	1.0000e+00	1.1096e+02	1	0	9342
b380	45-Rh-112	451120	1.5000e+00	2.1796e+06	1.5230e+06	0.	1.	0.	6.3523e+06	1.0000e+00	1.1095e+02	1	0	9367
381	46-Pd-112	461120	7.6032e+04	7.8000e+04	7.4000e+02	0.	1.	0.	2.9300e+05	1.0000e+00	1.1095e+02	1	2	9392
382	47-Ag-112	471120	1.1232e+04	1.3970e+06	6.7000e+05	0.	1.	0.	3.9580e+06	1.0000e+00	1.1095e+02	1	4	9417
383	48-Cd-112	481120	stable								1.1094e+02	0	0	9447
	Sigma(.0253) and RI=			2.2000e+00	1.3814e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9447
b384	50-Sn-112	501120	stable								1.1094e+02	0	0	9513
	Sigma(.0253) and RI=			1.1463e+00	3.0622e+01		B1, B2 and B3=		7.0000e-01	3.0000e-01	0.			H9513
385	42-Mo-113	421130	2.2866e-01	3.0157e+06	2.5808e+06	0.	1.	0.	9.0972e+06	1.0000e+00	1.1197e+02	1	0	9300
386	43-Tc-113	431130	6.5238e-01	2.5493e+06	1.9785e+06	0.	1.	0.	7.5557e+06	1.0000e+00	1.1196e+02	1	0	9319
387	44-Ru-113	441130	3.0000e+00	2.1083e+06	1.5100e+06	0.	1.	0.	6.1963e+06	1.0000e+00	1.1195e+02	1	0	9343
388	45-Rh-113	451130	9.0000e-01	1.5904e+06	1.0425e+06	0.	1.	0.	4.6757e+06	1.0000e+00	1.1195e+02	1	0	9368
389	46-Pd-113	461130	9.0000e+01	1.0433e+06	6.1679e+05	0.	1.	0.	3.1433e+06	9.0000e-01	1.1194e+02	2	0	9393
							1.	1.	2.9233e+06	1.0000e-01				
390	47-Ag-113	471130	1.9332e+04	7.6500e+05	5.4000e+04	0.	1.	0.	2.0100e+06	9.8700e-01	1.1194e+02	2	0	9418
							1.	1.	1.7460e+06	1.3000e-02				
391	47-Ag-113m	471131	6.9000e+01	6.4288e+05	3.5772e+05	0.	1.	0.	2.0103e+06	1.0000e+00	1.1194e+02	1	0	9419
392	48-Cd-113	481130	2.9348e+23	9.3300e+04	0.	0.	1.	0.	3.2200e+05	1.0000e+00	1.1193e+02	1	1	9448
	Sigma(.0253) and RI=			1.9890e+04	3.8030e+02		B1, B2 and B3=		1.0000e+00	0.	0.			H1318
393	48-Cd-113m	481131	4.2917e+08	2.1100e+05	7.0000e+03	0.	1.	0.	5.8600e+05	9.9880e-01	1.1203e+02	2	4	9449
							3.	0.	2.6370e+05	1.2000e-03				
394	49-In-113	491130	stable								1.1193e+02	0	0	9473
	Sigma(.0253) and RI=			1.1401e+01	2.2662e+02		B1, B2 and B3=		3.2800e-01	6.7200e-01	0.			H9473
395	49-In-113m	491131	5.9688e+03	1.3090e+05	2.6020e+05	0.	3.	0.	3.9169e+05	1.0000e+00	1.1194e+02	1	3	9474
396	50-Sn-113	501130	9.9000e+06	0.	4.3400e+03	0.	2.	1.	6.7841e+06	1.0000e+00	1.1202e+02	1	0	9514
397	50-Sn-113m	501131	1.2600e+03	0.	7.2163e+04	0.	2.	0.	1.1940e+06	9.0000e-02	1.1203e+02	2	0	9515
							3.	0.	7.9300e+04	9.1000e-01				
398	42-Mo-114	421140	3.7665e-01	2.5378e+06	1.8082e+06	0.	1.	0.	7.3623e+06	1.0000e+00	1.1297e+02	1	0	9301
399	43-Tc-114	431140	2.0226e-01	3.3233e+06	3.4868e+06	0.	1.	0.	1.0621e+07	1.0000e+00	1.1296e+02	1	0	9320
400	44-Ru-114	441140	8.1365e+00	1.4387e+06	8.7344e+05	0.	1.	0.	4.1967e+06	1.0000e+00	1.1295e+02	1	0	9344
401	45-Rh-114	451140	1.7000e+00	2.5463e+06	2.0981e+06	0.	1.	0.	7.6683e+06	1.0000e+00	1.1294e+02	1	0	9369
402	46-Pd-114	461140	1.4400e+02	4.3414e+05	2.8094e+05	0.	1.	0.	1.4667e+06	1.0000e+00	1.1293e+02	1	0	9394
403	47-Ag-114	471140	4.3500e+00	1.9940e+06	2.8800e+05	0.	1.	0.	4.8600e+06	1.0000e+00	1.1293e+02	1	-0	9420
404	48-Cd-114	481140	stable								1.1293e+02	0	0	9450
	Sigma(.0253) and RI=			3.3603e-01	1.9237e+01		B1, B2 and B3=		8.8200e-01	1.1800e-01	0.			H9450
405	49-In-114	491140	7.1900e+01	6.4059e+05	1.8200e+03	0.	1.	0.	1.9846e+06	9.8100e-01	1.1293e+02	2	0	9475
							2.	0.	1.4440e+06	1.9000e-02				
406	49-In-114m	491141	4.2800e+06	0.	2.2400e+05	0.	2.	0.	1.6343e+06	3.3000e-02	1.1293e+02	2	0	9476
							3.	0.	1.9030e+05	9.6700e-01				

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
b407	50-Sn-114	501140	stable								1.1292e+02	0	0	9516
	Sigma(.0253) and RI=			1.1068e+00	4.3151e+00		B1, B2 and B3=		1.0000e+00	0.	0.			H9516
408	42-Mo-115	421150	1.2591e-01	3.3499e+06	3.1599e+06	0.		1. 0.	1.0348e+07	1.0000e+00	1.1396e+02	1	0	9302
409	43-Tc-115	431150	2.7044e-01	2.9450e+06	2.5118e+06	0.		1. 0.	8.8859e+06	1.0000e+00	1.1395e+02	1	0	9321
410	44-Ru-115	441150	8.7844e-01	2.4502e+06	1.8847e+06	0.		1. 0.	7.2618e+06	1.0000e+00	1.1394e+02	1	0	9345
411	45-Rh-115	451150	8.3154e+00	1.9274e+06	1.3493e+06	0.		1. 0.	5.6687e+06	1.0000e+00	1.1393e+02	1	0	9370
412	46-Pd-115	461150	3.8000e+01	1.5126e+06	9.8517e+05	0.		1. 0.	4.4593e+06	7.3000e-01	1.1393e+02	2	0	9395
								1. 1.	4.4583e+06	2.7000e-01				
413	47-Ag-115	471150	1.2600e+03	1.0639e+06	6.3559e+05	0.		1. 0.	3.1830e+06	1.0000e+00	1.1392e+02	1	0	9421
414	47-Ag-115m	471151	1.8000e+01	1.0639e+06	6.3559e+05	0.		1. 0.	3.1830e+06	1.0000e+00	1.1392e+02	1	0	9422
415	48-Cd-115	481150	1.9246e+05	3.0300e+05	2.3300e+05	0.		1. 1.	1.1130e+06	1.0000e+00	1.1392e+02	1	4	9451
416	48-Cd-115m	481151	3.8534e+06	6.0700e+05	2.2000e+04	0.		1. 0.	1.6220e+06	9.9993e-01	1.1392e+02	2	4	9452
								1. 1.	1.2860e+06	7.0000e-05				
	Sigma(.0253) and RI=			3.1000e+01	1.9614e+02		B1, B2 and B3=		1.0000e+00	0.	0.			H9452
417	49-In-115	491150	1.6094e+22	1.5200e+05	0.	0.		1. 0.	4.9400e+05	1.0000e+00	1.1392e+02	1	1	9477
	Sigma(.0253) and RI=			2.0204e+02	3.2694e+03		B1, B2 and B3=		2.2300e-01	3.2200e-01	4.5500e-01			H9477
418	49-In-115m	491151	1.5480e+04	1.6900e+05	1.6540e+05	0.		1. 0.	8.5900e+05	3.7000e-02	1.1392e+02	2	4	9478
								3. 0.	3.3624e+05	9.6300e-01				
419	50-Sn-115	501150	stable								1.1392e+02	0	0	9517
	Sigma(.0253) and RI=			5.0000e+01	2.3882e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9517
420	43-Tc-116	431160	1.1549e-01	3.6018e+06	4.1784e+06	0.		1. 0.	1.1872e+07	1.0000e+00	1.1495e+02	1	0	9322
421	44-Ru-116	441160	1.7004e+00	1.9144e+06	1.2336e+06	0.		1. 0.	5.5269e+06	1.0000e+00	1.1494e+02	1	0	9346
422	45-Rh-116	451160	9.4919e-01	2.8261e+06	2.5998e+06	0.		1. 0.	8.7338e+06	1.0000e+00	1.1493e+02	1	0	9371
423	46-Pd-116	461160	1.4000e+01	7.7889e+05	4.7275e+05	0.		1. 0.	2.4597e+06	5.0000e-01	1.1492e+02	2	0	9396
								1. 1.	2.3787e+06	5.0000e-01				
424	47-Ag-116	471160	1.5500e+02	1.7050e+06	1.3890e+06	0.		1. 0.	5.3300e+06	1.0000e+00	1.1492e+02	1	-0	9423
425	47-Ag-116m	471161	8.6000e+00	1.6720e+06	1.5430e+06	0.		1. 0.	5.4100e+06	1.0000e+00	1.1492e+02	1	0	9424
426	48-Cd-116	481160	stable								1.1491e+02	0	0	9453
	Sigma(.0253) and RI=			7.6848e-02	2.4381e+00		B1, B2 and B3=		8.0000e-01	2.0000e-01	0.			H9453
427	49-In-116	491160	1.4100e+01	1.3640e+06	1.8200e+04	0.		1. 0.	3.2730e+06	1.0000e+00	1.1491e+02	1	2	9479
d428	49-In-116m	491161	3.2490e+03	3.0410e+05	2.4730e+06	0.		1. 0.	3.3980e+06	1.0000e+00	1.1491e+02	1	4	9480
429	49-In-116n	491162	2.1600e+00	1.6500e+04	1.4590e+05	0.		3. 1.	1.6239e+05	1.0000e+00	1.1501e+02	1	3	9481
430	50-Sn-116	501160	stable								1.1491e+02	0	0	9518
	Sigma(.0253) and RI=			1.2040e-01	1.1675e+01		B1, B2 and B3=		9.5000e-01	5.0000e-02	0.			H9518
431	43-Tc-117	431170	1.5176e-01	3.2205e+06	2.9792e+06	0.		1. 0.	9.9071e+06	1.0000e+00	1.1594e+02	1	0	9323
432	44-Ru-117	441170	3.4277e-01	2.8270e+06	2.3765e+06	0.		1. 0.	8.5131e+06	1.0000e+00	1.1593e+02	1	0	9347
433	45-Rh-117	451170	1.2174e+00	2.3607e+06	1.8024e+06	0.		1. 0.	6.9989e+06	1.0000e+00	1.1592e+02	1	0	9372
434	46-Pd-117	461170	5.0000e+00	1.8751e+06	1.3112e+06	0.		1. 0.	5.5248e+06	5.0000e-01	1.1591e+02	2	0	9397
								1. 1.	5.5238e+06	5.0000e-01				
435	47-Ag-117	471170	7.2700e+01	1.2940e+06	1.1000e+06	0.		1. 0.	4.1800e+06	5.0000e-01	1.1591e+02	2	-0	9425
								1. 1.	4.1800e+06	5.0000e-01				
436	47-Ag-117m	471171	5.3400e+00	1.6070e+06	4.2100e+05	0.		1. 1.	4.1800e+06	1.0000e+00	1.1591e+02	1	-0	9426

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
437	48-Cd-117	481170	8.9640e+03	4.4300e+05	1.0870e+06	0.	1.	0.	2.5280e+06	8.0000e-02	1.1590e+02	2	4	9454
							1.	1.	2.2120e+06	9.2000e-01				
438	48-Cd-117m	481171	1.2096e+04	2.3600e+05	2.0440e+06	0.	1.	0.	2.6640e+06	9.9000e-01	1.1590e+02	2	2	9455
							1.	1.	2.3480e+06	1.0000e-02				
439	49-In-117	491170	2.6280e+03	2.6400e+05	6.9200e+05	0.	1.	0.	1.4550e+06	9.9690e-01	1.1590e+02	2	4	9482
							1.	1.	1.1300e+06	3.1000e-03				
440	49-In-117m	491171	6.9900e+03	4.3100e+05	9.1000e+04	0.	1.	0.	1.7700e+06	5.2900e-01	1.1590e+02	2	4	9483
							3.	0.	3.1530e+05	4.7100e-01				
441	50-Sn-117	501170	stable								1.1590e+02	0	0	9519
	Sigma(.0253) and RI=			2.5980e+00	2.0185e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9519
442	50-Sn-117m	501171	1.2096e+06	1.5600e+05	1.5740e+05	0.	3.	0.	3.1458e+05	1.0000e+00	1.1590e+02	1	3	9520
443	43-Tc-118	431180	8.1554e-02	3.7546e+06	4.6659e+06	0.	1.	0.	1.2666e+07	1.0000e+00	1.1694e+02	1	0	9324
444	44-Ru-118	441180	6.6235e-01	2.2602e+06	1.5544e+06	0.	1.	0.	6.5481e+06	1.0000e+00	1.1692e+02	1	0	9348
445	45-Rh-118	451180	3.1565e-01	3.1377e+06	3.2240e+06	0.	1.	0.	9.9851e+06	1.0000e+00	1.1692e+02	1	0	9373
446	46-Pd-118	461180	3.1000e+00	1.2628e+06	7.6495e+05	0.	1.	0.	3.7899e+06	5.0000e-01	1.1691e+02	2	0	9398
							1.	1.	3.6622e+06	5.0000e-01				
447	47-Ag-118	471180	3.7000e+00	2.4096e+06	1.9470e+06	0.	1.	0.	7.2411e+06	1.0000e+00	1.1690e+02	1	0	9427
448	47-Ag-118m	471181	2.8000e+00	1.1447e+05	1.2698e+06	0.	1.	0.	7.3688e+05	5.9000e-01	1.1690e+02	2	0	9428
							3.	0.	1.2770e+05	4.1000e-01				
449	48-Cd-118	481180	3.0180e+03	2.4400e+05	0.	0.	1.	0.	7.4000e+05	1.0000e+00	1.1689e+02	1	0	9456
450	49-In-118	491180	5.0000e+00	1.7700e+06	7.8000e+04	0.	1.	0.	4.2000e+06	1.0000e+00	1.1689e+02	1	2	9484
451	49-In-118m	491181	2.6700e+02	5.6300e+05	2.7200e+06	0.	1.	0.	4.2600e+06	1.0000e+00	1.1689e+02	1	4	9485
b452	49-In-118n	491182	8.5000e+00	1.1900e+05	5.9000e+04	0.	1.	0.	4.4000e+06	1.5000e-02	1.1699e+02	2	4	9486
							3.	1.	1.3820e+05	9.8500e-01				
453	50-Sn-118	501180	stable								1.1689e+02	0	0	9521
	Sigma(.0253) and RI=			8.2377e-02	6.2141e+00		B1, B2 and B3=		3.9500e-01	6.0500e-01	0.			H9521
454	44-Ru-119	441190	1.9495e-01	3.0455e+06	2.7309e+06	0.	1.	0.	9.3071e+06	1.0000e+00	1.1792e+02	1	0	9349
455	45-Rh-119	451190	4.6542e-01	2.6721e+06	2.1957e+06	0.	1.	0.	8.0201e+06	1.0000e+00	1.1791e+02	1	0	9374
456	46-Pd-119	461190	1.7587e+00	2.2840e+06	1.7346e+06	0.	1.	0.	6.7761e+06	1.0000e+00	1.1790e+02	1	0	9399
457	47-Ag-119	471190	2.1000e+00	1.7800e+06	1.2410e+06	0.	1.	0.	5.3600e+06	1.0000e+00	1.1789e+02	1	-0	9429
458	48-Cd-119	481190	1.6200e+02	1.1567e+06	7.1347e+05	0.	1.	1.	3.4539e+06	1.0000e+00	1.1789e+02	1	0	9457
459	48-Cd-119m	481191	1.3200e+02	1.2082e+06	7.5310e+05	0.	1.	0.	3.6003e+06	1.0000e+00	1.1789e+02	1	0	9458
460	49-In-119	491190	1.2600e+02	5.9500e+05	7.6700e+05	0.	1.	0.	2.3480e+06	9.5000e-01	1.1789e+02	2	0	9487
							1.	1.	2.2590e+06	5.0000e-02				
461	49-In-119m	491191	1.0800e+03	1.0260e+06	3.3000e+04	0.	3.	0.	3.1100e+05	5.0000e-02	1.1789e+02	2	0	9488
							1.	0.	2.6590e+06	9.5000e-01				
462	50-Sn-119	501190	stable								1.1788e+02	0	0	9522
	Sigma(.0253) and RI=			2.2998e+00	3.9010e+00		B1, B2 and B3=		1.0000e+00	0.	0.			H9522
b463	50-Sn-119m	501191	2.1168e+07	2.0000e+04	6.9000e+04	0.	3.	0.	8.9540e+04	1.0000e+00	1.1788e+02	1	3	9523
464	44-Ru-120	441200	3.5028e-01	2.5114e+06	1.8343e+06	0.	1.	0.	7.3351e+06	1.0000e+00	1.1891e+02	1	0	9350
465	45-Rh-120	451200	1.7246e-01	3.3173e+06	3.6569e+06	0.	1.	0.	1.0779e+07	1.0000e+00	1.1891e+02	1	0	9375
466	46-Pd-120	461200	3.9065e+00	1.6558e+06	1.0440e+06	0.	1.	0.	4.8111e+06	1.0000e+00	1.1889e+02	1	0	9400

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
467	47-Ag-120	471200	1.1700e+00	3.1780e+06	1.2750e+06	0.	1.	0.	8.3420e+06	1.0000e+00	1.1889e+02	1	-0	9430
468	47-Ag-120m	471201	3.2000e-01	1.7606e+06	1.2710e+06	0.	1.	0.	8.6964e+06	6.3000e-01	1.1889e+02	2	0	9431
							3.	0.	2.0300e+05	3.7000e-01				
469	48-Cd-120	481200	5.0800e+01	5.0487e+05	3.2234e+05	0.	1.	0.	1.7190e+06	1.0000e+00	1.1888e+02	2	0	9459
							1.	1.	1.6190e+06	0.				
c470	49-In-120	491200	3.0800e+00	2.2580e+06	3.3100e+05	0.	1.	0.	5.4000e+06	1.0000e+00	1.1888e+02	1	2	9489
c471	49-In-120m	491201	4.4400e+01	9.3500e+05	2.9720e+06	0.	1.	0.	5.3000e+06	1.0000e+00	1.1888e+02	1	4	9490
472	50-Sn-120	501200	stable								1.1887e+02	0	0	9524
		Sigma(.0253) and RI=		1.4097e-01	1.2561e+00		B1, B2 and B3=		9.9400e-01	6.0000e-03	0.			H9524
b473	52-Te-120	521200	stable								1.1887e+02	0	0	9576
		Sigma(.0253) and RI=		2.2994e+00	2.8577e+01		B1, B2 and B3=		8.7000e-01	1.3000e-01	0.			H9576
474	45-Rh-121	451210	2.4956e-01	2.8952e+06	2.5335e+06	0.	1.	0.	8.8071e+06	1.0000e+00	1.1990e+02	1	0	9376
475	46-Pd-121	461210	6.4367e-01	2.5281e+06	2.0358e+06	0.	1.	0.	7.5701e+06	1.0000e+00	1.1989e+02	1	0	9401
476	47-Ag-121	471210	8.0000e-01	2.1990e+06	1.6580e+06	0.	1.	0.	6.5274e+06	1.0000e+00	1.1988e+02	1	0	9432
477	48-Cd-121	481210	1.3000e+01	1.5701e+06	1.0558e+06	0.	1.	0.	4.7052e+06	8.2000e-01	1.1988e+02	2	0	9460
							1.	1.	4.3842e+06	1.8000e-01				
478	48-Cd-121m	481211	4.8000e+00	1.5900e+06	1.0731e+06	0.	1.	0.	4.7052e+06	1.0000e+00	1.1987e+02	1	0	9461
c479	49-In-121	491210	3.0000e+01	9.7100e+05	9.7600e+05	0.	1.	0.	3.3800e+06	1.0000e+00	1.1987e+02	1	0	9491
c480	49-In-121m	491211	2.2560e+02	1.4830e+06	1.2000e+05	0.	3.	0.	3.2100e+05	1.0000e-02	1.1987e+02	2	0	9492
							1.	0.	3.7000e+06	9.9000e-01				
481	50-Sn-121	501210	9.7416e+04	1.1450e+05	0.	0.	1.	0.	3.8660e+05	1.0000e+00	1.1987e+02	1	1	9525
482	50-Sn-121m	501211	1.7356e+09	1.3490e+05	2.1800e+04	0.	1.	0.	3.9260e+05	1.0000e+00	1.1987e+02	1	4	9526
483	51-Sb-121	511210	stable								1.1987e+02	0	0	9548
		Sigma(.0253) and RI=		6.2562e+00	2.0560e+02		B1, B2 and B3=		9.9100e-01	9.0000e-03	0.			H9548
484	52-Te-121	521210	1.4500e+06	0.	5.6100e+05	0.	2.	0.	1.0800e+06	1.0000e+00	1.1996e+02	1	0	9577
b485	52-Te-121m	521211	1.3300e+07	0.	2.6460e+05	0.	2.	0.	1.3740e+06	1.0000e-01	1.1996e+02	2	0	9578
							3.	0.	2.9400e+05	9.0000e-01				
486	45-Rh-122	451220	1.0715e-01	3.5255e+06	4.2229e+06	0.	1.	0.	1.1763e+07	1.0000e+00	1.2090e+02	1	0	9377
487	46-Pd-122	461220	1.4112e+00	1.9301e+06	1.2730e+06	0.	1.	0.	5.5981e+06	1.0000e+00	1.2088e+02	1	0	9402
488	47-Ag-122	471220	1.5000e+00	2.9366e+06	2.9299e+06	0.	1.	0.	9.2864e+06	9.8600e-01	1.2088e+02	2	0	9433
							1.5	0.	1.1100e+06	1.4000e-02				
489	48-Cd-122	481220	3.1000e+00	8.9610e+05	5.4446e+05	0.	1.	0.	2.7402e+06	1.0000e+00	1.2087e+02	1	0	9462
490	49-In-122	491220	1.5000e+00	2.1418e+06	1.5934e+06	0.	1.	0.	6.3460e+06	1.0000e+00	1.2086e+02	1	0	9493
491	49-In-122m	491221	9.2000e+00	2.2860e+06	1.1450e+06	0.	1.	0.	6.3500e+06	1.0000e+00	1.2086e+02	1	-0	9494
492	50-Sn-122	501220	stable								1.2086e+02	0	0	9527
		Sigma(.0253) and RI=		1.8095e-01	7.6300e-01		B1, B2 and B3=		6.0000e-03	9.9400e-01	0.			H9527
493	51-Sb-122	511220	2.3328e+05	5.5770e+05	4.4500e+05	0.	1.	0.	1.9810e+06	9.7600e-01	1.2086e+02	2	5	9549
							2.	0.	1.6160e+06	2.4000e-02				
494	51-Sb-122m	511221	2.5200e+02	8.9000e+04	7.3000e+04	0.	3.	0.	1.6200e+05	1.0000e+00	1.2086e+02	1	0	9550
495	52-Te-122	521220	stable								1.2086e+02	0	0	9579
		Sigma(.0253) and RI=		2.8006e+00	7.3985e+01		B1, B2 and B3=		6.0700e-01	3.9300e-01	0.			H9579
496	45-Rh-123	451230	1.3429e-01	3.2271e+06	3.1279e+06	0.	1.	0.	1.0069e+07	1.0000e+00	1.2189e+02	1	0	9378

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
497	46-Pd-123	461230	3.0041e-01	2.8140e+06	2.4438e+06	0.	1.	0.	8.5541e+06	1.0000e+00	1.2188e+02	1	0	9403
498	47-Ag-123	471230	3.9000e-01	2.4430e+06	1.9518e+06	0.	1.	0.	7.3144e+06	9.5400e-01	1.2187e+02	2	0	9434
							1.5	0.	2.1600e+06	4.6000e-02				
499	48-Cd-123	481230	8.9050e+00	1.8325e+06	1.3017e+06	0.	1.	0.	5.4992e+06	7.7000e-01	1.2186e+02	2	0	9463
							1.	1.	5.1902e+06	2.3000e-01				
500	49-In-123	491230	5.9800e+00	1.5840e+06	6.6200e+05	0.	1.	1.	4.3810e+06	1.0000e+00	1.2186e+02	1	-0	9495
501	49-In-123m	491231	4.7800e+01	1.5220e+06	1.1180e+06	0.	1.	1.	4.6900e+06	1.0000e+00	1.2186e+02	1	-0	9496
502	50-Sn-123	501230	1.1163e+07	5.1990e+05	6.9000e+03	0.	1.	0.	1.3960e+06	1.0000e+00	1.2185e+02	1	4	9528
	Sigma(.0253) and RI=			3.3000e-02	2.6823e+00		B1, B2 and B3=		1.0000e+00	0.	0.			H9528
503	50-Sn-123m	501231	2.4048e+03	4.7520e+05	1.3956e+05	0.	1.	0.	1.4200e+06	1.0000e+00	1.2185e+02	1	4	9529
504	51-Sb-123	511230	stable								1.2185e+02	0	0	9551
	Sigma(.0253) and RI=			4.3266e+00	1.2720e+02		B1, B2 and B3=		9.8600e-01	9.0000e-03	5.0000e-03			H9551
b505	52-Te-123	521230	3.7843e+20	0.	2.0000e+04	0.	2.	0.	5.0000e+04	1.0000e+00	1.2185e+02	1	0	9580
	Sigma(.0253) and RI=			4.0981e+02	5.5333e+03		B1, B2 and B3=		1.0000e+00	0.	0.			H9580
506	52-Te-123m	521231	1.0300e+07	0.	2.4700e+05	0.	3.	0.	2.4700e+05	1.0000e+00	1.2185e+02	1	0	9581
507	46-Pd-124	461240	5.1398e-01	2.3485e+06	1.6882e+06	0.	1.	0.	6.8601e+06	1.0000e+00	1.2287e+02	1	0	9404
508	47-Ag-124	471240	2.4948e-01	3.1681e+06	3.4480e+06	0.	1.	0.	1.0270e+07	1.0000e+00	1.2286e+02	1	0	9435
509	48-Cd-124	481240	9.0000e-01	1.1862e+06	7.2480e+05	0.	1.	0.	3.5272e+06	1.0000e+00	1.2285e+02	1	0	9464
510	49-In-124	491240	3.1700e+00	2.2850e+06	1.9420e+06	0.	1.	0.	7.1400e+06	1.0000e+00	1.2285e+02	1	-0	9497
511	49-In-124m	491241	2.4000e+00	2.3566e+06	1.9530e+06	0.	1.	0.	7.1400e+06	1.0000e+00	1.2285e+02	1	0	9498
512	50-Sn-124	501240	stable								1.2284e+02	0	0	9530
	Sigma(.0253) and RI=			1.2990e-01	7.1466e+00		B1, B2 and B3=		3.0000e-02	9.7000e-01	0.			H9530
513	51-Sb-124	511240	5.2013e+06	3.8600e+05	1.8570e+06	0.	1.	0.	2.9050e+06	1.0000e+00	1.2284e+02	1	4	9552
	Sigma(.0253) and RI=			6.5000e+00	2.6397e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9552
514	51-Sb-124n	511242	9.3000e+01	1.4600e+05	3.5800e+05	0.	1.	0.	2.9150e+06	2.0000e-01	1.2293e+02	2	0	9553
							3.	0.	1.0700e+04	8.0000e-01				
515	51-Sb-124m	511241	1.2100e+03	0.	2.4000e+04	0.	3.	0.	2.4000e+04	1.0000e+00	1.2284e+02	1	0	9554
516	52-Te-124	521240	stable								1.2284e+02	0	0	9582
	Sigma(.0253) and RI=			6.8000e+00	8.4078e+00		B1, B2 and B3=		9.9400e-01	6.0000e-03	0.			H9582
517	54-Xe-124	541240	stable								1.2293e+02	0	0	9630
	Sigma(.0253) and RI=			1.6450e+02	3.0460e+03		B1, B2 and B3=		8.3200e-01	1.6800e-01	0.			H1335
518	46-Pd-125	461250	1.6604e-01	3.0829e+06	2.9090e+06	0.	1.	0.	9.5601e+06	1.0000e+00	1.2387e+02	1	0	9405
519	47-Ag-125	471250	3.3351e-01	2.8121e+06	2.4701e+06	0.	1.	0.	8.5764e+06	1.0000e+00	1.2386e+02	1	0	9436
520	48-Cd-125	481250	1.5480e+00	2.1753e+06	1.6613e+06	0.	1.	0.	6.4832e+06	7.0000e-01	1.2385e+02	2	0	9465
							1.	1.	6.4822e+06	3.0000e-01				
521	49-In-125	491250	2.3300e+00	1.9250e+06	9.5800e+05	0.	1.	0.	5.4000e+06	5.0000e-01	1.2384e+02	2	-0	9499
							1.	1.	5.4000e+06	5.0000e-01				
522	49-In-125m	491251	1.2200e+01	2.1060e+06	5.7800e+05	0.	1.	0.	5.4000e+06	5.0000e-01	1.2384e+02	2	-0	9500
							1.	1.	5.4000e+06	5.0000e-01				
523	50-Sn-125	501250	8.3290e+05	8.0600e+05	3.1300e+05	0.	1.	0.	2.3550e+06	1.0000e+00	1.2384e+02	1	2	9531
	Sigma(.0253) and RI=			5.5000e-01	1.4838e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9531
524	50-Sn-125m	501251	5.7120e+02	7.7900e+05	3.5580e+05	0.	1.	0.	2.3880e+06	1.0000e+00	1.2384e+02	1	2	9532
525	51-Sb-125	511250	8.7413e+07	9.5500e+04	4.3500e+05	0.	1.	0.	7.6680e+05	8.6500e-01	1.2383e+02	2	4	9555
							1.	1.	6.2170e+05	1.3500e-01				
	Sigma(.0253) and RI=			1.0000e+00	1.8355e+01		B1, B2 and B3=		5.0000e-01	2.5000e-01	2.5000e-01			H9555

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
526	52-Te-125	521250	stable								1.2383e+02	0	0	9583
	Sigma(.0253) and RI=			1.5501e+00	2.3642e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9583
527	52-Te-125m	521251	5.0112e+06	1.0700e+05	3.5700e+04	0.		3. 0.	1.4473e+05	1.0000e+00	1.2383e+02	1	3	9584
b528	54-Xe-125	541250	6.1200e+04	0.	2.4200e+05	0.		2. 0.	1.7350e+06	1.0000e+00	1.2393e+02	1	0	9631
b529	54-Xe-125m	541251	5.7000e+01	0.	2.5300e+05	0.		3. 0.	2.5300e+05	1.0000e+00	1.2393e+02	1	0	9632
530	46-Pd-126	461260	2.5202e-01	2.6819e+06	2.1059e+06	0.		1. 0.	7.9501e+06	1.0000e+00	1.2486e+02	1	0	9406
531	47-Ag-126	471260	1.3984e-01	3.3860e+06	4.0162e+06	0.		1. 0.	1.1276e+07	1.0000e+00	1.2485e+02	1	0	9437
532	48-Cd-126	481260	3.2658e+00	1.6416e+06	1.0512e+06	0.		1. 0.	4.7892e+06	1.0000e+00	1.2484e+02	1	0	9466
533	49-In-126	491260	1.5300e+00	2.5830e+06	2.2890e+06	0.		1. 0.	8.1200e+06	1.0000e+00	1.2484e+02	1	-0	9501
534	50-Sn-126	501260	3.1557e+12	1.0600e+05	5.6000e+04	0.		1. 1.	3.6000e+05	3.3000e-01	1.2483e+02	2	4	9533
								1. 2.	3.3800e+05	6.7000e-01				
	Sigma(.0253) and RI=			3.0000e-01	1.8505e-01		B1, B2 and B3=		5.0000e-01	5.0000e-01	0.			H9533
535	51-Sb-126	511260	1.0714e+06	3.1100e+05	2.8490e+06	0.		1. 0.	3.6650e+06	1.0000e+00	1.2483e+02	1	4	9556
	Sigma(.0253) and RI=			5.8000e+00	4.5690e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9556
536	51-Sb-126m	511261	1.1400e+03	6.1400e+05	1.5840e+06	0.		1. 0.	3.6830e+06	8.6000e-01	1.2483e+02	2	4	9557
								3. 0.	1.7720e+04	1.4000e-01				
d537	51-Sb-126n	511262	1.1100e+01	2.1100e+04	2.8400e+02	0.		3. 1.	4.0420e+04	1.0000e+00	1.2492e+02	1	3	9558
538	52-Te-126	521260	stable								1.2482e+02	0	0	9585
	Sigma(.0253) and RI=			1.0350e+00	1.0342e+01		B1, B2 and B3=		8.7400e-01	1.2600e-01	0.			H9585
539	54-Xe-126	541260	stable								1.2492e+02	0	0	9633
	Sigma(.0253) and RI=			2.2080e+00	4.4020e+01		B1, B2 and B3=		8.8000e-01	1.2000e-01	0.			H1339
540	47-Ag-127	471270	1.7527e-01	3.1000e+06	2.9811e+06	0.		1. 0.	9.6664e+06	1.0000e+00	1.2584e+02	1	0	9438
541	48-Cd-127	481270	5.7187e-01	2.4845e+06	2.0427e+06	0.		1. 0.	7.4892e+06	5.0000e-01	1.2584e+02	2	0	9467
								1. 1.	7.4882e+06	5.0000e-01				
542	49-In-127	491270	3.7600e+00	2.4200e+06	9.4800e+05	0.		1. 0.	6.4300e+06	4.9600e-01	1.2583e+02	3	-0	9502
								1. 1.	6.4300e+06	4.9600e-01				
								1.5 0.	7.8000e+05	8.3000e-03				
543	49-In-127m	491271	1.3000e+00	2.1538e+06	1.6520e+06	0.		1. 0.	6.4300e+06	9.9280e-01	1.2583e+02	2	0	9503
								1.5 0.	8.3000e+05	7.2000e-03				
544	50-Sn-127	501270	7.5600e+03	5.3500e+05	1.9140e+06	0.		1. 0.	3.2010e+06	1.0000e+00	1.2582e+02	1	2	9534
545	50-Sn-127m	501271	2.4780e+02	9.7400e+05	4.9090e+05	0.		1. 0.	2.9100e+06	1.0000e+00	1.2582e+02	1	2	9535
546	51-Sb-127	511270	3.3264e+05	3.1200e+05	6.7300e+05	0.		1. 0.	1.5810e+06	8.3300e-01	1.2582e+02	2	4	9559
								1. 1.	1.4930e+06	1.6700e-01				
547	52-Te-127	521270	3.3660e+04	2.2320e+05	4.8890e+03	0.		1. 0.	6.9400e+05	1.0000e+00	1.2582e+02	1	4	9586
548	52-Te-127m	521271	9.4176e+06	8.2000e+04	1.1600e+04	0.		1. 0.	7.8200e+05	2.4000e-02	1.2582e+02	2	4	9587
								3. 0.	8.8260e+04	9.7600e-01				
	Sigma(.0253) and RI=			9.4000e+00	4.2488e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9587
549	53- I-127	531270	stable								1.2581e+02	0	0	9606
	Sigma(.0253) and RI=			6.2007e+00	1.5463e+02		B1, B2 and B3=		1.0000e+00	0.	0.			H9606
550	54-Xe-127	541270	3.1458e+06	0.	2.8200e+05	0.		2. 0.	6.6400e+05	1.0000e+00	1.2589e+02	1	0	9634
551	54-Xe-127m	541271	6.9000e+01	0.	2.9700e+05	0.		3. 0.	2.9700e+05	1.0000e+00	1.2591e+02	1	0	9635
552	47-Ag-128	471280	9.4279e-02	3.5358e+06	4.4974e+06	0.		1. 0.	1.2058e+07	1.0000e+00	1.2684e+02	1	0	9439
553	48-Cd-128	481280	1.0531e+00	2.0163e+06	1.3793e+06	0.		1. 0.	5.8792e+06	9.9890e-01	1.2683e+02	2	0	9468
								1.5 0.	1.8000e+05	1.1000e-03				

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
554	49-In-128	491280	8.4000e-01	3.1240e+06	2.1270e+06	0.	1.	0.	9.1000e+06	9.8300e-01	1.2682e+02	2	-0	9504
							1.5	0.	1.1900e+06	1.7000e-02				
555	49-In-128m	491281	5.6000e+00	2.8636e+06	2.9208e+06	0.	1.	0.	9.1300e+06	1.0000e+00	1.2682e+02	1	0	9505
556	50-Sn-128	501280	3.5460e+03	2.4900e+05	5.9900e+05	0.	1.	1.	1.2900e+06	1.0000e+00	1.2681e+02	1	4	9536
557	51-Sb-128	511280	3.2436e+04	4.2900e+05	3.0960e+06	0.	1.	0.	4.2600e+06	1.0000e+00	1.2681e+02	1	2	9560
558	51-Sb-128m	511281	6.2400e+02	9.2100e+05	1.9860e+06	0.	1.	0.	4.2600e+06	1.0000e+00	1.2681e+02	1	2	9561
559	52-Te-128	521280	stable								1.2681e+02	0	0	9588
	Sigma(.0253) and RI=			2.1467e-01	2.4067e+00		B1, B2 and B3=		9.4400e-01	5.6000e-02	0.			H9588
560	53- I-128	531280	1.4990e+03	6.9601e+05	8.4700e+05	0.	1.	0.	2.1270e+06	1.0000e+00	1.2681e+02	1	0	9607
561	54-Xe-128	541280	stable								1.2681e+02	0	0	9636
	Sigma(.0253) and RI=			5.3600e+00	1.1270e+01		B1, B2 and B3=		9.0900e-01	9.1000e-02	0.			H1348
562	48-Cd-129	481290	2.9872e-01	2.7088e+06	2.3731e+06	0.	1.	0.	8.2712e+06	1.0000e+00	1.2782e+02	1	0	9469
563	49-In-129	491290	9.9000e-01	2.8640e+06	1.0960e+06	0.	1.	0.	7.5200e+06	9.6200e-01	1.2781e+02	2	-0	9506
							1.5	0.	2.2500e+06	3.8000e-02				
564	49-In-129m	491291	2.5000e+00	2.4877e+06	2.0674e+06	0.	1.	0.	7.5200e+06	9.6500e-01	1.2781e+02	2	0	9507
							1.5	0.	1.8200e+06	3.5000e-02				
565	50-Sn-129	501290	4.9800e+02	1.3347e+06	8.8170e+05	0.	1.	0.	3.9900e+06	1.0000e+00	1.2781e+02	1	0	9537
566	50-Sn-129m	501291	1.3800e+02	1.3467e+06	8.9183e+05	0.	1.	0.	4.0250e+06	1.0000e+00	1.2781e+02	1	0	9538
567	51-Sb-129	511290	1.5552e+04	3.9000e+05	1.2980e+06	0.	1.	0.	2.3770e+06	8.3400e-01	1.2780e+02	2	4	9562
							1.	1.	2.2710e+06	1.6600e-01				
568	52-Te-129	521290	4.1760e+03	5.4400e+05	5.9000e+04	0.	1.	0.	1.4980e+06	1.0000e+00	1.2780e+02	1	4	9589
569	52-Te-129m	521291	2.9030e+06	2.0490e+05	8.4600e+04	0.	1.	0.	1.6040e+06	3.5000e-01	1.2780e+02	2	4	9590
							3.	0.	1.0550e+05	6.5000e-01				
	Sigma(.0253) and RI=			1.1000e+00	6.0507e+00		B1, B2 and B3=		1.0000e+00	0.	0.			H9590
570	53- I-129	531290	4.9544e+14	5.2700e+04	2.3000e+04	0.	1.	0.	1.9000e+05	1.0000e+00	1.2780e+02	1	4	9608
	Sigma(.0253) and RI=			2.7000e+01	3.5780e+01		B1, B2 and B3=		3.3300e-01	6.6700e-01	0.			H9608
571	54-Xe-129	541290	stable								1.2780e+02	0	0	9637
	Sigma(.0253) and RI=			1.8000e+01	2.5520e+02		B1, B2 and B3=		1.0000e+00	0.	0.			H1349
572	54-Xe-129m	541291	6.9120e+05	1.8000e+05	5.1300e+04	0.	3.	0.	2.3614e+05	1.0000e+00	1.2780e+02	1	3	9638
573	48-Cd-130	481300	4.7675e-01	2.3228e+06	1.7063e+06	0.	1.	0.	6.8262e+06	1.0000e+00	1.2882e+02	1	0	9470
574	49-In-130	491300	5.8000e-01	3.0433e+06	3.3375e+06	0.	1.	0.	9.9120e+06	9.4110e-01	1.2881e+02	3	0	9508
							1.	1.	9.8327e+06	4.5000e-02				
							1.5	0.	1.8700e+06	1.3900e-02				
575	50-Sn-130	501300	2.2200e+02	6.1289e+05	3.8637e+05	0.	1.	0.	2.0000e+06	1.0000e-01	1.2880e+02	2	0	9539
							1.	1.	1.9700e+06	9.0000e-01				
576	50-Sn-130m	501301	1.0200e+02	6.2265e+05	3.9196e+05	0.	1.	0.	2.0000e+06	1.0000e+00	1.2880e+02	1	0	9540
577	51-Sb-130	511300	2.4000e+03	7.2300e+05	3.2720e+06	0.	1.	0.	4.9700e+06	1.0000e+00	1.2880e+02	1	4	9563
578	51-Sb-130m	511301	3.7800e+02	1.0200e+06	2.7100e+06	0.	1.	0.	5.0000e+06	1.0000e+00	1.2880e+02	1	4	9564
579	52-Te-130	521300	stable								1.2879e+02	0	0	9591
	Sigma(.0253) and RI=			2.9000e-01	3.5340e-01		B1, B2 and B3=		9.0900e-01	9.1000e-02	0.			H9591
580	53- I-130	531300	4.4496e+04	2.8750e+05	2.1380e+06	0.	1.	0.	2.9860e+06	1.0000e+00	1.2879e+02	1	2	9609
	Sigma(.0253) and RI=			1.8000e+01	1.8002e+02		B1, B2 and B3=		1.0000e+00	0.	0.			H9609
581	53- I-130m	531301	5.5200e+02	1.1203e+05	1.3400e+05	0.	1.	0.	2.0320e+06	1.7000e-01	1.2879e+02	2	0	9610
							3.	0.	4.8200e+04	8.3000e-01				

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
582	54-Xe-130	541300	stable								1.2879e+02	0	0	9639
	Sigma(.0253) and RI=			6.2000e+00	4.5060e+00		B1, B2 and B3=		8.7700e-01	1.2300e-01	0.			H1350
583	48-Cd-131	481310	1.0617e-01	3.4217e+06	3.7795e+06	0.	1.	0.	1.1111e+07	1.0000e+00	1.2981e+02	1	0	9471
584	49-In-131	491310	2.8000e-01	2.7565e+06	2.4728e+06	0.	1.	0.	8.4670e+06	8.8340e-01	1.2980e+02	3	0	9509
							1.	1.	8.4660e+06	1.0000e-01				
							1.5	0.	2.8200e+06	1.6600e-02				
585	50-Sn-131	501310	5.0000e+01	1.4706e+06	1.0044e+06	0.	1.	0.	4.3920e+06	1.0000e+00	1.2979e+02	1	0	9541
586	50-Sn-131m	501311	3.9000e+01	1.4706e+06	1.0044e+06	0.	1.	0.	4.3920e+06	1.0000e+00	1.2979e+02	1	0	9542
587	51-Sb-131	511310	1.3800e+03	5.4400e+05	1.9900e+06	0.	1.	0.	3.1000e+06	9.3200e-01	1.2979e+02	2	2	9565
							1.	1.	2.9178e+06	6.8000e-02				
588	52-Te-131	521310	1.5000e+03	7.2100e+05	4.2100e+05	0.	1.	0.	2.2500e+06	1.0000e+00	1.2978e+02	1	4	9592
589	52-Te-131m	521311	1.0800e+05	1.6200e+05	1.4100e+06	0.	1.	0.	2.4320e+06	8.0000e-01	1.2978e+02	2	4	9593
							3.	0.	1.8225e+05	2.0000e-01				
590	53- I-131	531310	6.9466e+05	1.9145e+05	3.8100e+05	0.	1.	0.	9.7080e+05	9.8914e-01	1.2978e+02	2	4	9611
							1.	1.	8.0687e+05	1.0860e-02				
	Sigma(.0253) and RI=			7.0000e-01	7.9683e+00		B1, B2 and B3=		1.0000e+00	0.	0.			H9611
591	54-Xe-131	541310	stable								1.2978e+02	0	0	9640
	Sigma(.0253) and RI=			9.0030e+01	1.0200e+03		B1, B2 and B3=		1.0000e+00	0.	0.			H1351
592	54-Xe-131m	541311	1.0282e+06	1.4200e+05	2.0100e+04	0.	3.	0.	1.6393e+05	1.0000e+00	1.2978e+02	1	3	9641
593	48-Cd-132	481320	1.3572e-01	3.1148e+06	2.8962e+06	0.	1.	0.	9.6112e+06	1.0000e+00	1.3081e+02	1	0	9472
594	49-In-132	491320	1.2000e-01	3.6337e+06	4.9952e+06	0.	1.	0.	1.2752e+07	9.5900e-01	1.3080e+02	2	0	9510
							1.5	0.	4.8700e+06	4.1000e-02				
595	50-Sn-132	501320	4.0000e+01	7.7400e+05	1.2860e+06	0.	1.	1.	3.2200e+06	1.0000e+00	1.3079e+02	1	4	9543
596	51-Sb-132	511320	2.5200e+02	1.3820e+06	2.6000e+06	0.	1.	0.	5.6000e+06	1.0000e+00	1.3078e+02	1	4	9566
597	51-Sb-132m	511321	1.6800e+02	1.3000e+06	2.6310e+06	0.	1.	0.	5.6000e+06	1.0000e+00	1.3078e+02	1	4	9567
598	52-Te-132	521320	2.8152e+05	1.0030e+05	2.3300e+05	0.	1.	0.	4.9300e+05	1.0000e+00	1.3078e+02	1	4	9594
	Sigma(.0253) and RI=			2.0000e-03	5.6237e-03		B1, B2 and B3=		5.0000e-01	5.0000e-01	0.			H9594
599	53- I-132	531320	8.2800e+03	4.9900e+05	2.2790e+06	0.	1.	0.	3.5800e+06	1.0000e+00	1.3078e+02	1	4	9612
600	53- I-132m	531321	4.9800e+03	1.8168e+05	4.1360e+05	0.	1.	0.	3.7000e+06	1.4000e-01	1.3077e+02	2	0	9613
							3.	0.	1.2000e+05	8.6000e-01				
601	54-Xe-132	541320	stable								1.3077e+02	0	0	9642
	Sigma(.0253) and RI=			4.4000e-01	1.7470e+00		B1, B2 and B3=		9.0000e-01	1.0000e-01	0.			H1352
602	49-In-133	491330	1.1163e-01	3.4369e+06	3.8900e+06	0.	1.	0.	1.1252e+07	1.0000e+00	1.3179e+02	1	0	9511
603	50-Sn-133	501330	1.4700e+00	2.3889e+06	1.9790e+06	0.	1.	0.	7.2320e+06	9.9980e-01	1.3178e+02	2	0	9544
							1.5	0.	2.0000e+04	2.0000e-04				
604	51-Sb-133	511330	1.4880e+02	1.0620e+06	1.2200e+06	0.	1.	0.	3.9500e+06	5.8000e-01	1.3177e+02	2	2	9568
							1.	1.	3.6160e+06	4.2000e-01				
605	52-Te-133	521330	7.4700e+02	8.1800e+05	9.2900e+05	0.	1.	0.	2.9700e+06	1.0000e+00	1.3177e+02	1	4	9595
d606	52-Te-133m	521331	3.3240e+03	6.7200e+05	2.3080e+06	0.	1.	0.	3.3040e+06	8.7000e-01	1.3177e+02	2	4	9596
							3.	0.	3.3414e+05	1.3000e-01				
b607	53- I-133	531330	7.4880e+04	4.1000e+05	6.0700e+05	0.	1.	0.	1.7600e+06	9.7120e-01	1.3177e+02	2	4	9614
							1.	1.	1.5270e+06	2.8800e-02				
608	53- I-133m	531331	9.0000e+00	0.	1.6340e+06	0.	3.	0.	1.6340e+06	1.0000e+00	1.3177e+02	1	0	9615
609	54-Xe-133	541330	4.5317e+05	1.3620e+05	4.6100e+04	0.	1.	0.	4.2700e+05	1.0000e+00	1.3176e+02	1	4	9643
	Sigma(.0253) and RI=			1.9000e+02	3.5630e+02		B1, B2 and B3=		1.0000e+00	0.	0.			H9643

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
610	54-Xe-133m	541331	1.8904e+05	1.8900e+05	4.2400e+04	0.	3.	0.	2.3318e+05	1.0000e+00	1.3176e+02	1	3	9644
611	55-Cs-133	551330	stable								1.3176e+02	0	0	9662
	Sigma(.0253) and RI=			2.9610e+01	3.8270e+02	B1, B2 and B3=			9.2400e-01	7.6000e-02	0.			H1355
612	49-In-134	491340	8.0557e-02	3.6085e+06	5.0137e+06	0.	1.	0.	1.2720e+07	1.0000e+00	1.3279e+02	1	0	9512
613	50-Sn-134	501340	1.0400e+00	1.9568e+06	1.3529e+06	0.	1.	0.	5.7320e+06	8.3000e-01	1.3278e+02	2	0	9545
							1.5	0.	2.1600e+06	1.7000e-01				
c614	51-Sb-134	511340	1.0700e+01	2.8000e+06	2.0360e+06	0.	1.	0.	8.4900e+06	9.9914e-01	1.3277e+02	2	4	9569
							1.5	0.	1.0000e+06	8.6000e-04				
c615	51-Sb-134m	511341	8.5000e-01	3.7800e+06	0.	0.	1.	0.	8.4000e+06	1.0000e+00	1.3277e+02	1	1	9570
616	52-Te-134	521340	2.5080e+03	2.6800e+05	8.7700e+05	0.	1.	0.	1.7000e+06	1.0000e+00	1.3276e+02	1	4	9597
617	53- I-134	531340	3.1560e+03	6.1600e+05	2.5800e+06	0.	1.	0.	4.1500e+06	1.0000e+00	1.3276e+02	1	4	9616
d618	53- I-134m	531341	2.2200e+02	2.0000e+04	2.2100e+05	0.	1.	1.	4.4660e+06	2.0000e-02	1.3276e+02	2	2	9617
							3.	0.	3.1630e+05	9.8000e-01				
619	54-Xe-134	541340	stable								1.3276e+02	0	0	9645
	Sigma(.0253) and RI=			2.5000e-01	7.5790e-01	B1, B2 and B3=			9.8800e-01	1.2000e-02	0.			H1354
620	54-Xe-134m	541341	2.9000e-01	6.4000e+04	1.8410e+06	0.	3.	0.	1.9590e+06	1.0000e+00	1.3276e+02	1	3	9646
621	55-Cs-134	551340	6.5070e+07	1.6020e+05	1.5550e+06	0.	1.	0.	2.0585e+06	1.0000e+00	1.3276e+02	2	5	9663
							2.	0.	1.2160e+06	3.0000e-06				
	Sigma(.0253) and RI=			1.4000e+02	2.1116e+02	B1, B2 and B3=			1.0000e+00	0.	0.			H9663
622	55-Cs-134m	551341	1.0440e+04	1.0900e+05	2.7300e+04	0.	3.	0.	1.3868e+05	1.0000e+00	1.3276e+02	1	3	9664
623	56-Ba-134	561340	stable								1.3275e+02	0	0	9684
	Sigma(.0253) and RI=			2.1581e+00	2.4106e+01	B1, B2 and B3=			9.2600e-01	7.4000e-02	0.			H9684
624	50-Sn-135	501350	4.1777e-01	2.3736e+06	1.9779e+06	0.	1.	0.	7.2000e+06	9.1400e-01	1.3377e+02	2	0	9546
							1.5	0.	3.0800e+06	8.6000e-02				
625	51-Sb-135	511350	1.8200e+00	2.2955e+06	1.8788e+06	0.	1.	0.	6.9430e+06	8.6000e-01	1.3377e+02	2	0	9571
							1.5	0.	3.5500e+06	1.4000e-01				
626	52-Te-135	521350	1.9200e+01	2.3990e+06	7.3600e+05	0.	1.	0.	6.2000e+06	1.0000e+00	1.3376e+02	1	0	9598
627	53- I-135	531350	2.3796e+04	3.6900e+05	1.6470e+06	0.	1.	0.	2.7110e+06	8.3500e-01	1.3375e+02	2	2	9618
							1.	1.	2.1840e+06	1.6500e-01				
	Sigma(.0253) and RI=			2.0000e-02	1.5358e-02	B1, B2 and B3=			5.0000e-01	5.0000e-01	0.			H9618
628	54-Xe-135	541350	3.2724e+04	3.1800e+05	2.4880e+05	0.	1.	0.	1.1580e+06	1.0000e+00	1.3375e+02	1	4	9647
	Sigma(.0253) and RI=			2.6383e+06	7.6390e+03	B1, B2 and B3=			1.0000e+00	0.	0.			H1294
629	54-Xe-135m	541351	9.1740e+02	9.0900e+04	4.3200e+05	0.	3.	0.	5.2657e+05	1.0000e+00	1.3384e+02	1	3	9648
630	55-Cs-135	551350	7.2581e+13	5.6300e+04	0.	0.	1.	0.	2.0500e+05	1.0000e+00	1.3375e+02	1	1	9665
	Sigma(.0253) and RI=			8.7000e+00	6.1827e+01	B1, B2 and B3=			1.0000e+00	0.	0.			H9665
631	55-Cs-135m	551351	3.1800e+03	0.	1.6270e+06	0.	3.	0.	1.6270e+06	1.0000e+00	1.3375e+02	1	0	9666
632	56-Ba-135	561350	stable								1.3375e+02	0	0	9685
	Sigma(.0253) and RI=			5.8143e+00	1.0021e+02	B1, B2 and B3=			9.9500e-01	5.0000e-03	0.			H9685
633	56-Ba-135m	561351	1.0332e+05	2.0500e+05	6.1000e+04	0.	3.	0.	2.6824e+05	1.0000e+00	1.3375e+02	1	3	9686
634	50-Sn-136	501360	7.1718e-01	2.0069e+06	1.4115e+06	0.	1.	0.	5.8920e+06	1.0000e+00	1.3477e+02	1	0	9547
635	51-Sb-136	511360	8.2000e-01	2.6416e+06	2.6491e+06	0.	1.	0.	8.4110e+06	7.7000e-01	1.3476e+02	2	0	9572
							1.5	0.	4.0200e+06	2.3000e-01				

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
636	52-Te-136	521360	1.9000e+01	1.4626e+06	9.4022e+05	0.	1.	0.	4.3120e+06	9.9100e-01	1.3475e+02	2	0	9599
							1.5	0.	1.2000e+05	9.0000e-03				
637	53- I-136	531360	8.3000e+01	1.9680e+06	2.3780e+06	0.	1.	0.	6.9800e+06	1.0000e+00	1.3475e+02	1	2	9619
638	53- I-136m	531361	4.6000e+01	2.1300e+06	2.0000e+06	0.	1.	0.	7.0000e+06	1.0000e+00	1.3475e+02	1	2	9620
639	54-Xe-136	541360	stable								1.3474e+02	0	0	9649
		Sigma(.0253) and RI=		1.6000e-01	1.2380e-01		B1, B2 and B3=		1.0000e+00	0.	0.			H1356
640	55-Cs-136	551360	1.1215e+06	1.0000e+05	1.8710e+06	0.	1.	0.	2.5475e+06	8.4900e-01	1.3474e+02	2	2	9667
							1.	1.	5.1700e+05	1.5100e-01				
		Sigma(.0253) and RI=		1.3002e+00	3.9639e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9667
641	55-Cs-136m	551361	1.9000e+01	0.	5.0000e+04	0.	3.	0.	5.0000e+04	1.0000e+00	1.3483e+02	1	0	9668
642	56-Ba-136	561360	stable								1.3474e+02	0	0	9687
		Sigma(.0253) and RI=		4.1001e-01	1.9611e+00		B1, B2 and B3=		9.7600e-01	2.4000e-02	0.			H9687
643	56-Ba-136m	561361	3.0600e-01	1.0200e+05	1.9270e+06	0.	3.	0.	2.0305e+06	1.0000e+00	1.3474e+02	1	3	9688
644	51-Sb-137	511370	4.7785e-01	2.3389e+06	1.9512e+06	0.	1.	0.	7.1030e+06	8.0000e-01	1.3576e+02	2	0	9573
							1.5	0.	4.8600e+06	2.0000e-01				
645	52-Te-137	521370	3.5000e+00	1.9245e+06	1.4669e+06	0.	1.	0.	5.7800e+06	9.7800e-01	1.3575e+02	2	0	9600
							1.5	0.	9.4000e+05	2.2000e-02				
646	53- I-137	531370	2.4500e+01	2.2870e+06	9.7100e+05	0.	1.	0.	6.2000e+06	9.2800e-01	1.3574e+02	2	-0	9621
							1.5	0.	2.3380e+06	7.2000e-02				
647	54-Xe-137	541370	2.2980e+02	1.7740e+06	1.8900e+05	0.	1.	0.	4.3440e+06	1.0000e+00	1.3574e+02	1	2	9650
648	55-Cs-137	551370	9.5207e+08	1.8660e+05	0.	0.	1.	0.	1.1732e+06	5.3000e-02	1.3573e+02	2	1	9669
							1.	1.	5.1160e+05	9.4700e-01				
		Sigma(.0253) and RI=		1.1000e-01	4.8573e-01		B1, B2 and B3=		1.0000e+00	0.	0.			H9669
649	56-Ba-137	561370	stable								1.3573e+02	0	0	9689
		Sigma(.0253) and RI=		5.1001e+00	4.9573e+00		B1, B2 and B3=		1.0000e+00	0.	0.			H9689
650	56-Ba-137m	561371	1.5312e+02	6.3700e+04	5.9770e+05	0.	3.	0.	6.6164e+05	1.0000e+00	1.3573e+02	1	3	9690
651	51-Sb-138	511380	1.7336e-01	2.9072e+06	3.2343e+06	0.	1.	0.	9.5310e+06	1.0000e+00	1.3675e+02	1	0	9574
652	52-Te-138	521380	1.6000e+00	1.5176e+06	9.8759e+05	0.	1.	0.	4.4720e+06	9.4400e-01	1.3674e+02	2	0	9601
							1.5	0.	1.5000e+06	5.6000e-02				
653	53- I-138	531380	6.5000e+00	2.2550e+06	1.9818e+06	0.	1.	0.	6.9630e+06	9.7400e-01	1.3674e+02	2	0	9622
							1.5	0.	1.9800e+06	2.6000e-02				
654	54-Xe-138	541380	8.4780e+02	6.3500e+05	1.0960e+06	0.	1.	0.	2.7400e+06	1.0000e+00	1.3673e+02	1	4	9651
655	55-Cs-138	551380	1.9320e+03	1.2020e+06	2.3610e+06	0.	1.	0.	5.2900e+06	1.0000e+00	1.3673e+02	1	4	9670
656	55-Cs-138m	551381	1.7400e+02	3.8600e+05	5.4000e+05	0.	1.	0.	5.3700e+06	2.5000e-01	1.3673e+02	2	4	9671
							3.	0.	7.9900e+04	7.5000e-01				
657	56-Ba-138	561380	stable								1.3672e+02	0	0	9691
		Sigma(.0253) and RI=		3.5090e-01	3.1790e-01		B1, B2 and B3=		1.0000e+00	0.	0.			H1353
658	57-La-138	571380	3.5000e+18	2.9375e+05	1.2280e+06	0.	1.	0.	1.0410e+06	3.2000e-01	1.3672e+02	2	0	9706
							2.	0.	1.7490e+06	6.8000e-01				
659	51-Sb-139	511390	2.1781e-01	2.7146e+06	2.5214e+06	0.	1.	0.	8.4310e+06	1.0000e+00	1.3775e+02	1	0	9575
660	52-Te-139	521390	5.8002e-01	2.2721e+06	1.8830e+06	0.	1.	0.	6.9000e+06	9.3700e-01	1.3774e+02	2	0	9602
							1.5	0.	2.4000e+06	6.3000e-02				
661	53- I-139	531390	2.3800e+00	2.2060e+06	1.4410e+06	0.	1.	0.	6.5000e+06	8.9800e-01	1.3773e+02	2	-0	9623
							1.5	0.	2.6100e+06	1.0200e-01				

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
c662	54-Xe-139	541390	4.0400e+01	1.7020e+06	7.6000e+05	0.	1.	0.	5.0200e+06	1.0000e+00	1.3773e+02	1	2	9652
663	55-Cs-139	551390	5.6400e+02	1.6860e+06	3.2800e+05	0.	1.	0.	4.2900e+06	1.0000e+00	1.3772e+02	1	2	9672
664	56-Ba-139	561390	4.9914e+03	8.9790e+05	4.4800e+04	0.	1.	0.	2.3060e+06	1.0000e+00	1.3772e+02	1	4	9692
665	57-La-139	571390	stable								1.3771e+02	0	0	9707
		Sigma(.0253) and RI=		8.9953e+00	1.2033e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9707
666	52-Te-140	521400	8.9384e-01	1.9697e+06	1.3949e+06	0.	1.	0.	5.8000e+06	1.0000e+00	1.3874e+02	1	0	9603
b667	53- I-140	531400	8.6000e-01	2.5402e+06	2.5256e+06	0.	1.	0.	8.0830e+06	7.8000e-01	1.3873e+02	2	0	9624
							1.5	0.	3.4000e+06	2.2000e-01				
c668	54-Xe-140	541400	1.3600e+01	1.1810e+06	1.2100e+06	0.	1.	0.	4.0600e+06	1.0000e+00	1.3872e+02	1	4	9653
c669	55-Cs-140	551400	6.3700e+01	1.6490e+06	2.3000e+06	0.	1.	0.	6.0500e+06	1.0000e+00	1.3872e+02	1	2	9673
670	56-Ba-140	561400	1.1050e+06	3.1100e+05	2.5840e+05	0.	1.	0.	1.0350e+06	1.0000e+00	1.3871e+02	1	4	9693
		Sigma(.0253) and RI=		1.6000e+00	1.2759e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9693
671	57-La-140	571400	1.4494e+05	5.4760e+05	2.3310e+06	0.	1.	0.	3.7607e+06	1.0000e+00	1.3871e+02	1	4	9708
		Sigma(.0253) and RI=		2.7000e+00	6.5075e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9708
672	58-Ce-140	581400	stable								1.3870e+02	0	0	9724
		Sigma(.0253) and RI=		5.7000e-01	4.4564e-01		B1, B2 and B3=		1.0000e+00	0.	0.			H9724
673	52-Te-141	521410	2.7262e-01	2.5952e+06	2.3570e+06	0.	1.	0.	8.0260e+06	1.0000e+00	1.3973e+02	1	0	9604
674	53- I-141	531410	4.6000e-01	2.2921e+06	1.9257e+06	0.	1.	0.	6.9830e+06	6.1000e-01	1.3972e+02	2	0	9625
							1.5	0.	3.9400e+06	3.9000e-01				
c675	54-Xe-141	541410	1.7200e+00	2.3450e+06	7.7600e+05	0.	1.	0.	6.0000e+06	9.9957e-01	1.3972e+02	2	4	9654
							1.5	0.	1.7000e+05	4.3000e-04				
c676	55-Cs-141	551410	2.4900e+01	1.9120e+06	8.0000e+05	0.	1.	0.	4.9800e+06	9.9947e-01	1.3971e+02	2	4	9674
							1.5	0.	2.2000e+05	5.3000e-04				
677	56-Ba-141	561410	1.0980e+03	8.8300e+05	8.8800e+05	0.	1.	0.	3.0300e+06	1.0000e+00	1.3970e+02	1	2	9694
678	57-La-141	571410	1.4148e+04	9.4800e+05	4.2400e+04	0.	1.	0.	2.4300e+06	1.0000e+00	1.3970e+02	1	2	9709
679	58-Ce-141	581410	2.8080e+06	1.7000e+05	7.8000e+04	0.	1.	0.	5.8080e+05	1.0000e+00	1.3970e+02	1	4	9725
		Sigma(.0253) and RI=		2.9000e+01	2.4085e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9725
680	59-Pr-141	591410	stable								1.3970e+02	0	0	9742
		Sigma(.0253) and RI=		1.1500e+01	1.9167e+01		B1, B2 and B3=		6.5800e-01	3.4200e-01	0.			H9742
681	52-Te-142	521420	5.9007e-01	2.0643e+06	1.5034e+06	0.	1.	0.	6.1000e+06	1.0000e+00	1.4073e+02	1	0	9605
682	53- I-142	531420	2.0000e-01	2.8093e+06	3.1093e+06	0.	1.	0.	9.2090e+06	8.4000e-01	1.4072e+02	2	0	9626
							1.5	0.	4.4700e+06	1.6000e-01				
683	54-Xe-142	541420	1.2200e+00	1.6630e+06	1.1186e+06	0.	1.	0.	4.9000e+06	9.9590e-01	1.4071e+02	2	0	9655
							1.5	0.	2.2000e+05	4.1000e-03				
684	55-Cs-142	551420	1.6900e+00	2.5020e+06	1.1670e+06	0.	1.	0.	6.8700e+06	9.9810e-01	1.4071e+02	2	-0	9675
							1.5	0.	9.6000e+05	1.9000e-03				
685	56-Ba-142	561420	6.4200e+02	4.1600e+05	1.0130e+06	0.	1.	0.	2.2000e+06	1.0000e+00	1.4070e+02	1	2	9695
c686	57-La-142	571420	5.5500e+03	8.9600e+05	2.7500e+06	0.	1.	0.	4.5170e+06	1.0000e+00	1.4070e+02	1	4	9710
687	58-Ce-142	581420	3.3113e+18	0.	0.	1.4445e+06	4.	0.	1.4344e+06	1.0000e+00	1.4069e+02	1	0	9726
		Sigma(.0253) and RI=		9.5000e-01	8.3094e-01		B1, B2 and B3=		1.0000e+00	0.	0.			H9726
688	59-Pr-142	591420	6.8868e+04	8.0900e+05	5.8000e+04	0.	2.	0.	7.4510e+05	1.6400e-04	1.4069e+02	2	5	9743
							1.	0.	2.1590e+06	9.9984e-01				
		Sigma(.0253) and RI=		2.0000e+01	1.4484e+02		B1, B2 and B3=		1.0000e+00	0.	0.			H9743

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
689	59-Pr-142m	591421	8.7600e+02	0.	3.6830e+03	0.	3.	0.	3.6830e+03	1.0000e+00	1.4069e+02	1	0	9744
690	60-Nd-142	601420	stable								1.4069e+02	0	0	9763
	Sigma(.0253) and RI=			1.8700e+01	8.9211e+00	B1, B2 and B3=			1.0000e+00	0.	0.			H9763
691	53- I-143	531430	4.0109e-01	2.3759e+06	2.0566e+06	0.	1.	0.	7.2830e+06	8.2000e-01	1.4171e+02	2	0	9627
							1.5	0.	4.7200e+06	1.8000e-01				
692	54-Xe-143	541430	9.6000e-01	2.3296e+06	1.9931e+06	0.	1.	0.	7.1260e+06	9.8800e-01	1.4171e+02	2	0	9656
							1.5	0.	1.0400e+06	1.2000e-02				
693	54-Xe-143m	541431	3.0000e-01	2.3296e+06	1.9931e+06	0.	1.	0.	7.1260e+06	1.0000e+00	1.4171e+02	1	0	9657
694	55-Cs-143	551430	1.7800e+00	1.7530e+06	1.5510e+06	0.	1.	0.	5.6500e+06	9.8400e-01	1.4170e+02	2	-0	9676
							1.5	0.	1.3900e+06	1.6000e-02				
695	56-Ba-143	561430	1.3600e+01	1.2320e+06	1.0060e+06	0.	1.	0.	4.0000e+06	1.0000e+00	1.4169e+02	1	-0	9696
696	57-La-143	571430	8.4600e+02	1.0853e+06	7.0853e+05	0.	1.	0.	3.3000e+06	1.0000e+00	1.4169e+02	1	0	9711
697	58-Ce-143	581430	1.1880e+05	4.2900e+05	2.8200e+05	0.	1.	0.	1.4550e+06	1.0000e+00	1.4169e+02	1	4	9727
	Sigma(.0253) and RI=			6.0000e+00	4.1520e+01	B1, B2 and B3=			1.0000e+00	0.	0.			H9727
698	59-Pr-143	591430	1.1716e+06	3.1560e+05	9.0000e-03	0.	1.	0.	9.3530e+05	1.0000e+00	1.4168e+02	1	2	9745
	Sigma(.0253) and RI=			8.9000e+01	1.8935e+02	B1, B2 and B3=			1.0000e+00	0.	0.			H9745
699	60-Nd-143	601430	stable								1.4168e+02	0	0	9764
	Sigma(.0253) and RI=			3.2507e+02	1.3111e+02	B1, B2 and B3=			1.0000e+00	0.	0.			H9764
700	53- I-144	531440	1.4597e-01	2.9489e+06	3.4754e+06	0.	1.	0.	9.8560e+06	1.0000e+00	1.4271e+02	1	0	9628
701	54-Xe-144	541440	1.1000e+00	1.7632e+06	1.2146e+06	0.	1.	0.	5.2000e+06	9.9270e-01	1.4270e+02	2	0	9658
							1.5	0.	9.8000e+05	7.3000e-03				
c702	55-Cs-144	551440	1.0010e+00	3.1800e+06	9.5094e+05	0.	1.	0.	8.1000e+06	9.7300e-01	1.4270e+02	2	4	9677
							1.5	0.	2.0100e+06	2.7000e-02				
703	56-Ba-144	561440	1.0700e+01	1.0250e+06	6.4800e+05	0.	1.	0.	3.2000e+06	1.0000e+00	1.4269e+02	1	-0	9697
c704	57-La-144	571440	4.0300e+01	1.4610e+06	1.8237e+06	0.	1.	0.	5.3000e+06	1.0000e+00	1.4268e+02	1	4	9712
705	58-Ce-144	581440	2.4572e+07	9.1100e+04	1.9800e+04	0.	1.	0.	3.1820e+05	9.8700e-01	1.4268e+02	2	4	9728
							1.	1.	2.5920e+05	1.3000e-02				
	Sigma(.0253) and RI=			1.0000e+00	2.0663e+00	B1, B2 and B3=			1.0000e+00	0.	0.			H9728
706	59-Pr-144	591440	1.0368e+03	1.2094e+06	2.8800e+04	0.	1.	0.	2.9970e+06	1.0000e+00	1.4268e+02	1	4	9746
707	59-Pr-144m	591441	4.3200e+02	4.6900e+04	1.3000e+04	0.	3.	0.	5.9030e+04	9.9950e-01	1.4268e+02	2	4	9747
							1.	0.	3.0550e+06	5.0000e-04				
b708	60-Nd-144	601440	6.6000e+22	0.	0.	1.9103e+06	4.	0.	1.9103e+06	1.0000e+00	1.4267e+02	1	0	9765
	Sigma(.0253) and RI=			3.6004e+00	5.4758e+00	B1, B2 and B3=			1.0000e+00	0.	0.			H9765
b709	62-Sm-144	621440	stable								1.4268e+02	0	0	9803
	Sigma(.0253) and RI=			6.9982e-01	3.0134e+01	B1, B2 and B3=			1.0000e+00	0.	0.			H9803
710	53- I-145	531450	1.9342e-01	2.7249e+06	2.6288e+06	0.	1.	0.	8.5590e+06	1.0000e+00	1.4371e+02	1	0	9629
711	54-Xe-145	541450	9.0000e-01	2.5107e+06	2.2746e+06	0.	1.	0.	7.7730e+06	1.0000e+00	1.4370e+02	1	0	9659
712	55-Cs-145	551450	5.9000e-01	1.8993e+06	1.4833e+06	0.	1.	0.	5.7450e+06	8.6000e-01	1.4369e+02	2	0	9678
							1.5	0.	2.3800e+06	1.4000e-01				
713	56-Ba-145	561450	4.8000e+00	1.5310e+06	1.3150e+06	0.	1.	0.	4.9500e+06	1.0000e+00	1.4368e+02	1	-0	9698
714	57-La-145	571450	2.9200e+01	1.0230e+06	1.6130e+06	0.	1.	0.	4.1300e+06	1.0000e+00	1.4368e+02	1	-0	9713
715	58-Ce-145	581450	1.8000e+02	6.2500e+05	8.5000e+05	0.	1.	0.	2.5000e+06	1.0000e+00	1.4367e+02	1	4	9729

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
716	59-Pr-145	591450	2.1528e+04	6.7300e+05	2.5000e+04	0.	1.	0.	1.8050e+06	1.0000e+00	1.4367e+02	1	4	9748
717	60-Nd-145	601450	stable								1.4367e+02	0	0	9766
	Sigma(.0253) and RI=			4.2002e+01	2.3250e+02	B1, B2 and B3=			1.0000e+00	0.	0.			H9766
718	62-Sm-145	621450	2.9400e+07	0.	0.	0.	2.	0.	6.1500e+06	1.0000e+00	1.4373e+02	1	0	9804
719	54-Xe-146	541460	5.6268e-01	2.1757e+06	1.6539e+06	0.	1.	0.	6.4760e+06	1.0000e+00	1.4469e+02	1	0	9660
720	55-Cs-146	551460	3.4000e-01	2.5736e+06	2.6935e+06	0.	1.	0.	8.3180e+06	8.6600e-01	1.4468e+02	2	0	9679
							1.5	0.	2.4400e+06	1.3400e-01				
721	56-Ba-146	561460	2.0000e+00	1.0777e+06	6.8246e+05	0.	1.	0.	3.2590e+06	1.0000e+00	1.4468e+02	1	0	9699
722	57-La-146	571460	1.1000e+01	2.0465e+06	1.7280e+06	0.	1.	0.	6.2870e+06	1.0000e+00	1.4467e+02	1	0	9714
723	58-Ce-146	581460	8.5200e+02	2.5700e+05	2.9900e+05	0.	1.	0.	1.0800e+06	1.0000e+00	1.4467e+02	1	4	9730
724	59-Pr-146	591460	1.4442e+03	1.2930e+06	9.0700e+05	0.	1.	0.	4.0800e+06	1.0000e+00	1.4466e+02	1	2	9749
725	60-Nd-146	601460	stable								1.4466e+02	0	0	9767
	Sigma(.0253) and RI=			1.4000e+00	3.2696e+00	B1, B2 and B3=			1.0000e+00	0.	0.			H9767
726	62-Sm-146	621460	3.2503e+15	0.	0.	2.5400e+06	4.	0.	2.5400e+06	1.0000e+00	1.4472e+02	1	0	9805
727	54-Xe-147	541470	1.9909e-01	2.7490e+06	2.7044e+06	0.	1.	0.	8.6830e+06	1.0000e+00	1.4569e+02	1	0	9661
728	55-Cs-147	551470	5.4548e-01	2.2879e+06	1.9723e+06	0.	1.	0.	7.0210e+06	7.5000e-01	1.4568e+02	2	0	9680
							1.5	0.	3.4200e+06	2.5000e-01				
729	56-Ba-147	561470	1.7546e+00	1.9235e+06	1.5212e+06	0.	1.	0.	5.8320e+06	9.4800e-01	1.4567e+02	2	0	9700
							1.5	0.	1.0000e+06	5.2000e-02				
730	57-La-147	571470	5.0000e+00	1.4427e+06	1.0308e+06	0.	1.	0.	4.3610e+06	9.9500e-01	1.4567e+02	2	0	9715
							1.5	0.	1.0000e+05	5.0000e-03				
731	58-Ce-147	581470	5.6000e+01	1.0846e+06	7.1597e+05	0.	1.	0.	3.3060e+06	1.0000e+00	1.4566e+02	1	0	9731
732	59-Pr-147	591470	8.1600e+02	7.9500e+05	7.0300e+05	0.	1.	0.	2.7000e+06	1.0000e+00	1.4566e+02	1	4	9750
733	60-Nd-147	601470	9.5558e+05	2.6610e+05	1.3600e+05	0.	1.	0.	8.9580e+05	1.0000e+00	1.4565e+02	1	4	9768
	Sigma(.0253) and RI=			4.9000e+01	6.4815e+02	B1, B2 and B3=			1.0000e+00	0.	0.			H9768
734	61-Pm-147	611470	8.2786e+07	6.1900e+04	3.4500e+00	0.	1.	0.	2.2450e+05	1.0000e+00	1.4565e+02	1	2	9783
	Sigma(.0253) and RI=			1.8194e+02	2.2649e+03	B1, B2 and B3=			5.3000e-01	4.7000e-01	0.			H9783
735	62-Sm-147	621470	3.3000e+18	0.	0.	2.3105e+06	4.	0.	2.3105e+06	1.0000e+00	1.4565e+02	1	0	9806
	Sigma(.0253) and RI=			6.4012e+01	7.5731e+02	B1, B2 and B3=			1.0000e+00	0.	0.			H9806
736	55-Cs-148	551480	2.0560e-01	2.7835e+06	3.1805e+06	0.	1.	0.	9.2280e+06	1.0000e+00	1.4667e+02	1	0	9681
b737	56-Ba-148	561480	3.3247e+00	1.5306e+06	1.0242e+06	0.	1.	0.	4.5350e+06	7.6100e-01	1.4666e+02	2	0	9701
							1.5	0.	1.0000e+06	2.3900e-01				
738	57-La-148	571480	1.3000e+00	2.2122e+06	2.0396e+06	0.	1.	0.	6.9340e+06	1.0000e+00	1.4666e+02	1	0	9716
739	58-Ce-148	581480	4.8000e+01	4.0125e+05	2.7038e+05	0.	1.	0.	1.3800e+06	1.0000e+00	1.4665e+02	1	0	9732
c740	59-Pr-148	591480	1.3800e+02	1.6480e+06	1.2210e+06	0.	1.	0.	4.8000e+06	1.0000e+00	1.4665e+02	1	2	9751
b741	60-Nd-148	601480	stable								1.4665e+02	0	0	9769
	Sigma(.0253) and RI=			2.5004e+00	1.9441e+01	B1, B2 and B3=			1.0000e+00	0.	0.			H9769
742	61-Pm-148	611480	4.6397e+05	7.2600e+05	5.7500e+05	0.	1.	0.	2.4640e+06	1.0000e+00	1.4665e+02	1	4	9784
	Sigma(.0253) and RI=			2.0000e+03	3.9904e+04	B1, B2 and B3=			1.0000e+00	0.	0.			H9784
743	61-Pm-148m	611481	3.5683e+06	1.6990e+05	2.0960e+06	0.	1.	0.	2.6010e+06	9.5400e-01	1.4665e+02	2	4	9785
							3.	0.	1.3720e+05	4.6000e-02				
	Sigma(.0253) and RI=			1.0618e+04	3.6440e+03	B1, B2 and B3=			1.0000e+00	0.	0.			H9785
744	62-Sm-148	621480	2.5000e+23	0.	0.	1.9862e+06	4.	0.	1.9862e+06	1.0000e+00	1.4664e+02	1	0	9807
	Sigma(.0253) and RI=			2.7000e+00	2.7641e+01	B1, B2 and B3=			1.0000e+00	0.	0.			H9807

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
745	55-Cs-149	551490	2.4419e-01	2.6445e+06	2.5460e+06	0.	1.	0.	8.3140e+06	1.0000e+00	1.4767e+02	1	0	9682
746	56-Ba-149	561490	6.9518e-01	2.2000e+06	1.8711e+06	0.	1.	0.	6.7420e+06	9.9970e-01	1.4766e+02	2	0	9702
							1.5	0.	2.6000e+05	3.0000e-04				
747	57-La-149	571490	2.4079e+00	1.8582e+06	1.4590e+06	0.	1.	0.	5.6370e+06	9.9190e-01	1.4765e+02	2	0	9717
							1.5	0.	1.2100e+06	8.1000e-03				
748	58-Ce-149	581490	5.0000e+00	1.3034e+06	9.0943e+05	0.	1.	0.	3.9530e+06	1.0000e+00	1.4765e+02	1	0	9733
c749	59-Pr-149	591490	1.5000e+02	1.1580e+06	1.2600e+05	0.	1.	0.	3.0000e+06	1.0000e+00	1.4764e+02	1	4	9752
750	60-Nd-149	601490	6.2280e+03	5.0900e+05	3.8400e+05	0.	1.	0.	1.6890e+06	1.0000e+00	1.4764e+02	1	4	9770
d751	61-Pm-149	611490	1.9109e+05	3.6590e+05	1.0700e+04	0.	1.	0.	1.0713e+06	1.0000e+00	1.4764e+02	1	4	9786
	Sigma(.0253) and RI=			1.4000e+03	8.0054e+02	B1, B2 and B3=			1.0000e+00	0.	0.			H9786
752	62-Sm-149	621490	3.1536e+23	0.	0.	1.9076e+06	4.	0.	1.8949e+06	1.0000e+00	1.4764e+02	1	0	9808
	Sigma(.0253) and RI=			3.9310e+04	3.2560e+03	B1, B2 and B3=			1.0000e+00	0.	0.			H1319
753	55-Cs-150	551500	1.2376e-01	2.9906e+06	3.7397e+06	0.	1.	0.	1.0204e+07	1.0000e+00	1.4867e+02	1	0	9683
754	56-Ba-150	561500	9.6219e-01	1.9623e+06	1.4382e+06	0.	1.	0.	5.8280e+06	9.9760e-01	1.4865e+02	2	0	9703
							1.5	0.	2.1000e+05	2.4000e-03				
755	57-La-150	571500	6.0808e-01	2.4388e+06	2.4916e+06	0.	1.	0.	7.8440e+06	9.9060e-01	1.4865e+02	2	0	9718
							1.5	0.	1.2000e+06	9.4000e-03				
756	58-Ce-150	581500	4.0000e+00	8.5717e+05	5.4306e+05	0.	1.	0.	2.6560e+06	1.0000e+00	1.4864e+02	1	0	9734
757	59-Pr-150	591500	6.2000e+00	1.8416e+06	1.4342e+06	0.	1.	0.	5.5770e+06	1.0000e+00	1.4864e+02	1	0	9753
758	60-Nd-150	601500	stable								1.4863e+02	0	0	9771
	Sigma(.0253) and RI=			1.2000e+00	1.5945e+01	B1, B2 and B3=			1.0000e+00	0.	0.			H9771
759	61-Pm-150	611500	9.6500e+03	1.2127e+06	7.0000e+05	0.	1.	0.	3.5000e+06	1.0000e+00	1.4863e+02	1	0	9787
760	62-Sm-150	621500	stable								1.4863e+02	0	0	9809
	Sigma(.0253) and RI=			1.0200e+02	3.2155e+02	B1, B2 and B3=			1.0000e+00	0.	0.			H9809
761	56-Ba-151	561510	3.3274e-01	2.4760e+06	2.2897e+06	0.	1.	0.	7.7180e+06	1.0000e+00	1.4965e+02	1	0	9704
762	57-La-151	571510	7.1939e-01	2.2510e+06	1.9562e+06	0.	1.	0.	6.9300e+06	1.0000e+00	1.4964e+02	1	0	9719
763	58-Ce-151	581510	1.0000e+00	1.6048e+06	1.2011e+06	0.	1.	0.	4.8630e+06	1.0000e+00	1.4964e+02	1	0	9735
764	59-Pr-151	591510	4.0000e+00	1.4115e+06	1.0140e+06	0.	1.	0.	4.2800e+06	1.0000e+00	1.4963e+02	1	0	9754
765	60-Nd-151	601510	7.4400e+02	6.0600e+05	8.0705e+05	0.	1.	0.	2.4410e+06	1.0000e+00	1.4963e+02	1	2	9772
766	61-Pm-151	611510	1.0224e+05	2.8500e+05	3.0800e+05	0.	1.	0.	1.1880e+06	1.0000e+00	1.4963e+02	1	2	9788
	Sigma(.0253) and RI=			7.0000e+02	2.0029e+03	B1, B2 and B3=			1.0000e+00	0.	0.			H9788
d767	62-Sm-151	621510	2.8401e+09	1.9780e+04	1.4500e+01	0.	1.	0.	7.6100e+04	1.0000e+00	1.4962e+02	1	4	9810
	Sigma(.0253) and RI=			1.5000e+04	3.4750e+03	B1, B2 and B3=			1.0000e+00	0.	0.			H9810
768	63-Eu-151	631510	stable								1.4962e+02	0	0	9825
	Sigma(.0253) and RI=			9.1970e+03	3.3050e+03	B1, B2 and B3=			6.5190e-01	3.4770e-01	4.0000e-04			H1357
769	56-Ba-152	561520	4.2049e-01	2.2909e+06	1.8443e+06	0.	1.	0.	6.8990e+06	1.0000e+00	1.5065e+02	1	0	9705
770	57-La-152	571520	2.8495e-01	2.6687e+06	3.0040e+06	0.	1.	0.	8.8200e+06	1.0000e+00	1.5064e+02	1	0	9720
771	58-Ce-152	581520	7.6627e+00	1.3219e+06	8.6663e+05	0.	1.	0.	3.9490e+06	1.0000e+00	1.5063e+02	1	0	9736
772	59-Pr-152	591520	6.7761e+00	2.0815e+06	1.8573e+06	0.	1.	0.	6.4870e+06	1.0000e+00	1.5063e+02	1	0	9755
773	60-Nd-152	601520	6.9000e+02	3.2142e+05	2.2336e+05	0.	1.	0.	1.1440e+06	1.0000e+00	1.5062e+02	1	0	9773
c774	61-Pm-152	611520	2.4600e+02	1.3100e+06	2.8800e+05	0.	1.	0.	3.4700e+06	1.0000e+00	1.5062e+02	1	2	9789
c775	61-Pm-152m	611521	4.5000e+02	1.1340e+06	1.2900e+06	0.	1.	0.	3.4700e+06	1.0000e+00	1.5062e+02	1	2	9790

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
776	61-Pm-152n	611522	1.0800e+03	7.3849e+05	1.2806e+06	0.		1. 0.	3.4710e+06	1.0000e+00	1.5062e+02	1	0	9791
777	62-Sm-152	621520	stable								1.5062e+02	0	0	9811
		Sigma(.0253) and RI=		2.0600e+02	3.0120e+03		B1, B2 and B3=		1.0000e+00	0.	0.			H9811
778	63-Eu-152	631520	4.2065e+08	1.2630e+05	1.1638e+06	0.		1. 0.	1.8190e+06	2.7920e-01	1.5062e+02	2	5	9826
								2. 0.	1.8769e+06	7.2080e-01				
		Sigma(.0253) and RI=		2.3130e+03	3.6780e+03		B1, B2 and B3=		1.0000e+00	0.	0.			H1292
779	63-Eu-152m	631521	3.3552e+04	5.0910e+05	2.9400e+05	0.		1. 0.	1.8670e+06	7.2000e-01	1.5062e+02	2	5	9827
								2. 0.	1.9219e+06	2.8000e-01				
780	63-Eu-152n	631522	5.7600e+03	5.9600e+04	7.6300e+04	0.		3. 0.	1.4780e+05	1.0000e+00	1.5069e+02	1	3	9828
781	64-Gd-152	641520	3.4080e+21	0.	0.	2.2062e+06		4. 0.	2.2062e+06	1.0000e+00	1.5062e+02	1	0	9843
		Sigma(.0253) and RI=		1.4420e+01	4.2860e+02		B1, B2 and B3=		1.0000e+00	0.	0.			H1362
782	57-La-153	571530	3.2584e-01	2.5466e+06	2.4305e+06	0.		1. 0.	8.0010e+06	1.0000e+00	1.5163e+02	1	0	9721
783	58-Ce-153	581530	1.4688e+00	1.9152e+06	1.5452e+06	0.		1. 0.	5.8390e+06	1.0000e+00	1.5163e+02	1	0	9737
784	59-Pr-153	591530	4.4907e+00	1.8314e+06	1.4495e+06	0.		1. 0.	5.5730e+06	1.0000e+00	1.5162e+02	1	0	9756
785	60-Nd-153	601530	6.7500e+01	1.0959e+06	7.3747e+05	0.		1. 0.	3.3510e+06	1.0000e+00	1.5161e+02	1	0	9774
786	61-Pm-153	611530	3.2400e+02	6.5800e+05	5.3600e+04	0.		1. 0.	1.8000e+06	1.0000e+00	1.5161e+02	1	4	9792
787	62-Sm-153	621530	1.6812e+05	2.6940e+05	6.2000e+04	0.		1. 0.	8.1700e+05	1.0000e+00	1.5161e+02	1	4	9812
		Sigma(.0253) and RI=		3.3000e+02	2.8610e+03		B1, B2 and B3=		1.0000e+00	0.	0.			H9812
788	63-Eu-153	631530	stable								1.5161e+02	0	0	9829
		Sigma(.0253) and RI=		2.9990e+02	1.4480e+03		B1, B2 and B3=		1.0000e+00	0.	0.			H1359
789	64-Gd-153	641530	2.1000e+07	0.	1.0120e+05	0.		2. 0.	2.4390e+06	1.0000e+00	1.5161e+02	1	0	9844
790	57-La-154	571540	1.4926e-01	2.9375e+06	3.7057e+06	0.		1. 0.	1.0063e+07	1.0000e+00	1.5263e+02	1	0	9722
791	58-Ce-154	581540	2.0161e+00	1.6903e+06	1.1833e+06	0.		1. 0.	5.0200e+06	1.0000e+00	1.5262e+02	1	0	9738
792	59-Pr-154	591540	1.0614e+00	2.3277e+06	2.3351e+06	0.		1. 0.	7.4630e+06	1.0000e+00	1.5261e+02	1	0	9757
793	60-Nd-154	601540	4.0000e+01	7.7672e+05	4.9559e+05	0.		1. 0.	2.4370e+06	1.0000e+00	1.5261e+02	1	0	9775
c794	61-Pm-154	611540	1.0800e+02	9.1500e+05	1.8560e+06	0.		1. 0.	4.0000e+06	1.0000e+00	1.5261e+02	1	4	9793
c795	61-Pm-154m	611541	1.6800e+02	9.1200e+05	1.9400e+06	0.		1. 0.	4.0000e+06	1.0000e+00	1.5261e+02	1	4	9794
796	62-Sm-154	621540	stable								1.5260e+02	0	0	9813
		Sigma(.0253) and RI=		5.5000e+00	3.3890e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H9813
797	63-Eu-154	631540	2.7139e+08	2.8200e+05	1.2260e+06	0.		1. 0.	1.9746e+06	1.0000e+00	1.5260e+02	1	4	9830
		Sigma(.0253) and RI=		1.5060e+03	2.5530e+03		B1, B2 and B3=		1.0000e+00	0.	0.			H1293
798	63-Eu-154m	631541	2.7600e+03	0.	1.6000e+05	0.		3. 0.	1.6000e+05	1.0000e+00	1.5268e+02	1	0	9831
799	64-Gd-154	641540	stable								1.5260e+02	0	0	9845
		Sigma(.0253) and RI=		8.5880e+01	2.3000e+02		B1, B2 and B3=		1.0000e+00	0.	0.			H1364
800	57-La-155	571550	1.5399e-01	2.9115e+06	3.1987e+06	0.		1. 0.	9.5040e+06	1.0000e+00	1.5362e+02	1	0	9723
801	58-Ce-155	581550	5.2782e-01	2.2850e+06	2.0396e+06	0.		1. 0.	7.0820e+06	1.0000e+00	1.5361e+02	1	0	9739
802	59-Pr-155	591550	1.1224e+00	2.1569e+06	1.8604e+06	0.		1. 0.	6.6440e+06	1.0000e+00	1.5361e+02	1	0	9758
803	60-Nd-155	601550	1.8221e+01	1.4232e+06	1.0371e+06	0.		1. 0.	4.3270e+06	1.0000e+00	1.5360e+02	1	0	9776
804	61-Pm-155	611550	3.6600e+01	1.0056e+06	6.6519e+05	0.		1. 0.	3.0900e+06	1.0000e+00	1.5360e+02	1	0	9795
805	62-Sm-155	621550	1.3320e+03	4.9965e+05	2.9405e+05	0.		1. 0.	1.6290e+06	1.0000e+00	1.5359e+02	1	0	9814
806	63-Eu-155	631550	1.5652e+08	6.2400e+04	6.1000e+04	0.		1. 0.	2.4660e+05	1.0000e+00	1.5359e+02	1	4	9832
		Sigma(.0253) and RI=		4.0400e+03	1.8558e+03		B1, B2 and B3=		1.0000e+00	0.	0.			H9832

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
807	64-Gd-155	641550	stable								1.5359e+02	0	0	9846
	Sigma(.0253) and RI=			6.0880e+04	1.5530e+03		B1, B2 and B3=		1.0000e+00	0.	0.			H1365
808	58-Ce-156	581560	5.9629e-01	2.1686e+06	1.7155e+06	0.		1. 0.	6.5230e+06	1.0000e+00	1.5461e+02	1	0	9740
809	59-Pr-156	591560	3.7926e-01	2.6239e+06	2.9804e+06	0.		1. 0.	8.7060e+06	1.0000e+00	1.5460e+02	1	0	9759
810	60-Nd-156	601560	1.9622e+01	1.1627e+06	7.5481e+05	0.		1. 0.	3.5080e+06	1.0000e+00	1.5459e+02	1	0	9777
811	61-Pm-156	611560	1.3100e+01	1.6609e+06	1.2053e+06	0.		1. 0.	4.9800e+06	1.0000e+00	1.5459e+02	1	0	9796
812	62-Sm-156	621560	3.3840e+04	1.8413e+05	1.4039e+05	0.		1. 0.	7.1500e+05	1.0000e+00	1.5459e+02	1	0	9815
813	63-Eu-156	631560	1.3124e+06	4.1300e+05	1.3270e+06	0.		1. 0.	2.4530e+06	1.0000e+00	1.5459e+02	1	4	9833
	Sigma(.0253) and RI=			4.8200e+02	1.4921e+03		B1, B2 and B3=		1.0000e+00	0.	0.			H9833
814	64-Gd-156	641560	stable								1.5458e+02	0	0	9847
	Sigma(.0253) and RI=			1.7090e+00	1.0510e+02		B1, B2 and B3=		1.0000e+00	0.	0.			H1366
815	58-Ce-157	581570	2.1442e-01	2.7061e+06	2.7862e+06	0.		1. 0.	8.6780e+06	1.0000e+00	1.5560e+02	1	0	9741
816	59-Pr-157	591570	3.8001e-01	2.5712e+06	2.5270e+06	0.		1. 0.	8.1470e+06	1.0000e+00	1.5560e+02	1	0	9760
817	60-Nd-157	601570	2.4833e+00	1.8241e+06	1.4613e+06	0.		1. 0.	5.5700e+06	1.0000e+00	1.5559e+02	1	0	9778
818	61-Pm-157	611570	6.1183e+01	1.3660e+06	9.8871e+05	0.		1. 0.	4.1610e+06	1.0000e+00	1.5558e+02	1	0	9797
819	62-Sm-157	621570	4.8000e+02	8.3844e+05	5.3286e+05	0.		1. 0.	2.6050e+06	1.0000e+00	1.5558e+02	1	0	9816
820	63-Eu-157	631570	5.4540e+04	4.0470e+05	2.4175e+05	0.		1. 0.	1.3600e+06	1.0000e+00	1.5558e+02	1	0	9834
	Sigma(.0253) and RI=			1.9000e+02	1.3021e+03		B1, B2 and B3=		1.0000e+00	0.	0.			H9834
821	64-Gd-157	641570	stable								1.5558e+02	0	0	9848
	Sigma(.0253) and RI=			2.5500e+05	7.5680e+02		B1, B2 and B3=		1.0000e+00	0.	0.			H1367
822	59-Pr-158	591580	1.6855e-01	2.9639e+06	3.8917e+06	0.		1. 0.	1.0302e+07	1.0000e+00	1.5659e+02	1	0	9761
823	60-Nd-158	601580	2.6949e+00	1.6826e+06	1.1899e+06	0.		1. 0.	5.0110e+06	1.0000e+00	1.5658e+02	1	0	9779
824	61-Pm-158	611580	3.7997e+00	1.9939e+06	1.7709e+06	0.		1. 0.	6.2230e+06	1.0000e+00	1.5658e+02	1	0	9798
b825	62-Sm-158	621580	2.6390e+03	5.4231e+05	3.5572e+05	0.		1. 0.	1.7860e+06	1.0000e+00	1.5657e+02	1	0	9817
826	63-Eu-158	631580	2.7540e+03	1.1894e+06	6.4286e+05	0.		1. 0.	3.4510e+06	1.0000e+00	1.5657e+02	1	0	9835
827	64-Gd-158	641580	stable								1.5657e+02	0	0	9849
	Sigma(.0253) and RI=			2.0020e+00	6.2690e+01		B1, B2 and B3=		1.0000e+00	0.	0.			H1368
828	59-Pr-159	591590	1.8055e-01	2.8904e+06	3.2384e+06	0.		1. 0.	9.5010e+06	1.0000e+00	1.5759e+02	1	0	9762
829	60-Nd-159	601590	6.4159e-01	2.2984e+06	2.0966e+06	0.		1. 0.	7.1660e+06	1.0000e+00	1.5758e+02	1	0	9780
830	61-Pm-159	611590	3.0005e+00	1.8504e+06	1.5019e+06	0.		1. 0.	5.6640e+06	1.0000e+00	1.5757e+02	1	0	9799
831	62-Sm-159	621590	1.6200e+02	1.2595e+06	8.9518e+05	0.		1. 0.	3.8480e+06	1.0000e+00	1.5757e+02	1	0	9818
832	63-Eu-159	631590	1.0860e+03	9.0000e+05	3.5500e+05	0.		1. 0.	2.6300e+06	1.0000e+00	1.5756e+02	1	0	9836
833	64-Gd-159	641590	6.6816e+04	3.1200e+05	5.1000e+04	0.		1. 0.	9.7470e+05	1.0000e+00	1.5756e+02	1	4	9850
834	65-Tb-159	651590	stable								1.5756e+02	0	0	9857
	Sigma(.0253) and RI=			2.5502e+01	4.5950e+02		B1, B2 and B3=		1.0000e+00	0.	0.			H9857
835	60-Nd-160	601600	7.8856e-01	2.1123e+06	1.6717e+06	0.		1. 0.	6.3650e+06	1.0000e+00	1.5857e+02	1	0	9781
836	61-Pm-160	611600	7.2892e-01	2.3946e+06	2.5560e+06	0.		1. 0.	7.8190e+06	1.0000e+00	1.5857e+02	1	0	9800
837	62-Sm-160	621600	7.2579e+01	1.0824e+06	7.0272e+05	0.		1. 0.	3.2890e+06	1.0000e+00	1.5856e+02	1	0	9819
838	63-Eu-160	631600	5.3000e+01	1.5715e+06	1.1018e+06	0.		1. 0.	4.6940e+06	1.0000e+00	1.5856e+02	1	0	9837
839	64-Gd-160	641600	stable								1.5855e+02	0	0	9851
	Sigma(.0253) and RI=			7.6360e-01	7.8830e+00		B1, B2 and B3=		1.0000e+00	0.	0.			H1370
840	65-Tb-160	651600	6.2467e+06	2.4000e+05	1.1610e+06	0.		1. 0.	1.8350e+06	1.0000e+00	1.5855e+02	1	0	9858
	Sigma(.0253) and RI=			5.2500e+02	1.1345e+03		B1, B2 and B3=		1.0000e+00	0.	0.			H9858

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
841	66-Dy-160	661600	stable								1.5855e+02	0	0	9864
	Sigma(.0253) and RI=			6.1013e+01	1.6755e+03		Bl, B2 and B3=		1.0000e+00	0.	0.			H9864
842	60-Nd-161	601610	3.1131e-01	2.5474e+06	2.5381e+06	0.		1. 0.	8.1100e+06	1.0000e+00	1.5957e+02	1	0	9782
843	61-Pm-161	611610	7.8993e-01	2.2512e+06	2.0439e+06	0.		1. 0.	7.0180e+06	1.0000e+00	1.5956e+02	1	0	9801
844	62-Sm-161	621610	4.7801e+00	1.7783e+06	1.4286e+06	0.		1. 0.	5.4440e+06	1.0000e+00	1.5956e+02	1	0	9820
845	63-Eu-161	631610	4.2050e+01	1.3536e+06	9.8818e+05	0.		1. 0.	4.1350e+06	1.0000e+00	1.5955e+02	1	0	9838
846	64-Gd-161	641610	2.2200e+02	6.1412e+05	3.7030e+05	0.		1. 0.	1.9590e+06	1.0000e+00	1.5955e+02	1	0	9852
847	65-Tb-161	651610	5.9600e+05	1.4916e+05	7.9530e+04	0.		1. 0.	5.9000e+05	1.0000e+00	1.5955e+02	1	0	9859
848	66-Dy-161	661610	stable								1.5955e+02	0	0	9865
	Sigma(.0253) and RI=			5.8512e+02	1.2154e+03		Bl, B2 and B3=		1.0000e+00	0.	0.			H9865
849	61-Pm-162	611620	3.2428e-01	2.6109e+06	3.0637e+06	0.		1. 0.	8.7630e+06	1.0000e+00	1.6056e+02	1	0	9802
850	62-Sm-162	621620	5.2600e+00	1.5545e+06	1.0835e+06	0.		1. 0.	4.6430e+06	1.0000e+00	1.6055e+02	1	0	9821
851	63-Eu-162	631620	1.6243e+02	2.0002e+06	1.8253e+06	0.		1. 0.	6.2900e+06	1.0000e+00	1.6055e+02	1	0	9839
852	64-Gd-162	641620	5.4000e+02	4.0718e+05	2.7664e+05	0.		1. 0.	1.4000e+06	1.0000e+00	1.6054e+02	1	0	9853
853	65-Tb-162	651620	4.5600e+02	8.1048e+05	4.0593e+05	0.		1. 0.	2.4210e+06	1.0000e+00	1.6054e+02	1	0	9860
b854	66-Dy-162	661620	stable								1.6054e+02	0	0	9866
	Sigma(.0253) and RI=			1.9914e+02	2.8094e+03		Bl, B2 and B3=		1.0000e+00	0.	0.			H9866
855	62-Sm-163	621630	1.2679e+00	2.0638e+06	1.7932e+06	0.		1. 0.	6.3880e+06	1.0000e+00	1.6154e+02	1	0	9822
856	63-Eu-163	631630	7.6045e+00	1.7895e+06	1.4510e+06	0.		1. 0.	5.4890e+06	1.0000e+00	1.6154e+02	1	0	9840
857	64-Gd-163	641630	9.2770e+01	1.1580e+06	8.1243e+05	0.		1. 0.	3.5550e+06	1.0000e+00	1.6153e+02	1	0	9854
858	65-Tb-163	651630	1.1700e+03	5.2431e+05	3.1195e+05	0.		1. 0.	1.7020e+06	1.0000e+00	1.6153e+02	1	0	9861
859	66-Dy-163	661630	stable								1.6153e+02	0	0	9867
	Sigma(.0253) and RI=			1.3440e+02	1.4653e+03		Bl, B2 and B3=		1.0000e+00	0.	0.			H9867
860	62-Sm-164	621640	1.3850e+00	1.9295e+06	1.4742e+06	0.		1. 0.	5.7970e+06	1.0000e+00	1.6254e+02	1	0	9823
861	63-Eu-164	631640	1.5327e+00	2.2357e+06	2.2923e+06	0.		1. 0.	7.2340e+06	1.0000e+00	1.6253e+02	1	0	9841
862	64-Gd-164	641640	1.3014e+03	8.8873e+05	5.7435e+05	0.		1. 0.	2.7540e+06	1.0000e+00	1.6253e+02	1	0	9855
863	65-Tb-164	651640	1.8000e+02	1.3157e+06	7.8894e+05	0.		1. 0.	3.8570e+06	1.0000e+00	1.6253e+02	1	0	9862
864	66-Dy-164	661640	stable								1.6252e+02	0	0	9868
	Sigma(.0253) and RI=			2.5200e+03	3.2870e+02		Bl, B2 and B3=		5.8800e-01	4.1200e-01	0.			H1031
865	62-Sm-165	621650	4.5356e-01	2.4211e+06	2.3600e+06	0.		1. 0.	7.6770e+06	1.0000e+00	1.6353e+02	1	0	9824
866	63-Eu-165	631650	1.3546e+00	2.1342e+06	1.9057e+06	0.		1. 0.	6.6430e+06	1.0000e+00	1.6353e+02	1	0	9842
867	64-Gd-165	641650	4.2295e+01	1.4697e+06	1.1138e+06	0.		1. 0.	4.4990e+06	1.0000e+00	1.6352e+02	1	0	9856
868	65-Tb-165	651650	3.2752e+01	8.6940e+05	5.6830e+05	0.		1. 0.	2.7600e+06	5.0000e-01	1.6352e+02	2	0	9863
								1. 1.	2.6520e+06	5.0000e-01				
869	66-Dy-165	661650	8.3880e+03	3.7812e+05	2.2881e+05	0.		1. 0.	1.2850e+06	1.0000e+00	1.6352e+02	1	0	9869
870	66-Dy-165m	661651	7.5600e+01	8.3186e+03	1.1500e+05	0.		1. 0.	1.2850e+06	2.2000e-02	1.6352e+02	2	0	9870
								3. 0.	1.0800e+05	9.7800e-01				
871	67-Ho-165	671650	stable								1.6351e+02	0	0	9872
	Sigma(.0253) and RI=			6.6505e+01	7.6059e+02		Bl, B2 and B3=		9.4200e-01	5.8000e-02	0.			H9872
872	66-Dy-166	661660	2.9340e+05	1.4500e+05	5.2000e+04	0.		1. 0.	4.8100e+05	1.0000e+00	1.6451e+02	1	0	9871
873	67-Ho-166	671660	9.6480e+04	6.9000e+05	3.5000e+04	0.		1. 0.	1.8594e+06	1.0000e+00	1.6451e+02	1	0	9873
874	67-Ho-166m	671661	3.7868e+10	5.9029e+05	3.1593e+05	0.		1. 0.	1.8540e+06	1.0000e+00	1.6451e+02	1	0	9874

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
875	68-Er-166	681660	stable								1.6451e+02	0	0	9875
	Sigma(.0253) and RI=			3.5060e+01	1.4030e+02		B1, B2 and B3=		2.5000e-01	7.5000e-01	0.			H9875
b876	68-Er-167	681670	stable								1.6550e+02	0	0	9876
	Sigma(.0253) and RI=			6.7014e+02	3.0138e+03		B1, B2 and B3=		1.0000e+00	0.	0.			H9876
877	68-Er-167m	681671	2.2800e+00	0.	2.0780e+05	0.		3. 0.	2.0780e+05	1.0000e+00	1.6550e+02	1	0	9877
			**********	**********	**********	Actinides	**********		**********					
878	81-Tl-208	812080	1.8420e+02	5.8920e+05	3.3810e+06	0.		1. 0.	4.9920e+06	1.0000e+00	2.0621e+02	1	4	8108
879	82-Pb-212	822120	3.8304e+04	1.7200e+05	1.4600e+05	0.		1. 0.	5.7280e+05	1.0000e+00	2.1018e+02	1	4	8212
880	83-Bi-212	832120	3.6330e+03	5.0300e+05	1.0670e+05	7.9550e+06		1. 0.	2.2460e+06	0.	2.1018e+02	3	5	8312
								4. 0.	6.2074e+06	3.5930e-01				
								1.4 0.	1.1200e+07	6.4070e-01				
881	84-Po-216	842160	1.5000e-01	0.	1.7000e+01	6.9064e+06		4. 0.	6.9066e+06	1.0000e+00	2.1414e+02	1	2	8416
882	86-Rn-220	862200	5.5600e+01	0.	5.0000e+02	6.4043e+06		4. 0.	6.4049e+06	1.0000e+00	2.1811e+02	1	2	8620
883	88-Ra-224	882240	3.1622e+05	2.3000e+03	1.0000e+04	5.7780e+06		4. 0.	5.7891e+06	1.0000e+00	2.2208e+02	1	4	8824
884	90-Th-228	902280	6.0373e+07	1.8100e+04	3.5100e+03	5.4960e+06		4. 0.	5.5203e+06	1.0000e+00	2.2604e+02	1	4	8028
885	90-Th-230	902300	2.4299e+12	1.2490e+04	1.3980e+03	4.7470e+06		4. 0.	4.7706e+06	1.0000e+00	2.2806e+02	1	4	8030
	Sigma(.0253) and RI=			2.3159e+01	8.5372e+02		B1, B2 and B3=		1.0000e+00	0.	0.			L8030
886	90-Th-231	902310	9.1872e+04	1.2880e+05	2.4900e+04	0.		1. 0.	3.9000e+05	1.0000e+00	2.2902e+02	1	4	8031
887	91-Pa-231	912310	1.0338e+12	1.6650e+04	3.2400e+04	5.0110e+06		4. 0.	5.1484e+06	1.0000e+00	2.2905e+02	1	4	8131
	Sigma(.0253) and RI=			2.2776e+02	6.0493e+02		B1, B2 and B3=		1.0000e+00	0.	0.			L8131
d888	90-Th-232	902320	4.4337e+17	1.1100e+04	1.1000e+03	4.0760e+06		4. 0.	4.0820e+06	1.0000e+00	2.3004e+02	1	2	1390
	Sigma(.0253) and RI=			7.4145e+00	8.3715e+01		B1, B2 and B3=		1.0000e+00	0.	0.			L1390
889	91-Pa-232	912320	1.1318e+05	1.5800e+05	9.4000e+05	0.		1. 0.	1.3370e+06	1.0000e+00	2.3001e+02	1	4	8132
890	92- U-232	922320	2.2626e+09	1.2740e+04	2.2179e+03	5.3996e+06		4. 0.	5.4139e+06	1.0000e+00	2.3004e+02	2	4	8232
								6. 0.	0.	9.0000e-13				
	Sigma(.0253) and RI=			7.2848e+01	3.1692e+02		B1, B2 and B3=		1.0000e+00	0.	0.			L8232
d891	90-Th-233	902330	1.3380e+03	4.0690e+05	3.5347e+04	0.		1. 0.	1.2452e+06	1.0000e+00	2.3100e+02	1	4	8033
d892	91-Pa-233	912330	2.3328e+06	1.8900e+05	2.1900e+05	0.		1. 0.	5.7230e+05	1.0000e+00	2.3104e+02	1	4	1391
	Sigma(.0253) and RI=			4.1668e+01	8.5644e+02		B1, B2 and B3=		4.9000e-01	5.1000e-01	0.			L1391
893	92- U-233	922330	5.0232e+12	3.7400e+03	1.0700e+03	4.8930e+06		4. 0.	4.9091e+06	1.0000e+00	2.3104e+02	2	4	1393
								6. 0.	0.	1.3000e-12				
	Sigma(.0253) and RI=			4.5852e+01	1.3714e+02		B1, B2 and B3=		1.0000e+00	0.	0.			L1393
894	92- U-234	922340	7.7188e+12	1.0900e+04	1.6100e+03	4.8560e+06		4. 0.	4.8564e+06	1.0000e+00	2.3203e+02	2	4	1394
								6. 0.	0.	1.2000e-11				
	Sigma(.0253) and RI=			1.0376e+02	6.5747e+02		B1, B2 and B3=		1.0000e+00	0.	0.			L1394
895	92- U-235	922350	2.2210e+16	2.4100e+04	1.7000e+05	4.4710e+06		4. 0.	4.6790e+06	1.0000e+00	2.3303e+02	1	4	1395
	Sigma(.0253) and RI=			9.8455e+01	1.3919e+02		B1, B2 and B3=		1.0000e+00	0.	0.			L1395
896	92- U-236	922360	7.3891e+14	9.2000e+03	1.6700e+03	4.5700e+06		4. 0.	4.5692e+06	1.0000e+00	2.3402e+02	2	4	1396
								6. 0.	0.	1.2000e-09				
	Sigma(.0253) and RI=			5.1758e+00	3.4567e+02		B1, B2 and B3=		1.0000e+00	0.	0.			L1396
897	93-Np-236m	932361	8.1000e+04	8.3400e+04	5.1900e+04	0.		1. 0.	5.3700e+05	4.8000e-01	2.3397e+02	2	5	8346
								2. 0.	9.8500e+05	5.2000e-01				
898	93-Np-236	932360	3.6290e+12	1.8700e+05	1.5200e+05	0.		1. 0.	5.3700e+05	8.9000e-02	2.3397e+02	2	5	8336
								2. 0.	9.8500e+05	9.1100e-01				
899	94-Pu-236	942360	8.9969e+07	1.0120e+04	2.2300e+03	5.8510e+06		4. 0.	5.8677e+06	1.0000e+00	2.3402e+02	2	4	8436
								6. 0.	0.	8.1000e-10				
	Sigma(.0253) and RI=			1.6371e+02	3.1283e+02		B1, B2 and B3=		1.0000e+00	0.	0.			L8436

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
d900	92- U-237	922370	5.8320e+05	1.6730e+05	1.4300e+05	0.	1.	0.	5.1910e+05	1.0000e+00	2.3501e+02	1	4	8237
	Sigma(.0253) and RI=			4.7728e+02	3.0923e+02		B1, B2 and B3=		1.0000e+00	0.	0.			L8237
b901	93-Np-237	932370	6.7532e+13	4.7000e+04	3.5000e+04	4.8650e+06	4.	0.	4.9573e+06	1.0000e+00	2.3501e+02	1	4	1337
	Sigma(.0253) and RI=			1.6919e+02	6.4865e+02		B1, B2 and B3=		1.0000e+00	0.	0.			L1337
d902	94-Pu-237	942370	3.9424e+06	6.1200e+03	5.6500e+04	1.8000e+02	2.	0.	2.2400e+05	1.0000e+00	2.3501e+02	2	5	8437
							4.	0.	5.7540e+06	3.3000e-05				
	Sigma(.0253) and RI=			5.4136e+02	1.8644e+02		B1, B2 and B3=		1.0000e+00	0.	0.			L8437
903	92- U-238	922380	1.4101e+17	8.1000e+03	1.4000e+03	4.2660e+06	4.	0.	4.2710e+06	1.0000e+00	2.3601e+02	2	4	1398
							6.	0.	0.	5.4500e-07				
	Sigma(.0253) and RI=			2.7199e+00	2.7881e+02		B1, B2 and B3=		1.0000e+00	0.	0.			L1398
904	93-Np-238	932380	1.8291e+05	2.4360e+05	5.4800e+05	0.	1.	0.	1.2930e+06	1.0000e+00	2.3601e+02	1	4	8338
	Sigma(.0253) and RI=			2.0355e+02	9.9684e+01		B1, B2 and B3=		1.0000e+00	0.	0.			L8338
905	94-Pu-238	942380	2.7691e+09	8.2600e+03	1.8620e+03	5.5770e+06	4.	0.	5.5933e+06	1.0000e+00	2.3617e+02	2	4	1338
							6.	0.	0.	1.8400e-09				
	Sigma(.0253) and RI=			5.6350e+02	1.5243e+02		B1, B2 and B3=		1.0000e+00	0.	0.			L1338
906	92- U-239	922390	1.4100e+03	4.1100e+05	5.4000e+04	0.	1.	0.	1.2670e+06	1.0000e+00	2.3695e+02	1	4	8239
907	93-Np-239	932390	2.0339e+05	2.4300e+05	1.7500e+05	0.	1.	0.	7.2140e+05	1.0000e+00	2.3695e+02	1	4	8339
908	94-Pu-239	942390	7.6084e+11	3.8300e+03	8.1400e+02	5.2350e+06	4.	0.	5.2435e+06	1.0000e+00	2.3700e+02	2	4	1399
							6.	0.	0.	4.4000e-12				
	Sigma(.0253) and RI=			2.7118e+02	1.9285e+02		B1, B2 and B3=		1.0000e+00	0.	0.			L1399
909	94-Pu-240	942400	2.0670e+11	8.2800e+03	1.6470e+03	5.2430e+06	4.	0.	5.2560e+06	1.0000e+00	2.3799e+02	2	4	1380
							6.	0.	0.	5.0000e-08				
	Sigma(.0253) and RI=			2.9164e+02	8.0019e+03		B1, B2 and B3=		1.0000e+00	0.	0.			L1380
910	95-Am-240	952400	1.8288e+05	5.7000e+04	1.0350e+06	1.0380e+01	2.	0.	1.3460e+06	1.0000e+00	2.3794e+02	2	5	8540
							4.	0.	5.7000e+06	1.9000e-06				
d911	94-Pu-241	942410	4.6389e+08	5.2400e+03	4.1700e-01	1.2200e+02	1.	0.	2.0820e+04	1.0000e+00	2.3898e+02	2	3	1381
							4.	0.	5.1396e+06	2.4500e-05				
	Sigma(.0253) and RI=			3.6298e+02	1.9651e+02		B1, B2 and B3=		1.0000e+00	0.	0.			L1381
b912	95-Am-241	952410	1.3639e+10	1.7500e+04	2.8600e+04	5.5670e+06	4.	0.	5.6379e+06	1.0000e+00	2.3899e+02	2	4	1361
							6.	0.	0.	4.1000e-12				
	Sigma(.0253) and RI=			5.8142e+02	1.4199e+03		B1, B2 and B3=		8.8500e-01	1.1500e-01	0.			L1361
d913	96-Cm-241	962410	2.8339e+06	5.3700e+05	5.1700e+05	6.0000e+04	2.	0.	7.7100e+05	9.9000e-01	2.3899e+02	2	5	8641
							4.	0.	6.1848e+06	1.0000e-02				
	Sigma(.0253) and RI=			2.5094e+02	1.1014e+02		B1, B2 and B3=		1.0000e+00	0.	0.			L8641
914	94-Pu-242	942420	1.1875e+13	6.7700e+03	1.4000e+03	4.9730e+06	4.	0.	4.9831e+06	1.0000e+00	2.3998e+02	2	4	1342
							6.	0.	0.	5.5000e-06				
	Sigma(.0253) and RI=			1.9338e+01	1.2735e+03		B1, B2 and B3=		1.0000e+00	0.	0.			L1342
d915	95-Am-242m	952421	4.7967e+09	3.2200e+04	5.9000e+03	2.5000e+04	3.	0.	4.8630e+04	9.9500e-01	2.3998e+02	3	4	1369
							4.	0.	5.6380e+06	4.7600e-03				
							6.	0.	0.	1.6000e-10				
	Sigma(.0253) and RI=			1.3519e+03	2.8381e+02		B1, B2 and B3=		1.0000e+00	0.	0.			L1369
916	95-Am-242	952420	5.7636e+04	1.7510e+05	1.9310e+04	0.	1.	0.	6.6500e+05	8.2700e-01	2.3998e+02	2	5	8542
							2.	0.	7.5200e+05	1.7300e-01				
	Sigma(.0253) and RI=			2.5390e+02	7.1273e+01		B1, B2 and B3=		1.0000e+00	0.	0.			L8542
917	96-Cm-242	962420	1.4075e+07	7.7000e+03	2.2000e+03	6.2070e+06	4.	0.	6.2158e+06	1.0000e+00	2.3998e+02	2	4	8642
							6.	0.	0.	6.8000e-08				
	Sigma(.0253) and RI=			1.7238e+01	1.5592e+02		B1, B2 and B3=		1.0000e+00	0.	0.			L8642

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
918	94-Pu-243	942430	1.7845e+04	1.7070e+05	2.5000e+04	0.	1.	0.	5.8300e+05	1.0000e+00	2.4097e+02	1	4	8443
	Sigma(.0253) and RI=		8.8276e+01	2.7533e+02		B1, B2 and B3=			1.0000e+00	0.	0.			L8443
b919	95-Am-243	952430	2.3289e+11	1.4200e+04	6.0000e+04	5.3482e+06	4.	0.	5.4387e+06	1.0000e+00	2.4097e+02	2	4	1363
							6.	0.	0.	2.2000e-10				
	Sigma(.0253) and RI=		7.5291e+01	1.8190e+03		B1, B2 and B3=			6.0000e-02	9.4000e-01	0.			L1363
d920	96-Cm-243	962430	8.9937e+08	1.0260e+05	1.2780e+05	5.9294e+06	2.	0.	7.2000e+03	2.6000e-03	2.4097e+02	2	5	1343
							4.	0.	6.1674e+06	9.9740e-01				
	Sigma(.0253) and RI=		5.8628e+01	2.5087e+02		B1, B2 and B3=			1.0000e+00	0.	0.			L1343
b921	94-Pu-244	942440	2.5877e+15	0.	0.	4.6510e+06	4.	0.	4.6658e+06	9.9875e-01	2.4197e+02	2	3	8444
							6.	0.	0.	1.2500e-03				
	Sigma(.0253) and RI=		1.8456e+00	1.0568e+02		B1, B2 and B3=			1.0000e+00	0.	0.			L8444
922	95-Am-244m	952441	1.5600e+03	5.0700e+05	1.8300e+03	0.	1.	0.	1.4980e+06	9.9961e-01	2.4190e+02	2	5	8554
							2.	0.	1.4000e+05	3.9000e-04				
923	95-Am-244	952440	3.6360e+04	3.1000e+05	8.0770e+05	0.	1.	0.	1.4290e+06	1.0000e+00	2.4190e+02	1	4	8544
924	96-Cm-244	962440	5.7150e+08	6.4000e+03	1.6050e+03	5.8930e+06	4.	0.	5.9018e+06	1.0000e+00	2.4197e+02	2	4	1344
							6.	0.	0.	1.3470e-06				
	Sigma(.0253) and RI=		1.0434e+01	5.9179e+02		B1, B2 and B3=			1.0000e+00	0.	0.			L1344
925	96-Cm-245	962450	2.6744e+11	4.0800e+04	1.0200e+05	5.4453e+06	4.	0.	5.6235e+06	1.0000e+00	2.4296e+02	1	4	1345
	Sigma(.0253) and RI=		3.8514e+02	1.1670e+02		B1, B2 and B3=			1.0000e+00	0.	0.			L1345
926	96-Cm-246	962460	1.4926e+11	5.9800e+03	1.3760e+03	5.4640e+06	4.	0.	5.4760e+06	9.9974e-01	2.4395e+02	2	4	1346
							6.	0.	0.	2.6140e-04				
	Sigma(.0253) and RI=		1.3044e+00	1.0378e+02		B1, B2 and B3=			1.0000e+00	0.	0.			L1346
927	96-Cm-247	962470	4.9229e+14	1.0200e+04	3.1400e+05	5.0280e+06	4.	0.	5.3530e+06	1.0000e+00	2.4495e+02	1	4	8647
	Sigma(.0253) and RI=		5.8614e+01	4.9349e+02		B1, B2 and B3=			1.0000e+00	0.	0.			L8647
b928	96-Cm-248	962480	1.0720e+13	0.	0.	4.7270e+06	4.	0.	5.1610e+06	9.1740e-01	2.4594e+02	2	3	8648
							6.	0.	0.	8.2600e-02				
	Sigma(.0253) and RI=		2.4587e+00	2.4825e+02		B1, B2 and B3=			1.0000e+00	0.	0.			L8648
929	96-Cm-249	962490	3.8490e+03	2.7400e+05	1.9200e+04	0.	1.	0.	9.0300e+05	1.0000e+00	2.4686e+02	1	4	8649
d930	97-Bk-249	972490	2.7648e+07	3.3000e+04	8.8000e-02	7.9000e+01	1.	0.	1.2640e+05	9.9999e-01	2.4694e+02	3	5	8749
							4.	0.	5.5260e+06	1.4500e-05				
							6.	0.	0.	4.6000e-10				
	Sigma(.0253) and RI=		1.5933e+03	4.0777e+03		B1, B2 and B3=			1.0000e+00	0.	0.			L8749
931	98-Cf-249	982490	1.1064e+10	1.8300e+04	3.2800e+05	5.9440e+06	4.	0.	6.2956e+06	1.0000e+00	2.4694e+02	2	4	8849
							6.	0.	0.	5.0200e-09				
	Sigma(.0253) and RI=		4.8293e+02	8.1039e+02		B1, B2 and B3=			1.0000e+00	0.	0.			L8849
932	97-Bk-250	972500	1.1581e+04	2.8390e+05	8.9900e+05	0.	1.	0.	1.7750e+06	1.0000e+00	2.4785e+02	1	4	8750
933	98-Cf-250	982500	4.1276e+08	4.2500e+03	1.4600e+03	6.1170e+06	4.	0.	6.1292e+06	9.9923e-01	2.4793e+02	2	4	8850
							6.	0.	0.	7.7000e-04				
	Sigma(.0253) and RI=		1.6187e+03	1.1207e+04		B1, B2 and B3=			1.0000e+00	0.	0.			L8850
934	98-Cf-251	982510	2.8338e+10	1.2900e+05	1.0600e+05	5.7910e+06	4.	0.	6.1724e+06	1.0000e+00	2.4892e+02	1	4	8851
	Sigma(.0253) and RI=		2.8740e+03	1.6220e+03		B1, B2 and B3=			1.0000e+00	0.	0.			L8851
935	98-Cf-252	982520	8.3247e+07	4.1700e+03	1.4800e+03	6.0260e+06	4.	0.	6.2171e+06	9.6908e-01	2.4992e+02	2	4	8852
							6.	0.	0.	3.0920e-02				
	Sigma(.0253) and RI=		2.0611e+01	4.7189e+01		B1, B2 and B3=			1.0000e+00	0.	0.			L8852
b936	98-Cf-253	982530	1.5388e+06	7.9000e+04	0.	1.9000e+04	1.	0.	2.8900e+05	9.9690e-01	2.5091e+02	2	3	8853
							4.	0.	6.1260e+06	3.1000e-03				
	Sigma(.0253) and RI=		3.4212e+02	3.7698e+02		B1, B2 and B3=			1.0000e+00	0.	0.			L8853

Table 2-1 Cont'd

No.	Symbol	ZZAAAS	Halflife	E-Beta	E-Gamma	E-Alpha	RTYP	RFS	Q	Branching	AWR	NDK	NSP	MAT
937	99-Es-253	992530	1.7686e+06	2.3700e+03	1.3720e+03	6.7330e+06	4.	0.	6.7396e+06	1.0000e+00	2.5091e+02	2	4	8953
							6.	0.	0.	8.7000e-08				
	Sigma(.0253) and RI=			2.0200e+02	6.3629e+03		B1, B2 and B3=		5.5300e-01	4.4700e-01	0.			L8953

[a]Resonance integrals are from 0.5 eV, infinitely dilute.
Halflives are in seconds.
Energies are in eV.
Branching values are fractions.
NDK = number of decay modes.
NSP = number of spectra in the files.

Note 1: NSP = -0 in this table denotes that the decay energies were derived from beta strength measurements.

RTYP and RFS are the type of decay mode and final state identifiers in which

RTYP	Mode
1.	beta
2.	positron and/or ec.
3.	isomeric transition
4.	alpha
5.	neutron (not delayed neutron--see Note 2)
6.	spontaneous fission
7.	proton
10.	unknown

and RFS = 0. = ground, RFS = 0. + n = isomeric state n.

Note 2: RTYP values can be combined such as 1.5, meaning beta followed by a delayed neutron (see ENDF-102 Manual for detail).

Note 3: B1, B2, B3 on the sigma line are approximate (n,gamma) branchings to ground, first and second isomeric states, if any, of daughter nuclides. A MAT number on this line preceded by L denotes cross sections processed by the NJOY code at 900 k, infinitely dilute. All other cross sections were processed at 0 k.

[b]See Apprendix C for comments on some data for this nuclide that are questionable or in error in the ENDF/B-V files. Most errors do not affect the listed data but would affect processing codes.

[c]For these nuclides the average beta and gamma decay energies could be significantly in error because of the "Pandemonium" problem (see text for discussion and Appendix C for listing).

[d]See Table C-4. These nuclides show some inconsistency between average energies derived from spectra and averages tabulated in the spectral files; this is also true for In-118n, In-119m, Pr-149, Pm-152m, Pu-244, Cm-248, and Cf-253 identified with a "b" or "c."

Section 3

FISSION YIELDS

As listed in Table 1-2, ENDF/B-V contains independent and cumulative fission-product yields for 11 fissioning nuclides at one or more neutron incident energies. Values for each product in Table 2-1 are included along with values for low-yield products. A total of 20 yield sets of each type (independent and cumulative) are included. Depending on the fission system, there are 1100 to 1200 nuclides included for each type. Uncertainties are also listed for each yield. The independent yields apply before, and cumulative yields apply after, delayed neutron emission. The data are based on Ref. (5), but have been extended where necessary to include all nuclides in the decay files and/or nuclides that are at least four charge units on the neutron rich side of the most probable charge per mass chain. In a few cases, the isomeric state identifier has been revised to agree with the decay files and second isomeric states added. Where possible, data are based on evaluated measured data and on yield distribution models otherwise. An exposition of the specific evaluation process is included in Ref. (12) and possibly more extensively in Ref. (13).

These data are too extensive for inclusion in this document. However, many users are interested only in the mass chain yields. These are listed in Table 3-1 for all yield sets, where the T, F, and H following the fissioning nuclide identification refers, respectively, to yields pooled as applicable to thermal, fast, and high (~ 14.7 MeV) incident neutron energies; the S denotes spontaneous fission.

Table 3-1

ENDF/B-V MASS CHAIN YIELDS/100 FISSIONS (UNCERTAINTIES IN %)

Mass	Th232(f)	Uncertainty	Th232(he)	Uncertainty	U233(t)	Uncertainty	U233(f)	Uncertainty	U233(he)	Uncertainty
66	1.220e-06	+/- 32.00	1.290e-04	+/- 6.00	2.639e-07	+/- 23.00	4.500e-07	+/- 32.00	6.680e-04	+/- 11.00
67	4.191e-06	+/- 32.00	2.200e-04	+/- 8.00	1.200e-06	+/- 23.00	1.800e-06	+/- 32.00	1.520e-03	+/- 16.00
68	1.450e-05	+/- 32.00	7.330e-04	+/- 8.00	3.678e-06	+/- 23.00	5.500e-06	+/- 32.00	1.828e-03	+/- 32.00
69	3.351e-05	+/- 32.00	1.462e-03	+/- 8.00	1.010e-05	+/- 23.00	1.500e-05	+/- 32.00	2.940e-03	+/- 32.00
70	6.612e-05	+/- 23.00	2.685e-03	+/- 8.00	3.948e-05	+/- 23.00	6.000e-05	+/- 23.00	4.768e-03	+/- 32.00
71	1.680e-04	+/- 23.00	5.117e-03	+/- 8.00	1.749e-04	+/- 23.00	2.600e-04	+/- 32.00	7.549e-03	+/- 32.00
72	4.461e-04	+/- 16.00	7.637e-03	+/- 8.00	5.058e-04	+/- 23.00	7.700e-04	+/- 32.00	1.291e-02	+/- 8.00
73	6.632e-04	+/- 16.00	1.601e-02	+/- 6.00	1.135e-03	+/- 16.00	1.699e-03	+/- 23.00	1.919e-02	+/- 11.00
74	1.189e-03	+/- 16.00	2.915e-02	+/- 8.00	2.759e-03	+/- 23.00	4.198e-03	+/- 32.00	2.832e-02	+/- 16.00
75	2.969e-03	+/- 16.00	5.117e-02	+/- 8.00	8.278e-03	+/- 23.00	1.249e-02	+/- 32.00	4.387e-02	+/- 16.00
76	7.137e-03	+/- 16.00	8.745e-02	+/- 8.00	1.471e-02	+/- 22.99	2.220e-02	+/- 31.99	6.744e-02	+/- 15.99
77	1.229e-02	+/- 8.00	1.253e-01	+/- 8.00	2.615e-02	+/- 23.00	4.049e-02	+/- 23.00	1.028e-01	+/- 16.00
78	3.644e-02	+/- 16.00	2.406e-01	+/- 8.00	5.518e-02	+/- 23.00	6.997e-02	+/- 32.00	1.562e-01	+/- 16.00
79	8.465e-02	+/- 11.00	1.214e+00	+/- 6.00	1.512e-01	+/- 16.00	1.100e-01	+/- 23.00	2.328e-01	+/- 16.00
80	2.046e-01	+/- 16.00	1.293e+00	+/- 8.00	2.391e-01	+/- 23.00	1.999e-01	+/- 32.00	3.404e-01	+/- 16.00
81	4.290e-01	+/- 16.00	1.463e+00	+/- 8.00	2.910e-01	+/- 16.00	3.700e-01	+/- 6.00	5.466e-01	+/- 23.00
82	1.116e+00	+/- 16.00	1.675e+00	+/- 8.00	5.521e-01	+/- 22.97	5.827e-01	+/- 7.96	8.378e-01	+/- 22.84
83	2.223e+00	+/- 1.40	1.679e+00	+/- 4.00	1.018e+00	+/- 0.70	9.942e-01	+/- 2.00	1.307e+00	+/- 6.00
84	4.108e+00	+/- 2.00	2.282e+00	+/- 4.00	1.704e+00	+/- 1.00	1.640e+00	+/- 2.00	2.058e+00	+/- 4.00
85	4.242e+00	+/- 2.00	4.314e+00	+/- 4.00	2.196e+00	+/- 0.70	2.174e+00	+/- 6.00	2.042e+00	+/- 8.00
86	6.723e+00	+/- 2.00	5.191e+00	+/- 8.00	2.859e+00	+/- 1.40	2.783e+00	+/- 2.00	2.691e+00	+/- 15.98
87	7.154e+00	+/- 2.80	4.797e+00	+/- 4.00	4.019e+00	+/- 1.00	3.802e+00	+/- 2.00	3.327e+00	+/- 6.00
88	7.480e+00	+/- 2.00	5.123e+00	+/- 4.00	5.504e+00	+/- 1.00	5.117e+00	+/- 2.00	3.989e+00	+/- 6.00
89	7.600e+00	+/- 4.00	5.727e+00	+/- 2.80	6.314e+00	+/- 2.80	5.859e+00	+/- 6.00	4.607e+00	+/- 6.00
90	7.685e+00	+/- 6.00	5.894e+00	+/- 2.80	6.906e+00	+/- 2.80	6.450e+00	+/- 2.00	4.746e+00	+/- 8.00
91	7.378e+00	+/- 2.80	5.862e+00	+/- 2.80	6.537e+00	+/- 1.00	6.470e+00	+/- 2.00	5.156e+00	+/- 6.00
92	6.833e+00	+/- 4.00	5.598e+00	+/- 4.00	6.595e+00	+/- 1.00	6.494e+00	+/- 2.00	5.531e+00	+/- 4.00
93	6.731e+00	+/- 4.00	5.454e+00	+/- 2.80	7.014e+00	+/- 1.00	6.882e+00	+/- 2.00	5.394e+00	+/- 6.00
94	5.682e+00	+/- 6.00	7.061e+00	+/- 8.00	6.815e+00	+/- 1.00	6.740e+00	+/- 2.00	5.061e+00	+/- 16.00
95	5.374e+00	+/- 4.00	4.752e+00	+/- 6.00	6.190e+00	+/- 4.00	6.272e+00	+/- 2.00	5.024e+00	+/- 6.00
96	4.409e+00	+/- 6.00	3.640e+00	+/- 8.00	5.665e+00	+/- 1.00	5.705e+00	+/- 2.00	4.845e+00	+/- 15.94
97	4.454e+00	+/- 2.00	3.179e+00	+/- 4.00	5.458e+00	+/- 1.00	5.455e+00	+/- 2.00	4.712e+00	+/- 4.00
98	3.700e+00	+/- 6.00	2.612e+00	+/- 8.00	5.158e+00	+/- 1.40	5.140e+00	+/- 2.00	4.031e+00	+/- 11.00
99	2.876e+00	+/- 4.00	2.020e+00	+/- 2.80	4.874e+00	+/- 2.80	4.681e+00	+/- 4.00	3.611e+00	+/- 2.80
100	1.379e+00	+/- 6.00	1.551e+00	+/- 8.00	4.408e+00	+/- 1.40	4.380e+00	+/- 2.00	3.151e+00	+/- 11.00
101	7.305e-01	+/- 11.00	1.508e+00	+/- 8.00	3.231e+00	+/- 1.00	3.740e+00	+/- 6.00	2.803e+00	+/- 11.00
102	3.732e-01	+/- 11.00	1.058e+00	+/- 8.00	2.451e+00	+/- 1.40	2.830e+00	+/- 6.00	2.524e+00	+/- 16.00
103	1.528e-01	+/- 6.00	9.555e-01	+/- 6.00	1.669e+00	+/- 4.00	1.772e+00	+/- 6.00	2.345e+00	+/- 6.00
104	9.059e-02	+/- 11.00	9.872e-01	+/- 8.00	1.029e+00	+/- 1.40	1.240e+00	+/- 6.00	1.991e+00	+/- 16.00
105	4.617e-02	+/- 4.00	9.677e-01	+/- 4.00	4.829e-01	+/- 16.00	8.981e-01	+/- 6.00	1.816e+00	+/- 6.00
106	4.414e-02	+/- 8.00	1.089e+00	+/- 6.00	2.587e-01	+/- 1.00	2.920e-01	+/- 6.00	1.418e+00	+/- 11.00
107	5.194e-02	+/- 11.00	1.017e+00	+/- 8.00	1.174e-01	+/- 16.00	1.500e-01	+/- 8.00	1.467e+00	+/- 16.00
108	6.262e-02	+/- 16.00	1.029e+00	+/- 8.00	6.318e-02	+/- 16.00	1.100e-01	+/- 32.00	1.476e+00	+/- 16.00
109	6.091e-02	+/- 11.00	1.181e+00	+/- 6.00	4.419e-02	+/- 11.00	9.269e-02	+/- 16.00	1.670e+00	+/- 8.00
110	7.219e-02	+/- 16.00	1.096e+00	+/- 8.00	2.612e-02	+/- 16.00	8.997e-02	+/- 32.00	1.334e+00	+/- 22.99
111	7.132e-02	+/- 8.00	1.204e+00	+/- 4.00	1.921e-02	+/- 8.00	7.711e-02	+/- 8.00	1.399e+00	+/- 6.00
112	8.621e-02	+/- 8.00	1.277e+00	+/- 4.00	1.440e-02	+/- 11.00	6.890e-02	+/- 16.00	1.662e+00	+/- 6.00
113	8.630e-02	+/- 11.00	1.220e+00	+/- 4.00	1.366e-02	+/- 16.00	6.692e-02	+/- 16.00	1.722e+00	+/- 8.00
114	7.578e-02	+/- 16.00	1.150e+00	+/- 8.00	1.308e-02	+/- 16.00	6.297e-02	+/- 32.00	1.267e+00	+/- 16.00
115	6.924e-02	+/- 6.00	1.268e+00	+/- 6.00	1.183e-02	+/- 16.00	5.627e-02	+/- 11.00	1.370e+00	+/- 8.00

Table 3-1 Cont'd

Mass	Th232(f)	Uncertainty	Th232(he)	Uncertainty	U233(t)	Uncertainty	U233(f)	Uncertainty	U233(he)	Uncertainty
116	7.542e-02	+/- 16.00	1.550e+00	+/- 8.00	1.442e-02	+/- 16.00	6.318e-02	+/- 23.00	1.403e+00	+/- 15.99
117	6.812e-02	+/- 8.00	1.847e+00	+/- 6.00	1.141e-02	+/- 11.00	5.270e-02	+/- 16.00	1.332e+00	+/- 11.00
118	6.490e-02	+/- 16.00	1.480e+00	+/- 8.00	1.224e-02	+/- 11.00	5.186e-02	+/- 23.00	1.300e+00	+/- 16.00
119	5.893e-02	+/- 16.00	1.417e+00	+/- 8.00	1.258e-02	+/- 11.00	6.425e-02	+/- 16.00	1.238e+00	+/- 16.00
120	5.593e-02	+/- 16.00	1.370e+00	+/- 8.00	1.384e-02	+/- 11.00	7.165e-02	+/- 23.00	1.177e+00	+/- 16.00
121	5.041e-02	+/- 8.00	9.747e-01	+/- 6.00	1.496e-02	+/- 23.00	7.686e-02	+/- 16.00	1.653e+00	+/- 8.00
122	3.765e-02	+/- 16.00	1.261e+00	+/- 8.00	1.475e-02	+/- 11.00	7.164e-02	+/- 23.00	1.261e+00	+/- 22.99
123	3.056e-02	+/- 16.00	1.257e+00	+/- 8.00	1.990e-02	+/- 23.00	7.434e-02	+/- 23.00	1.371e+00	+/- 16.00
124	2.737e-02	+/- 16.00	1.499e+00	+/- 7.64	2.434e-02	+/- 10.99	1.039e-01	+/- 22.96	1.540e+00	+/- 15.78
125	3.861e-02	+/- 11.00	1.224e+00	+/- 8.00	1.122e-01	+/- 11.00	1.383e-01	+/- 8.00	1.814e+00	+/- 6.00
126	5.013e-02	+/- 16.00	1.309e+00	+/- 8.00	2.464e-01	+/- 23.00	2.735e-01	+/- 11.00	1.996e+00	+/- 16.00
127	9.077e-02	+/- 8.00	1.141e+00	+/- 4.00	5.617e-01	+/- 11.00	5.000e-01	+/- 6.00	2.232e+00	+/- 4.00
128	1.881e-01	+/- 16.00	1.522e+00	+/- 8.00	7.573e-01	+/- 6.00	1.111e+00	+/- 8.00	2.580e+00	+/- 16.00
129	3.730e-01	+/- 11.00	1.567e+00	+/- 6.00	1.613e+00	+/- 16.00	1.682e+00	+/- 6.00	2.856e+00	+/- 11.00
130	8.399e-01	+/- 11.00	2.258e+00	+/- 7.91	2.101e+00	+/- 15.98	2.519e+00	+/- 7.99	3.237e+00	+/- 15.73
131	1.621e+00	+/- 2.00	2.668e+00	+/- 4.00	3.606e+00	+/- 0.70	3.738e+00	+/- 2.00	3.457e+00	+/- 6.00
132	2.881e+00	+/- 1.40	3.200e+00	+/- 4.00	4.939e+00	+/- 1.00	4.953e+00	+/- 2.00	4.071e+00	+/- 4.00
133	3.964e+00	+/- 4.00	4.298e+00	+/- 6.00	6.022e+00	+/- 0.70	6.005e+00	+/- 2.00	4.564e+00	+/- 6.00
134	5.290e+00	+/- 2.00	6.812e+00	+/- 6.00	6.310e+00	+/- 0.70	6.218e+00	+/- 2.00	5.015e+00	+/- 5.98
135	5.382e+00	+/- 2.00	4.994e+00	+/- 4.00	6.215e+00	+/- 1.40	6.359e+00	+/- 2.00	5.070e+00	+/- 6.00
136	5.655e+00	+/- 2.00	5.853e+00	+/- 7.98	7.122e+00	+/- 3.94	6.985e+00	+/- 1.95	6.920e+00	+/- 13.80
137	6.640e+00	+/- 4.00	5.263e+00	+/- 2.80	6.812e+00	+/- 0.70	6.633e+00	+/- 2.00	4.958e+00	+/- 4.00
138	7.140e+00	+/- 11.00	5.301e+00	+/- 2.80	5.914e+00	+/- 1.40	6.479e+00	+/- 2.00	5.946e+00	+/- 11.00
139	7.156e+00	+/- 2.80	5.523e+00	+/- 2.80	6.334e+00	+/- 4.00	6.330e+00	+/- 2.00	5.871e+00	+/- 4.00
140	7.704e+00	+/- 2.80	5.767e+00	+/- 2.80	6.493e+00	+/- 1.00	6.214e+00	+/- 2.00	4.429e+00	+/- 4.00
141	7.303e+00	+/- 4.00	5.666e+00	+/- 2.80	6.531e+00	+/- 2.80	6.405e+00	+/- 2.80	4.630e+00	+/- 6.00
142	6.318e+00	+/- 4.00	5.019e+00	+/- 6.00	6.656e+00	+/- 1.00	6.468e+00	+/- 2.00	4.463e+00	+/- 16.00
143	6.519e+00	+/- 2.80	4.893e+00	+/- 2.80	5.892e+00	+/- 1.00	5.531e+00	+/- 2.00	3.275e+00	+/- 4.00
144	7.817e+00	+/- 4.00	3.928e+00	+/- 6.00	4.639e+00	+/- 0.70	4.485e+00	+/- 2.00	2.507e+00	+/- 8.00
145	5.283e+00	+/- 2.80	2.441e+00	+/- 4.00	3.392e+00	+/- 0.70	3.180e+00	+/- 2.00	2.040e+00	+/- 8.00
146	4.514e+00	+/- 4.00	2.252e+00	+/- 8.00	2.536e+00	+/- 1.00	2.375e+00	+/- 2.00	1.648e+00	+/- 16.00
147	3.011e+00	+/- 4.00	1.775e+00	+/- 4.00	1.750e+00	+/- 2.80	1.681e+00	+/- 2.00	1.195e+00	+/- 6.00
148	1.979e+00	+/- 2.80	9.799e-01	+/- 8.00	1.272e+00	+/- 0.70	1.192e+00	+/- 2.00	9.031e-01	+/- 23.00
149	8.832e-01	+/- 16.00	7.540e-01	+/- 6.00	7.771e-01	+/- 2.80	7.032e-01	+/- 2.00	6.234e-01	+/- 11.00
150	3.466e-01	+/- 16.00	3.763e-01	+/- 8.00	5.023e-01	+/- 0.99	4.638e-01	+/- 1.99	4.468e-01	+/- 22.82
151	3.142e-01	+/- 6.00	2.069e-01	+/- 4.00	3.153e-01	+/- 2.00	3.046e-01	+/- 2.00	3.299e-01	+/- 8.00
152	7.591e-02	+/- 16.00	1.187e-01	+/- 8.00	2.136e-01	+/- 2.80	1.908e-01	+/- 2.00	2.205e-01	+/- 16.00
153	3.325e-02	+/- 16.00	8.271e-02	+/- 6.00	1.048e-01	+/- 6.00	1.159e-01	+/- 6.00	1.441e-01	+/- 8.00
154	7.287e-03	+/- 42.57	5.064e-02	+/- 18.87	4.669e-02	+/- 29.84	6.184e-02	+/- 28.20	9.898e-02	+/- 22.49
155	3.828e-03	+/- 23.00	2.899e-02	+/- 8.00	2.179e-02	+/- 23.00	3.268e-02	+/- 16.00	6.651e-02	+/- 16.00
156	2.561e-03	+/- 11.00	1.679e-02	+/- 8.00	1.131e-02	+/- 6.00	1.777e-02	+/- 11.00	4.344e-02	+/- 6.00
157	9.562e-04	+/- 23.00	9.733e-03	+/- 8.00	6.327e-03	+/- 8.00	9.622e-03	+/- 23.00	2.784e-02	+/- 11.00
158	5.041e-04	+/- 32.00	5.736e-03	+/- 8.00	2.315e-03	+/- 32.00	3.150e-03	+/- 32.00	1.752e-02	+/- 15.88
159	1.060e-04	+/- 32.00	4.162e-03	+/- 8.00	8.746e-04	+/- 6.00	1.685e-03	+/- 16.00	1.073e-02	+/- 11.00
160	7.512e-05	+/- 32.00	1.582e-03	+/- 8.00	3.544e-04	+/- 44.93	3.974e-04	+/- 31.88	7.214e-03	+/- 15.93
161	1.650e-05	+/- 23.00	9.950e-04	+/- 6.00	1.209e-04	+/- 6.00	9.000e-05	+/- 32.00	4.709e-03	+/- 6.00
162	8.662e-06	+/- 32.00	4.680e-04	+/- 8.00	1.569e-05	+/- 32.00	2.160e-05	+/- 32.00	2.859e-03	+/- 32.00
163	5.041e-06	+/- 32.00	2.340e-04	+/- 8.00	7.317e-06	+/- 32.00	9.900e-06	+/- 32.00	1.775e-03	+/- 32.00
164	2.211e-06	+/- 32.00	1.210e-04	+/- 8.00	2.409e-06	+/- 32.00	3.330e-06	+/- 32.00	1.085e-03	+/- 31.99
165	3.741e-07	+/- 23.00	6.680e-05	+/- 8.00	7.577e-07	+/- 23.00	1.120e-06	+/- 23.00	6.420e-04	+/- 23.00
166	1.500e-07	+/- 32.00	2.780e-05	+/- 6.00	4.628e-07	+/- 32.00	6.390e-07	+/- 32.00	2.410e-04	+/- 11.00
167	1.060e-07	+/- 32.00	1.460e-05	+/- 8.00	6.477e-08	+/- 32.00	8.910e-08	+/- 32.00	2.270e-04	+/- 32.00

Table 3-1 Cont'd

Mass	Th232(f)	Uncertainty	Th232(he)	Uncertainty	U233(t)	Uncertainty	U233(f)	Uncertainty	U233(he)	Uncertainty
168	5.751e-08	+/- 32.00	7.360e-06	+/- 8.00	1.669e-08	+/- 32.00	2.340e-08	+/- 32.00	1.380e-04	+/- 32.00
169	2.921e-08	+/- 32.00	3.570e-06	+/- 8.00	5.648e-09	+/- 32.00	7.830e-09	+/- 32.00	8.310e-05	+/- 11.00
170	1.160e-08	+/- 32.00	1.600e-06	+/- 8.00	1.671e-09	+/- 31.97	2.342e-09	+/- 31.97	4.446e-05	+/- 31.96
171	5.041e-09	+/- 32.00	7.510e-07	+/- 8.00	5.558e-10	+/- 32.00	7.200e-10	+/- 32.00	2.470e-05	+/- 32.00
172	2.591e-09	+/- 32.00	3.500e-07	+/- 8.00	1.849e-10	+/- 32.00	2.700e-10	+/- 32.00	1.890e-05	+/- 11.00

Mass	U235(t)	Uncertainty	U235(f)	Uncertainty	U235(he)	Uncertainty	U236(f)	Uncertainty	U238(f)	Uncertainty
66	7.618e-08	+/- 32.00	8.816e-07	+/- 23.00	3.010e-04	+/- 8.00	7.470e-07	+/- 32.00	1.752e-08	+/- 32.00
67	3.919e-07	+/- 32.00	2.829e-06	+/- 23.00	6.740e-04	+/- 8.00	1.870e-06	+/- 32.00	6.057e-08	+/- 32.00
68	6.609e-07	+/- 32.00	4.918e-06	+/- 23.00	9.060e-04	+/- 32.00	3.740e-06	+/- 32.00	2.283e-07	+/- 23.00
69	1.430e-06	+/- 32.00	1.060e-05	+/- 23.00	1.410e-03	+/- 32.00	8.410e-06	+/- 32.00	6.187e-07	+/- 23.00
70	3.309e-06	+/- 32.00	2.299e-05	+/- 23.00	2.412e-03	+/- 23.00	1.870e-05	+/- 32.00	1.712e-06	+/- 23.00
71	7.708e-06	+/- 32.00	5.667e-05	+/- 23.00	4.027e-03	+/- 32.00	4.670e-05	+/- 32.00	4.946e-06	+/- 23.00
72	2.679e-05	+/- 11.00	2.019e-04	+/- 23.00	6.086e-03	+/- 8.00	1.680e-04	+/- 32.00	9.321e-06	+/- 32.00
73	1.180e-04	+/- 45.00	6.027e-04	+/- 16.00	1.161e-02	+/- 8.00	6.670e-04	+/- 23.00	4.776e-05	+/- 23.00
74	3.619e-04	+/- 23.00	1.450e-03	+/- 23.00	1.740e-02	+/- 11.00	1.588e-03	+/- 32.00	9.321e-05	+/- 32.00
75	1.179e-03	+/- 23.00	9.173e-03	+/- 16.00	2.761e-02	+/- 11.00	1.214e-02	+/- 32.00	2.423e-04	+/- 23.00
76	3.857e-03	+/- 32.00	1.615e-02	+/- 23.00	4.092e-02	+/- 11.00	2.055e-02	+/- 32.00	8.049e-04	+/- 23.00
77	8.432e-03	+/- 11.00	3.539e-02	+/- 11.00	6.802e-02	+/- 11.00	4.195e-02	+/- 23.00	3.334e-03	+/- 11.00
78	2.183e-02	+/- 8.00	6.470e-02	+/- 11.00	1.020e-01	+/- 11.00	5.231e-02	+/- 32.00	1.128e-02	+/- 23.00
79	4.531e-02	+/- 4.00	1.007e-01	+/- 8.00	1.734e-01	+/- 8.00	1.049e-01	+/- 23.00	3.342e-02	+/- 16.00
80	1.308e-01	+/- 4.00	1.762e-01	+/- 11.00	2.624e-01	+/- 11.00	1.682e-01	+/- 32.00	6.950e-02	+/- 23.00
81	1.953e-01	+/- 2.80	2.537e-01	+/- 11.00	2.977e-01	+/- 11.00	2.429e-01	+/- 32.00	1.431e-01	+/- 23.00
82	3.278e-01	+/- 2.80	3.817e-01	+/- 10.99	6.241e-01	+/- 10.92	3.458e-01	+/- 31.99	2.383e-01	+/- 23.00
83	5.360e-01	+/- 0.50	5.722e-01	+/- 1.00	1.115e+00	+/- 4.00	5.242e-01	+/- 23.00	3.935e-01	+/- 1.00
84	9.951e-01	+/- 0.70	1.026e+00	+/- 1.40	1.539e+00	+/- 16.00	9.576e-01	+/- 23.00	8.149e-01	+/- 1.40
85	1.310e+00	+/- 0.35	1.328e+00	+/- 1.00	1.685e+00	+/- 2.80	1.509e+00	+/- 8.00	7.308e-01	+/- 1.40
86	1.969e+00	+/- 0.50	1.934e+00	+/- 1.00	2.624e+00	+/- 11.00	1.672e+00	+/- 16.00	1.278e+00	+/- 1.40
87	2.557e+00	+/- 0.70	2.479e+00	+/- 2.00	2.473e+00	+/- 2.80	2.305e+00	+/- 6.00	1.587e+00	+/- 1.40
88	3.633e+00	+/- 0.70	3.485e+00	+/- 1.00	3.452e+00	+/- 4.00	2.958e+00	+/- 6.00	2.060e+00	+/- 2.00
89	4.877e+00	+/- 1.40	4.527e+00	+/- 2.00	4.213e+00	+/- 2.80	3.795e+00	+/- 6.00	2.846e+00	+/- 2.00
90	5.913e+00	+/- 0.70	5.453e+00	+/- 1.00	4.671e+00	+/- 2.80	4.526e+00	+/- 11.00	3.240e+00	+/- 2.00
91	5.933e+00	+/- 0.50	5.666e+00	+/- 1.00	4.897e+00	+/- 4.00	5.640e+00	+/- 6.00	4.069e+00	+/- 2.80
92	5.980e+00	+/- 0.70	5.742e+00	+/- 1.00	5.358e+00	+/- 8.00	6.217e+00	+/- 6.00	4.525e+00	+/- 4.00
93	6.383e+00	+/- 0.70	6.135e+00	+/- 1.00	5.295e+00	+/- 6.00	5.693e+00	+/- 4.00	4.975e+00	+/- 2.80
94	6.444e+00	+/- 0.70	6.197e+00	+/- 1.00	5.234e+00	+/- 8.00	5.586e+00	+/- 16.00	4.977e+00	+/- 6.00
95	6.495e+00	+/- 0.70	6.363e+00	+/- 0.70	5.050e+00	+/- 6.00	6.410e+00	+/- 6.00	5.105e+00	+/- 1.00
96	6.282e+00	+/- 0.70	6.099e+00	+/- 1.40	5.316e+00	+/- 7.99	5.750e+00	+/- 16.00	5.932e+00	+/- 6.00
97	5.941e+00	+/- 0.70	5.921e+00	+/- 0.70	5.610e+00	+/- 4.00	5.077e+00	+/- 4.00	5.525e+00	+/- 1.00
98	5.774e+00	+/- 0.70	5.869e+00	+/- 1.00	4.138e+00	+/- 8.00	5.804e+00	+/- 11.00	5.812e+00	+/- 1.40
99	6.119e+00	+/- 1.00	5.755e+00	+/- 1.40	5.085e+00	+/- 4.00	5.912e+00	+/- 6.00	6.248e+00	+/- 2.00
100	6.206e+00	+/- 1.40	6.284e+00	+/- 1.00	3.970e+00	+/- 8.00	5.567e+00	+/- 11.00	6.618e+00	+/- 1.40
101	5.074e+00	+/- 1.00	5.352e+00	+/- 1.40	3.470e+00	+/- 8.00	5.293e+00	+/- 11.00	6.084e+00	+/- 6.00
102	4.236e+00	+/- 1.00	4.535e+00	+/- 1.40	3.269e+00	+/- 8.00	4.934e+00	+/- 16.00	6.327e+00	+/- 6.00
103	3.042e+00	+/- 1.40	3.276e+00	+/- 1.40	3.218e+00	+/- 2.80	4.207e+00	+/- 4.00	6.229e+00	+/- 1.40
104	1.835e+00	+/- 0.70	2.275e+00	+/- 2.00	2.134e+00	+/- 8.00	3.363e+00	+/- 16.00	4.989e+00	+/- 6.00
105	9.674e-01	+/- 2.00	1.210e+00	+/- 2.00	1.891e+00	+/- 4.00	2.470e+00	+/- 6.00	3.975e+00	+/- 2.80
106	4.017e-01	+/- 1.00	5.577e-01	+/- 4.00	1.570e+00	+/- 4.00	1.014e+00	+/- 8.00	2.513e+00	+/- 4.00
107	1.405e-01	+/- 6.00	3.275e-01	+/- 11.00	1.284e+00	+/- 8.00	9.247e-01	+/- 23.00	1.303e+00	+/- 8.00
108	6.706e-02	+/- 6.00	1.717e-01	+/- 16.00	1.078e+00	+/- 11.00	3.457e-01	+/- 32.00	6.011e-01	+/- 16.00
109	3.443e-02	+/- 11.00	1.148e-01	+/- 11.00	1.423e+00	+/- 4.00	1.431e-01	+/- 23.00	2.671e-01	+/- 11.00
110	3.034e-02	+/- 11.00	9.026e-02	+/- 16.00	1.049e+00	+/- 11.00	1.027e-01	+/- 32.00	1.355e-01	+/- 16.00

Table 3-1 Cont'd

Mass	U235(t)	Uncertainty	U235(f)	Uncertainty	U235(he)	Uncertainty	U236(f)	Uncertainty	U238(f)	Uncertainty
111	2.005e-02	+/- 4.00	4.314e-02	+/- 2.80	1.205e+00	+/- 2.80	6.542e-02	+/- 8.00	8.065e-02	+/- 2.00
112	1.610e-02	+/- 4.00	3.819e-02	+/- 2.80	1.054e+00	+/- 8.00	4.763e-02	+/- 32.00	6.504e-02	+/- 6.00
113	1.634e-02	+/- 6.00	3.367e-02	+/- 2.80	1.084e+00	+/- 8.00	3.813e-02	+/- 23.00	5.267e-02	+/- 8.00
114	1.403e-02	+/- 6.00	3.290e-02	+/- 2.80	9.797e-01	+/- 11.00	3.269e-02	+/- 32.00	3.933e-02	+/- 16.00
115	1.079e-02	+/- 11.00	2.939e-02	+/- 8.00	9.624e-01	+/- 4.00	5.124e-02	+/- 23.00	3.385e-02	+/- 4.00
116	1.690e-02	+/- 6.00	3.467e-02	+/- 4.00	9.761e-01	+/- 11.00	3.363e-02	+/- 32.00	4.162e-02	+/- 11.00
117	1.085e-02	+/- 2.80	3.385e-02	+/- 11.00	1.079e+00	+/- 8.00	3.578e-02	+/- 16.00	3.678e-02	+/- 11.00
118	1.094e-02	+/- 11.00	3.311e-02	+/- 8.00	1.105e+00	+/- 8.00	3.594e-02	+/- 23.00	3.962e-02	+/- 11.00
119	1.216e-02	+/- 11.00	3.405e-02	+/- 8.00	1.116e+00	+/- 8.00	3.499e-02	+/- 23.00	3.576e-02	+/- 11.00
120	1.210e-02	+/- 11.00	3.435e-02	+/- 8.00	1.135e+00	+/- 8.00	3.783e-02	+/- 23.00	3.577e-02	+/- 16.00
121	1.299e-02	+/- 6.00	3.522e-02	+/- 11.00	1.042e+00	+/- 4.00	3.694e-02	+/- 32.00	4.352e-02	+/- 11.00
122	1.530e-02	+/- 11.00	4.041e-02	+/- 11.00	1.206e+00	+/- 11.00	4.987e-02	+/- 32.00	3.762e-02	+/- 16.00
123	1.585e-02	+/- 4.00	4.508e-02	+/- 11.00	1.240e+00	+/- 8.00	7.187e-02	+/- 23.00	4.046e-02	+/- 16.00
124	2.592e-02	+/- 10.99	6.596e-02	+/- 11.00	1.314e+00	+/- 10.95	9.232e-02	+/- 32.00	4.436e-02	+/- 16.00
125	2.939e-02	+/- 4.00	7.095e-02	+/- 6.00	1.423e+00	+/- 8.00	1.633e-01	+/- 23.00	5.271e-02	+/- 8.00
126	5.559e-02	+/- 8.00	1.395e-01	+/- 11.00	1.778e+00	+/- 4.00	2.459e-01	+/- 23.00	6.385e-02	+/- 11.00
127	1.256e-01	+/- 6.00	2.814e-01	+/- 16.00	2.183e+00	+/- 2.80	2.265e-01	+/- 16.00	1.300e-01	+/- 6.00
128	3.507e-01	+/- 2.80	6.808e-01	+/- 11.00	2.476e+00	+/- 8.00	6.052e-01	+/- 23.00	4.615e-01	+/- 11.00
129	7.435e-01	+/- 6.00	8.926e-01	+/- 6.00	3.557e+00	+/- 8.00	1.007e+00	+/- 8.00	9.975e-01	+/- 8.00
130	1.784e+00	+/- 2.00	1.935e+00	+/- 8.00	3.648e+00	+/- 7.95	1.991e+00	+/- 16.00	1.875e+00	+/- 8.00
131	2.883e+00	+/- 0.50	3.178e+00	+/- 0.70	3.995e+00	+/- 4.00	3.034e+00	+/- 6.00	3.233e+00	+/- 1.40
132	4.298e+00	+/- 0.50	4.601e+00	+/- 0.70	4.779e+00	+/- 6.00	4.305e+00	+/- 6.00	5.130e+00	+/- 1.40
133	6.702e+00	+/- 0.35	6.730e+00	+/- 1.00	5.527e+00	+/- 8.00	7.026e+00	+/- 6.00	6.620e+00	+/- 1.40
134	7.795e+00	+/- 0.70	7.536e+00	+/- 0.70	6.055e+00	+/- 5.99	8.017e+00	+/- 6.00	7.565e+00	+/- 2.80
135	6.541e+00	+/- 1.00	6.581e+00	+/- 0.70	5.912e+00	+/- 4.00	5.790e+00	+/- 6.00	6.863e+00	+/- 1.40
136	6.316e+00	+/- 0.50	6.162e+00	+/- 0.70	5.069e+00	+/- 10.53	6.412e+00	+/- 15.99	6.855e+00	+/- 4.00
137	6.221e+00	+/- 0.35	6.151e+00	+/- 0.70	4.917e+00	+/- 2.80	6.066e+00	+/- 4.00	6.000e+00	+/- 1.00
138	6.756e+00	+/- 0.70	6.550e+00	+/- 1.40	4.634e+00	+/- 4.00	6.219e+00	+/- 16.00	5.666e+00	+/- 2.00
139	6.377e+00	+/- 1.00	6.328e+00	+/- 1.00	4.738e+00	+/- 4.00	5.873e+00	+/- 16.00	5.967e+00	+/- 2.80
140	6.276e+00	+/- 0.50	6.105e+00	+/- 0.70	4.478e+00	+/- 2.80	5.796e+00	+/- 2.80	5.948e+00	+/- 1.00
141	5.796e+00	+/- 1.00	5.953e+00	+/- 2.00	4.375e+00	+/- 6.00	5.541e+00	+/- 6.00	5.456e+00	+/- 2.80
142	5.877e+00	+/- 0.50	5.667e+00	+/- 2.00	4.247e+00	+/- 6.00	5.817e+00	+/- 6.00	4.728e+00	+/- 1.40
143	5.937e+00	+/- 0.35	5.686e+00	+/- 0.50	3.806e+00	+/- 4.00	6.085e+00	+/- 6.00	4.558e+00	+/- 1.00
144	5.474e+00	+/- 0.50	5.260e+00	+/- 1.40	3.122e+00	+/- 4.00	5.209e+00	+/- 4.00	4.543e+00	+/- 1.00
145	3.917e+00	+/- 0.35	3.743e+00	+/- 0.50	2.681e+00	+/- 6.00	3.668e+00	+/- 11.00	3.755e+00	+/- 1.00
146	2.975e+00	+/- 0.35	2.902e+00	+/- 0.50	2.214e+00	+/- 8.00	2.943e+00	+/- 16.00	3.393e+00	+/- 1.00
147	2.253e+00	+/- 1.00	2.096e+00	+/- 1.40	1.627e+00	+/- 4.00	2.341e+00	+/- 4.00	2.531e+00	+/- 1.40
148	1.670e+00	+/- 0.35	1.672e+00	+/- 0.35	1.203e+00	+/- 11.00	1.741e+00	+/- 16.00	2.081e+00	+/- 0.70
149	1.067e+00	+/- 1.40	1.026e+00	+/- 1.00	6.442e-01	+/- 8.00	1.369e+00	+/- 8.00	1.610e+00	+/- 1.40
150	6.483e-01	+/- 0.50	6.842e-01	+/- 0.70	5.173e-01	+/- 10.97	7.295e-01	+/- 31.99	1.265e+00	+/- 1.40
151	4.184e-01	+/- 1.00	4.076e-01	+/- 1.00	3.536e-01	+/- 8.00	4.227e-01	+/- 11.00	8.011e-01	+/- 2.00
152	2.678e-01	+/- 0.70	2.797e-01	+/- 4.00	2.624e-01	+/- 11.00	3.877e-01	+/- 32.00	5.207e-01	+/- 1.40
153	1.613e-01	+/- 2.80	1.752e-01	+/- 4.00	2.018e-01	+/- 11.00	2.553e-01	+/- 23.00	4.109e-01	+/- 2.80
154	7.340e-02	+/- 16.66	7.430e-02	+/- 17.45	8.026e-02	+/- 32.17	1.292e-01	+/- 52.33	2.134e-01	+/- 3.82
155	3.205e-02	+/- 4.00	5.616e-02	+/- 16.00	6.399e-02	+/- 11.00	9.232e-02	+/- 32.00	1.328e-01	+/- 16.00
156	1.319e-02	+/- 4.00	1.929e-02	+/- 6.00	5.271e-02	+/- 2.80	3.365e-02	+/- 6.00	6.748e-02	+/- 2.80
157	6.154e-03	+/- 8.00	1.126e-02	+/- 23.00	3.785e-02	+/- 11.00	2.308e-02	+/- 32.00	3.872e-02	+/- 16.00
158	2.915e-03	+/- 23.00	6.772e-03	+/- 16.00	2.345e-02	+/- 11.00	1.108e-02	+/- 32.00	1.730e-02	+/- 16.00
159	1.004e-03	+/- 6.00	3.053e-03	+/- 11.00	1.193e-02	+/- 8.00	4.339e-03	+/- 32.00	8.091e-03	+/- 16.00
160	3.160e-04	+/- 32.00	1.181e-03	+/- 16.00	7.175e-03	+/- 10.97	1.939e-03	+/- 32.00	3.229e-03	+/- 23.00

Table 3-1 Cont'd

Mass	U235(t)	Uncertainty	U235(f)	Uncertainty	U235(he)	Uncertainty	U236(f)	Uncertainty	U238(f)	Uncertainty
161	8.528e-05	+/- 4.00	3.598e-04	+/- 11.00	5.201e-03	+/- 8.00	4.920e-04	+/- 6.00	1.279e-03	+/- 8.00
162	1.920e-05	+/- 32.00	6.137e-05	+/- 23.00	2.799e-03	+/- 11.00	4.990e-04	+/- 32.00	4.916e-04	+/- 23.00
163	7.668e-06	+/- 32.00	1.020e-05	+/- 23.00	1.592e-03	+/- 11.00	1.110e-04	+/- 32.00	1.211e-04	+/- 23.00
164	2.399e-06	+/- 32.00	6.137e-06	+/- 23.00	9.841e-04	+/- 11.00	4.430e-05	+/- 32.00	3.925e-05	+/- 23.00
165	1.170e-06	+/- 23.00	2.459e-06	+/- 23.00	5.410e-04	+/- 11.00	1.700e-05	+/- 23.00	1.502e-05	+/- 23.00
166	5.519e-07	+/- 23.00	1.020e-06	+/- 23.00	2.710e-04	+/- 8.00	1.020e-05	+/- 32.00	5.386e-06	+/- 23.00
167	3.009e-07	+/- 23.00	4.098e-07	+/- 23.00	1.860e-04	+/- 11.00	4.800e-06	+/- 32.00	1.592e-06	+/- 23.00
168	6.888e-08	+/- 23.00	1.020e-07	+/- 23.00	1.070e-04	+/- 11.00	1.200e-06	+/- 32.00	6.828e-07	+/- 23.00
169	2.819e-08	+/- 23.00	6.137e-08	+/- 23.00	7.700e-05	+/- 8.00	2.950e-07	+/- 32.00	2.243e-07	+/- 23.00
170	5.919e-09	+/- 23.00	2.049e-08	+/- 23.00	3.261e-05	+/- 11.00	8.960e-08	+/- 32.00	6.828e-08	+/- 23.00
171	2.819e-09	+/- 23.00	7.167e-09	+/- 23.00	1.770e-05	+/- 11.00	2.950e-08	+/- 32.00	1.912e-08	+/- 23.00
172	9.708e-10	+/- 23.00	2.049e-09	+/- 23.00	1.610e-05	+/- 8.00	7.940e-09	+/- 32.00	9.972e-09	+/- 23.00

Mass	U238(he)	Uncertainty	Np237(f)	Uncertainty	Pu239(t)	Uncertainty	Pu239(f)	Uncertainty	Pu239(he)	Uncertainty
66	8.501e-05	+/- 11.00	1.910e-07	+/- 8.00	1.841e-07	+/- 23.00	8.813e-07	+/- 16.00	6.330e-05	+/- 8.00
67	1.400e-04	+/- 16.00	3.810e-07	+/- 8.00	3.681e-07	+/- 23.00	2.911e-06	+/- 16.00	9.991e-05	+/- 8.00
68	3.011e-04	+/- 16.00	1.920e-06	+/- 8.00	1.290e-06	+/- 23.00	8.553e-06	+/- 16.00	2.210e-04	+/- 8.00
69	5.051e-04	+/- 16.00	1.010e-05	+/- 8.00	4.611e-06	+/- 23.00	3.171e-05	+/- 16.00	3.770e-04	+/- 8.00
70	9.082e-04	+/- 16.00	2.490e-05	+/- 8.00	1.571e-05	+/- 23.00	8.823e-05	+/- 16.00	6.811e-04	+/- 8.00
71	1.605e-03	+/- 16.00	6.320e-05	+/- 8.00	2.851e-05	+/- 23.00	2.071e-04	+/- 32.00	1.216e-03	+/- 8.00
72	3.020e-03	+/- 11.00	1.540e-04	+/- 8.00	9.613e-05	+/- 45.00	5.312e-04	+/- 32.00	2.222e-03	+/- 8.00
73	5.242e-03	+/- 11.00	3.740e-04	+/- 6.00	2.301e-04	+/- 23.00	7.502e-04	+/- 16.00	3.804e-03	+/- 6.00
74	8.072e-03	+/- 16.00	6.770e-04	+/- 8.00	5.332e-04	+/- 32.00	1.763e-03	+/- 16.00	5.982e-03	+/- 8.00
75	1.398e-02	+/- 16.00	1.346e-03	+/- 8.00	1.243e-03	+/- 32.00	2.734e-03	+/- 23.00	1.041e-02	+/- 8.00
76	2.217e-02	+/- 16.00	6.139e-03	+/- 8.00	2.756e-03	+/- 31.99	5.864e-03	+/- 16.00	1.666e-02	+/- 7.99
77	3.138e-02	+/- 8.00	1.089e-02	+/- 8.00	7.336e-03	+/- 11.00	1.399e-02	+/- 8.00	2.403e-02	+/- 8.00
78	4.104e-02	+/- 11.00	2.516e-02	+/- 8.00	2.853e-02	+/- 11.00	3.744e-02	+/- 16.00	3.097e-02	+/- 8.00
79	1.683e-01	+/- 11.00	5.796e-02	+/- 6.00	4.704e-02	+/- 16.00	6.103e-02	+/- 11.00	8.733e-02	+/- 6.00
80	2.146e-01	+/- 16.00	1.149e-01	+/- 8.00	1.133e-01	+/- 16.00	1.050e-01	+/- 16.00	1.601e-01	+/- 8.00
81	3.341e-01	+/- 11.00	2.360e-01	+/- 8.00	1.716e-01	+/- 16.00	1.423e-01	+/- 11.00	2.767e-01	+/- 8.00
82	4.566e-01	+/- 16.00	3.363e-01	+/- 10.98	2.057e-01	+/- 22.63	2.142e-01	+/- 7.98	3.551e-01	+/- 7.92
83	6.332e-01	+/- 1.40	4.815e-01	+/- 1.40	2.951e-01	+/- 0.50	3.088e-01	+/- 2.00	4.788e-01	+/- 6.00
84	1.083e+00	+/- 2.80	7.634e-01	+/- 2.00	4.745e-01	+/- 1.00	4.888e-01	+/- 2.00	8.104e-01	+/- 8.00
85	9.764e-01	+/- 1.40	9.648e-01	+/- 2.00	5.732e-01	+/- 0.50	6.004e-01	+/- 1.00	9.924e-01	+/- 4.00
86	1.513e+00	+/- 2.80	1.307e+00	+/- 2.00	7.591e-01	+/- 1.00	7.762e-01	+/- 1.40	1.148e+00	+/- 7.99
87	1.666e+00	+/- 2.80	1.731e+00	+/- 2.00	9.925e-01	+/- 0.70	1.006e+00	+/- 2.00	1.336e+00	+/- 6.00
88	2.182e+00	+/- 2.00	2.196e+00	+/- 2.00	1.364e+00	+/- 1.40	1.312e+00	+/- 1.40	2.007e+00	+/- 8.00
89	2.895e+00	+/- 2.00	2.515e+00	+/- 4.00	1.708e+00	+/- 2.80	1.751e+00	+/- 2.00	2.084e+00	+/- 4.00
90	3.190e+00	+/- 2.80	3.334e+00	+/- 2.00	2.109e+00	+/- 2.00	2.038e+00	+/- 1.40	2.429e+00	+/- 8.00
91	3.750e+00	+/- 2.00	3.914e+00	+/- 2.00	2.503e+00	+/- 1.40	2.436e+00	+/- 1.00	2.114e+00	+/- 8.00
92	3.924e+00	+/- 2.80	4.478e+00	+/- 2.00	3.009e+00	+/- 2.00	2.981e+00	+/- 1.00	2.953e+00	+/- 8.00
93	4.481e+00	+/- 2.80	5.138e+00	+/- 2.00	3.896e+00	+/- 1.40	3.730e+00	+/- 1.00	3.253e+00	+/- 6.00
94	4.902e+00	+/- 8.00	5.126e+00	+/- 2.00	4.429e+00	+/- 2.00	4.206e+00	+/- 1.00	3.535e+00	+/- 8.00
95	4.947e+00	+/- 2.80	5.699e+00	+/- 2.00	4.894e+00	+/- 2.00	4.685e+00	+/- 1.00	3.837e+00	+/- 8.00
96	5.613e+00	+/- 11.00	5.541e+00	+/- 2.00	5.080e+00	+/- 2.00	4.803e+00	+/- 1.40	4.408e+00	+/- 7.99
97	5.290e+00	+/- 2.00	6.131e+00	+/- 2.00	5.396e+00	+/- 2.80	5.271e+00	+/- 0.70	4.475e+00	+/- 4.00
98	5.490e+00	+/- 11.00	6.124e+00	+/- 2.00	5.832e+00	+/- 2.00	5.631e+00	+/- 1.40	4.930e+00	+/- 8.00
99	5.670e+00	+/- 1.40	6.192e+00	+/- 2.80	6.156e+00	+/- 2.00	6.005e+00	+/- 2.00	4.127e+00	+/- 6.00
100	5.035e+00	+/- 8.00	6.559e+00	+/- 2.00	6.810e+00	+/- 4.00	6.551e+00	+/- 1.00	5.185e+00	+/- 8.00
101	5.655e+00	+/- 2.80	6.179e+00	+/- 2.00	5.899e+00	+/- 1.40	6.541e+00	+/- 1.40	5.066e+00	+/- 8.00
102	4.614e+00	+/- 8.00	5.884e+00	+/- 2.00	5.969e+00	+/- 2.00	6.650e+00	+/- 1.40	5.552e+00	+/- 8.00

Table 3-1 Cont'd

Mass	U238(he)	Uncertainty	Np237(f)	Uncertainty	Pu239(t)	Uncertainty	Pu239(f)	Uncertainty	Pu239(he)	Uncertainty
103	4.635e+00	+/- 2.00	5.584e+00	+/- 2.80	6.950e+00	+/- 2.00	6.835e+00	+/- 1.40	5.235e+00	+/- 6.00
104	3.598e+00	+/- 6.00	4.209e+00	+/- 2.00	5.914e+00	+/- 2.00	6.524e+00	+/- 1.40	5.517e+00	+/- 8.00
105	3.234e+00	+/- 2.00	3.179e+00	+/- 4.00	5.362e+00	+/- 6.00	5.405e+00	+/- 4.00	4.238e+00	+/- 6.00
106	2.439e+00	+/- 4.00	2.240e+00	+/- 11.00	4.282e+00	+/- 2.80	4.354e+00	+/- 1.40	3.582e+00	+/- 6.00
107	1.729e+00	+/- 6.00	1.694e+00	+/- 11.00	3.362e+00	+/- 11.00	3.054e+00	+/- 8.00	2.901e+00	+/- 8.00
108	1.235e+00	+/- 11.00	9.537e-01	+/- 16.00	2.173e+00	+/- 16.00	1.911e+00	+/- 11.00	2.431e+00	+/- 8.00
109	1.227e+00	+/- 6.00	4.462e-01	+/- 11.00	1.876e+00	+/- 8.00	1.915e+00	+/- 6.00	2.481e+00	+/- 4.00
110	1.037e+00	+/- 11.00	2.306e-01	+/- 16.00	5.989e-01	+/- 23.00	6.199e-01	+/- 11.00	1.768e+00	+/- 8.00
111	1.114e+00	+/- 2.80	9.607e-02	+/- 4.00	3.037e-01	+/- 2.80	3.556e-01	+/- 2.00	1.510e+00	+/- 6.00
112	1.014e+00	+/- 4.00	7.265e-02	+/- 6.00	1.333e-01	+/- 2.80	1.924e-01	+/- 2.80	1.414e+00	+/- 6.00
113	9.466e-01	+/- 6.00	5.173e-02	+/- 6.00	6.517e-02	+/- 4.00	1.263e-01	+/- 2.00	1.313e+00	+/- 8.00
114	7.257e-01	+/- 11.00	5.128e-02	+/- 8.00	6.061e-02	+/- 4.00	9.313e-02	+/- 2.00	1.274e+00	+/- 8.00
115	8.391e-01	+/- 4.00	4.891e-02	+/- 8.00	3.573e-02	+/- 4.00	7.170e-02	+/- 6.00	9.749e-01	+/- 6.00
116	6.819e-01	+/- 11.00	4.818e-02	+/- 8.00	4.950e-02	+/- 8.00	5.972e-02	+/- 6.00	1.173e+00	+/- 7.99
117	7.352e-01	+/- 8.00	4.343e-02	+/- 8.00	5.633e-02	+/- 8.00	7.877e-02	+/- 11.00	1.167e+00	+/- 8.00
118	8.324e-01	+/- 11.00	5.532e-02	+/- 8.00	3.642e-02	+/- 11.00	6.274e-02	+/- 11.00	1.287e+00	+/- 8.00
119	7.349e-01	+/- 11.00	5.569e-02	+/- 8.00	3.908e-02	+/- 16.00	6.321e-02	+/- 11.00	1.261e+00	+/- 8.00
120	8.610e-01	+/- 11.00	5.541e-02	+/- 8.00	3.657e-02	+/- 16.00	6.164e-02	+/- 11.00	1.257e+00	+/- 8.00
121	8.310e-01	+/- 4.00	5.469e-02	+/- 6.00	3.831e-02	+/- 8.00	6.849e-02	+/- 11.00	1.474e+00	+/- 6.00
122	8.633e-01	+/- 11.00	6.089e-02	+/- 8.00	5.017e-02	+/- 16.00	7.587e-02	+/- 11.00	1.470e+00	+/- 7.99
123	9.360e-01	+/- 11.00	6.720e-02	+/- 8.00	4.372e-02	+/- 23.00	8.581e-02	+/- 16.00	1.742e+00	+/- 8.00
124	1.051e+00	+/- 11.00	7.504e-02	+/- 8.00	8.781e-02	+/- 15.98	1.329e-01	+/- 15.98	2.026e+00	+/- 7.84
125	1.229e+00	+/- 6.00	1.318e-01	+/- 4.00	1.110e-01	+/- 8.00	1.484e-01	+/- 8.00	2.019e+00	+/- 6.00
126	1.645e+00	+/- 16.00	1.655e-01	+/- 16.00	2.708e-01	+/- 11.00	3.125e-01	+/- 8.00	2.083e+00	+/- 8.00
127	1.502e+00	+/- 6.00	3.586e-01	+/- 8.00	4.893e-01	+/- 11.00	5.533e-01	+/- 8.00	2.287e+00	+/- 8.00
128	1.678e+00	+/- 8.00	6.786e-01	+/- 16.00	7.478e-01	+/- 6.00	9.436e-01	+/- 6.00	2.737e+00	+/- 8.00
129	2.009e+00	+/- 8.00	1.466e+00	+/- 6.00	1.486e+00	+/- 11.00	1.626e+00	+/- 8.00	3.411e+00	+/- 8.00
130	3.197e+00	+/- 11.00	2.297e+00	+/- 11.00	2.329e+00	+/- 10.97	2.567e+00	+/- 7.99	4.473e+00	+/- 7.81
131	4.042e+00	+/- 2.00	3.697e+00	+/- 2.00	3.846e+00	+/- 0.70	3.869e+00	+/- 1.00	4.763e+00	+/- 6.00
132	4.853e+00	+/- 1.40	5.008e+00	+/- 1.40	5.393e+00	+/- 0.70	5.309e+00	+/- 1.00	5.314e+00	+/- 8.00
133	6.145e+00	+/- 2.00	6.639e+00	+/- 1.40	6.975e+00	+/- 0.70	6.890e+00	+/- 1.00	5.433e+00	+/- 8.00
134	6.506e+00	+/- 2.00	7.369e+00	+/- 1.40	7.621e+00	+/- 0.70	7.373e+00	+/- 1.00	5.679e+00	+/- 7.96
135	5.832e+00	+/- 1.40	7.549e+00	+/- 2.00	7.618e+00	+/- 1.40	7.449e+00	+/- 1.00	5.858e+00	+/- 8.00
136	5.706e+00	+/- 1.99	6.870e+00	+/- 1.99	6.710e+00	+/- 2.77	7.032e+00	+/- 1.37	6.579e+00	+/- 7.12
137	4.930e+00	+/- 2.00	6.267e+00	+/- 2.00	6.698e+00	+/- 0.50	6.479e+00	+/- 0.50	4.531e+00	+/- 6.00
138	4.688e+00	+/- 2.00	6.203e+00	+/- 2.00	6.057e+00	+/- 1.40	6.093e+00	+/- 1.00	4.177e+00	+/- 8.00
139	5.086e+00	+/- 2.00	5.651e+00	+/- 2.80	5.624e+00	+/- 4.00	5.596e+00	+/- 2.00	4.050e+00	+/- 8.00
140	4.621e+00	+/- 1.40	5.489e+00	+/- 1.40	5.552e+00	+/- 1.00	5.326e+00	+/- 1.00	3.831e+00	+/- 4.00
141	4.389e+00	+/- 2.80	5.439e+00	+/- 4.00	5.257e+00	+/- 2.80	5.238e+00	+/- 2.80	3.386e+00	+/- 8.00
142	4.139e+00	+/- 4.00	4.900e+00	+/- 2.00	4.984e+00	+/- 1.00	4.774e+00	+/- 1.00	3.033e+00	+/- 8.00
143	3.917e+00	+/- 2.80	4.703e+00	+/- 2.00	4.428e+00	+/- 0.70	4.295e+00	+/- 0.70	2.601e+00	+/- 6.00
144	3.645e+00	+/- 4.00	4.198e+00	+/- 2.00	3.738e+00	+/- 0.50	3.622e+00	+/- 2.80	2.703e+00	+/- 4.00
145	3.005e+00	+/- 4.00	3.482e+00	+/- 2.00	2.992e+00	+/- 0.50	2.965e+00	+/- 0.70	2.127e+00	+/- 8.00
146	2.167e+00	+/- 8.00	2.798e+00	+/- 2.00	2.462e+00	+/- 0.50	2.436e+00	+/- 0.70	1.757e+00	+/- 8.00
147	2.097e+00	+/- 2.00	2.211e+00	+/- 2.00	2.043e+00	+/- 1.40	1.978e+00	+/- 1.00	1.776e+00	+/- 4.00
148	1.746e+00	+/- 11.00	1.729e+00	+/- 2.00	1.635e+00	+/- 0.70	1.637e+00	+/- 0.50	1.305e+00	+/- 8.00
149	1.425e+00	+/- 6.00	1.275e+00	+/- 2.00	1.239e+00	+/- 1.40	1.239e+00	+/- 1.00	1.063e+00	+/- 8.00
150	1.099e+00	+/- 16.00	9.850e-01	+/- 2.00	9.663e-01	+/- 0.50	9.843e-01	+/- 0.70	9.740e-01	+/- 7.90
151	8.017e-01	+/- 6.00	7.138e-01	+/- 2.00	7.721e-01	+/- 1.40	7.770e-01	+/- 1.40	7.345e-01	+/- 8.00

Table 3-1 Cont'd

Mass	U238(he)	Uncertainty	Np237(f)	Uncertainty	Pu239(t)	Uncertainty	Pu239(f)	Uncertainty	Pu239(he)	Uncertainty
152	5.888e-01	+/- 16.00	4.563e-01	+/- 2.00	5.852e-01	+/- 1.40	6.061e-01	+/- 4.00	5.536e-01	+/- 8.00
153	3.918e-01	+/- 6.00	3.594e-01	+/- 4.00	3.637e-01	+/- 6.00	4.344e-01	+/- 4.00	4.549e-01	+/- 8.00
154	2.565e-01	+/- 20.26	1.853e-01	+/- 35.26	2.717e-01	+/- 31.60	2.755e-01	+/- 32.06	3.299e-01	+/- 19.01
155	1.579e-01	+/- 16.00	1.192e-01	+/- 8.00	1.655e-01	+/- 11.00	2.260e-01	+/- 11.00	2.318e-01	+/- 8.00
156	1.080e-01	+/- 4.00	9.992e-02	+/- 6.00	1.184e-01	+/- 2.80	1.475e-01	+/- 4.00	2.105e-01	+/- 6.00
157	8.379e-02	+/- 16.00	3.330e-02	+/- 8.00	7.410e-02	+/- 6.00	1.128e-01	+/- 8.00	1.115e-01	+/- 8.00
158	4.333e-02	+/- 16.00	1.320e-02	+/- 8.00	4.074e-02	+/- 23.00	7.304e-02	+/- 16.00	7.488e-02	+/- 8.00
159	2.634e-02	+/- 11.00	6.709e-03	+/- 8.00	2.059e-02	+/- 6.00	4.176e-02	+/- 11.00	5.188e-02	+/- 8.00
160	1.595e-02	+/- 15.98	2.592e-03	+/- 8.00	9.723e-03	+/- 31.96	2.605e-02	+/- 15.98	3.802e-02	+/- 7.97
161	8.489e-03	+/- 4.00	8.050e-04	+/- 8.00	4.846e-03	+/- 6.00	8.924e-03	+/- 4.00	1.823e-02	+/- 6.00
162	6.039e-03	+/- 16.00	3.130e-04	+/- 8.00	2.396e-03	+/- 32.00	7.104e-03	+/- 23.00	9.276e-03	+/- 8.00
163	3.452e-03	+/- 16.00	1.340e-04	+/- 8.00	9.703e-04	+/- 32.00	3.777e-03	+/- 45.00	3.275e-03	+/- 8.00
164	2.026e-03	+/- 16.00	5.810e-05	+/- 8.00	3.661e-04	+/- 32.00	2.379e-03	+/- 45.00	1.875e-03	+/- 8.00
165	1.116e-03	+/- 16.00	1.960e-05	+/- 8.00	1.390e-04	+/- 23.00	1.100e-03	+/- 32.00	7.560e-04	+/- 8.00
166	6.341e-04	+/- 8.00	1.160e-05	+/- 8.00	6.822e-05	+/- 16.00	7.642e-04	+/- 32.00	5.180e-04	+/- 8.00
167	3.751e-04	+/- 16.00	1.610e-06	+/- 8.00	1.981e-05	+/- 32.00	3.371e-04	+/- 32.00	2.810e-04	+/- 8.00
168	2.030e-04	+/- 16.00	4.120e-07	+/- 8.00	5.542e-06	+/- 32.00	9.663e-05	+/- 32.00	1.410e-04	+/- 8.00
169	1.300e-04	+/- 8.00	1.340e-07	+/- 8.00	1.881e-06	+/- 32.00	3.261e-05	+/- 32.00	6.580e-05	+/- 8.00
170	6.051e-05	+/- 16.00	4.221e-07	+/- 8.00	3.934e-07	+/- 44.97	9.748e-06	+/- 31.98	4.761e-05	+/- 7.98
171	3.361e-05	+/- 16.00	1.250e-07	+/- 8.00	1.891e-07	+/- 32.00	3.251e-06	+/- 32.00	3.760e-05	+/- 8.00
172	2.160e-05	+/- 16.00	4.840e-07	+/- 8.00	5.562e-08	+/- 32.00	9.663e-07	+/- 32.00	1.880e-05	+/- 8.00

Mass	Pu240(f)	Uncertainty	Pu241(t)	Uncertainty	Pu241(f)	Uncertainty	Pu242(f)	Uncertainty	Cf252(s)	Uncertainty
66	5.411e-06	+/- 23.00	1.350e-07	+/- 23.00	1.840e-07	+/- 32.00	1.890e-07	+/- 32.00	2.318e-09	+/- 32.00
67	8.111e-06	+/- 23.00	2.511e-07	+/- 23.00	1.290e-06	+/- 32.00	3.780e-07	+/- 32.00	1.159e-08	+/- 32.00
68	1.890e-05	+/- 23.00	5.802e-07	+/- 23.00	2.770e-06	+/- 32.00	6.620e-07	+/- 32.00	3.487e-08	+/- 32.00
69	2.970e-05	+/- 23.00	1.260e-06	+/- 23.00	1.010e-05	+/- 32.00	1.420e-06	+/- 32.00	1.159e-07	+/- 32.00
70	1.330e-05	+/- 32.00	4.541e-06	+/- 23.00	3.230e-05	+/- 32.00	2.840e-06	+/- 32.00	4.456e-07	+/- 23.00
71	3.790e-05	+/- 32.00	6.762e-06	+/- 23.00	8.300e-05	+/- 32.00	4.730e-06	+/- 32.00	1.389e-06	+/- 32.00
72	1.120e-04	+/- 8.00	2.511e-05	+/- 23.00	1.480e-04	+/- 32.00	1.040e-05	+/- 32.00	4.646e-06	+/- 32.00
73	3.340e-04	+/- 23.00	5.852e-05	+/- 16.00	4.720e-04	+/- 23.00	1.730e-05	+/- 23.00	1.109e-05	+/- 23.00
74	8.721e-04	+/- 32.00	9.663e-05	+/- 23.00	1.106e-03	+/- 32.00	4.730e-05	+/- 32.00	3.487e-05	+/- 32.00
75	5.391e-04	+/- 16.00	2.901e-04	+/- 23.00	4.610e-04	+/- 16.00	9.460e-05	+/- 32.00	1.159e-04	+/- 32.00
76	1.468e-03	+/- 16.00	9.663e-04	+/- 23.00	8.070e-04	+/- 16.00	2.840e-04	+/- 32.00	2.898e-04	+/- 32.00
77	1.310e-02	+/- 16.00	1.933e-03	+/- 23.00	9.611e-03	+/- 16.00	9.620e-03	+/- 23.00	8.902e-04	+/- 23.00
78	2.709e-02	+/- 16.00	9.470e-03	+/- 6.00	1.826e-02	+/- 16.00	1.798e-02	+/- 32.00	2.081e-03	+/- 11.00
79	5.075e-02	+/- 11.00	1.525e-02	+/- 11.00	3.597e-02	+/- 11.00	3.560e-02	+/- 23.00	6.678e-03	+/- 23.00
80	8.485e-02	+/- 16.00	2.964e-02	+/- 16.00	6.439e-02	+/- 16.00	6.340e-02	+/- 32.00	1.566e-02	+/- 16.00
81	1.412e-01	+/- 16.00	6.299e-02	+/- 16.00	9.541e-02	+/- 11.00	1.041e-01	+/- 32.00	3.046e-02	+/- 16.00
82	2.007e-01	+/- 15.98	1.319e-01	+/- 15.99	1.438e-01	+/- 8.00	1.609e-01	+/- 21.99	4.977e-02	+/- 15.97
83	3.031e-01	+/- 11.00	2.127e-01	+/- 2.80	1.980e-01	+/- 1.00	2.406e-01	+/- 33.00	5.989e-02	+/- 8.00
84	4.273e-01	+/- 11.00	3.715e-01	+/- 2.80	3.480e-01	+/- 1.00	3.515e-01	+/- 32.00	1.031e-01	+/- 16.00
85	5.721e-01	+/- 11.00	3.986e-01	+/- 2.00	3.968e-01	+/- 1.00	4.140e-01	+/- 23.00	1.668e-01	+/- 16.00
86	7.560e-01	+/- 11.00	6.396e-01	+/- 4.00	5.845e-01	+/- 1.00	6.531e-01	+/- 23.00	1.830e-01	+/- 11.00
87	9.911e-01	+/- 16.00	7.864e-01	+/- 2.80	7.516e-01	+/- 1.00	8.547e-01	+/- 16.00	2.720e-01	+/- 11.00
88	1.235e+00	+/- 11.00	1.021e+00	+/- 2.80	9.639e-01	+/- 1.00	1.093e+00	+/- 23.00	3.661e-01	+/- 16.00
89	1.474e+00	+/- 8.00	1.226e+00	+/- 4.00	1.250e+00	+/- 6.00	1.345e+00	+/- 16.00	3.891e-01	+/- 6.00
90	1.883e+00	+/- 6.00	1.576e+00	+/- 2.80	1.531e+00	+/- 1.00	1.728e+00	+/- 11.00	6.707e-01	+/- 16.00
91	2.269e+00	+/- 6.00	1.892e+00	+/- 2.80	1.897e+00	+/- 1.40	2.064e+00	+/- 16.00	6.742e-01	+/- 4.00
92	2.880e+00	+/- 11.00	2.373e+00	+/- 4.00	2.337e+00	+/- 2.00	2.504e+00	+/- 16.00	7.158e-01	+/- 6.00
93	3.778e+00	+/- 4.00	3.090e+00	+/- 4.00	2.971e+00	+/- 1.40	3.130e+00	+/- 11.00	9.426e-01	+/- 8.00
94	4.118e+00	+/- 11.00	3.544e+00	+/- 4.00	3.411e+00	+/- 1.40	3.653e+00	+/- 16.00	1.140e+00	+/- 11.00

Table 3-1 Cont'd

Mass	Pu240(f)	Uncertainty	Pu241(t)	Uncertainty	Pu241(f)	Uncertainty	Pu242(f)	Uncertainty	Cf252(s)	Uncertainty
95	4.396e+00	+/- 6.00	4.074e+00	+/- 2.80	3.919e+00	+/- 1.00	4.022e+00	+/- 16.00	1.320e+00	+/- 2.80
96	4.929e+00	+/- 11.00	4.621e+00	+/- 3.99	4.380e+00	+/- 2.00	4.490e+00	+/- 16.00	1.604e+00	+/- 15.99
97	5.147e+00	+/- 6.00	4.856e+00	+/- 2.80	4.653e+00	+/- 0.70	4.836e+00	+/- 11.00	1.715e+00	+/- 2.80
98	5.475e+00	+/- 11.00	5.141e+00	+/- 8.00	4.962e+00	+/- 1.00	5.181e+00	+/- 11.00	2.240e+00	+/- 11.00
99	5.996e+00	+/- 2.80	6.270e+00	+/- 2.80	5.536e+00	+/- 4.00	5.386e+00	+/- 8.00	2.657e+00	+/- 2.80
100	6.045e+00	+/- 11.00	6.128e+00	+/- 8.00	6.265e+00	+/- 1.00	5.621e+00	+/- 11.00	3.312e+00	+/- 11.00
101	6.053e+00	+/- 11.00	6.006e+00	+/- 8.00	6.330e+00	+/- 1.00	5.886e+00	+/- 11.00	3.990e+00	+/- 6.00
102	6.086e+00	+/- 11.00	6.391e+00	+/- 8.00	6.697e+00	+/- 1.00	5.832e+00	+/- 16.00	4.089e+00	+/- 4.00
103	6.713e+00	+/- 4.00	6.151e+00	+/- 4.00	6.426e+00	+/- 4.00	5.882e+00	+/- 11.00	5.638e+00	+/- 2.80
104	5.903e+00	+/- 11.00	6.876e+00	+/- 8.00	7.129e+00	+/- 1.00	5.814e+00	+/- 16.00	6.246e+00	+/- 11.00
105	5.549e+00	+/- 6.00	6.146e+00	+/- 6.00	6.418e+00	+/- 6.00	5.673e+00	+/- 11.00	6.320e+00	+/- 2.80
106	4.969e+00	+/- 6.00	6.226e+00	+/- 6.00	6.085e+00	+/- 1.40	5.313e+00	+/- 16.00	6.942e+00	+/- 11.00
107	4.153e+00	+/- 11.00	5.211e+00	+/- 11.00	4.871e+00	+/- 8.00	5.023e+00	+/- 11.00	6.516e+00	+/- 8.00
108	3.036e+00	+/- 11.00	3.938e+00	+/- 11.00	3.492e+00	+/- 11.00	4.231e+00	+/- 16.00	6.101e+00	+/- 8.00
109	1.792e+00	+/- 6.00	2.254e+00	+/- 6.00	2.524e+00	+/- 8.00	3.248e+00	+/- 8.00	5.952e+00	+/- 6.00
110	1.177e+00	+/- 11.00	1.172e+00	+/- 16.00	1.417e+00	+/- 8.00	2.199e+00	+/- 16.00	5.918e+00	+/- 11.00
111	5.034e-01	+/- 6.00	5.710e-01	+/- 4.00	7.478e-01	+/- 16.00	1.285e+00	+/- 16.00	5.194e+00	+/- 2.80
112	2.392e-01	+/- 6.00	2.311e-01	+/- 4.00	3.607e-01	+/- 11.00	6.445e-01	+/- 23.00	4.162e+00	+/- 2.80
113	1.597e-01	+/- 8.00	1.459e-01	+/- 6.00	2.114e-01	+/- 16.00	3.078e-01	+/- 23.00	3.479e+00	+/- 4.00
114	9.865e-02	+/- 16.00	7.249e-02	+/- 23.00	1.167e-01	+/- 11.00	1.514e-01	+/- 32.00	3.451e+00	+/- 11.00
115	6.638e-02	+/- 6.00	4.224e-02	+/- 23.00	1.023e-01	+/- 23.00	1.024e-01	+/- 32.00	2.504e+00	+/- 6.00
116	7.930e-02	+/- 16.00	2.859e-02	+/- 32.00	9.612e-02	+/- 16.00	9.463e-02	+/- 32.00	1.956e+00	+/- 11.00
117	7.862e-02	+/- 11.00	2.539e-02	+/- 16.00	8.753e-02	+/- 11.00	9.731e-02	+/- 16.00	1.109e+00	+/- 8.00
118	7.391e-02	+/- 16.00	2.383e-02	+/- 32.00	8.265e-02	+/- 16.00	8.658e-02	+/- 23.00	8.957e-01	+/- 16.00
119	7.401e-02	+/- 11.00	2.383e-02	+/- 32.00	8.170e-02	+/- 16.00	8.658e-02	+/- 23.00	3.305e-01	+/- 16.00
120	7.820e-02	+/- 16.00	2.394e-02	+/- 23.00	8.287e-02	+/- 16.00	8.177e-02	+/- 23.00	2.910e-01	+/- 16.00
121	7.852e-02	+/- 16.00	2.353e-02	+/- 32.00	8.774e-02	+/- 16.00	9.198e-02	+/- 32.00	1.116e-01	+/- 6.00
122	8.773e-02	+/- 16.00	2.352e-02	+/- 32.00	9.067e-02	+/- 16.00	9.401e-02	+/- 32.00	6.966e-02	+/- 32.00
123	1.012e-01	+/- 16.00	2.490e-02	+/- 23.00	9.749e-02	+/- 16.00	9.849e-02	+/- 23.00	4.219e-02	+/- 11.00
124	1.154e-01	+/- 16.00	2.916e-02	+/- 32.00	1.072e-01	+/- 16.00	1.124e-01	+/- 32.00	2.322e-02	+/- 31.99
125	1.054e-01	+/- 11.00	4.242e-02	+/- 11.00	9.185e-02	+/- 8.00	6.672e-02	+/- 8.00	2.198e-02	+/- 8.00
126	2.812e-01	+/- 16.00	7.665e-02	+/- 23.00	1.898e-01	+/- 16.00	1.777e-01	+/- 23.00	2.573e-02	+/- 32.00
127	4.188e-01	+/- 6.00	2.294e-01	+/- 4.00	3.137e-01	+/- 11.00	3.044e-01	+/- 23.00	9.883e-02	+/- 8.00
128	6.683e-01	+/- 16.00	3.544e-01	+/- 23.00	5.927e-01	+/- 8.00	5.077e-01	+/- 23.00	2.022e-01	+/- 16.00
129	1.102e+00	+/- 11.00	7.572e-01	+/- 16.00	9.929e-01	+/- 8.00	8.487e-01	+/- 16.00	3.743e-01	+/- 11.00
130	1.993e+00	+/- 11.00	1.651e+00	+/- 16.00	1.695e+00	+/- 8.00	1.486e+00	+/- 16.00	7.028e-01	+/- 16.00
131	3.544e+00	+/- 4.00	2.843e+00	+/- 2.00	3.218e+00	+/- 4.00	3.185e+00	+/- 4.00	1.501e+00	+/- 6.00
132	4.807e+00	+/- 4.00	4.218e+00	+/- 2.00	4.641e+00	+/- 2.00	4.566e+00	+/- 6.00	1.976e+00	+/- 4.00
133	7.005e+00	+/- 4.00	6.770e+00	+/- 1.40	6.691e+00	+/- 0.70	6.593e+00	+/- 2.00	3.323e+00	+/- 8.00
134	7.027e+00	+/- 6.00	7.418e+00	+/- 2.00	7.717e+00	+/- 1.00	7.375e+00	+/- 2.00	3.078e+00	+/- 16.00
135	7.450e+00	+/- 4.00	7.302e+00	+/- 1.40	7.323e+00	+/- 0.70	7.165e+00	+/- 4.00	4.009e+00	+/- 2.80
136	6.809e+00	+/- 5.95	6.682e+00	+/- 2.79	6.825e+00	+/- 1.40	6.888e+00	+/- 4.00	3.999e+00	+/- 10.94
137	6.465e+00	+/- 4.00	6.865e+00	+/- 1.40	6.571e+00	+/- 0.70	6.387e+00	+/- 4.00	4.860e+00	+/- 2.80
138	6.541e+00	+/- 6.00	6.771e+00	+/- 2.80	6.426e+00	+/- 1.00	6.329e+00	+/- 6.00	5.222e+00	+/- 8.00
139	5.877e+00	+/- 11.00	5.947e+00	+/- 6.00	6.173e+00	+/- 2.80	6.026e+00	+/- 6.00	5.943e+00	+/- 4.00
140	5.108e+00	+/- 4.00	6.170e+00	+/- 2.00	5.363e+00	+/- 1.40	4.995e+00	+/- 6.00	6.086e+00	+/- 2.00
141	4.765e+00	+/- 6.00	4.964e+00	+/- 2.00	4.986e+00	+/- 6.00	5.106e+00	+/- 11.00	6.173e+00	+/- 2.80

Table 3-1 Cont'd

Mass	Pu240(f)	Uncertainty	Pu241(t)	Uncertainty	Pu241(f)	Uncertainty	Pu242(f)	Uncertainty	Cf252(s)	Uncertainty
142	4.964e+00	+/- 6.00	5.032e+00	+/- 2.00	4.661e+00	+/- 1.40	4.599e+00	+/- 6.00	6.030e+00	+/- 6.00
143	4.720e+00	+/- 4.00	4.704e+00	+/- 1.40	4.561e+00	+/- 0.70	4.678e+00	+/- 2.00	6.430e+00	+/- 2.00
144	4.067e+00	+/- 4.00	4.334e+00	+/- 1.40	4.188e+00	+/- 1.00	4.259e+00	+/- 4.00	6.038e+00	+/- 4.00
145	3.277e+00	+/- 4.00	3.344e+00	+/- 1.40	3.245e+00	+/- 0.70	3.467e+00	+/- 2.00	5.429e+00	+/- 6.00
146	2.736e+00	+/- 4.00	2.862e+00	+/- 1.40	2.737e+00	+/- 0.70	3.002e+00	+/- 2.00	4.793e+00	+/- 11.00
147	2.233e+00	+/- 4.00	2.368e+00	+/- 2.00	2.235e+00	+/- 1.00	2.419e+00	+/- 6.00	4.453e+00	+/- 2.80
148	1.915e+00	+/- 4.00	1.990e+00	+/- 1.40	1.906e+00	+/- 0.50	2.063e+00	+/- 2.00	4.189e+00	+/- 11.00
149	1.369e+00	+/- 6.00	1.524e+00	+/- 2.00	1.451e+00	+/- 0.70	1.615e+00	+/- 2.00	2.950e+00	+/- 4.00
150	1.140e+00	+/- 4.00	1.248e+00	+/- 2.00	1.193e+00	+/- 0.70	1.360e+00	+/- 2.80	2.408e+00	+/- 15.90
151	8.432e-01	+/- 6.00	9.369e-01	+/- 2.00	9.121e-01	+/- 1.00	1.025e+00	+/- 4.00	1.861e+00	+/- 4.00
152	6.576e-01	+/- 6.00	7.466e-01	+/- 2.00	7.083e-01	+/- 1.00	8.348e-01	+/- 2.80	1.491e+00	+/- 16.00
153	5.797e-01	+/- 6.00	5.482e-01	+/- 4.00	5.382e-01	+/- 4.00	6.554e-01	+/- 6.00	1.294e+00	+/- 4.00
154	3.171e-01	+/- 16.04	3.961e-01	+/- 12.96	3.708e-01	+/- 12.40	4.600e-01	+/- 6.97	1.046e+00	+/- 7.66
155	2.476e-01	+/- 6.00	2.417e-01	+/- 8.00	3.217e-01	+/- 16.00	3.678e-01	+/- 32.00	8.749e-01	+/- 16.00
156	1.754e-01	+/- 6.00	1.761e-01	+/- 2.80	2.340e-01	+/- 16.00	2.657e-01	+/- 32.00	6.747e-01	+/- 4.00
157	1.304e-01	+/- 8.00	1.372e-01	+/- 4.00	1.560e-01	+/- 16.00	1.839e-01	+/- 32.00	5.309e-01	+/- 6.00
158	8.503e-02	+/- 16.00	8.625e-02	+/- 23.00	1.072e-01	+/- 16.00	1.226e-01	+/- 32.00	4.629e-01	+/- 16.00
159	3.651e-02	+/- 6.00	4.867e-02	+/- 4.00	6.239e-02	+/- 16.00	7.357e-02	+/- 32.00	3.523e-01	+/- 6.00
160	3.046e-02	+/- 16.00	1.917e-02	+/- 23.00	3.802e-02	+/- 16.00	4.598e-02	+/- 32.00	2.691e-01	+/- 15.99
161	1.190e-02	+/- 8.00	8.572e-03	+/- 4.00	2.242e-02	+/- 16.00	2.657e-02	+/- 32.00	1.995e-01	+/- 4.00
162	6.745e-03	+/- 23.00	2.492e-03	+/- 23.00	1.045e-02	+/- 32.00	1.431e-02	+/- 32.00	1.734e-01	+/- 16.00
163	2.283e-03	+/- 32.00	8.993e-04	+/- 23.00	5.890e-03	+/- 32.00	6.130e-03	+/- 32.00	1.446e-01	+/- 16.00
164	1.141e-03	+/- 32.00	2.881e-04	+/- 23.00	3.040e-03	+/- 32.00	3.065e-03	+/- 32.00	9.455e-02	+/- 16.00
165	5.651e-04	+/- 23.00	6.032e-05	+/- 23.00	5.700e-04	+/- 32.00	1.022e-03	+/- 32.00	4.339e-02	+/- 16.00
166	5.181e-04	+/- 23.00	1.250e-05	+/- 23.00	1.140e-04	+/- 32.00	1.740e-04	+/- 32.00	1.196e-02	+/- 16.00
167	2.860e-04	+/- 23.00	5.271e-06	+/- 23.00	5.420e-05	+/- 32.00	9.710e-05	+/- 32.00	3.254e-03	+/- 32.00
168	1.280e-04	+/- 23.00	1.530e-06	+/- 23.00	1.520e-05	+/- 32.00	4.600e-05	+/- 32.00	1.282e-03	+/- 31.99
169	9.231e-05	+/- 16.00	2.871e-07	+/- 23.00	5.320e-06	+/- 32.00	2.550e-05	+/- 32.00	5.995e-04	+/- 32.00
170	3.211e-05	+/- 23.00	9.583e-08	+/- 23.00	1.520e-06	+/- 32.00	1.530e-05	+/- 32.00	3.767e-04	+/- 32.00
171	1.780e-05	+/- 23.00	2.871e-07	+/- 23.00	5.320e-06	+/- 32.00	2.550e-05	+/- 32.00	5.995e-04	+/- 32.00
172	1.040e-05	+/- 23.00	9.583e-08	+/- 23.00	1.520e-06	+/- 32.00	1.530e-05	+/- 32.00	3.767e-04	+/- 32.00

Section 4

PROCESSED CROSS SECTIONS

INTRODUCTION

Of the 877 fission products and 60 actinides, 196 fission products and 41 actinides have neutron cross sections for total, elastic, and radiative capture reactions from 10^{-5} eV to 20 MeV in ENDF/B-V. Total inelastic evaluations are included for nearly all of these 237 nuclides, and additional neutron reaction cross-section evaluations [e.g., (n,2n), (n,p), (n,α), etc.] are present for many of them. Thermal (0.0253 eV), resonance integral (above 0.5 eV and also above 0.625 eV), and 154-group values have been produced in the processing of each cross section using the NJOY code (17). The multigroup library has been included as part of the TOAFEW-V code (15). This collapsing code and library is available for specific applications to any user. For convenience, we have included reference sets of collapsed few-group cross sections in this section for all (n,γ) and reaction cross sections included in ENDF/B-V. These reference data are all based on the processed multigroup files for the case of infinite dilution and Doppler broadened to 900 K. (The TOAFEW multigroup files contain data for 300, 900, and 1200 K at infinite dilution ($\sigma_0 = 10^{10}$b) and, for actinides, at two or more additional dilutions for resonance self-shielding using the Bondarenko formulation.)

The processed cross sections in this section include only those in the ENDF/B-V actinide and fission-product files (including those actinides and fission products from the general purpose files). Recently we have produced (n,2n) cross sections for all 237 nuclides because of their potential importance. These are listed in Appendix D for energies above 4.274 MeV in the first 9 groups of the 154-group structure.

As already noted, we did correct errors discovered in the ENDF/B-V files before the final processing for 11 fission products. The (n,γ) cross sections (MF=3 MT=102) of $^{105}_{45}$Rh (MAT=9355) at 0.5 eV was changed from 360 to 3600 b as required for agreement with other values in the 1/v behavior. The interpolation scheme (INT) used in describing the 1/v behavior of 10 fission-product nuclides has been changed from linear-linear (INT=2) to log-log (INT=5); the nuclides affected are $^{74}_{34}$Se (MAT=9089), $^{84}_{38}$Sr (MAT=9179), $^{96}_{44}$Ru (MAT=9325), $^{98}_{44}$Ru (MAT=9327), $^{102}_{46}$Pd (MAT=9379), $^{106}_{48}$Cd (MAT=9440), $^{112}_{50}$Sn (MAT=9513), $^{114}_{50}$Sn (MAT=9516), $^{120}_{52}$Te (MAT=9576), and $^{144}_{62}$Sm (MAT=9803). These corrections have been made with the help and concurrence of the pertinent data evaluators, although they do not yet reflect official ENDF/B changes.

A. Thermal Reactor Cross Sections

The neutron flux spectrum used in processing the multigroup cross sections and the subsequent collapse to four groups represents the broad neutron energy structure in typical mid-life pressurized water reactors. Table 4-1 lists a set of 115 log-log interpolation points and Fig. 4-1 is a plot of the spectra. The dips evident in the plot are due to ^{238}U resonances at 6.67, 20.9, 36.7, and 66.0 eV. No flux depressions for higher energy ^{238}U resonances are included, but perturbations due to ^{16}O resonances at 0.442-, 1.0-, and 1.3-MeV and the ^{16}O window at 2.35 MeV are clearly evident. The large spike between 12.57 and 15.57 MeV is a fusion peak that should not have any significant effect on cross sections in this report. This spectra was proposed for general Power Reactor Studies (PRS Spectra) in Ref. (22) where more detail on its generation is given. It is also summarized in more detail in Ref. (4), which also lists the 154 energy-group structure.

Table 4-1

PRS FLUX WEIGHTING FUNCTION[a]

Point	Energy, (eV)	Flux	point	Energy, (eV)	Flux	Point	Energy, (eV)	Flux
1	1.0000e-05	5.2500e-04	41	3.5900e+01	6.7872e-04	81	6.0000e+06	4.7153e-09
2	9.0000e-03	3.5500e-01	42	3.6700e+01	9.1595e-06	82	8.0000e+06	1.2276e-09
3	1.6000e-02	5.5200e-01	43	3.7400e+01	6.5453e-04	83	1.0000e+07	3.0953e-10
4	2.4000e-02	7.1200e-01	44	3.8700e+01	8.2618e-04	84	1.2570e+07	2.4619e-10
5	2.9000e-02	7.8500e-01	45	6.1200e+01	5.5873e-04	85	1.2600e+07	3.4731e-10
6	3.3000e-02	8.2900e-01	46	6.4900e+01	4.8243e-04	86	1.2700e+07	1.0357e-09
7	4.3000e-02	8.9800e-01	47	6.6000e+01	4.5797e-05	87	1.2800e+07	2.8436e-09
8	5.0000e-02	9.1800e-01	48	6.7100e+01	4.7226e-04	88	1.2900e+07	7.1910e-09
9	5.4000e-02	9.2100e-01	49	6.8200e+01	4.8362e-04	89	1.3000e+07	1.6776e-08
10	5.9000e-02	9.1800e-01	50	1.0100e+03	3.7829e-05	90	1.3100e+07	3.6122e-08
11	7.0000e-02	8.9200e-01	51	2.0000e+04	2.2257e-06	91	1.3200e+07	7.1864e-08
12	9.0000e-02	7.9900e-01	52	3.0700e+04	1.5571e-06	92	1.3300e+07	1.3222e-07
13	1.1200e-01	6.8600e-01	53	6.0700e+04	9.1595e-07	93	1.3400e+07	2.2511e-07
14	1.4000e-01	5.2000e-01	54	1.2000e+05	5.7934e-07	94	1.3500e+07	3.5512e-07
15	1.7000e-01	3.8300e-01	55	2.0100e+05	4.3645e-07	95	1.3600e+07	5.1946e-07
16	2.1000e-01	2.5200e-01	56	2.8300e+05	3.8309e-07	96	1.3700e+07	7.0478e-07
17	3.0000e-01	1.0800e-01	57	3.5600e+05	3.6926e-07	97	1.3800e+07	8.8825e-07
18	4.0000e-01	6.8700e-02	58	3.7700e+05	3.4027e-07	98	1.3900e+07	1.0408e-06
19	4.9000e-01	5.1000e-02	59	3.9900e+05	2.7387e-07	99	1.4070e+07	1.1540e-06
20	5.7000e-01	4.3700e-02	60	4.4200e+05	1.0075e-07	100	1.4200e+07	1.0870e-06
21	6.0000e-01	4.1300e-02	61	4.7400e+05	2.1754e-07	101	1.4300e+07	9.5757e-07
22	1.0000e+00	2.4914e-02	62	5.0200e+05	2.6333e-07	102	1.4400e+07	7.8704e-07
23	1.3518e+00	1.8502e-02	63	5.4000e+05	3.0501e-07	103	1.4500e+07	6.0403e-07
24	4.0100e+00	6.3200e-03	64	6.5000e+05	2.9493e-07	104	1.4600e+07	4.3317e-07
25	5.5047e+00	4.6164e-03	65	7.7000e+05	2.5005e-07	105	1.4700e+07	2.9041e-07
26	5.8842e+00	4.1950e-03	66	9.0000e+05	2.1479e-07	106	1.4800e+07	1.8213e-07
27	6.1350e+00	3.7279e-03	67	9.4100e+05	1.7861e-07	107	1.4900e+07	1.0699e-07
28	6.4490e+00	1.6524e-03	68	1.0000e+06	9.1595e-08	108	1.5000e+07	5.8832e-08
29	6.6700e+00	5.3125e-05	69	1.0500e+06	1.1518e-07	109	1.5100e+07	3.0354e-08
30	6.8940e+00	1.7632e-03	70	1.1200e+06	1.3648e-07	110	1.5200e+07	1.4687e-08
31	7.0100e+00	2.9219e-03	71	1.1900e+06	1.5479e-07	111	1.5300e+07	6.6688e-09
32	7.3080e+00	3.6042e-03	72	1.2100e+06	1.5022e-07	112	1.5400e+07	2.8450e-09
33	1.7530e+01	1.7156e-03	73	1.3100e+06	6.8696e-08	113	1.5500e+07	1.1406e-09
34	1.9860e+01	1.3858e-03	74	1.4000e+06	1.2182e-07	114	1.5676e+07	1.9780e-10
35	2.0370e+01	1.0973e-03	75	2.2200e+06	5.9033e-08	115	2.0000e+07	1.5477e-10
36	2.0900e+01	1.3739e-05	76	2.3500e+06	9.1595e-08			
37	2.1400e+01	1.0588e-03	77	2.6300e+06	3.9981e-08			
38	2.2500e+01	1.3565e-03	78	3.0000e+06	3.1142e-08			
39	3.4400e+01	8.1519e-04	79	4.0000e+06	1.7073e-08			
40	3.5600e+01	7.4897e-04	80	5.0000e+06	9.0679e-09			

[a]Flux values are given in units of neutrons/cm**2 sec. eV.

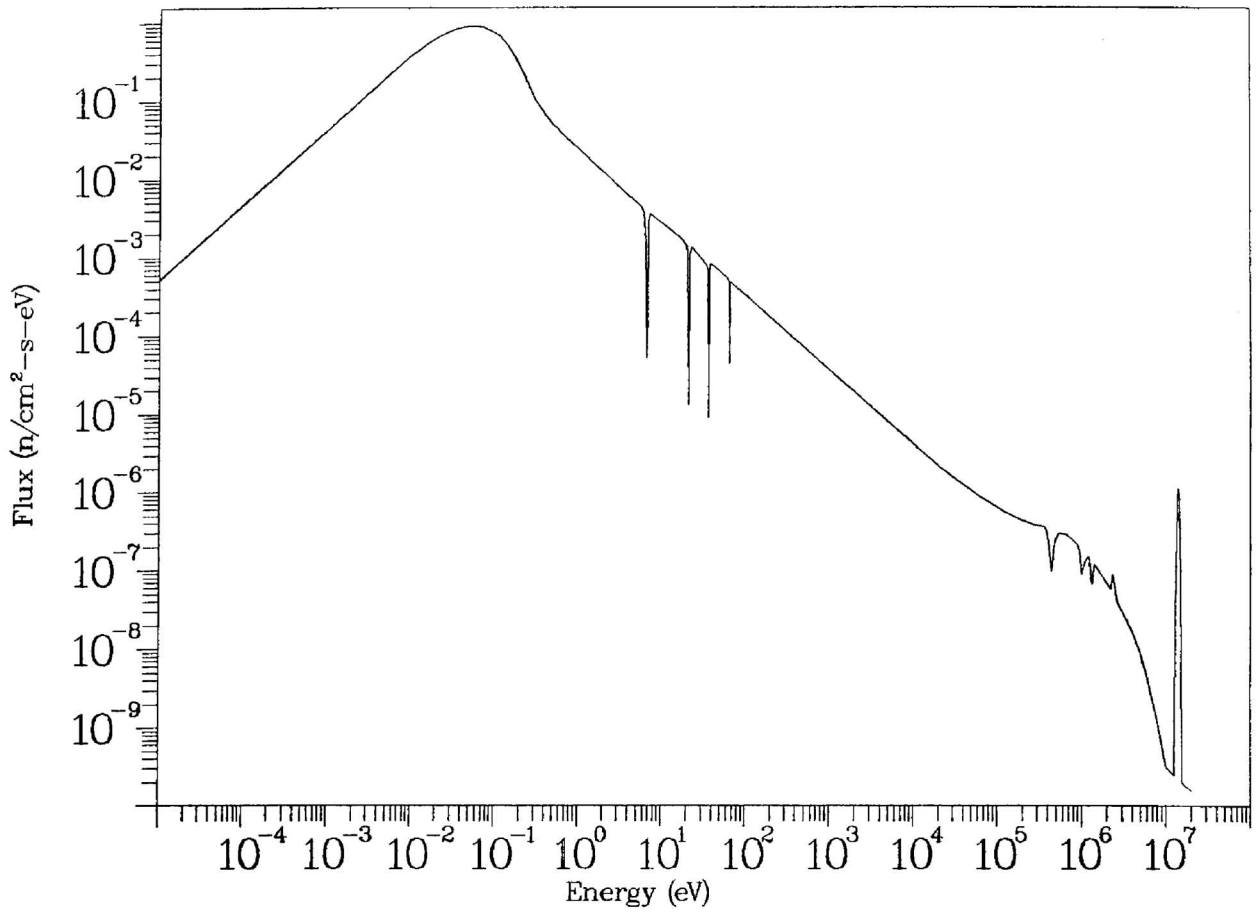


Fig. 4-1. PRS Flux Weighting Function.

The collapsed cross sections apply to the energy bounds in Table 4-2.

Table 4-2

FOUR-GROUP STRUCTURE

Group	Energy, eV
	1.00000×10^{7}
1	8.20850×10^{5}
2	5.53084×10^{3}
3	6.25060×10^{-1}
4	1.00000×10^{-5}

Table 4-3 lists the processed cross sections for these energy groups. It also lists the resonance integral from 0.500 eV, the cross section at 0.0253 eV as

obtained from the NJOY processing, and an "effective" thermal cross section. The effective thermal value is simply the ratio of each group-4 value to the value of a ($\bar{\sigma}_{1/v}$), a 1/v cross section equal to unity at 0.0253 eV averaged in the PRS flux over the group-4 energy range. Specifically, the value of $\bar{\sigma}_{1/v}$ in this spectrum is 0.554018. For cross sections that have a true 1/v energy dependence, the tabulated values of σ at 0.0253 eV and the effective thermal values would agree. For many general survey calculations, the use of the effective thermal cross section with the integral group-4 flux multiplied by $\bar{\sigma}_{1/v}$ is sufficiently accurate to obviate the averaging of the thermal cross section for minor changes in the thermal spectrum. An accurate evaluation of the thermal reaction rate is obtained by multipling the effective cross sections by the ratio of a $\bar{\sigma}_{1/v}$ in the user spectrum to the 0.554018 value. Some σ(0.0253 eV) cross sections, and particularly some resonance integrals, in Table 4-3 may differ slightly from values in Table 2-1; values for the fission products in Table 2-1 are those intended for the case of zero degrees at infinite dilution, whereas in Table 4-3, all values result from the NJOY processing at 900 K, infinite dilution. In addition, there may be very minor differences due to the interpolation method in NJOY.

Table 4-3

THERMAL REACTOR CROSS SECTIONS

Nuclide	MAT	MT	Reaction	Four-Group Cross Sections Gp 1	Gp 2	Gp 3	Gp 4	Thermal Values Effec.	.0253 eV	Resonance Integral
32Ge 72	9050	102	(n,gamma)	2.0993-2	5.4944-2	8.0426-2	5.4566-1	9.8491-1	9.8306-1	1.1218+0
			tot.absn.	2.0993-2	5.4944-2	8.0426-2	5.4566-1	9.8491-1	9.8306-1	1.1218+0
32Ge 73	9051	102	(n,gamma)	4.3831-2	1.7710-1	8.0584+0	8.3657+0	1.5100+1	1.5065+1	6.9625+1
			tot.absn.	4.3831-2	1.7710-1	8.0584+0	8.3657+0	1.5100+1	1.5065+1	6.9625+1
32Ge 74	9053	102	(n,gamma)	9.4867-3	3.2202-2	4.4052-2	2.1340-1	3.8519-1	3.8438-1	6.0371-1
			tot.absn.	9.4867-3	3.2202-2	4.4052-2	2.1340-1	3.8519-1	3.8438-1	6.0371-1
32Ge 76	9056	102	(n,gamma)	2.6674-3	9.1939-3	1.6356-1	7.9096-2	1.4277-1	1.4248-1	1.3435+0
			tot.absn.	2.6674-3	9.1939-3	1.6356-1	7.9096-2	1.4277-1	1.4248-1	1.3435+0
33As 75	9071	102	(n,gamma)	3.1746-2	2.4015-1	7.0809+0	2.3995+0	4.3311+0	4.3170+0	6.1497+1
			tot.absn.	3.1746-2	2.4015-1	7.0809+0	2.3995+0	4.3311+0	4.3170+0	6.1497+1
34Se 74	9089	102	(n,gamma)	2.0296-2	1.0337-1	5.9177+1	2.8898+1	5.2161+1	5.1832+1	5.7951+2
			tot.absn.	2.0296-2	1.0337-1	5.9177+1	2.8898+1	5.2161+1	5.1832+1	5.7951+2
34Se 76	9091	102	(n,gamma)	3.0391-2	1.0304-1	3.8755+0	4.7364+1	8.5492+1	8.5324+1	4.3866+1
			tot.absn.	3.0391-2	1.0304-1	3.8755+0	4.7364+1	8.5492+1	8.5324+1	4.3866+1
34Se 77	9092	102	(n,gamma)	2.4002-2	2.5712-1	3.5707+0	2.3377+1	4.2195+1	4.2120+1	3.6154+1
			tot.absn.	2.4002-2	2.5712-1	3.5707+0	2.3377+1	4.2195+1	4.2120+1	3.6154+1
34Se 78	9094	102	(n,gamma)	1.2347-2	4.5615-2	5.3606-1	2.2293-1	4.0239-1	4.0158-1	4.5513+0
			tot.absn.	1.2347-2	4.5615-2	5.3606-1	2.2293-1	4.0239-1	4.0158-1	4.5513+0
34Se 80	9097	102	(n,gamma)	1.2237-2	4.5558-2	8.9880-2	3.3994-1	6.1359-1	6.1233-1	1.0680+0
			tot.absn.	1.2237-2	4.5558-2	8.9880-2	3.3994-1	6.1359-1	6.1233-1	1.0680+0
34Se 82	9100	102	(n,gamma)	3.7545-3	1.0739-2	1.6844-3	2.5084-2	4.5276-2	4.5195-2	9.2585-2
			tot.absn.	3.7545-3	1.0739-2	1.6844-3	2.5084-2	4.5276-2	4.5195-2	9.2585-2
35Br 79	9113	102	(n,gamma)	6.1840-2	4.3618-1	1.2057+1	6.1939+0	1.1180+1	1.1133+1	1.3588+2
			tot.absn.	6.1840-2	4.3618-1	1.2057+1	6.1939+0	1.1180+1	1.1133+1	1.3588+2
35Br 81	9117	102	(n,gamma)	4.2182-2	2.8102-1	5.7381+0	1.5009+0	2.7092+0	2.7016+0	4.9970+1
			tot.absn.	4.2182-2	2.8102-1	5.7381+0	1.5009+0	2.7092+0	2.7016+0	4.9970+1
36Kr 78	1330	102	(n,gamma)	6.2771-2	2.0241-1	2.6246+0	2.6943+0	4.8632+0	4.8593+0	2.3682+1
		103	(n,p)	2.5011-2	0.	0.	0.	0.	0.	3.7730-1
		104	(n,d)	4.2693-7	0.	0.	0.	0.	0.	1.9546-2
		107	(n,a)	1.7564-3	0.	0.	0.	0.	0.	2.9653-2
			tot.absn.	8.9539-2	2.0241-1	2.6246+0	2.6943+0	4.8632+0	4.8593+0	2.4246+1
36Kr 80	1331	102	(n,gamma)	3.1774-2	1.4020-1	7.8416+0	6.5364+0	1.1798+1	1.1778+1	6.8589+1
		103	(n,p)	1.4809-3	0.	0.	0.	0.	0.	3.6824-2
		104	(n,d)	1.2928-8	0.	0.	0.	0.	0.	1.3503-2
		106	(n,he3)	3.3389-8	0.	0.	0.	0.	0.	5.5027-4
		107	(n,a)	9.5801-5	0.	0.	0.	0.	0.	2.3315-3
			tot.absn.	3.3351-2	1.4020-1	7.8416+0	6.5364+0	1.1798+1	1.1778+1	6.9103+1
36Kr 82	1332	102	(n,gamma)	1.4255-2	6.7455-2	1.9907+1	1.6780+1	3.0287+1	3.0263+1	1.8334+2
		103	(n,p)	1.7205-4	0.	0.	0.	0.	0.	1.1812-2
		104	(n,d)	6.2630-8	0.	0.	0.	0.	0.	8.2429-3
		107	(n,a)	5.8693-6	0.	0.	0.	0.	0.	8.9698-4
			tot.absn.	1.4433-2	6.7455-2	1.9907+1	1.6780+1	3.0287+1	3.0263+1	1.8397+2
36Kr 83	1333	16	(n,2n)	3.9454-3	0.	0.	0.	0.	0.	1.1532+0
		102	(n,gamma)	3.4002-2	2.1056-1	1.7999+1	1.1157+2	2.0138+2	2.0813+2	1.8800+2
		103	(n,p)	1.2459-4	0.	0.	0.	0.	0.	4.1986-3
		105	(n,t)	9.0496-9	0.	0.	0.	0.	0.	5.1050-3
		107	(n,a)	8.7252-6	0.	0.	0.	0.	0.	6.3048-4
			tot.absn.	3.8081-2	2.1056-1	1.7999+1	1.1157+2	2.0138+2	2.0813+2	1.8917+2
36Kr 84	1334	102	(n,gamma)	5.9588-3	2.2653-2	4.3042-1	4.6166-2	8.3329-2	8.3135-2	3.4765+0
		103	(n,p)	3.3463-6	0.	0.	0.	0.	0.	1.4873-3
		107	(n,a)	3.7906-7	0.	0.	0.	0.	0.	2.8183-4
			tot.absn.	5.9625-3	2.2653-2	4.3042-1	4.6166-2	8.3329-2	8.3135-2	4.1999+0
36Kr 85	9145	102	(n,gamma)	4.3675-3	2.8643-2	1.5871-1	9.2487-1	1.6694+0	1.6659+0	1.6650+0
			tot.absn.	4.3675-3	2.8643-2	1.5871-1	9.2487-1	1.6694+0	1.6659+0	1.6650+0
36Kr 86	1336	16	(n,2n)	3.6180-9	0.	0.	0.	0.	0.	7.8655-1
		102	(n,gamma)	1.2375-3	2.8779-3	1.5460-2	3.4217-2	6.1761-2	6.1639-2	1.4124-1
		103	(n,p)	2.8448-8	0.	0.	0.	0.	0.	2.8953-4
			tot.absn.	1.2375-3	2.8779-3	1.5460-2	3.4217-2	6.1761-2	6.1639-2	9.4958-1
37Rb 85	9160	102	(n,gamma)	1.8342-2	2.1514-1	5.4000-1	2.5630-1	4.6263-1	4.6149-1	5.8553+0
			tot.absn.	1.8342-2	2.1514-1	5.4000-1	2.5630-1	4.6263-1	4.6149-1	5.8553+0
37Rb 86	9161	102	(n,gamma)	4.2847-3	9.2315-2	2.8110+0	2.7301+0	4.9278+0	4.9200+0	2.3641+1
			tot.absn.	4.2847-3	9.2315-2	2.8110+0	2.7301+0	4.9278+0	4.9200+0	2.3641+1

Table 4-3 Cont'd

Nuclide	MAT	MT	Reaction	Four-Group Cross Sections Gp 1	Gp 2	Gp 3	Gp 4	Thermal Values Effec.	.0253 eV	Resonance Integral
37Rb 87	9163	102	(n,gamma)	2.1069-3	1.0455-2	2.5398-1	6.6837-2	1.2064-1	1.2036-1	2.1074+0
			tot.absn.	2.1069-3	1.0455-2	2.5398-1	6.6837-2	1.2064-1	1.2036-1	2.1074+0
38Sr 84	9179	102	(n,gamma)	5.7914-2	1.6738-1	1.1824+0	4.5260-1	8.1693-1	8.1481-1	1.0473+1
			tot.absn.	5.7914-2	1.6738-1	1.1824+0	4.5260-1	8.1693-1	8.1481-1	1.0473+1
38Sr 86	9182	102	(n,gamma)	1.6857-2	4.2237-2	5.7468-1	1.5813+0	2.8543+0	2.8484+0	5.1772+0
			tot.absn.	1.6857-2	4.2237-2	5.7468-1	1.5813+0	2.8543+0	2.8484+0	5.1772+0
38Sr 87	9183	102	(n,gamma)	1.6690-2	7.7688-2	1.0454+1	9.2353+0	1.6670+1	1.6057+1	1.1896+2
			tot.absn.	1.6690-2	7.7688-2	1.0454+1	9.2353+0	1.6670+1	1.6057+1	1.1896+2
38Sr 88	9185	102	(n,gamma)	1.3279-3	2.2142-3	2.2022-4	3.2312-3	5.8324-3	5.8202-3	1.9887-2
			tot.absn.	1.3279-3	2.2142-3	2.2022-4	3.2312-3	5.8324-3	5.8202-3	1.9887-2
38Sr 89	9186	102	(n,gamma)	8.3135-3	2.0370-2	3.9425-2	2.3391-1	4.2221-1	4.2133-1	5.2481-1
			tot.absn.	8.3135-3	2.0370-2	3.9425-2	2.3391-1	4.2221-1	4.2133-1	5.2481-1
38Sr 90	9187	102	(n,gamma)	4.9179-3	1.5677-2	3.2945-2	5.0156-1	9.0531-1	9.0363-1	5.0519-1
			tot.absn.	4.9179-3	1.5677-2	3.2945-2	5.0156-1	9.0531-1	9.0363-1	5.0519-1
39 Y 89	9202	102	(n,gamma)	7.1317-3	2.2464-2	8.2331-2	7.1299-1	1.2869+0	1.2841+0	9.7297-1
			tot.absn.	7.1317-3	2.2464-2	8.2331-2	7.1299-1	1.2869+0	1.2841+0	9.7297-1
39 Y 90	9204	102	(n,gamma)	1.1365-2	1.1458-1	4.3788-1	1.9479+0	3.5159+0	3.5093+0	4.7328+0
			tot.absn.	1.1365-2	1.1458-1	4.3788-1	1.9479+0	3.5159+0	3.5093+0	4.7328+0
39 Y 91	9206	102	(n,gamma)	4.2169-3	3.2838-2	1.6066-1	7.7968-1	1.4073+0	1.4043+0	1.6584+0
			tot.absn.	4.2169-3	3.2838-2	1.6066-1	7.7968-1	1.4073+0	1.4043+0	1.6584+0
40Zr 90	1385	102	(n,gamma)	9.1623-3	2.0421-2	1.7931-2	3.3886-2	6.1165-2	6.1049-2	2.8632-1
		103	(n,p)	3.5594-4	0.	0.	0.	0.	0.	3.4743-2
		107	(n,a)	2.6151-6	0.	0.	0.	0.	0.	1.9466-3
			tot.absn.	9.5209-3	2.0421-2	1.7931-2	3.3886-2	6.1165-2	6.1049-2	7.4192-1
40Zr 91	1386	16	(n,2n)	3.5911-3	0.	0.	0.	0.	0.	9.5859-1
		102	(n,gamma)	9.1621-3	6.3499-2	6.4542-1	5.5613-1	1.0038+0	1.0022+0	5.6967+0
		103	(n,p)	1.8206-4	0.	0.	0.	0.	0.	2.4803-2
		107	(n,a)	2.2399-4	0.	0.	0.	0.	0.	2.3885-2
			tot.absn.	1.3159-2	6.3499-2	6.4542-1	5.5613-1	1.0038+0	1.0022+0	6.7040+0
40Zr 92	1387	16	(n,2n)	3.7688-4	0.	0.	0.	0.	0.	7.4376-1
		102	(n,gamma)	9.1622-3	2.6509-2	6.6395-2	8.8860-2	1.6039-1	1.6008-1	6.9282-1
		103	(n,p)	2.7663-5	0.	0.	0.	0.	0.	1.4960-2
		107	(n,a)	1.5250-5	0.	0.	0.	0.	0.	5.7976-3
			tot.absn.	9.5820-3	2.6509-2	6.6395-2	8.8860-2	1.6039-1	1.6008-1	1.4573+0
40Zr 93	9232	102	(n,gamma)	2.0887-2	5.1475-2	3.4591+0	1.3943+0	2.5167+0	2.5105+0	3.0555+1
			tot.absn.	2.0887-2	5.1475-2	3.4591+0	1.3943+0	2.5167+0	2.5105+0	3.0555+1
40Zr 94	1388	16	(n,2n)	9.9008-4	0.	0.	0.	0.	0.	8.3399-1
		102	(n,gamma)	9.1622-3	3.2480-2	1.9059-2	3.1109-2	5.6151-2	5.6035-2	3.9238-1
		103	(n,p)	5.0805-6	0.	0.	0.	0.	0.	7.5749-3
		107	(n,a)	2.7738-6	0.	0.	0.	0.	0.	2.9821-3
			tot.absn.	1.0160-2	3.2480-2	1.9059-2	3.1109-2	5.6151-2	5.6035-2	1.2369+0
40Zr 95	9234	102	(n,gamma)	3.7665-2	1.1668-1	5.7972-1	2.7307-1	4.9288-1	4.9187-1	5.2058+0
			tot.absn.	3.7665-2	1.1668-1	5.7972-1	2.7307-1	4.9288-1	4.9187-1	5.2058+0
40Zr 96	1389	16	(n,2n)	1.9656-3	0.	0.	0.	0.	0.	9.1184-1
		102	(n,gamma)	9.1622-3	2.3538-2	6.4650-1	1.3365-2	2.4124-2	2.4044-2	5.2907+0
		107	(n,a)	1.7801-6	0.	0.	0.	0.	0.	4.1305-3
			tot.absn.	1.1130-2	2.3538-2	6.4650-1	1.3365-2	2.4124-2	2.4044-2	6.2067+0
41Nb 93	1189	16	(n,2n)	2.2337-4	0.	0.	0.	0.	0.	7.4586-1
		22	(n,n'a)	1.4547-5	0.	0.	0.	0.	0.	2.0097-3
		102	(n,gamma)	1.6059-2	1.5911-1	1.0376+0	6.4185-1	1.1585+0	1.1556+0	9.4377+0
		103	(n,p)	5.2584-4	0.	0.	0.	0.	0.	3.5528-2
		107	(n,a)	5.4331-5	0.	0.	0.	0.	0.	6.9613-3
			tot.absn.	1.6877-2	1.5911-1	1.0376+0	6.4185-1	1.1585+0	1.1556+0	1.0249+1
41Nb 94	9251	102	(n,gamma)	5.7315-3	1.6864-1	1.1740+1	7.6119+0	1.3739+1	1.3653+1	1.1648+2
			tot.absn.	5.7315-3	1.6864-1	1.1740+1	7.6119+0	1.3739+1	1.3653+1	1.1648+2
41Nb 95	9253	102	(n,gamma)	5.2606-2	2.6477-1	2.4932+0	8.3501-1	1.5072+0	1.5043+0	2.2008+1
			tot.absn.	5.2606-2	2.6477-1	2.4932+0	8.3501-1	1.5072+0	1.5043+0	2.2008+1
42Mo 92	9278	102	(n,gamma)	2.2352-2	5.8306-2	7.1079-2	2.0692-2	3.7349-2	4.3873-2	9.4828-1
		103	(n,p)	3.3278-3	7.2843-7	1.9468-9	0.	0.	0.	1.6515-1
		107	(n,a)	4.6196-5	4.0922-9	0.	0.	0.	0.	4.1366-2
			tot.absn.	2.5726-2	5.8307-2	7.1079-2	2.0692-2	3.7349-2	4.3873-2	1.1548+0
42Mo 94	9281	102	(n,gamma)	3.0451-2	6.1367-2	9.5029-2	8.8949-3	1.6055-2	1.6024-2	1.0975+0
			tot.absn.	3.0451-2	6.1367-2	9.5029-2	8.8949-3	1.6055-2	1.6024-2	1.0975+0
42Mo 95	9282	102	(n,gamma)	3.5534-2	2.3459-1	1.2594+1	8.0693+0	1.4565+1	1.4523+1	1.1341+2
			tot.absn.	3.5534-2	2.3459-1	1.2594+1	8.0693+0	1.4565+1	1.4523+1	1.1341+2
42Mo 96	9283	102	(n,gamma)	2.6196-2	7.9316-2	2.2759+0	5.5702-1	1.0054+0	1.0026+0	1.9652+1
			tot.absn.	2.6196-2	7.9316-2	2.2759+0	5.5702-1	1.0054+0	1.0026+0	1.9652+1

Table 4-3 Cont'd

Nuclide	MAT	MT	Reaction	Four-Group Cross Sections Gp 1	Gp 2	Gp 3	Gp 4	Thermal Values- Effec.	.0253 eV	Resonance Integral
42Mo 97	9284	102	(n,gamma)	3.1228-2	2.3758-1	1.8091+0	1.2101+0	2.1843+0	2.1800+0	1.6556+1
			tot.absn.	3.1228-2	2.3758-1	1.8091+0	1.2101+0	2.1843+0	2.1800+0	1.6556+1
42Mo 98	9285	102	(n,gamma)	1.4859-2	7.7505-2	7.7159-1	7.1104-2	1.2834-1	1.2768-1	6.8940+0
			tot.absn.	1.4859-2	7.7505-2	7.7159-1	7.1104-2	1.2834-1	1.2768-1	6.8940+0
42Mo 99	9286	102	(n,gamma)	4.2795-2	4.0551-1	2.8452+0	9.4743-1	1.7101+0	1.7070+0	2.7269+1
			tot.absn.	4.2795-2	4.0551-1	2.8452+0	9.4743-1	1.7101+0	1.7070+0	2.7269+1
42Mo100	9287	102	(n,gamma)	9.6872-3	6.0459-2	4.4218-1	1.1087-1	2.0012-1	1.9971-1	3.8824+0
			tot.absn.	9.6872-3	6.0459-2	4.4218-1	1.1087-1	2.0012-1	1.9971-1	3.8824+0
43Tc 99	1308	16	(n,2n)	3.9515-4	0.	0.	0.	0.	0.	9.9421-1
		102	(n,gamma)	4.7133-2	4.8791-1	2.8855+1	1.1156+1	2.0136+1	1.9578+1	3.5085+2
			tot.absn.	4.7528-2	4.8791-1	2.8855+1	1.1156+1	2.0136+1	1.9578+1	3.5184+2
44Ru 96	9325	102	(n,gamma)	1.3413-1	3.0214-1	1.2426+0	1.3884-1	2.5060-1	2.4934-1	1.1889+1
			tot.absn.	1.3413-1	3.0214-1	1.2426+0	1.3884-1	2.5060-1	2.4934-1	1.1889+1
44Ru 98	9327	102	(n,gamma)	2.0121-2	8.6515-2	9.5842-1	4.4528+0	8.0373+0	7.9806+0	9.4804+0
			tot.absn.	2.0121-2	8.6515-2	9.5842-1	4.4528+0	8.0373+0	7.9806+0	9.4804+0
44Ru 99	9328	102	(n,gamma)	3.8265-2	3.7496-1	1.4205+1	2.8201+0	5.0903+0	5.0177+0	1.3641+2
			tot.absn.	3.8265-2	3.7496-1	1.4205+1	2.8201+0	5.0903+0	5.0177+0	1.3641+2
44Ru100	9329	102	(n,gamma)	5.3226-2	1.4772-1	8.0066-1	3.2280+0	5.8265+0	5.8168+0	8.1082+0
			tot.absn.	5.3226-2	1.4772-1	8.0066-1	3.2280+0	5.8265+0	5.8168+0	8.1082+0
44Ru101	9330	102	(n,gamma)	3.6842-2	5.9217-1	9.9917+0	1.7368+0	3.1349+0	3.1084+0	1.0020+2
			tot.absn.	3.6842-2	5.9217-1	9.9917+0	1.7368+0	3.1349+0	3.1084+0	1.0020+2
44Ru102	9331	102	(n,gamma)	5.7672-2	1.3443-1	3.2135-1	7.2417-1	1.3071+0	1.3044+0	3.5831+0
			tot.absn.	5.7672-2	1.3443-1	3.2135-1	7.2417-1	1.3071+0	1.3044+0	3.5831+0
44Ru103	9332	102	(n,gamma)	2.4615-2	3.6642-1	7.4621+0	4.2858+0	7.7358+0	7.7211+0	7.1875+1
			tot.absn.	2.4615-2	3.6642-1	7.4621+0	4.2858+0	7.7358+0	7.7211+0	7.1875+1
44Ru104	9333	102	(n,gamma)	2.8022-2	1.0807-1	7.2907-1	2.4314-1	4.3887-1	4.3790-1	6.5116+0
			tot.absn.	2.8022-2	1.0807-1	7.2907-1	2.4314-1	4.3887-1	4.3790-1	6.5116+0
44Ru105	9334	102	(n,gamma)	2.3260-2	3.2288-1	6.3847-1	1.1137-1	2.0102-1	2.0059-1	7.3850+0
			tot.absn.	2.3260-2	3.2288-1	6.3847-1	1.1137-1	2.0102-1	2.0059-1	7.3850+0
44Ru106	9335	102	(n,gamma)	8.3415-3	5.2364-2	2.3426-1	8.1360-2	1.4685-1	1.4659-1	2.1700+0
			tot.absn.	8.3415-3	5.2364-2	2.3426-1	8.1360-2	1.4685-1	1.4659-1	2.1700+0
45Rh103	1310	16	(n,2n)	2.9714-5	0.	0.	0.	0.	0.	4.5834-1
		102	(n,gamma)	4.6139-2	5.5627-1	8.9150+1	9.6042+1	1.7335+2	1.4737+2	1.0386+3
			tot.absn.	4.6169-2	5.5627-1	8.9150+1	9.6042+1	1.7335+2	1.4737+2	1.0391+3
45Rh105	9355	102	(n,gamma)	9.1290-2	4.9123-1	1.1439+3	9.1582+3	1.6530+4	1.6046+4	1.5275+4
			tot.absn.	9.1290-2	4.9123-1	1.1439+3	9.1582+3	1.6530+4	1.6046+4	1.5275+4
46Pd102	9379	102	(n,gamma)	4.1420-2	1.3052-1	1.0363+0	2.6565+0	4.7950+0	4.7854+0	9.9338+0
			tot.absn.	4.1420-2	1.3052-1	1.0363+0	2.6565+0	4.7950+0	4.7854+0	9.9338+0
46Pd104	9381	102	(n,gamma)	9.7635-2	2.5279-1	2.0760+0	2.1582-1	3.8956-1	3.8848-1	1.8474+1
			tot.absn.	9.7635-2	2.5279-1	2.0760+0	2.1582-1	3.8956-1	3.8848-1	1.8474+1
46Pd105	9382	102	(n,gamma)	8.7985-2	7.2157-1	9.4121+0	7.8122+0	1.4101+1	1.4056+1	9.1686+1
			tot.absn.	8.7985-2	7.2157-1	9.4121+0	7.8122+0	1.4101+1	1.4056+1	9.1686+1
46Pd106	9383	102	(n,gamma)	7.7438-2	2.0976-1	9.1255-1	1.3262-1	2.3938-1	2.3879-1	8.6391+0
			tot.absn.	7.7438-2	2.0976-1	9.1255-1	1.3262-1	2.3938-1	2.3879-1	8.6391+0
46Pd107	9384	102	(n,gamma)	9.1801-2	6.5623-1	7.7104+0	5.5682+0	1.0051+1	1.0029+1	7.6667+1
			tot.absn.	9.1801-2	6.5623-1	7.7104+0	5.5682+0	1.0051+1	1.0029+1	7.6667+1
46Pd108	9386	102	(n,gamma)	6.0825-2	1.9143-1	2.2773+1	6.8184+0	1.2307+1	1.2250+1	2.2514+2
			tot.absn.	6.0825-2	1.9143-1	2.2773+1	6.8184+0	1.2307+1	1.2250+1	2.2514+2
46Pd110	9389	102	(n,gamma)	2.3277-2	1.1384-1	8.6635-1	1.2275-1	2.2157-1	2.2093-1	7.4698+0
			tot.absn.	2.3277-2	1.1384-1	8.6635-1	1.2275-1	2.2157-1	2.2093-1	7.4698+0
47Ag107	1371	16	(n,2n)	6.1034-5	0.	0.	0.	0.	0.	9.1708-1
		102	(n,gamma)	6.8844-2	5.3198-1	1.2038+1	2.0531+1	3.7058+1	3.6990+1	1.1498+2
		103	(n,p)	6.3990-5	0.	0.	0.	0.	0.	1.1285-2
		104	(n,d)	3.6763-6	0.	0.	0.	0.	0.	1.0527-2
		107	(n,a)	6.9229-5	0.	0.	0.	0.	0.	1.9441-2
			tot.absn.	6.9042-2	5.3198-1	1.2038+1	2.0531+1	3.7058+1	3.6990+1	1.1594+2
47Ag109	1373	16	(n,2n)	9.7527-5	0.	0.	0.	0.	0.	8.7580-1
		102	(n,gamma)	7.4072-2	5.8208-1	1.3081+2	5.2749+1	9.5212+1	9.2419+1	1.4664+3
		103	(n,p)	7.1455-5	0.	0.	0.	0.	0.	1.0949-2
		107	(n,a)	6.1056-5	0.	0.	0.	0.	0.	8.7206-3
			tot.absn.	7.4302-2	5.8208-1	1.3081+2	5.2749+1	9.5212+1	9.2419+1	1.4673+3
47Ag111	9415	102	(n,gamma)	2.6067-2	3.3317-1	1.2036+1	1.6716+0	3.0172+0	3.0116+0	1.0473+2
			tot.absn.	2.6067-2	3.3317-1	1.2036+1	1.6716+0	3.0172+0	3.0116+0	1.0473+2
48Cd106	9440	102	(n,gamma)	7.2072-2	1.8507-1	1.1980+0	6.0885-1	1.0990+0	1.0966+0	1.1058+1
			tot.absn.	7.2072-2	1.8507-1	1.1980+0	6.0885-1	1.0990+0	1.0966+0	1.1058+1
48Cd108	9442	102	(n,gamma)	9.6025-2	1.8042-1	3.6226-1	6.1246-1	1.1055+0	1.1033+0	4.2640+0
			tot.absn.	9.6025-2	1.8042-1	3.6226-1	6.1246-1	1.1055+0	1.1033+0	4.2640+0

Table 4-3 Cont'd

Nuclide	MAT	MT	Reaction	Four-Group Cross Sections Gp 1	Gp 2	Gp 3	Gp 4	Thermal Values- Effec.	.0253 eV	Resonance Integral
48Cd110	9444	102	(n,gamma)	1.1611-1	2.0957-1	4.6975+0	6.1852+0	1.1164+1	1.1140+1	4.2575+1
			tot.absn.	1.1611-1	2.0957-1	4.6975+0	6.1852+0	1.1164+1	1.1140+1	4.2575+1
48Cd111	9445	102	(n,gamma)	3.5512-2	3.2428-1	5.6183+0	1.3526+1	2.4414+1	2.4365+1	5.4393+1
			tot.absn.	3.5512-2	3.2428-1	5.6183+0	1.3526+1	2.4414+1	2.4365+1	5.4393+1
48Cd112	9447	102	(n,gamma)	9.3230-2	1.9517-1	1.1501+0	1.2253+0	2.2116+0	2.2066+0	1.3767+1
			tot.absn.	9.3230-2	1.9517-1	1.1501+0	1.2253+0	2.2116+0	2.2066+0	1.3767+1
48Cd113	1318	16	(n,2n)	2.2313-3	0.	0.	0.	0.	0.	1.2428+0
		102	(n,gamma)	4.0381-2	2.9399-1	1.9043+1	2.7446+4	4.9539+4	2.0248+4	3.6759+2
		103	(n,p)	6.3476-6	0.	0.	0.	0.	0. -	8.7358-3
			tot.absn.	4.2619-2	2.9399-1	1.9043+1	2.7446+4	4.9539+4	2.0248+4	3.6884+2
48Cd114	9450	102	(n,gamma)	9.6279-2	2.0533-1	2.2127+0	1.8713-1	3.3776-1	3.3692-1	1.9225+1
			tot.absn.	9.6279-2	2.0533-1	2.2127+0	1.8713-1	3.3776-1	3.3692-1	1.9225+1
48Cd115m	9452	102	(n,gamma)	3.4299-2	2.3442-1	2.1785+1	1.7261+1	3.1155+1	3.1089+1	1.9413+2
			tot.absn.	3.4299-2	2.3442-1	2.1785+1	1.7261+1	3.1155+1	3.1089+1	1.9413+2
48Cd116	9453	102	(n,gamma)	4.1681-2	9.2758-2	2.2762-1	4.2784-2	7.7224-2	7.7056-2	2.4207+0
			tot.absn.	4.1681-2	9.2758-2	2.2762-1	4.2784-2	7.7224-2	7.7056-2	2.4207+0
49In113	9473	102	(n,gamma)	2.4044-1	5.2345-1	2.1648+1	6.5691+0	1.1857+1	1.1436+1	2.2626+2
			tot.absn.	2.4044-1	5.2345-1	2.1648+1	6.5691+0	1.1857+1	1.1436+1	2.2626+2
49In115	9477	102	(n,gamma)	1.2280-1	3.7493-1	2.8571+2	1.2825+2	2.3149+2	2.0305+2	3.2825+3
			tot.absn.	1.2280-1	3.7493-1	2.8571+2	1.2825+2	2.3149+2	2.0305+2	3.2825+3
50Sn112	9513	102	(n,gamma)	1.8824-1	2.3127-1	3.3757+0	6.3691-1	1.1496+0	1.1458+0	3.0251+1
			tot.absn.	1.8824-1	2.3127-1	3.3757+0	6.3691-1	1.1496+0	1.1458+0	3.0251+1
50Sn114	9516	102	(n,gamma)	1.7274-1	2.2381-1	2.8293-1	6.1278-1	1.1061+0	1.1037+0	3.9515+0
			tot.absn.	1.7274-1	2.2381-1	2.8293-1	6.1278-1	1.1061+0	1.1037+0	3.9515+0
50Sn115	9517	102	(n,gamma)	3.7254-3	3.1813-2	2.0042+0	2.7835+1	5.0242+1	5.0143+1	2.3498+1
			tot.absn.	3.7254-3	3.1813-2	2.0042+0	2.7835+1	5.0242+1	5.0143+1	2.3498+1
50Sn116	9518	102	(n,gamma)	3.1703-2	4.3593-2	1.3612+0	6.7094-2	1.2110-1	1.2071-1	1.1730+1
			tot.absn.	3.1703-2	4.3593-2	1.3612+0	6.7094-2	1.2110-1	1.2071-1	1.1730+1
50Sn117	9519	102	(n,gamma)	3.2746-2	1.6591-1	1.9937+0	1.4484+0	2.6144+0	2.6066+0	1.8521+1
			tot.absn.	3.2746-2	1.6591-1	1.9937+0	1.4484+0	2.6144+0	2.6066+0	1.8521+1
50Sn118	9521	102	(n,gamma)	7.6823-2	8.6630-2	6.9448-1	4.5935-2	8.2912-2	8.2682-2	6.2098+0
			tot.absn.	7.6823-2	8.6630-2	6.9448-1	4.5935-2	8.2912-2	8.2682-2	6.2098+0
50Sn119	9522	102	(n,gamma)	6.3631-3	4.0365-2	3.9575-1	1.2816+0	2.3133+0	2.3091+0	3.8349+0
			tot.absn.	6.3631-3	4.0365-2	3.9575-1	1.2816+0	2.3133+0	2.3091+0	3.8349+0
50Sn120	9524	102	(n,gamma)	1.7976-2	3.4536-2	1.3493-1	7.8508-2	1.4171-1	1.4139-1	1.2925+0
			tot.absn.	1.7976-2	3.4536-2	1.3493-1	7.8508-2	1.4171-1	1.4139-1	1.2925+0
50Sn122	9527	102	(n,gamma)	1.3339-2	1.8236-2	7.6066-2	1.0071-1	1.8177-1	1.8142-1	7.6399-1
			tot.absn.	1.3339-2	1.8236-2	7.6066-2	1.0071-1	1.8177-1	1.8142-1	7.6399-1
50Sn123	9528	102	(n,gamma)	3.9512-2	8.5187-2	2.6923-1	1.8371-2	3.3159-2	3.3090-2	2.6792+0
			tot.absn.	3.9512-2	8.5187-2	2.6923-1	1.8371-2	3.3159-2	3.3090-2	2.6792+0
50Sn124	9530	102	(n,gamma)	1.8482-2	2.4417-2	8.1235-1	7.2458-2	1.3079-1	1.3026-1	7.1410+0
			tot.absn.	1.8482-2	2.4417-2	8.1235-1	7.2458-2	1.3079-1	1.3026-1	7.1410+0
50Sn125	9531	102	(n,gamma)	9.9105-3	4.6781-2	1.9546+0	3.0629-1	5.5285-1	5.5161-1	1.5214+1
			tot.absn.	9.9105-3	4.6781-2	1.9546+0	3.0629-1	5.5285-1	5.5161-1	1.5214+1
50Sn126	9533	102	(n,gamma)	5.6649-3	7.2164-3	1.0979-2	1.6715-1	3.0170-1	3.0112-1	1.8315-1
			tot.absn.	5.6649-3	7.2164-3	1.0979-2	1.6715-1	3.0170-1	3.0112-1	1.8315-1
51Sb121	9548	102	(n,gamma)	9.5332-2	3.5558-1	1.6860+1	3.5529+0	6.4130+0	6.2811+0	2.0610+2
			tot.absn.	9.5332-2	3.5558-1	1.6860+1	3.5529+0	6.4130+0	6.2811+0	2.0610+2
51Sb123	9551	102	(n,gamma)	4.1734-2	1.7627-1	8.3621+0	2.4221+0	4.3718+0	4.3402+0	1.2706+2
			tot.absn.	4.1734-2	1.7627-1	8.3621+0	2.4221+0	4.3718+0	4.3402+0	1.2706+2
51Sb124	9552	102	(n,gamma)	2.5393-2	5.8589-1	2.5394+0	3.6176+0	6.5297+0	6.5170+0	2.6442+1
			tot.absn.	2.5393-2	5.8589-1	2.5394+0	3.6176+0	6.5297+0	6.5170+0	2.6442+1
51Sb125	9555	102	(n,gamma)	7.5168-2	2.1047-1	2.1082+0	5.5717-1	1.0057+0	1.0038+0	1.8556+1
			tot.absn.	7.5168-2	2.1047-1	2.1082+0	5.5717-1	1.0057+0	1.0038+0	1.8556+1
51Sb126	9556	102	(n,gamma)	1.8451-2	3.0324-1	5.1470+0	3.2308+0	5.8316+0	5.8197+0	4.5730+1
			tot.absn.	1.8451-2	3.0324-1	5.1470+0	3.2308+0	5.8316+0	5.8197+0	4.5730+1
52Te120	9576	102	(n,gamma)	1.3397-1	3.0199-1	2.1912+0	1.2732+0	2.2981+0	2.2928+0	2.0058+1
			tot.absn.	1.3397-1	3.0199-1	2.1912+0	1.2732+0	2.2981+0	2.2928+0	2.0058+1
52Te122	9579	102	(n,gamma)	1.2000-1	2.5041-1	8.4230+0	1.5621+0	2.8196+0	2.8086+0	7.3920+1
			tot.absn.	1.2000-1	2.5041-1	8.4230+0	1.5621+0	2.8196+0	2.8086+0	7.3920+1
52Te123	9580	102	(n,gamma)	6.1528-2	3.6671-1	4.8685+2	2.4570+2	4.4349+2	4.1131+2	5.5361+3
			tot.absn.	6.1528-2	3.6671-1	4.8685+2	2.4570+2	4.4349+2	4.1131+2	5.5361+3
52Te124	9582	102	(n,gamma)	1.1043-1	1.9554-1	7.7235-1	3.7881+0	6.8374+0	6.8235+0	8.3429+0
			tot.absn.	1.1043-1	1.9554-1	7.7235-1	3.7881+0	6.8374+0	6.8235+0	8.3429+0
52Te125	9583	102	(n,gamma)	2.6092-2	2.5569-1	2.6567+0	8.6291-1	1.5576+0	1.5540+0	2.3527+1
			tot.absn.	2.6092-2	2.5569-1	2.6567+0	8.6291-1	1.5576+0	1.5540+0	2.3527+1

Table 4-3 Cont'd

Nuclide	MAT	MT	Reaction	Four-Group Cross Sections Gp 1	Gp 2	Gp 3	Gp 4	Thermal Values Effec.	.0253 eV	Resonance Integral
52Te126	9585	102	(n,gamma)	3.7165-2	8.4447-2	1.1871+0	5.7690-1	1.0413+0	1.0393+0	1.0327+1
			tot.absn.	3.7165-2	8.4447-2	1.1871+0	5.7690-1	1.0413+0	1.0393+0	1.0327+1
52Te127m	9587	102	(n,gamma)	5.4180-2	2.6486-1	4.7289+0	5.2364+0	9.4516+0	9.4324+0	4.2418+1
			tot.absn.	5.4180-2	2.6486-1	4.7289+0	5.2364+0	9.4516+0	9.4324+0	4.2418+1
52Te128	9588	102	(n,gamma)	4.5350-2	8.6590-2	2.2965-1	1.1959-1	2.1586-1	2.1542-1	2.3974+0
			tot.absn.	4.5350-2	8.6590-2	2.2965-1	1.1959-1	2.1586-1	2.1542-1	2.3974+0
52Te129m	9590	102	(n,gamma)	9.4777-3	8.1956-2	6.8313-1	6.1215-1	1.1049+0	1.1028+0	6.1144+0
			tot.absn.	9.4777-3	8.1956-2	6.8313-1	6.1215-1	1.1049+0	1.1028+0	6.1144+0
52Te130	9591	102	(n,gamma)	3.7590-3	1.4009-2	2.8523-2	1.6144-1	2.9139-1	2.9081-1	3.5977-1
			tot.absn.	3.7590-3	1.4009-2	2.8523-2	1.6144-1	2.9139-1	2.9081-1	3.5977-1
52Te132	9594	102	(n,gamma)	5.7036-4	4.4880-4	7.3197-5	1.1136-3	2.0100-3	2.0056-3	5.7428-3
			tot.absn.	5.7036-4	4.4880-4	7.3197-5	1.1136-3	2.0100-3	2.0056-3	5.7428-3
53 I127	9606	102	(n,gamma)	4.9789-2	4.0859-1	1.5459+1	3.4608+0	6.2466+0	6.2221+0	1.5487+2
			tot.absn.	4.9789-2	4.0859-1	1.5459+1	3.4608+0	6.2466+0	6.2221+0	1.5487+2
53 I129	9608	102	(n,gamma)	3.8151-2	2.2799-1	3.6972+0	1.5031+1	2.7131+1	2.7101+1	3.5233+1
			tot.absn.	3.8151-2	2.2799-1	3.6972+0	1.5031+1	2.7131+1	2.7101+1	3.5233+1
53 I130	9609	102	(n,gamma)	1.8359-2	2.6926-1	1.9781+1	1.0031+1	1.8106+1	1.8076+1	1.8065+2
			tot.absn.	1.8359-2	2.6926-1	1.9781+1	1.0031+1	1.8106+1	1.8076+1	1.8065+2
53 I131	9611	102	(n,gamma)	9.4636-3	7.3597-2	9.5891-1	3.8969-1	7.0338-1	7.0192-1	8.1017+0
			tot.absn.	9.4636-3	7.3597-2	9.5891-1	3.8969-1	7.0338-1	7.0192-1	8.1017+0
53 I135	9618	102	(n,gamma)	4.6821-4	5.7364-4	7.3205-4	1.1137-2	2.0102-2	2.0061-2	1.5218-2
			tot.absn.	4.6821-4	5.7364-4	7.3205-4	1.1137-2	2.0102-2	2.0061-2	1.5218-2
54Xe124	1335	102	(n,gamma)	9.4932-2	2.9973-1	2.7883+2	9.3747+1	1.6921+2	1.6507+2	3.0657+3
		103	(n,p)	2.6496-5	0.	0.	0.	0.	0.	6.0037-3
		104	(n,d)	1.5723-7	0.	0.	0.	0.	0.	5.9341-3
		105	(n,t)	6.8146-9	0.	0.	0.	0.	0.	1.0179-3
		106	(n,he3)	1.5854-8	0.	0.	0.	0.	0.	4.3672-4
		107	(n,a)	2.6431-5	0.	0.	0.	0.	0.	1.5769-3
			tot.absn.	9.4985-2	2.9973-1	2.7883+2	9.3747+1	1.6921+2	1.6507+2	3.0663+3
54Xe126	1339	102	(n,gamma)	6.5549-2	1.8884-1	5.0511+0	1.2247+0	2.2105+0	2.2076+0	4.4016+1
		103	(n,p)	6.5240-6	0.	0.	0.	0.	0.	2.1184-3
		104	(n,d)	1.0578-8	0.	0.	0.	0.	0.	3.5699-3
		105	(n,t)	3.024-10	0.	0.	0.	0.	0.	6.0723-4
		106	(n,he3)	4.9305-8	0.	0.	0.	0.	0.	1.4377-4
		107	(n,a)	7.5672-6	0.	0.	0.	0.	0.	7.8408-4
			tot.absn.	6.5563-2	1.8884-1	5.0511+0	1.2247+0	2.2105+0	2.2076+0	4.4912+1
54Xe128	1348	16	(n,2n)	6.1245-5	0.	0.	0.	0.	0.	1.0879+0
		102	(n,gamma)	4.2209-2	1.3963-1	1.2120+0	2.9420+0	5.3102+0	5.3738+0	1.1173+1
		103	(n,p)	3.2827-5	0.	0.	0.	0.	0.	1.3564-2
		104	(n,d)	1.8218-8	0.	0.	0.	0.	0.	2.2286-3
		105	(n,t)	4.0901-9	0.	0.	0.	0.	0.	4.5583-4
		106	(n,he3)	1.2697-8	0.	0.	0.	0.	0.	5.5569-5
		107	(n,a)	1.8891-6	0.	0.	0.	0.	0.	2.5590-4
			tot.absn.	4.2305-2	1.3963-1	1.2120+0	2.9420+0	5.3102+0	5.3738+0	1.2353+1
54Xe129	1349	16	(n,2n)	9.2326-3	0.	0.	0.	0.	0.	1.6288+0
		102	(n,gamma)	5.3094-2	3.0018-1	2.5281+1	1.0062+1	1.8162+1	1.8054+1	2.5505+2
		103	(n,p)	7.4694-6	0.	0.	0.	0.	0.	1.9470-3
		104	(n,d)	1.1212-8	0.	0.	0.	0.	0.	1.9152-3
		105	(n,t)	4.9873-9	0.	0.	0.	0.	0.	1.4491-3
		107	(n,a)	1.3000-5	0.	0.	0.	0.	0.	6.5508-4
			tot.absn.	6.2347-2	3.0018-1	2.5281+1	1.0062+1	1.8162+1	1.8054+1	2.5678+2
54Xe130	1350	16	(n,2n)	1.0978-4	0.	0.	0.	0.	0.	1.1320+0
		102	(n,gamma)	3.3989-2	1.1285-1	3.9267-1	3.3997+0	6.1365+0	6.2149+0	4.4347+0
		103	(n,p)	6.1480-6	0.	0.	0.	0.	0.	3.3368-3
		104	(n,d)	4.4619-8	0.	0.	0.	0.	0.	1.4052-3
		105	(n,t)	1.1690-9	0.	0.	0.	0.	0.	3.2198-4
		107	(n,a)	5.6637-7	0.	0.	0.	0.	0.	1.2397-4
			tot.absn.	3.4106-2	1.1285-1	3.9267-1	3.3997+0	6.1365+0	6.2149+0	5.7085+0
54Xe131	1351	16	(n,2n)	1.5114-2	0.	0.	0.	0.	0.	1.7417+0
		102	(n,gamma)	1.3310-2	1.8406-1	1.0259+2	5.0667+1	9.1454+1	9.0378+1	1.0163+3
		103	(n,p)	1.0187-5	3.5384-7	0.	0.	0.	0.	2.9217-3
		104	(n,d)	2.5539-8	0.	0.	0.	0.	0.	1.1836-3
		105	(n,t)	4.9830-8	0.	0.	0.	0.	0.	1.0688-3
		107	(n,a)	4.3872-6	0.	0.	0.	0.	0.	3.1954-4
			tot.absn.	2.8439-2	1.8406-1	1.0259+2	5.0667+1	9.1454+1	9.0378+1	1.0182+3

Table 4-3 Cont'd

Nuclide	MAT	MT	Reaction	Four-Group Cross Sections Gp 1	Gp 2	Gp 3	Gp 4	Thermal Values Effec.	.0253 eV	Resonance Integral
54Xe132	1352	16	(n,2n)	6.7050-4	0.	0.	0.	0.	0.	1.1721+0
		102	(n,gamma)	1.8128-2	6.6607-2	1.5802-1	2.4476-1	4.4180-1	4.4136-1	1.7132+0
		103	(n,p)	1.8128-6	0.	0.	0.	0.	0.	1.9092-3
		104	(n,d)	5.7410-9	0.	0.	0.	0.	0.	9.0208-4
		105	(n,t)	1.990-10	0.	0.	0.	0.	0.	2.2340-4
		107	(n,a)	1.5598-7	0.	0.	0.	0.	0.	5.8390-5
			tot.absn.	1.8800-2	6.6607-2	1.5802-1	2.4476-1	4.4180-1	4.4136-1	3.0876+0
54Xe133	9643	102	(n,gamma)	5.9569-3	5.2823-2	3.4076+1	1.0579+2	1.9095+2	1.9059+2	3.6574+2
			tot.absn.	5.9569-3	5.2823-2	3.4076+1	1.0579+2	1.9095+2	1.9059+2	3.6574+2
54Xe134	1354	16	(n,2n)	1.4951-3	0.	0.	0.	0.	0.	1.2206+0
		102	(n,gamma)	1.0561-2	3.4369-2	6.6597-2	1.3831-1	2.4965-1	2.5065-1	7.6447-1
		103	(n,p)	1.4924-6	0.	0.	0.	0.	0.	1.6136-3
		104	(n,d)	1.7433-8	0.	0.	0.	0.	0.	5.8365-4
		105	(n,t)	1.271-10	0.	0.	0.	0.	0.	1.7759-4
		107	(n,a)	6.4900-8	0.	0.	0.	0.	0.	3.9016-5
			tot.absn.	1.2058-2	3.4369-2	6.6597-2	1.3831-1	2.4965-1	2.5065-1	2.2369+0
54Xe135	1294	102	(n,gamma)	5.5536-4	3.2239-3	3.6397+2	1.6684+6	3.0114+6	2.6894+6	7.4188+3
			tot.absn.	5.5536-4	3.2239-3	3.6397+2	1.6684+6	3.0114+6	2.6894+6	7.4188+3
54Xe136	1356	16	(n,2n)	2.7172-3	0.	0.	0.	0.	0.	1.0786+0
		102	(n,gamma)	1.0718-3	2.2915-3	1.0694-2	8.9075-2	1.6078-1	1.6044-1	1.2103-1
		103	(n,p)	6.8820-8	0.	0.	0.	0.	0.	6.7559-5
		104	(n,d)	3.0628-9	0.	0.	0.	0.	0.	3.8087-4
		105	(n,t)	8.527-11	0.	0.	0.	0.	0.	1.4135-4
		107	(n,a)	2.6443-8	0.	0.	0.	0.	0.	3.2570-5
			tot.absn.	3.7891-3	2.2915-3	1.0694-2	8.9075-2	1.6078-1	1.6044-1	1.5070+0
55Cs133	1355	16	(n,2n)	4.4365-4	0.	0.	0.	0.	0.	1.0878+0
		102	(n,gamma)	4.5148-2	3.4277-1	3.4120+1	1.6710+1	3.0162+1	2.9697+1	3.8220+2
		103	(n,p)	2.5961-4	0.	0.	0.	0.	0.	1.2340-2
		107	(n,a)	3.1782-6	0.	0.	0.	0.	0.	1.0067-3
			tot.absn.	4.5854-2	3.4277-1	3.4120+1	1.6710+1	3.0162+1	2.9697+1	3.8330+2
55Cs134	9663	102	(n,gamma)	1.2878-2	3.4464-1	2.0454+1	7.7936+1	1.4067+2	1.4038+2	2.1092+2
			tot.absn.	1.2878-2	3.4464-1	2.0454+1	7.7936+1	1.4067+2	1.4038+2	2.1092+2
55Cs135	9665	102	(n,gamma)	3.1845-3	4.1489-2	6.3084+0	4.8441+0	8.7436+0	8.7271+0	6.1121+1
			tot.absn.	3.1845-3	4.1489-2	6.3084+0	4.8441+0	8.7436+0	8.7271+0	6.1121+1
55Cs136	9667	102	(n,gamma)	1.9415-2	1.6352-1	3.3142+0	7.2502-1	1.3087+0	1.3046+0	3.9537+1
			tot.absn.	1.9415-2	1.6352-1	3.3142+0	7.2502-1	1.3087+0	1.3046+0	3.9537+1
55Cs137	9669	102	(n,gamma)	1.5037-3	5.5414-3	5.8559-2	6.1289-2	1.1063-1	1.1043-1	4.9903-1
			tot.absn.	1.5037-3	5.5414-3	5.8559-2	6.1289-2	1.1063-1	1.1043-1	4.9903-1
56Ba134	9684	102	(n,gamma)	3.5197-2	8.6106-2	2.7291+0	1.2031+0	2.1715+0	2.1671+0	2.3972+1
			tot.absn.	3.5197-2	8.6106-2	2.7291+0	1.2031+0	2.1715+0	2.1671+0	2.3972+1
56Ba135	9685	102	(n,gamma)	2.8642-2	2.2147-1	1.1227+1	3.2440+0	5.8554+0	5.8376+0	1.0044+2
			tot.absn.	2.8642-2	2.2147-1	1.1227+1	3.2440+0	5.8554+0	5.8376+0	1.0044+2
56Ba136	9687	102	(n,gamma)	1.3129-2	3.5832-2	2.1300-1	2.2819-1	4.1188-1	4.1106-1	1.9502+0
			tot.absn.	1.3129-2	3.5832-2	2.1300-1	2.2819-1	4.1188-1	4.1106-1	1.9502+0
56Ba137	9689	102	(n,gamma)	7.2211-3	3.7346-2	4.9830-1	2.8395+0	5.1253+0	5.1142+0	4.8944+0
			tot.absn.	7.2211-3	3.7346-2	4.9830-1	2.8395+0	5.1253+0	5.1142+0	4.8944+0
56Ba138	1353	16	(n,2n)	2.3758-3	0.	0.	0.	0.	0.	9.8183-1
		102	(n,gamma)	2.6107-3	4.8869-3	2.7255-2	1.9460-1	3.5124-1	3.5103-1	3.1540-1
		103	(n,p)	9.9277-6	0.	0.	0.	0.	0.	2.2334-3
		107	(n,a)	1.6723-3	0.	0.	0.	0.	0.	3.5720-2
			tot.absn.	6.6687-3	4.8869-3	2.7255-2	1.9460-1	3.5124-1	3.5103-1	1.5461+0
56Ba140	9693	102	(n,gamma)	1.6891-3	3.7465-3	1.5652+0	8.8958-1	1.6057+0	1.6063+0	1.2769+1
			tot.absn.	1.6891-3	3.7465-3	1.5652+0	8.8958-1	1.6057+0	1.6063+0	1.2769+1
57La139	9707	102	(n,gamma)	6.0636-3	2.6548-2	1.2491+0	4.9961+0	9.0180+0	9.0250+0	1.1998+1
			tot.absn.	6.0636-3	2.6548-2	1.2491+0	4.9961+0	9.0180+0	9.0250+0	1.1998+1
57La140	9708	102	(n,gamma)	2.9497-2	1.2961-1	7.6536+0	1.5030+0	2.7130+0	2.7073+0	6.4501+1
			tot.absn.	2.9497-2	1.2961-1	7.6536+0	1.5030+0	2.7130+0	2.7073+0	6.4501+1
58Ce140	9724	102	(n,gamma)	1.7039-2	1.7321-2	2.8540-2	3.1750-1	5.7308-1	5.7184-1	4.4312-1
			tot.absn.	1.7039-2	1.7321-2	2.8540-2	3.1750-1	5.7308-1	5.7184-1	4.4312-1
58Ce141	9725	102	(n,gamma)	4.5043-2	1.0544-1	2.2976+0	1.6141+1	2.9134+1	2.9075+1	2.3897+1
			tot.absn.	4.5043-2	1.0544-1	2.2976+0	1.6141+1	2.9134+1	2.9075+1	2.3897+1
58Ce142	9726	102	(n,gamma)	1.4861-2	3.2918-2	5.9209-2	5.2882-1	9.5452-1	9.5254-1	8.1780-1
			tot.absn.	1.4861-2	3.2918-2	5.9209-2	5.2882-1	9.5452-1	9.5254-1	8.1780-1
58Ce143	9727	102	(n,gamma)	9.5818-3	7.5748-2	5.0345+0	3.3436+0	6.0352+0	6.0251+0	4.2242+1
			tot.absn.	9.5818-3	7.5748-2	5.0345+0	3.3436+0	6.0352+0	6.0251+0	4.2242+1
58Ce144	9728	102	(n,gamma)	1.0900-2	2.4052-2	2.3095-1	5.5660-1	1.0047+0	1.0027+0	2.0300+0
			tot.absn.	1.0900-2	2.4052-2	2.3095-1	5.5660-1	1.0047+0	1.0027+0	2.0300+0

Table 4-3 Cont'd

Nuclide	MAT	MT	Reaction	Four-Group Cross Sections Gp 1	Gp 2	Gp 3	Gp 4	Thermal Values Effec.	.0253 eV	Resonance Integral
59Pr141	9742	16	(n,2n)	1.5829-5	0.	0.	0.	0.	0.	1.1660+0
		22	(n,n'a)	4.4782-7	0.	0.	0.	0.	0.	7.1766-4
		28	(n,n'p)	6.7469-7	0.	0.	0.	0.	0.	8.1915-4
		102	(n,gamma)	1.5663-2	7.0922-2	2.0879+0	6.4006+0	1.1553+1	1.1540+1	1.8917+1
		103	(n,p)	1.1284-5	9.6608-7	7.0943-7	4.6933-7	8.4714-7	4.2291-7	4.0319-3
		104	(n,d)	1.1816-6	0.	0.	0.	0.	0.	7.5818-3
		107	(n,a)	6.5587-5	5.2543-5	3.6427-5	2.1316-5	3.8475-5	1.8348-5	3.8822-3
			tot.absn.	1.5758-2	7.0976-2	2.0879+0	6.4006+0	1.1553+1	1.1540+1	2.0135+1
59Pr142	9743	102	(n,gamma)	1.6080-2	2.5463-1	1.4843+1	1.1136+1	2.0101+1	2.0056+1	1.4618+2
			tot.absn.	1.6080-2	2.5463-1	1.4843+1	1.1136+1	2.0101+1	2.0056+1	1.4618+2
59Pr143	9745	102	(n,gamma)	4.8350-2	2.1625-1	1.8421+1	4.9545+1	8.9429+1	8.9257+1	1.8933+2
			tot.absn.	4.8350-2	2.1625-1	1.8421+1	4.9545+1	8.9429+1	8.9257+1	1.8933+2
60Nd142	9763	102	(n,gamma)	2.7727-2	3.1229-2	7.3084-1	1.0407+1	1.8784+1	1.8747+1	8.7754+0
			tot.absn.	2.7727-2	3.1229-2	7.3084-1	1.0407+1	1.8784+1	1.8747+1	8.7754+0
60Nd143	9764	16	(n,2n)	2.2615-2	0.	0.	0.	0.	0.	1.9422+0
		22	(n,n'a)	7.3765-6	3.9873-6	2.7871-6	1.6615-6	2.9990-6	1.4409-6	1.0829-3
		28	(n,n'p)	2.7716-7	0.	0.	0.	0.	0.	3.6072-4
		102	(n,gamma)	6.0230-2	1.9851-1	1.2149+1	1.7672+2	3.1898+2	3.2581+2	1.2948+2
		103	(n,p)	7.8499-6	0.	0.	0.	0.	0.	4.0319-3
		104	(n,d)	2.0881-9	0.	0.	0.	0.	0.	3.9081-3
		105	(n,t)	1.4815-9	0.	0.	0.	0.	0.	4.6380-3
		107	(n,a)	1.8713-4	5.5779-5	3.8644-5	2.2571-5	4.0741-5	1.9414-5	6.7096-3
			tot.absn.	8.3048-2	1.9857-1	1.2149+1	1.7672+2	3.1898+2	3.2581+2	1.3154+2
60Nd144	9765	102	(n,gamma)	2.9698-2	5.0310-2	5.8690-1	2.0066+0	3.6219+0	3.6173+0	5.4739+0
			tot.absn.	2.9698-2	5.0310-2	5.8690-1	2.0066+0	3.6219+0	3.6173+0	5.4739+0
60Nd145	9766	16	(n,2n)	2.9938-2	0.	0.	0.	0.	0.	1.8079+0
		22	(n,n'a)	2.9686-6	1.3205-6	9.4170-7	5.8661-7	1.0588-6	5.1727-7	9.1535-4
		28	(n,n'p)	1.2140-7	0.	0.	0.	0.	0.	3.6623-4
		102	(n,gamma)	9.5251-2	2.8326-1	2.2689+1	2.3450+1	4.2326+1	4.2145+1	2.3227+2
		103	(n,p)	2.3531-6	0.	0.	0.	0.	0.	2.1414-3
		107	(n,a)	8.7043-5	4.0613-5	2.8145-5	1.6445-5	2.9682-5	1.4144-5	4.0541-3
			tot.absn.	1.2528-1	2.8330-1	2.2689+1	2.3450+1	4.2326+1	4.2145+1	2.3450+2
60Nd146	9767	16	(n,2n)	6.7012-3	0.	0.	0.	0.	0.	1.2848+0
		22	(n,n'a)	3.2777-6	2.4726-6	1.8114-6	1.1924-6	2.1523-6	1.0725-6	1.1236-3
		28	(n,n'p)	2.0156-8	0.	0.	0.	0.	0.	2.1264-4
		102	(n,gamma)	4.5108-2	8.3347-2	2.9562-1	7.7989-1	1.4077+0	1.4046+0	3.0706+0
		103	(n,p)	1.9058-7	0.	0.	0.	0.	0.	1.0486-3
		107	(n,a)	4.3095-5	3.4712-5	2.4071-5	1.4087-5	2.5427-5	1.2126-5	2.0879-3
			tot.absn.	5.1856-2	8.3384-2	2.9565-1	7.7991-1	1.4077+0	1.4046+0	4.8349+0
60Nd147	9768	102	(n,gamma)	5.1084-2	3.9306-1	6.0029+1	2.7278+1	4.9237+1	4.9135+1	6.3617+2
			tot.absn.	5.1084-2	3.9306-1	6.0029+1	2.7278+1	4.9237+1	4.9135+1	6.3617+2
60Nd148	9769	16	(n,2n)	7.5792-3	0.	0.	0.	0.	0.	1.2232+0
		22	(n,n'a)	3.2319-6	2.7425-6	2.0341-6	1.3715-6	2.4755-6	1.2435-6	8.7598-4
		28	(n,n'p)	5.7695-9	0.	0.	0.	0.	0.	1.4541-4
		102	(n,gamma)	6.1942-2	1.0238-1	2.2585+0	1.3941+0	2.5163+0	2.5093+0	1.9495+1
		103	(n,p)	4.4276-8	0.	0.	0.	0.	0.	5.4367-4
		107	(n,a)	2.8604-5	2.4617-5	1.7072-5	9.9960-6	1.8043-5	8.6045-6	1.2045-3
			tot.absn.	6.9553-2	1.0241-1	2.2585+0	1.3941+0	2.5163+0	2.5093+0	2.1334+1
60Nd150	9771	16	(n,2n)	7.4565-3	0.	0.	0.	0.	0.	1.2011+0
		22	(n,n'a)	2.0371-6	2.8160-7	0.	0.	0.	0.	6.0313-4
		28	(n,n'p)	1.0077-9	0.	0.	0.	0.	0.	9.6937-5
		102	(n,gamma)	2.6359-2	1.0462-1	1.8303+0	6.6833-1	1.2063+0	1.2034+0	1.5964+1
		103	(n,p)	2.9120-8	0.	0.	0.	0.	0.	3.6012-4
		107	(n,a)	1.7189-5	1.5219-5	1.0546-5	6.1608-6	1.1120-5	5.2984-6	6.2452-4
			tot.absn.	3.3835-2	1.0464-1	1.8303+0	6.6834-1	1.2063+0	1.2034+0	1.7827+1
61Pm147	9783	16	(n,2n)	6.1547-3	0.	0.	0.	0.	0.	1.3357+0
		22	(n,n'a)	3.9248-6	2.3404-6	1.6824-6	1.0659-6	1.9240-6	9.4583-7	1.4470-3
		28	(n,n'p)	6.1360-7	0.	0.	0.	0.	0.	9.5374-4
		102	(n,gamma)	1.2887-1	7.7426-1	1.9191+2	9.8860+1	1.7844+2	1.8251+2	2.2844+3
		103	(n,p)	4.9247-6	0.	0.	0.	0.	0.	2.5417-3
		104	(n,d)	5.4627-7	0.	0.	0.	0.	0.	5.8059-3
		105	(n,t)	3.9321-9	0.	0.	0.	0.	0.	4.3304-3
		107	(n,a)	5.8232-5	4.0957-5	2.8372-5	1.6563-5	2.9897-5	1.4242-5	2.9948-3
			tot.absn.	1.3509-1	7.7430-1	1.9191+2	9.8860+1	1.7844+2	1.8251+2	2.2861+3
61Pm148	9784	102	(n,gamma)	4.9272-1	2.5740+0	2.8325+3	2.6491+3	4.7817+3	2.0058+3	3.8385+4
			tot.absn.	4.9272-1	2.5740+0	2.8325+3	2.6491+3	4.7817+3	2.0058+3	3.8385+4

Table 4-3 Cont'd

Nuclide	MAT	MT	Reaction	Four-Group Cross Sections Gp 1	Gp 2	Gp 3	Gp 4	Thermal Values Effec.	.0253 eV	Resonance Integral
61Pm148m	9785	102	(n,gamma)	4.9272-1	2.5740+0	3.1809+2	1.9062+4	3.4407+4	1.0788+4	3.5264+3
			tot.absn.	4.9272-1	2.5740+0	3.1809+2	1.9062+4	3.4407+4	1.0788+4	3.5264+3
61Pm149	9786	102	(n,gamma)	5.2649-1	2.1342+0	7.3798+1	7.7854+2	1.4053+3	1.4035+3	7.9070+2
			tot.absn.	5.2649-1	2.1342+0	7.3798+1	7.7854+2	1.4053+3	1.4035+3	7.9070+2
61Pm151	9788	102	(n,gamma)	1.0103-3	2.0378-2	1.7321+2	3.8965+2	7.0331+2	7.0188+2	2.0485+3
			tot.absn.	1.0103-3	2.0378-2	1.7321+2	3.8965+2	7.0331+2	7.0188+2	2.0485+3
62Sm144	9803	102	(n,gamma)	2.4476-1	2.1884-1	2.2133+0	3.8669-1	6.9797-1	6.9763-1	1.9715+1
			tot.absn.	2.4476-1	2.1884-1	2.2133+0	3.8669-1	6.9797-1	6.9763-1	1.9715+1
62Sm147	9806	16	(n,2n)	1.7475-2	0.	0.	0.	0.	0.	1.7204+0
		22	(n,n'a)	6.3086-6	2.0835-6	1.4649-6	8.8481-7	1.5971-6	7.7097-7	1.3255-3
		28	(n,n'p)	7.1012-7	0.	0.	0.	0.	0.	8.3433-4
		102	(n,gamma)	1.8258-1	8.6070-1	7.6422+1	3.4419+1	6.2126+1	6.4207+1	7.5950+2
		103	(n,p)	1.5351-5	2.0558-6	1.5310-6	1.0401-6	1.8773-6	9.4528-7	4.7859-3
		104	(n,d)	5.8614-9	0.	0.	0.	0.	0.	4.2887-3
		105	(n,t)	7.190-10	0.	0.	0.	0.	0.	4.6130-3
		107	(n,a)	2.3176-4	7.1627-5	4.9639-5	2.9008-5	5.2359-5	2.4946-5	7.8010-3
			tot.absn.	2.0031-1	8.6078-1	7.6422+1	3.4419+1	6.2126+1	6.4207+1	7.6150+2
62Sm148	9807	102	(n,gamma)	2.0216-1	2.5966-1	3.1105+0	1.5036+0	2.7139+0	2.7077+0	2.7455+1
			tot.absn.	2.0216-1	2.5966-1	3.1105+0	1.5036+0	2.7139+0	2.7077+0	2.7455+1
62Sm149	1319	16	(n,2n)	1.0977-2	0.	0.	0.	0.	0.	1.3832+0
		102	(n,gamma)	9.0679-2	1.4891+0	2.8696+2	4.9782+4	8.9855+4	4.0525+4	3.2546+3
		103	(n,p)	1.3481-4	0.	0.	0.	0.	0.	1.5174-2
		107	(n,a)	1.3481-4	0.	0.	0.	0.	0.	1.5174-2
			tot.absn.	1.0193-1	1.4891+0	2.8696+2	4.9782+4	8.9855+4	4.0525+4	3.2562+3
62Sm150	9809	102	(n,gamma)	1.3131-1	2.8625-1	1.1521+1	5.4553+1	9.8469+1	1.0230+2	3.2093+2
			tot.absn.	1.3131-1	2.8625-1	1.1521+1	5.4553+1	9.8469+1	1.0230+2	3.2093+2
62Sm151	9810	16	(n,2n)	4.2521-2	0.	0.	0.	0.	0.	1.9494+0
		22	(n,n'a)	5.4181-6	2.2834-6	1.6060-6	9.7138-7	1.7533-6	8.4640-7	1.4725-3
		28	(n,n'p)	1.6764-7	0.	0.	0.	0.	0.	3.9288-4
		102	(n,gamma)	2.6797-1	1.6054+0	2.8956+2	4.6626+3	8.4160+3	1.4924+4	3.3880+3
		103	(n,p)	2.6222-6	0.	0.	0.	0.	0.	1.7508-3
		107	(n,a)	5.6192-5	3.1366-5	2.1720-5	1.2679-5	2.2885-5	1.0892-5	2.4024-3
			tot.absn.	3.1056-1	1.6054+0	2.8956+2	4.6626+3	8.4160+3	1.4924+4	3.3904+3
62Sm152	9811	16	(n,2n)	2.4059-3	0.	0.	0.	0.	0.	1.1676+0
		22	(n,n'a)	5.1349-6	4.4739-6	3.2779-6	2.1575-6	3.8942-6	1.9398-6	1.0946-3
		28	(n,n'p)	2.3667-8	0.	0.	0.	0.	0.	2.4475-4
		102	(n,gamma)	8.9013-2	3.6535-1	2.7605+2	1.1695+2	2.1109+2	2.0684+2	3.0024+3
		103	(n,p)	2.3509-7	0.	0.	0.	0.	0.	8.6308-4
		107	(n,a)	3.4119-5	2.9897-5	2.0744-5	1.2150-5	2.1931-5	1.0458-5	1.2375-3
			tot.absn.	9.1458-2	3.6538-1	2.7605+2	1.1695+2	2.1109+2	2.0684+2	3.0040+3
62Sm153	9812	102	(n,gamma)	2.2569-4	1.1903-2	2.3910+2	1.8382+2	3.3179+2	3.3104+2	2.8422+3
			tot.absn.	2.2569-4	1.1903-2	2.3910+2	1.8382+2	3.3179+2	3.3104+2	2.8422+3
62Sm154	9813	102	(n,gamma)	5.7084-2	1.4260-1	3.8595+0	3.0648+0	5.5320+0	5.5208+0	3.3736+1
			tot.absn.	5.7084-2	1.4260-1	3.8595+0	3.0648+0	5.5320+0	5.5208+0	3.3736+1
63Eu151	1357	16	(n,2n)	8.9855-4	0.	0.	0.	0.	0.	1.3393+0
		22	(n,n'a)	1.3105-9	0.	0.	0.	0.	0.	4.1007-5
		28	(n,n'p)	2.049-10	0.	0.	0.	0.	0.	4.2372-5
		102	(n,gamma)	3.1543-1	2.7080+0	2.0540+2	4.6790+3	8.4456+3	9.1606+3	3.3570+3
		103	(n,p)	6.0087-5	1.0369-6	2.8048-9	0.	0.	0.	1.7368-2
		104	(n,d)	1.1809-6	0.	0.	0.	0.	0.	6.1855-3
		105	(n,t)	2.5663-8	0.	0.	0.	0.	0.	4.2546-3
		106	(n,he3)	3.1310-8	0.	0.	0.	0.	0.	9.8222-5
		107	(n,a)	1.1984-4	1.0472-5	2.9472-8	0.	0.	0.	6.6777-3
			tot.absn.	3.1651-1	2.7080+0	2.0540+2	4.6790+3	8.4456+3	9.1606+3	3.3585+3
63Eu152	1292	16	(n,2n)	9.3845-3	0.	0.	0.	0.	0.	1.6251+0
		22	(n,n'a)	5.60-10	0.	0.	0.	0.	0.	1.8468-5
		28	(n,n'p)	1.906-11	0.	0.	0.	0.	0.	2.2141-5
		102	(n,gamma)	1.7462-1	3.2500+0	3.2545+2	7.6681+2	1.3841+3	2.3040+3	3.6781+3
		103	(n,p)	2.0443-4	2.1711-6	1.5039-6	1.5087-6	2.7232-6	1.5179-6	1.9009-2
		104	(n,d)	3.2373-7	0.	0.	0.	0.	0.	4.4150-3
		105	(n,t)	8.8031-7	0.	0.	0.	0.	0.	6.4186-3
		106	(n,he3)	1.1050-8	0.	0.	0.	0.	0.	5.2930-5
		107	(n,a)	1.5640-4	1.1594-5	3.2630-8	0.	0.	0.	6.4144-3
			tot.absn.	1.8437-1	3.2500+0	3.2545+2	7.6681+2	1.3841+3	2.3040+3	3.6800+3

Table 4-3 Cont'd

Nuclide	MAT	MT	Reaction	-----Four-Group Cross Sections----- Gp 1	Gp 2	Gp 3	Gp 4	--Thermal Values- Effec.	.0253 eV	Resonance Integral
63Eu153	1359	16	(n,2n)	2.4548-3	0.	0.	0.	0.	0.	1.3028+0
		22	(n,n'a)	5.6165-7	0.	0.	0.	0.	0.	1.2984-3
		28	(n,n'p)	4.4288-7	0.	0.	0.	0.	0.	8.7487-4
		102	(n,gamma)	1.6283-1	1.7167+0	1.3744+2	1.3979+2	2.5232+2	3.0033+2	1.4472+3
		103	(n,p)	8.4703-6	3.3635-7	0.	0.	0.	0.	3.1785-3
		104	(n,d)	2.0901-7	0.	0.	0.	0.	0.	3.9486-3
		105	(n,t)	1.6263-8	0.	0.	0.	0.	0.	2.2078-3
		106	(n,he3)	4.5806-9	0.	0.	0.	0.	0.	2.8672-5
		107	(n,a)	7.7784-5	9.5686-6	1.0242-6	9.7977-7	1.7685-6	9.4687-7	5.3691-3
			tot.absn.	1.6537-1	1.7167+0	1.3744+2	1.3979+2	2.5232+2	3.0033+2	1.4487+3
63Eu154	1293	16	(n,2n)	5.3586-3	0.	0.	0.	0.	0.	1.6029+0
		28	(n,n'p)	7.410-11	0.	0.	0.	0.	0.	2.1572-6
		102	(n,gamma)	7.2518-2	1.8791+0	2.2097+2	4.9646+2	8.9610+2	1.4932+3	2.5525+3
		103	(n,p)	3.0329-4	9.4922-6	0.	0.	0.	0.	5.9574-2
		104	(n,d)	2.4234-8	0.	0.	0.	0.	0.	2.7681-3
		105	(n,t)	4.7133-8	0.	0.	0.	0.	0.	3.8670-3
		106	(n,he3)	2.6507-9	0.	0.	0.	0.	0.	1.6230-5
		107	(n,a)	2.0989-4	1.9153-5	5.3980-8	0.	0.	0.	1.7909-2
			tot.absn.	7.8390-2	1.8791+0	2.2097+2	4.9646+2	8.9610+2	1.4932+3	2.5543+3
63Eu155	9832	16	(n,2n)	3.7691-3	0.	0.	0.	0.	0.	1.3635+0
		22	(n,n'a)	2.3245-6	0.	0.	0.	0.	0.	5.3923-4
		28	(n,n'p)	3.0906-7	0.	0.	0.	0.	0.	4.3300-4
		102	(n,gamma)	9.0448-1	1.5431+0	1.5359+2	2.2492+3	4.0598+3	4.0519+3	1.8250+3
		103	(n,p)	9.7663-7	0.	0.	0.	0.	0.	1.1098-3
		104	(n,d)	1.1009-8	0.	0.	0.	0.	0.	2.4485-3
		107	(n,a)	2.3454-5	2.0486-5	1.4181-5	8.2662-6	1.4920-5	7.1002-6	1.2857-3
			tot.absn.	9.0828-1	1.5431+0	1.5359+2	2.2492+3	4.0598+3	4.0519+3	1.8267+3
63Eu156	9833	102	(n,gamma)	5.0035-4	3.5401-2	1.2952+2	2.6866+2	4.8494+2	4.8334+2	1.4700+3
			tot.absn.	5.0035-4	3.5401-2	1.2952+2	2.6866+2	4.8494+2	4.8334+2	1.4700+3
63Eu157	9834	102	(n,gamma)	3.2238-3	2.5281-2	1.1371+2	1.0555+2	1.9052+2	1.9048+2	1.2803+3
			tot.absn.	3.2238-3	2.5281-2	1.1371+2	1.0555+2	1.9052+2	1.9048+2	1.2803+3
64Gd152	1362	16	(n,2n)	1.5684-3	0.	0.	0.	0.	0.	1.1292+0
		22	(n,n'a)	8.4516-6	2.0915-7	0.	0.	0.	0.	8.7814-3
		28	(n,n'p)	2.3519-6	0.	0.	0.	0.	0.	1.3028-2
		102	(n,gamma)	3.1478-1	5.5428-1	3.2933+1	8.0188+0	1.4474+1	1.4468+1	4.0386+2
		103	(n,p)	1.4571-5	0.	0.	0.	0.	0.	8.2307-3
		107	(n,a)	9.2021-6	3.1349-7	0.	0.	0.	0.	2.6210-3
			tot.absn.	3.1638-1	5.5428-1	3.2933+1	8.0188+0	1.4474+1	1.4468+1	4.0502+2
64Gd154	1364	16	(n,2n)	1.4718-3	0.	0.	0.	0.	0.	1.1431+0
		22	(n,n'a)	3.0889-6	4.4258-8	0.	0.	0.	0.	5.9605-3
		28	(n,n'p)	1.7039-6	0.	0.	0.	0.	0.	1.1526-2
		102	(n,gamma)	3.1424-1	8.5667-1	2.3897+1	4.6933+1	8.4713+1	8.6245+1	2.2938+2
		103	(n,p)	1.2431-5	0.	0.	0.	0.	0.	6.9245-3
		107	(n,a)	2.5984-6	0.	0.	0.	0.	0.	1.3616-3
			tot.absn.	3.1573-1	8.5667-1	2.3897+1	4.6933+1	8.4713+1	8.6245+1	2.3055+2
64Gd155	1365	16	(n,2n)	1.5819-2	0.	0.	0.	0.	0.	1.6065+0
		22	(n,n'a)	9.9193-6	3.1095-7	0.	0.	0.	0.	8.1629-3
		28	(n,n'p)	5.1707-6	0.	0.	0.	0.	0.	1.5440-2
		102	(n,gamma)	1.6297-1	1.6254+0	1.3221+2	1.9132+4	3.4533+4	6.0483+4	1.5508+3
		103	(n,p)	4.1701-5	1.4636-6	0.	0.	0.	0.	1.0295-2
		107	(n,a)	9.4654-6	2.6459-7	0.	0.	0.	0.	2.2299-3
			tot.absn.	1.7886-1	1.6254+0	1.3221+2	1.9132+4	3.4533+4	6.0483+4	1.5524+3
64Gd156	1366	16	(n,2n)	1.7975-3	0.	0.	0.	0.	0.	1.1506+0
		22	(n,n'a)	1.9538-6	1.5996-7	0.	0.	0.	0.	4.3684-3
		28	(n,n'p)	9.4043-7	0.	0.	0.	0.	0.	9.2078-3
		102	(n,gamma)	9.6173-2	3.9019-1	1.1437+1	9.5579-1	1.7252+0	1.7161+0	1.0482+2
		103	(n,p)	1.8163-5	0.	0.	0.	0.	0.	1.2340-2
		107	(n,a)	1.3436-5	1.1222-6	7.0908-7	4.0938-7	7.3893-7	3.5029-7	8.7608-3
			tot.absn.	9.8005-2	3.9019-1	1.1437+1	9.5579-1	1.7252+0	1.7161+0	1.0601+2
64Gd157	1367	16	(n,2n)	1.7191-2	0.	0.	0.	0.	0.	1.6565+0
		22	(n,n'a)	4.8553-6	6.1900-8	0.	0.	0.	0.	6.0151-3
		28	(n,n'p)	1.7712-6	0.	0.	0.	0.	0.	9.9541-3
		102	(n,gamma)	5.4302-2	8.1558-1	5.9107+1	8.2467+4	1.4885+5	2.5402+5	7.4536+2
		103	(n,p)	8.3250-6	6.9544-8	0.	0.	0.	0.	3.6845-3
		107	(n,a)	4.0235-6	0.	0.	0.	0.	0.	1.5559-3
			tot.absn.	7.1512-2	8.1558-1	5.9107+1	8.2467+4	1.4885+5	2.5402+5	7.4704+2

Table 4-3 Cont'd

Nuclide	MAT	MT	Reaction	-----Four-Group Cross Sections----- Gp 1	Gp 2	Gp 3	Gp 4	--Thermal Values- Effec.	.0253 eV	Resonance Integral
64Gd158	1368	16	(n,2n)	3.2093-3	0.	0.	0.	0.	0.	1.2047+0
		22	(n,n'a)	1.6382-6	9.1340-8	0.	0.	0.	0.	3.4387-3
		28	(n,n'p)	3.1531-7	0.	0.	0.	0.	0.	5.6332-3
		102	(n,gamma)	6.5592-2	1.9153-1	6.5163+0	1.1205+0	2.0224+0	2.0113+0	6.2603+1
		103	(n,p)	2.1991-6	0.	0.	0.	0.	0.	2.7640-3
		107	(n,a)	2.6627-6	0.	0.	0.	0.	0.	2.2227-3
			tot.absn.	6.8808-2	1.9153-1	6.5163+0	1.1205+0	2.0224+0	2.0113+0	6.3822+1
64Gd160	1370	16	(n,2n)	7.2424-3	0.	0.	0.	0.	0.	1.2669+0
		22	(n,n'a)	1.1705-6	0.	0.	0.	0.	0.	2.3589-3
		28	(n,n'p)	7.3006-8	0.	0.	0.	0.	0.	3.4913-3
		102	(n,gamma)	5.4319-2	1.1135-1	9.0207-1	4.2530-1	7.6766-1	7.6806-1	7.8586+0
		103	(n,p)	1.5644-6	0.	0.	0.	0.	0.	3.1505-3
		107	(n,a)	1.4813-6	0.	0.	0.	0.	0.	2.0991-3
			tot.absn.	6.1566-2	1.1135-1	9.0207-1	4.2530-1	7.6766-1	7.6806-1	9.1366+0
65Tb159	9857	102	(n,gamma)	9.1200-2	1.0954+0	4.6810+1	1.4328+1	2.5863+1	2.5572+1	4.5610+2
			tot.absn.	9.1200-2	1.0954+0	4.6810+1	1.4328+1	2.5863+1	2.5572+1	4.5610+2
65Tb160	9858	102	(n,gamma)	1.4307-3	7.8414-2	9.8609+1	2.9175+2	5.2662+2	5.2633+2	1.1229+3
			tot.absn.	1.4307-3	7.8414-2	9.8609+1	2.9175+2	5.2662+2	5.2633+2	1.1229+3
66Dy160	9864	102	(n,gamma)	7.9398-1	1.2007+0	1.5161+2	3.5966+1	6.4918+1	6.1197+1	1.6701+3
			tot.absn.	7.9398-1	1.2007+0	1.5161+2	3.5966+1	6.4918+1	6.1197+1	1.6701+3
66Dy161	9865	102	(n,gamma)	5.9423-2	1.2273+0	1.1706+2	3.1025+2	5.5999+2	5.8687+2	1.2056+3
			tot.absn.	5.9423-2	1.2273+0	1.1706+2	3.1025+2	5.5999+2	5.8687+2	1.2056+3
66Dy162	9866	102	(n,gamma)	2.7995-1	5.3011-1	2.4692+2	1.1418+2	2.0609+2	1.9987+2	2.7844+3
			tot.absn.	2.7995-1	5.3011-1	2.4692+2	1.1418+2	2.0609+2	1.9987+2	2.7844+3
66Dy163	9867	102	(n,gamma)	5.4863-2	5.1930-1	1.3367+2	7.7490+1	1.3987+2	1.3473+2	1.4680+3
			tot.absn.	5.4863-2	5.1930-1	1.3367+2	7.7490+1	1.3987+2	1.3473+2	1.4680+3
66Dy164	1031	16	(n,2n)	4.0068-3	0.	0.	0.	0.	0.	1.2235+0
		102	(n,gamma)	9.0051-2	1.9065-1	2.3026+1	1.3012+3	2.3487+3	2.5216+3	3.2078+2
		103	(n,p)	2.3504-5	0.	0.	0.	0.	0.	1.0347-3
		107	(n,a)	1.9948-4	0.	0.	0.	0.	0.	4.6301-3
			tot.absn.	9.4281-2	1.9065-1	2.3026+1	1.3012+3	2.3487+3	2.5216+3	3.2246+2
67Ho165	9872	102	(n,gamma)	8.9277-2	8.7548-1	7.4741+1	3.7400+1	6.7506+1	6.6686+1	7.5734+2
			tot.absn.	8.9277-2	8.7548-1	7.4741+1	3.7400+1	6.7506+1	6.6686+1	7.5734+2
68Er166	9875	102	(n,gamma)	1.4309-1	2.9860-1	1.4846+1	1.9473+1	3.5148+1	3.5059+1	1.4026+2
			tot.absn.	1.4309-1	2.9860-1	1.4846+1	1.9473+1	3.5148+1	3.5059+1	1.4026+2
68Er167	9876	102	(n,gamma)	6.0909-2	8.0247-1	1.5877+2	1.0706+3	1.9324+3	6.7366+2	3.0078+3
			tot.absn.	6.0909-2	8.0247-1	1.5877+2	1.0706+3	1.9324+3	6.7366+2	3.0078+3
90Th230	8030	16	(n,2n)	1.4668-2	0.	0.	0.	0.	0.	1.6861+0
		18	fission	2.2159-1	2.2321-3	5.7226-4	0.	0.	0.	1.1624+0
		102	(n,gamma)	1.3405-2	1.2143-1	7.9325+1	1.3533+1	2.4426+1	2.3159+1	8.5372+2
			tot.absn.	2.4966-1	1.2366-1	7.9326+1	1.3533+1	2.4426+1	2.3159+1	8.5677+2
90Th232	1390	16	(n,2n)	1.4437-2	0.	0.	0.	0.	0.	1.3313+0
		18	fission	8.4596-2	1.0372-5	4.9532-5	0.	0.	0.	6.2569-1
		102	(n,gamma)	7.8745-2	2.9436-1	8.8851+0	4.0426+0	7.2969+0	7.4145+0	8.3715+1
			tot.absn.	1.7778-1	2.9437-1	8.8851+0	4.0426+0	7.2969+0	7.4145+0	8.6264+1
91Pa231	8131	16	(n,2n)	9.7157-3	0.	0.	0.	0.	0.	1.2205+0
		18	fission	1.1706+0	1.7997-1	1.0511-2	1.5689-2	2.8319-2	1.0430-2	5.2127+0
		102	(n,gamma)	1.9023-1	2.6124+0	5.3629+1	2.5727+2	4.6437+2	2.2776+2	6.0493+2
			tot.absn.	1.3705+0	2.7924+0	5.3640+1	2.5729+2	4.6440+2	2.2777+2	6.1162+2
91Pa233	1391	16	(n,2n)	4.1680-3	0.	0.	0.	0.	0.	4.9222-1
		18	fission	5.3766-1	3.1564-4	0.	0.	0.	0.	2.9722+0
		102	(n,gamma)	1.6601-1	8.0329-1	7.6665+1	2.1307+1	3.8458+1	4.1668+1	8.5644+2
			tot.absn.	7.0784-1	8.0361-1	7.6665+1	2.1307+1	3.8458+1	4.1668+1	8.6024+2
92 U232	8232	16	(n,2n)	6.0477-3	0.	0.	0.	0.	0.	1.4695+0
		18	fission	2.6394+0	1.9436+0	4.0809+1	3.7874+1	6.8362+1	7.7386+1	4.2669+2
		102	(n,gamma)	6.6657-2	5.7178-1	2.7799+1	3.4679+1	6.2596+1	7.2848+1	3.1692+2
			tot.absn.	2.7121+0	2.5154+0	6.8608+1	7.2553+1	1.3096+2	1.5023+2	7.4541+2
92 U233	1393	16	(n,2n)	5.2730-3	0.	0.	0.	0.	0.	3.6019-1
		18	fission	1.8676+0	2.4703+0	6.4000+1	2.9449+2	5.3155+2	5.2921+2	7.5779+2
		102	(n,gamma)	2.9905-2	2.4181-1	1.1644+1	2.8453+1	5.1357+1	4.5852+1	1.3714+2
			tot.absn.	1.9028+0	2.7121+0	7.5644+1	3.2294+2	5.8291+2	5.7506+2	8.9532+2
92 U234	1394	16	(n,2n)	1.2294-3	0.	0.	0.	0.	0.	2.6476-1
		18	fission	1.4132+0	2.9562-1	5.8885-2	2.4215-1	4.3708-1	4.6737-1	6.6337+0
		102	(n,gamma)	1.6126-1	4.7197-1	6.0270+1	5.4298+1	9.8007+1	1.0376+2	6.5747+2
			tot.absn.	1.5757+0	7.6759-1	6.0329+1	5.4540+1	9.8444+1	1.0423+2	6.6446+2

Table 4-3 Cont'd

Nuclide	MAT	MT	Reaction	-----Four-Group Cross Sections----- Gp 1	Gp 2	Gp 3	Gp 4	--Thermal Values- Effec.	.0253 eV	Resonance Integral
92 U235	1395	16	(n,2n)	7.6736-3	0.	0.	0.	0.	0.	3.5382-1
		18	fission	1.2308+0	1.6272+0	2.5222+1	2.9806+2	5.3799+2	5.8397+2	2.8094+2
		102	(n,gamma)	6.6715-2	4.6260-1	1.2800+1	5.2837+1	9.5371+1	9.8455+1	1.3919+2
			tot.absn.	1.3052+0	2.0898+0	3.8022+1	3.5090+2	6.3336+2	6.8242+2	4.2051+2
92 U236	1396	16	(n,2n)	7.6021-3	0.	0.	0.	0.	0.	6.6091-1
		18	fission	7.1627-1	1.7000-2	4.1697-1	2.6709-2	4.8209-2	4.6977-2	7.8188+0
		102	(n,gamma)	1.6134-1	4.6299-1	3.2338+1	2.9152+0	5.2619+0	5.1758+0	3.4567+2
			tot.absn.	8.8521-1	4.7999-1	3.2755+1	2.9419+0	5.3101+0	5.2228+0	3.5444+2
92 U237	8237	16	(n,2n)	2.3123-2	0.	0.	0.	0.	0.	9.6854-1
		18	fission	7.0646-1	6.4086-1	3.2864-1	1.0454+0	1.8869+0	2.0058+0	9.2796+0
		102	(n,gamma)	7.0105-2	2.8944-1	2.9883+1	2.4862+2	4.4877+2	4.7728+2	3.0923+2
			tot.absn.	7.9969-1	9.3030-1	3.0212+1	2.4967+2	4.5066+2	4.7929+2	3.1985+2
92 U238	1398	16	(n,2n)	1.4805-2	0.	0.	0.	0.	0.	9.8571-1
		18	fission	3.4962-1	4.8267-4	1.3819-4	2.9461-6	5.3176-6	5.3178-6	2.0531+0
		102	(n,gamma)	6.0445-2	2.6171-1	4.9235+0	1.5264+0	2.7551+0	2.7199+0	2.7881+2
			tot.absn.	4.2487-1	2.6219-1	4.9236+0	1.5264+0	2.7551+0	2.7199+0	2.8219+2
93Np237	1337	16	(n,2n)	1.2739-3	0.	0.	0.	0.	0.	1.5062-1
		18	fission	1.5916+0	2.6189-1	3.1511-2	9.1801-3	1.6570-2	1.6637-2	6.9674+0
		102	(n,gamma)	7.3044-2	1.3410+0	5.3440+1	1.2407+2	2.2395+2	1.6919+2	6.4865+2
			tot.absn.	1.6659+0	1.6029+0	5.3472+1	1.2408+2	2.2397+2	1.6921+2	6.5583+2
93Np238	8338	18	fission	0.	2.7551-1	7.5091+1	1.0703+3	1.9319+3	2.0341+3	8.9301+2
		102	(n,gamma)	0.	3.5394-2	8.5561+0	1.0725+2	1.9359+2	2.0355+2	9.9684+1
			tot.absn.	0.	3.1090-1	8.3647+1	1.1776+3	2.1255+3	2.2376+3	9.9269+2
94Pu236	8436	16	(n,2n)	2.2740-3	0.	0.	0.	0.	0.	4.3376-1
		18	fission	2.3745+0	1.3724+0	2.8907+1	8.5604+1	1.5452+2	1.6371+2	3.2405+2
		102	(n,gamma)	2.6849-2	2.6720-1	2.9022+1	8.5604+1	1.5452+2	1.6371+2	3.1283+2
			tot.absn.	2.4036+0	1.6396+0	5.7929+1	1.7121+2	3.0904+2	3.2742+2	6.3760+2
94Pu237	8437	16	(n,2n)	1.9309-3	0.	0.	0.	0.	0.	2.1297-1
		18	fission	3.0422+0	3.3103+0	8.8477+1	1.1689+3	2.1099+3	2.1053+3	1.0668+3
		102	(n,gamma)	1.9631-2	1.5640-1	1.4777+1	3.0058+2	5.4255+2	5.4136+2	1.8644+2
			tot.absn.	3.0638+0	3.4667+0	1.0325+2	1.4695+3	2.6524+3	2.6467+3	1.2536+3
94Pu238	1338	16	(n,2n)	3.2910-3	0.	0.	0.	0.	0.	5.9587-1
		18	fission	2.1580+0	1.0505+0	2.1971+0	7.4626+0	1.3470+1	1.7085+1	3.0827+1
		102	(n,gamma)	1.0585-1	5.8856-1	1.5015+1	2.4591+2	4.4387+2	5.6350+2	1.5243+2
			tot.absn.	2.2671+0	1.6391+0	1.7212+1	2.5337+2	4.5734+2	5.8058+2	1.8425+2
94Pu239	1399	16	(n,2n)	3.1812-3	0.	0.	0.	0.	0.	1.8168-1
		18	fission	1.8481+0	1.6422+0	2.6146+1	7.6096+2	1.3735+3	7.4373+2	3.0174+2
		102	(n,gamma)	1.2701-2	3.5143-1	1.8556+1	4.1876+2	7.5585+2	2.7118+2	1.9285+2
			tot.absn.	1.8640+0	1.9936+0	4.4702+1	1.1797+3	2.1293+3	1.0149+3	4.9480+2
94Pu240	1380	16	(n,2n)	1.2835-3	0.	0.	0.	0.	0.	1.5356-1
		18	fission	1.6042+0	2.8021-1	2.0784-1	3.8509-2	6.9509-2	5.7439-2	8.8988+0
		102	(n,gamma)	6.2996-2	4.1876-1	6.9084+2	1.9864+2	3.5855+2	2.9164+2	8.0019+3
			tot.absn.	1.6685+0	6.9897-1	6.9105+2	1.9868+2	3.5862+2	2.9170+2	8.0110+3
94Pu241	1381	16	(n,2n)	2.1279-2	0.	0.	0.	0.	0.	5.4515-1
		18	fission	1.5909+0	2.1626+0	5.1474+1	7.9480+2	1.4346+3	1.0203+3	5.9005+2
		102	(n,gamma)	9.2989-2	3.6264-1	1.7882+1	2.9572+2	5.3377+2	3.6298+2	1.9651+2
			tot.absn.	1.7052+0	2.5252+0	6.9356+1	1.0905+3	1.9684+3	1.3833+3	7.8716+2
94Pu242	1342	16	(n,2n)	5.9484-3	0.	0.	0.	0.	0.	4.8293-1
		18	fission	1.3773+0	1.6004-1	2.3566-2	5.8278-4	1.0519-3	1.0520-3	5.6078+0
		102	(n,gamma)	5.4889-2	3.6051-1	1.1336+2	1.1372+1	2.0526+1	1.9338+1	1.2735+3
			tot.absn.	1.4381+0	5.2055-1	1.1338+2	1.1373+1	2.0527+1	1.9339+1	1.2798+3
94Pu243	8443	16	(n,2n)	5.2776-2	0.	0.	0.	0.	0.	1.1326+0
		18	fission	1.2447+0	5.7921-1	4.7833+1	9.6353+1	1.7392+2	1.8174+2	5.5979+2
		102	(n,gamma)	2.1083-2	2.9671-1	2.3855+1	4.6805+1	8.4483+1	8.8276+1	2.7533+2
			tot.absn.	1.3186+0	8.7592-1	7.1688+1	1.4316+2	2.5840+2	2.7002+2	8.3670+2
94Pu244	8444	16	(n,2n)	1.9992-2	0.	0.	0.	0.	0.	8.9050-1
		18	fission	1.2476+0	1.1292-1	2.0096-3	0.	0.	0.	4.7957+0
		102	(n,gamma)	1.0121-2	1.1946-1	8.5206+0	1.0050+0	1.8140+0	1.8456+0	1.0568+2
			tot.absn.	1.2777+0	2.3238-1	8.5226+0	1.0050+0	1.8140+0	1.8456+0	1.1156+2
95Am241	1361	16	(n,2n)	1.0161-3	0.	0.	0.	0.	0.	1.3612-1
		18	fission	1.7999+0	9.9396-2	4.5817-1	3.3059+0	5.9672+0	3.2799+0	1.3481+1
		102	(n,gamma)	1.2976-1	1.4193+0	9.0475+1	6.1519+2	1.1104+3	5.8142+2	1.4199+3
			tot.absn.	1.9307+0	1.5187+0	9.0933+1	6.1850+2	1.1164+3	5.8470+2	1.4336+3
95Am242	8542	18	fission	0.	2.5009-1	5.1051+1	1.1903+3	2.1486+3	2.2852+3	6.1462+2
		102	(n,gamma)	0.	3.2137-2	6.0592+0	1.3225+2	2.3871+2	2.5390+2	7.1273+1
			tot.absn.	0.	2.8223-1	5.7110+1	1.3226+3	2.3873+3	2.5391+3	6.8589+2

Table 4-3 Cont'd

Nuclide	MAT	MT	Reaction	Four-Group Cross Sections Gp 1	Gp 2	Gp 3	Gp 4	Thermal Values- Effec.	.0253 eV	Resonance Integral
95Am242m	1369	16	(n,2n)	1.1579-2	0.	0.	0.	0.	0.	4.8545-1
		18	fission	2.1657+0	3.2844+0	1.4971+2	4.9449+3	8.9255+3	6.6652+3	1.8709+3
		102	(n,gamma)	7.9507-3	2.7396-1	2.1960+1	1.0159+3	1.8337+3	1.3519+3	2.8381+2
			tot.absn.	2.1852+0	3.5584+0	1.7167+2	5.9608+3	1.0759+4	8.0171+3	2.1554+3
95Am243	1363	16	(n,2n)	6.3650-4	0.	0.	0.	0.	0.	8.1818-2
		18	fission	1.4662+0	6.8942-2	1.0470-3	0.	0.	0.	6.2485+0
		102	(n,gamma)	3.2462-2	7.3914-1	1.5911+2	4.7627+1	8.5967+1	7.5291+1	1.8190+3
			tot.absn.	1.4993+0	8.0808-1	1.5911+2	4.7627+1	8.5967+1	7.5291+1	1.8253+3
96Cm241	8641	16	(n,2n)	4.4371-4	0.	0.	0.	0.	0.	1.5225-2
		18	fission	2.7825+0	2.7519+0	9.4619+1	1.4469+3	2.6116+3	2.6060+3	1.1564+3
		102	(n,gamma)	9.4134-3	1.6104-1	9.1065+0	1.3933+2	2.5150+2	2.5094+2	1.1014+2
			tot.absn.	2.7924+0	2.9129+0	1.0373+2	1.5862+3	2.8631+3	2.8569+3	1.2666+3
96Cm242	8642	16	(n,2n)	1.7016-4	0.	0.	0.	0.	0.	1.4623-2
		18	fission	1.1804+0	3.0934-2	3.3981-2	1.6045+0	2.8961+0	3.0319+0	6.3858+0
		102	(n,gamma)	1.5264-2	1.8843-1	1.6467+1	9.1560+0	1.6526+1	1.7238+1	1.5592+2
			tot.absn.	1.1958+0	2.1936-1	1.6501+1	1.0760+1	1.9422+1	2.0270+1	1.6232+2
96Cm243	1343	16	(n,2n)	1.1480-2	0.	0.	0.	0.	0.	3.2611-1
		18	fission	2.1941+0	2.1507+0	1.7112+2	4.0172+2	7.2509+2	6.9864+2	1.9672+3
		102	(n,gamma)	5.5252-3	1.6736-1	2.2684+1	3.3547+1	6.0553+1	5.8628+1	2.5087+2
			tot.absn.	2.2111+0	2.3181+0	1.9380+2	4.3527+2	7.8564+2	7.5727+2	2.2184+3
96Cm244	1344	16	(n,2n)	3.3409-3	0.	0.	0.	0.	0.	3.1694-1
		18	fission	1.9143+0	3.2380-1	1.0419+0	3.1617-1	5.7068-1	6.0751-1	1.8820+1
		102	(n,gamma)	7.0387-2	6.9827-1	5.5983+1	5.7752+0	1.0424+1	1.0434+1	5.9179+2
			tot.absn.	1.9880+0	1.0221+0	5.7025+1	6.0914+0	1.0995+1	1.1042+1	6.1113+2
96Cm245	1345	16	(n,2n)	1.9832-2	0.	0.	0.	0.	0.	7.3857-1
		18	fission	1.9764+0	2.3527+0	6.9976+1	1.0514+3	1.8977+3	2.1714+3	8.2813+2
		102	(n,gamma)	2.0301-2	2.9507-1	9.8639+0	1.8382+2	3.3179+2	3.8514+2	1.1670+2
			tot.absn.	2.0165+0	2.6478+0	7.9840+1	1.2352+3	2.2295+3	2.5565+3	9.4576+2
96Cm246	1346	16	(n,2n)	4.0406-3	0.	0.	0.	0.	0.	4.5899-1
		18	fission	1.6974+0	1.0023-1	3.9626-1	3.6557-2	6.5985-2	6.3552-2	1.0448+1
		102	(n,gamma)	3.1310-2	1.7421-1	1.0007+1	7.4818-1	1.3505+0	1.3044+0	1.0378+2
			tot.absn.	1.7328+0	2.7444-1	1.0403+1	7.8474-1	1.4165+0	1.3680+0	1.1505+2
96Cm247	8647	16	(n,2n)	3.1769-2	0.	0.	0.	0.	0.	7.1243-1
		18	fission	2.0960+0	1.9209+0	6.3004+1	5.9765+1	1.0788+2	8.4073+1	7.5330+2
		102	(n,gamma)	2.0351-2	2.8847-1	4.2175+1	4.0957+1	7.3926+1	5.8614+1	4.9349+2
			tot.absn.	2.1481+0	2.2094+0	1.0518+2	1.0072+2	1.8181+2	1.4269+2	1.2478+3
96Cm248	8648	16	(n,2n)	5.7611-3	0.	0.	0.	0.	0.	4.9147-1
		18	fission	1.7016+0	1.4661-1	8.3437-1	4.9315-2	8.9014-2	8.7862-2	1.5524+1
		102	(n,gamma)	4.1574-2	1.9657-1	2.3724+1	1.3815+0	2.4936+0	2.4587+0	2.4825+2
			tot.absn.	1.7489+0	3.4318-1	2.4558+1	1.4308+0	2.5826+0	2.5466+0	2.6469+2
97Bk249	8749	16	(n,2n)	2.0403-2	0.	0.	0.	0.	0.	1.0547+0
		18	fission	1.0757+0	3.2341-2	1.7036-3	0.	0.	0.	4.2497+0
		102	(n,gamma)	6.7435-2	3.4721-1	3.4008+2	9.0285+2	1.6296+3	1.5933+3	4.0777+3
			tot.absn.	1.1635+0	3.7955-1	3.4008+2	9.0285+2	1.6296+3	1.5933+3	4.0836+3
98Cf249	8849	16	(n,2n)	2.1563-2	0.	0.	0.	0.	0.	7.7487-1
		18	fission	1.6784+0	2.2381+0	1.5104+2	8.8236+2	1.5927+3	1.6697+3	2.1017+3
		102	(n,gamma)	6.7383-2	2.7588-1	5.8042+1	2.7750+2	5.0089+2	4.8293+2	8.1039+2
			tot.absn.	1.7673+0	2.5140+0	2.0908+2	1.1599+3	2.0936+3	2.1526+3	2.9131+3
98Cf250	8850	16	(n,2n)	1.0577-2	0.	0.	0.	0.	0.	6.0934-1
		18	fission	2.0639+0	1.1218+0	6.3435-3	0.	0.	0.	1.0875+1
		102	(n,gamma)	6.7384-2	2.7369-1	7.8413+2	1.3374+3	2.4140+3	1.6187+3	1.1207+4
			tot.absn.	2.1419+0	1.3955+0	7.8414+2	1.3374+3	2.4140+3	1.6187+3	1.1219+4
98Cf251	8851	16	(n,2n)	3.6985-2	0.	0.	0.	0.	0.	9.0402-1
		18	fission	1.6784+0	2.1717+0	3.5979+2	3.0523+3	5.5094+3	5.3447+3	4.9305+3
		102	(n,gamma)	6.7382-2	2.6368-1	1.1765+2	1.5728+3	2.8390+3	2.8740+3	1.6220+3
			tot.absn.	1.7828+0	2.4354+0	4.7744+2	4.6251+3	8.3484+3	8.2187+3	6.5537+3
98Cf252	8852	16	(n,2n)	8.3656-3	0.	0.	0.	0.	0.	4.0792-1
		18	fission	2.2797+0	4.5065-1	1.1939+1	1.6989+1	3.0666+1	3.2359+1	1.1909+2
		102	(n,gamma)	1.9614-2	2.6411-1	4.9156+0	1.0808+1	1.9508+1	2.0611+1	4.7189+1
			tot.absn.	2.3077+0	7.1476-1	1.6855+1	2.7797+1	5.0174+1	5.2970+1	1.6684+2
98Cf253	8853	18	fission	0.	3.6713-1	9.0944+1	7.9385+2	1.4329+3	1.1389+3	1.2375+3
		102	(n,gamma)	0.	3.3947-2	2.8090+1	2.3847+2	4.3043+2	3.4212+2	3.7698+2
			tot.absn.	0.	4.0108-1	1.1903+2	1.0323+3	1.8633+3	1.4810+3	1.6145+3
99Es253	8953	102	(n,gamma)	0.	2.7278-2	1.1118+2	9.7869+2	1.7665+3	2.0200+2	6.3629+3
			tot.absn.	0.	2.7278-2	1.1118+2	9.7869+2	1.7665+3	2.0200+2	6.3629+3

B. Fast Reactor Cross Sections

Here we provide cross sections collapsed from the same 154-group cross section library used in producing the thermal reactor cross sections to a single average value for each of three fast reactor spectra. These have very different degrees of hardness and should cover the range of spectra of interest to most users.

The tabular spectra used for the collapsing in 51 groups are given in Table 4-4. The listed values are in units of neutrons per eV for the average value over the listed energy bounds. Figure 4-2 is a normalized plot of these three spectra converted to neutrons per unit lethargy. Average energies for each spectra are noted on the plot. Table 4-5 lists the average cross sections for these three spectra.

Table 4-4

NORMALIZED FLUX WEIGHTING SPECTRA FOR THREE FAST CASES

(51 Histogram Values Listed as Flux-per-Unit-Energy)

---------- 1KMW Ref. Spectra ----------

2.0000+07	9.8704-14	1.8220+07	2.6887-13	1.6910+07	1.1208-12	1.4920+07	4.2813-12	1.3500+07	1.4549-11
1.1910+07	5.9365-11	1.0000+07	2.9421-10	7.7900+06	1.1887-09	6.0650+06	3.2185-09	4.7240+06	6.8731-09
3.6790+06	1.5488-08	2.8650+06	2.2744-08	2.2310+06	4.5052-08	1.3530+06	9.5180-08	8.2080+05	2.7560-07
4.9790+05	2.8859-07	3.8770+05	5.5203-07	3.0200+05	9.3859-07	1.8320+05	1.5483-06	1.1110+05	2.4311-06
6.7380+04	3.2054-06	4.0870+04	4.7755-06	2.5540+04	6.8404-06	1.9890+04	7.0523-06	1.5030+04	8.3231-06
9.1190+03	8.6304-06	5.5310+03	7.5729-06	3.3550+03	2.1785-06	2.8400+03	2.9125-06	2.4040+03	1.0752-05
2.0350+03	2.2403-05	1.2340+03	2.1978-05	7.4850+02	1.6960-05	4.5400+02	1.1321-05	2.7540+02	7.7788-06
1.6700+02	3.7554-06	1.0130+02	1.2238-06	6.1440+01	3.8692-07	3.7270+01	2.0586-07	2.2600+01	3.7811-08
1.3710+01	9.9495-09	8.3150+00	1.1729-09	5.0430+00	9.2531-10	3.0590+00	3.9636-10	1.8550+00	6.2895-11
1.1250+00	3.2219-12	6.8260-01	4.1465-13	4.1400-01	6.0906-15	2.5110-01	1.5477-16	1.5230-01	7.6316-18
9.2370-02	2.4381-19	2.5200-02							

---------- CFRMF Ref. Spectra ----------

2.0000+07	1.9380-13	1.8220+07	5.2787-13	1.6910+07	2.2006-12	1.4920+07	8.4056-12	1.3500+07	2.8564-11
1.1910+07	1.1655-10	1.0000+07	5.7767-10	7.7900+06	2.3338-09	6.0650+06	6.7322-09	4.7240+06	1.4377-08
3.6790+06	2.9493-08	2.8650+06	4.3310-08	2.2310+06	7.9846-08	1.3530+06	2.0660-07	8.2080+05	5.0629-07
4.9790+05	7.1596-07	3.8770+05	9.1609-07	3.0200+05	1.0636-06	1.8320+05	1.2555-06	1.1110+05	1.5266-06
6.7380+04	1.6590-06	4.0870+04	1.5983-06	2.5540+04	2.0116-06	1.9890+04	1.5382-06	1.5030+04	1.9702-06
9.1190+03	2.1834-06	5.5310+03	3.4034-06	3.3550+03	3.9203-06	2.8400+03	4.4311-06	2.4040+03	4.4250-06
2.0350+03	6.3239-06	1.2340+03	6.9984-06	7.4850+02	8.6223-06	4.5400+02	8.5596-06	2.7540+02	8.8448-06
1.6700+02	8.1288-06	1.0130+02	7.2565-06	6.1440+01	5.9691-06	3.7270+01	3.6317-06	2.2600+01	1.5992-06
1.3710+01	1.0761-06	8.3150+00	1.0858-07	5.0430+00	5.0731-08	3.0590+00	6.7899-09	1.8550+00	3.7992-10
1.1250+00	8.2161-12	6.8260-01	1.0146-11	4.1400-01	1.5828-11	2.5110-01	2.4334-11	1.5230-01	3.6978-11
9.2370-02	7.5249-11	2.5200-02							

---------- EBR-2 Ref. Spectra (Metal Driver Region) ----------

2.0000+07	1.9722-13	1.8220+07	5.3721-13	1.6910+07	2.2394-12	1.4920+07	8.5544-12	1.3500+07	2.9070-11
1.1910+07	1.1861-10	1.0000+07	5.8789-10	7.7900+06	2.3750-09	6.0650+06	7.7570-09	4.7240+06	1.6566-08
3.6790+06	3.9540-08	2.8650+06	5.8063-08	2.2310+06	1.1983-07	1.3530+06	2.5445-07	8.2080+05	5.3800-07
4.9790+05	8.1415-07	3.8770+05	9.7221-07	3.0200+05	1.0742-06	1.8320+05	1.1604-06	1.1110+05	1.1033-06
6.7380+04	9.3296-07	4.0870+04	9.5183-07	2.5540+04	9.2966-07	1.9890+04	6.0335-07	1.5030+04	3.6766-07
9.1190+03	1.8441-07	5.5310+03	9.8126-08	3.3550+03	2.4488-08	2.8400+03	3.2572-08	2.4040+03	1.1085-07
2.0350+03	7.9122-08	1.2340+03	1.5668-08	7.4850+02	1.9812-09	4.5400+02	2.4208-10	2.7540+02	2.5658-11
1.6700+02	1.4241-12	1.0130+02	6.1195-14	6.1440+01	1.5683-15	3.7270+01	6.8173-18	2.2600+01	1.1250-18
1.3710+01	1.8538-18	8.3150+00	3.0565-18	5.0430+00	5.0408-19	3.0590+00	8.3065-19	1.8550+00	1.3700-18
1.1250+00	2.2606-19	6.8260-01	3.7234-19	4.1400-01	6.1393-19	2.5110-01	1.0122-19	1.5230-01	1.6688-19
9.2370-02	1.4890-19	2.5200-02							

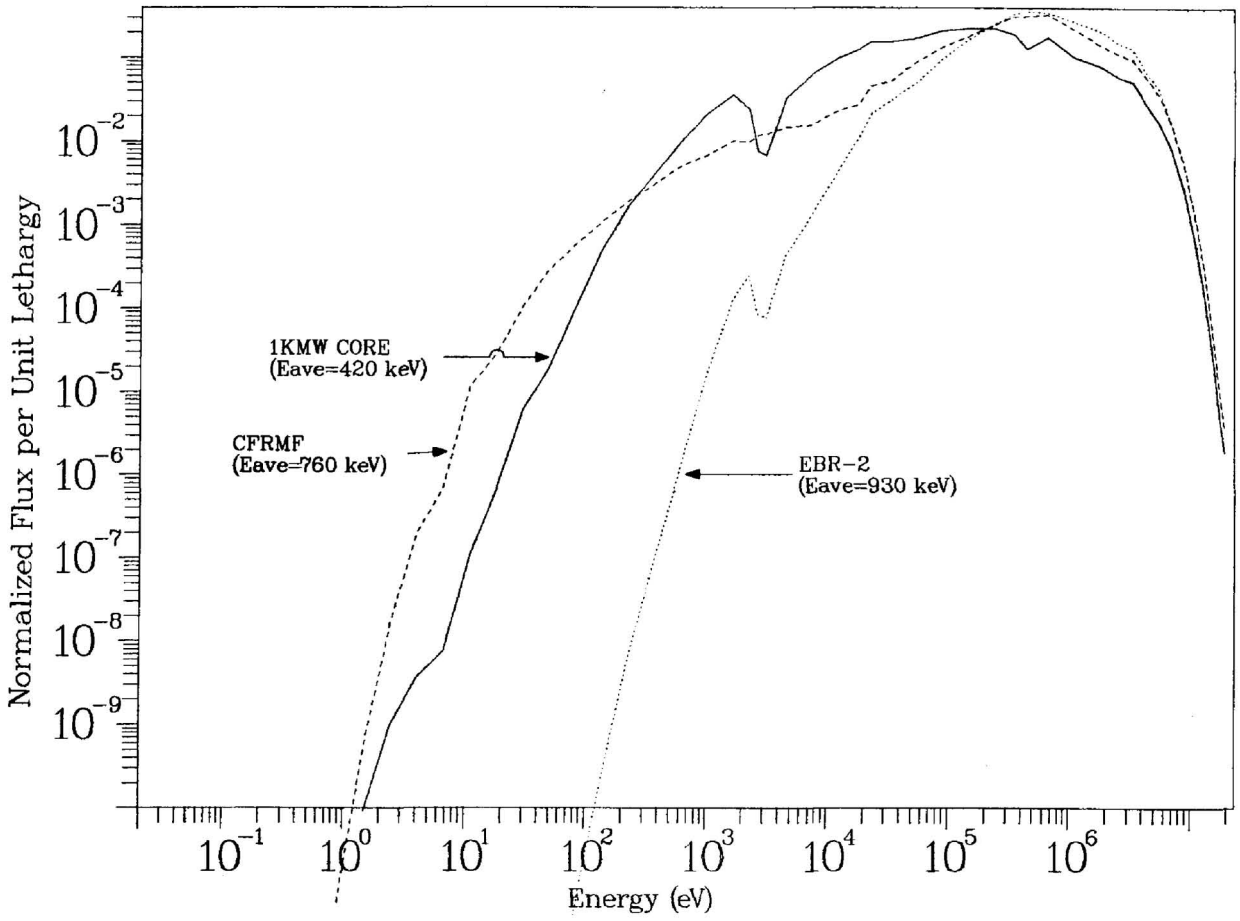


Fig. 4-2. Fast spectra used for one-group cross sections.

Table 4-5

ONE-GROUP FAST-REACTOR CROSS SECTIONS

Nuclide	MAT	MT	Reaction	1KMW Core	CFRMF	EBR2 Core
32Ge 72	9050	102	(n,gamma)	5.46e-02	4.08e-02	3.39e-02
			tot.absn.	5.46e-02	4.08e-02	3.39e-02
32Ge 73	9051	102	(n,gamma)	3.61e-01	2.26e-01	7.58e-02
			tot.absn.	3.61e-01	2.26e-01	7.58e-02
32Ge 74	9053	102	(n,gamma)	3.29e-02	2.33e-02	1.80e-02
			tot.absn.	3.29e-02	2.33e-02	1.80e-02
32Ge 76	9056	102	(n,gamma)	2.07e-02	1.29e-02	6.48e-03
			tot.absn.	2.07e-02	1.29e-02	6.48e-03
33As 75	9071	102	(n,gamma)	4.04e-01	2.22e-01	9.31e-02
			tot.absn.	4.04e-01	2.22e-01	9.31e-02
34Se 74	9089	102	(n,gamma)	2.05e-01	1.73e-01	5.12e-02
			tot.absn.	2.05e-01	1.73e-01	5.12e-02
34Se 76	9091	102	(n,gamma)	1.73e-01	1.05e-01	5.72e-02
			tot.absn.	1.73e-01	1.05e-01	5.72e-02
34Se 77	9092	102	(n,gamma)	4.00e-01	2.06e-01	9.91e-02
			tot.absn.	4.00e-01	2.06e-01	9.91e-02
34Se 78	9094	102	(n,gamma)	6.80e-02	4.51e-02	2.42e-02
			tot.absn.	6.80e-02	4.51e-02	2.42e-02
34Se 80	9097	102	(n,gamma)	5.81e-02	3.36e-02	2.41e-02
			tot.absn.	5.81e-02	3.36e-02	2.41e-02
34Se 82	9100	102	(n,gamma)	9.27e-03	7.56e-03	6.96e-03
			tot.absn.	9.27e-03	7.56e-03	6.96e-03
35Br 79	9113	102	(n,gamma)	6.98e-01	3.89e-01	1.77e-01
			tot.absn.	6.98e-01	3.89e-01	1.77e-01
35Br 81	9117	102	(n,gamma)	3.77e-01	2.30e-01	1.16e-01
			tot.absn.	3.77e-01	2.30e-01	1.16e-01
36Kr 78	1330	16	(n,2n)	4.83e-06	9.48e-06	9.65e-06
		102	(n,gamma)	2.57e-01	1.65e-01	9.65e-02
		103	(n,p)	2.80e-03	5.67e-03	6.51e-03
		104	(n,d)	1.16e-06	2.29e-06	2.33e-06
		105	(n,t)	1.02e-08	2.00e-08	2.04e-08
		106	(n,he3)	1.00e-08	1.97e-08	2.00e-08
		107	(n,a)	1.93e-04	3.93e-04	4.42e-04
			tot.absn.	2.60e-01	1.71e-01	1.03e-01
36Kr 80	1331	16	(n,2n)	2.16e-05	4.24e-05	4.32e-05
		102	(n,gamma)	2.30e-01	1.67e-01	6.79e-02
		103	(n,p)	1.63e-04	3.31e-04	3.65e-04
		104	(n,d)	5.05e-07	9.92e-07	1.01e-06
		105	(n,t)	6.09e-09	1.19e-08	1.22e-08
		106	(n,he3)	7.93e-09	1.56e-08	1.59e-08
		107	(n,a)	1.05e-05	2.10e-05	2.26e-05
			tot.absn.	2.30e-01	1.67e-01	6.83e-02
36Kr 82	1332	16	(n,2n)	3.94e-05	7.73e-05	7.87e-05
		102	(n,gamma)	9.03e-02	9.08e-02	2.97e-02
		103	(n,p)	1.96e-05	3.90e-05	4.09e-05
		104	(n,d)	1.98e-07	3.89e-07	3.96e-07
		105	(n,t)	4.01e-09	7.88e-09	8.02e-09
		106	(n,he3)	2.08e-09	4.09e-09	4.16e-09
		107	(n,a)	6.75e-07	1.33e-06	1.37e-06
			tot.absn.	9.04e-02	9.09e-02	2.98e-02
36Kr 83	1333	16	(n,2n)	5.81e-04	1.14e-03	1.16e-03
		17	(n,3n)	6.05e-11	1.19e-10	1.21e-10
		102	(n,gamma)	2.46e-01	1.41e-01	6.63e-02
		103	(n,p)	1.44e-05	2.91e-05	3.37e-05
		104	(n,d)	1.94e-07	3.81e-07	3.87e-07
		105	(n,t)	7.01e-08	1.38e-07	1.40e-07
		106	(n,he3)	1.13e-09	2.21e-09	2.25e-09
		107	(n,a)	9.81e-07	1.98e-06	2.17e-06
			tot.absn.	2.47e-01	1.42e-01	6.74e-02
36Kr 84	1334	16	(n,2n)	6.07e-05	1.19e-04	1.21e-04
		102	(n,gamma)	6.04e-02	3.07e-02	1.15e-02
		103	(n,p)	5.22e-07	1.02e-06	1.04e-06
		104	(n,d)	8.93e-08	1.75e-07	1.78e-07
		105	(n,t)	3.21e-09	6.31e-09	6.42e-09
		106	(n,he3)	1.11e-11	2.18e-11	2.22e-11
		107	(n,a)	5.74e-08	1.13e-07	1.15e-07
			tot.absn.	6.04e-02	3.08e-02	1.16e-02

Table 4-5 (Cont'd)

Nuclide	MAT	MT	Reaction	1KMW Core	CFRMF	EBR2 Core
36Kr 85	9145	102	(n,gamma)	4.31e-02	1.99e-02	9.72e-03
			tot.absn.	4.31e-02	1.99e-02	9.72e-03
36Kr 86	1336	16	(n,2n)	8.24e-05	1.62e-04	1.65e-04
		17	(n,3n)	3.36e-08	6.59e-08	6.71e-08
		102	(n,gamma)	3.77e-03	3.12e-03	1.78e-03
		103	(n,p)	1.41e-08	2.77e-08	2.82e-08
		104	(n,d)	1.85e-08	3.64e-08	3.70e-08
		105	(n,t)	1.36e-09	2.67e-09	2.72e-09
			tot.absn.	3.85e-03	3.28e-03	1.95e-03
37Rb 85	9160	102	(n,gamma)	2.32e-01	1.11e-01	6.15e-02
			tot.absn.	2.32e-01	1.11e-01	6.15e-02
37Rb 86	9161	102	(n,gamma)	1.83e-01	1.04e-01	2.98e-02
			tot.absn.	1.83e-01	1.04e-01	2.98e-02
37Rb 87	9163	102	(n,gamma)	1.91e-02	1.31e-02	5.45e-03
			tot.absn.	1.91e-02	1.31e-02	5.45e-03
38Sr 84	9179	102	(n,gamma)	2.27e-01	1.51e-01	9.65e-02
			tot.absn.	2.27e-01	1.51e-01	9.65e-02
38Sr 86	9182	102	(n,gamma)	8.05e-02	4.86e-02	2.40e-02
			tot.absn.	8.05e-02	4.86e-02	2.40e-02
38Sr 87	9183	102	(n,gamma)	1.13e-01	5.75e-02	2.95e-02
			tot.absn.	1.13e-01	5.75e-02	2.95e-02
38Sr 88	9185	102	(n,gamma)	2.30e-03	1.78e-03	1.66e-03
			tot.absn.	2.30e-03	1.78e-03	1.66e-03
38Sr 89	9186	102	(n,gamma)	2.31e-02	1.29e-02	9.08e-03
			tot.absn.	2.31e-02	1.29e-02	9.08e-03
38Sr 90	9187	102	(n,gamma)	1.39e-02	9.83e-03	8.65e-03
			tot.absn.	1.39e-02	9.83e-03	8.65e-03
39 Y 89	9202	102	(n,gamma)	2.59e-02	1.65e-02	1.19e-02
			tot.absn.	2.59e-02	1.65e-02	1.19e-02
39 Y 90	9204	102	(n,gamma)	1.42e-01	6.97e-02	3.90e-02
			tot.absn.	1.42e-01	6.97e-02	3.90e-02
39 Y 91	9206	102	(n,gamma)	4.57e-02	2.38e-02	1.35e-02
			tot.absn.	4.57e-02	2.38e-02	1.35e-02
40Zr 90	1385	16	(n,2n)	1.57e-05	3.08e-05	3.13e-05
		102	(n,gamma)	1.92e-02	1.38e-02	1.15e-02
		103	(n,p)	4.21e-05	8.44e-05	8.99e-05
		107	(n,a)	4.79e-07	9.40e-07	9.56e-07
			tot.absn.	1.92e-02	1.39e-02	1.16e-02
40Zr 91	1386	16	(n,2n)	5.13e-04	1.01e-03	1.03e-03
		102	(n,gamma)	1.01e-01	5.07e-02	2.09e-02
		103	(n,p)	2.23e-05	4.44e-05	4.67e-05
		107	(n,a)	2.79e-05	5.56e-05	6.16e-05
			tot.absn.	1.02e-01	5.18e-02	2.20e-02
40Zr 92	1387	16	(n,2n)	1.69e-04	3.32e-04	3.37e-04
		102	(n,gamma)	3.47e-02	2.09e-02	1.34e-02
		103	(n,p)	4.42e-06	8.67e-06	8.83e-06
		107	(n,a)	2.30e-06	4.52e-06	4.64e-06
			tot.absn.	3.49e-02	2.13e-02	1.38e-02
40Zr 93	9232	102	(n,gamma)	9.39e-02	7.35e-02	2.57e-02
			tot.absn.	9.39e-02	7.35e-02	2.57e-02
40Zr 94	1388	16	(n,2n)	2.58e-04	5.06e-04	5.15e-04
		102	(n,gamma)	2.92e-02	1.81e-02	1.38e-02
		103	(n,p)	1.18e-06	2.32e-06	2.36e-06
		107	(n,a)	5.54e-07	1.09e-06	1.11e-06
			tot.absn.	2.94e-02	1.86e-02	1.43e-02
40Zr 95	9234	102	(n,gamma)	1.69e-01	9.08e-02	5.21e-02
			tot.absn.	1.69e-01	9.08e-02	5.21e-02
40Zr 96	1389	16	(n,2n)	3.79e-04	7.45e-04	7.58e-04
		102	(n,gamma)	4.75e-02	3.46e-02	1.63e-02
		107	(n,a)	4.09e-07	8.03e-07	8.17e-07
			tot.absn.	4.78e-02	3.54e-02	1.70e-02
41Nb 93	1189	16	(n,2n)	1.34e-04	2.63e-04	2.68e-04
		17	(n,3n)	4.88e-08	9.57e-08	9.74e-08
		22	(n,n'a)	1.78e-06	3.52e-06	3.67e-06
		102	(n,gamma)	2.31e-01	1.17e-01	5.86e-02
		103	(n,p)	6.05e-05	1.22e-04	1.32e-04
		107	(n,a)	6.60e-06	1.32e-05	1.39e-05
			tot.absn.	2.31e-01	1.18e-01	5.90e-02
41Nb 94	9251	102	(n,gamma)	2.63e-01	1.23e-01	4.05e-02
			tot.absn.	2.63e-01	1.23e-01	4.05e-02

Table 4-5 (Cont'd)

Nuclide	MAT	MT	Reaction	1KMW Core	CFRMF	EBR2 Core
41Nb 95	9253	102	(n,gamma)	3.80e-01	2.12e-01	1.11e-01
			tot.absn.	3.80e-01	2.12e-01	1.11e-01
42Mo 92	9278	102	(n,gamma)	5.48e-02	4.00e-02	3.29e-02
		103	(n,p)	3.84e-04	7.69e-04	8.72e-04
		107	(n,a)	7.28e-06	1.44e-05	1.49e-05
			tot.absn.	5.52e-02	4.07e-02	3.38e-02
42Mo 94	9281	102	(n,gamma)	7.38e-02	5.38e-02	4.46e-02
			tot.absn.	7.38e-02	5.38e-02	4.46e-02
42Mo 95	9282	102	(n,gamma)	3.16e-01	1.89e-01	9.06e-02
			tot.absn.	3.16e-01	1.89e-01	9.06e-02
42Mo 96	9283	102	(n,gamma)	8.84e-02	7.33e-02	4.11e-02
			tot.absn.	8.84e-02	7.33e-02	4.11e-02
42Mo 97	9284	102	(n,gamma)	3.13e-01	1.66e-01	8.91e-02
			tot.absn.	3.13e-01	1.66e-01	8.91e-02
42Mo 98	9285	102	(n,gamma)	1.20e-01	6.55e-02	3.33e-02
			tot.absn.	1.20e-01	6.55e-02	3.33e-02
42Mo 99	9286	102	(n,gamma)	5.12e-01	2.72e-01	1.58e-01
			tot.absn.	5.12e-01	2.72e-01	1.58e-01
42Mo100	9287	102	(n,gamma)	9.22e-02	4.99e-02	2.56e-02
			tot.absn.	9.22e-02	4.99e-02	2.56e-02
43Tc 99	1308	16	(n,2n)	1.77e-04	3.47e-04	3.53e-04
		102	(n,gamma)	6.49e-01	3.19e-01	1.68e-01
			tot.absn.	6.50e-01	3.19e-01	1.68e-01
44Ru 96	9325	102	(n,gamma)	3.78e-01	2.54e-01	1.90e-01
			tot.absn.	3.78e-01	2.54e-01	1.90e-01
44Ru 98	9327	102	(n,gamma)	1.16e-01	6.92e-02	4.13e-02
			tot.absn.	1.16e-01	6.92e-02	4.13e-02
44Ru 99	9328	102	(n,gamma)	5.19e-01	2.91e-01	1.39e-01
			tot.absn.	5.19e-01	2.91e-01	1.39e-01
44Ru100	9329	102	(n,gamma)	1.95e-01	1.18e-01	7.88e-02
			tot.absn.	1.95e-01	1.18e-01	7.88e-02
44Ru101	9330	102	(n,gamma)	7.51e-01	3.91e-01	2.15e-01
			tot.absn.	7.51e-01	3.91e-01	2.15e-01
44Ru102	9331	102	(n,gamma)	1.70e-01	1.01e-01	7.39e-02
			tot.absn.	1.70e-01	1.01e-01	7.39e-02
44Ru103	9332	102	(n,gamma)	4.58e-01	2.56e-01	1.37e-01
			tot.absn.	4.58e-01	2.56e-01	1.37e-01
44Ru104	9333	102	(n,gamma)	1.51e-01	8.73e-02	5.02e-02
			tot.absn.	1.51e-01	8.73e-02	5.02e-02
44Ru105	9334	102	(n,gamma)	3.75e-01	1.82e-01	1.08e-01
			tot.absn.	3.75e-01	1.82e-01	1.08e-01
44Ru106	9335	102	(n,gamma)	8.76e-02	4.48e-02	2.05e-02
			tot.absn.	8.76e-02	4.48e-02	2.05e-02
45Rh103	1310	16	(n,2n)	6.63e-05	1.30e-04	1.33e-04
		102	(n,gamma)	7.12e-01	3.85e-01	2.17e-01
			tot.absn.	7.12e-01	3.85e-01	2.18e-01
45Rh105	9355	102	(n,gamma)	5.97e-01	3.45e-01	2.23e-01
			tot.absn.	5.97e-01	3.45e-01	2.23e-01
46Pd102	9379	102	(n,gamma)	1.72e-01	1.04e-01	6.65e-02
			tot.absn.	1.72e-01	1.04e-01	6.65e-02
46Pd104	9381	102	(n,gamma)	3.25e-01	2.10e-01	1.39e-01
			tot.absn.	3.25e-01	2.10e-01	1.39e-01
46Pd105	9382	102	(n,gamma)	8.99e-01	4.97e-01	3.02e-01
			tot.absn.	8.99e-01	4.97e-01	3.02e-01
46Pd106	9383	102	(n,gamma)	2.67e-01	1.68e-01	1.15e-01
			tot.absn.	2.67e-01	1.68e-01	1.15e-01
46Pd107	9384	102	(n,gamma)	8.58e-01	4.73e-01	2.76e-01
			tot.absn.	8.58e-01	4.73e-01	2.76e-01
46Pd108	9386	102	(n,gamma)	2.49e-01	1.89e-01	9.95e-02
			tot.absn.	2.49e-01	1.89e-01	9.95e-02
46Pd110	9389	102	(n,gamma)	2.06e-01	1.04e-01	5.28e-02
			tot.absn.	2.06e-01	1.04e-01	5.28e-02
47Ag107	1371	16	(n,2n)	1.38e-04	2.70e-04	2.75e-04
		102	(n,gamma)	6.92e-01	3.83e-01	2.19e-01
		103	(n,p)	8.44e-06	1.69e-05	1.79e-05
		104	(n,d)	1.07e-06	2.11e-06	2.15e-06
		105	(n,t)	5.01e-08	9.83e-08	1.00e-07
		107	(n,a)	9.04e-06	1.78e-05	1.81e-05
			tot.absn.	6.92e-01	3.83e-01	2.20e-01

Table 4-5 (Cont'd)

Nuclide	MAT	MT	Reaction	1KMW Core	CFRMF	EBR2 Core
47Ag109	1373	16	(n,2n)	1.45e-04	2.84e-04	2.89e-04
		102	(n,gamma)	7.89e-01	4.46e-01	2.42e-01
		103	(n,p)	9.32e-06	1.87e-05	1.99e-05
		107	(n,a)	7.29e-06	1.43e-05	1.46e-05
			tot.absn.	7.90e-01	4.46e-01	2.42e-01
47Ag111	9415	102	(n,gamma)	7.10e-01	3.93e-01	1.34e-01
			tot.absn.	7.10e-01	3.93e-01	1.34e-01
48Cd106	9440	102	(n,gamma)	2.38e-01	1.52e-01	1.04e-01
			tot.absn.	2.38e-01	1.52e-01	1.04e-01
48Cd108	9442	102	(n,gamma)	2.10e-01	1.36e-01	1.08e-01
			tot.absn.	2.10e-01	1.36e-01	1.08e-01
48Cd110	9444	102	(n,gamma)	2.66e-01	1.93e-01	1.34e-01
			tot.absn.	2.66e-01	1.93e-01	1.34e-01
48Cd111	9445	102	(n,gamma)	4.39e-01	2.46e-01	1.36e-01
			tot.absn.	4.39e-01	2.46e-01	1.36e-01
48Cd112	9447	102	(n,gamma)	2.43e-01	1.60e-01	1.17e-01
			tot.absn.	2.43e-01	1.60e-01	1.17e-01
48Cd113	1318	16	(n,2n)	4.21e-04	8.26e-04	8.40e-04
		102	(n,gamma)	3.97e-01	2.23e-01	1.13e-01
		103	(n,p)	1.40e-06	2.75e-06	2.79e-06
		107	(n,a)	5.89e-08	1.16e-07	1.18e-07
			tot.absn.	3.97e-01	2.24e-01	1.14e-01
48Cd114	9450	102	(n,gamma)	3.11e-01	1.98e-01	1.24e-01
			tot.absn.	3.11e-01	1.98e-01	1.24e-01
48Cd115m	9452	102	(n,gamma)	7.15e-01	4.13e-01	9.41e-02
			tot.absn.	7.15e-01	4.13e-01	9.41e-02
48Cd116	9453	102	(n,gamma)	1.18e-01	7.28e-02	5.41e-02
			tot.absn.	1.18e-01	7.28e-02	5.41e-02
49In113	9473	102	(n,gamma)	6.21e-01	4.26e-01	3.20e-01
			tot.absn.	6.21e-01	4.26e-01	3.20e-01
49In115	9477	102	(n,gamma)	4.65e-01	2.97e-01	2.01e-01
			tot.absn.	4.65e-01	2.97e-01	2.01e-01
50Sn112	9513	102	(n,gamma)	2.80e-01	2.18e-01	1.72e-01
			tot.absn.	2.80e-01	2.18e-01	1.72e-01
50Sn114	9516	102	(n,gamma)	2.48e-01	1.86e-01	1.64e-01
			tot.absn.	2.48e-01	1.86e-01	1.64e-01
50Sn115	9517	102	(n,gamma)	5.15e-02	2.88e-02	1.31e-02
			tot.absn.	5.15e-02	2.88e-02	1.31e-02
50Sn116	9518	102	(n,gamma)	6.12e-02	4.87e-02	3.07e-02
			tot.absn.	6.12e-02	4.87e-02	3.07e-02
50Sn117	9519	102	(n,gamma)	2.18e-01	1.23e-01	7.12e-02
			tot.absn.	2.18e-01	1.23e-01	7.12e-02
50Sn118	9521	102	(n,gamma)	1.21e-01	8.75e-02	6.59e-02
			tot.absn.	1.21e-01	8.75e-02	6.59e-02
50Sn119	9522	102	(n,gamma)	6.09e-02	2.98e-02	1.34e-02
			tot.absn.	6.09e-02	2.98e-02	1.34e-02
50Sn120	9524	102	(n,gamma)	4.85e-02	2.81e-02	1.94e-02
			tot.absn.	4.85e-02	2.81e-02	1.94e-02
50Sn122	9527	102	(n,gamma)	2.39e-02	1.71e-02	1.43e-02
			tot.absn.	2.39e-02	1.71e-02	1.43e-02
50Sn123	9528	102	(n,gamma)	1.21e-01	6.60e-02	4.22e-02
			tot.absn.	1.21e-01	6.60e-02	4.22e-02
50Sn124	9530	102	(n,gamma)	2.92e-02	2.57e-02	1.85e-02
			tot.absn.	2.92e-02	2.57e-02	1.85e-02
50Sn125	9531	102	(n,gamma)	3.31e-01	1.35e-01	1.57e-02
			tot.absn.	3.31e-01	1.35e-01	1.57e-02
50Sn126	9533	102	(n,gamma)	7.22e-03	6.43e-03	6.32e-03
			tot.absn.	7.22e-03	6.43e-03	6.32e-03
51Sb121	9548	102	(n,gamma)	4.56e-01	2.70e-01	1.64e-01
			tot.absn.	4.56e-01	2.70e-01	1.64e-01
51Sb123	9551	102	(n,gamma)	2.47e-01	1.46e-01	7.83e-02
			tot.absn.	2.47e-01	1.46e-01	7.83e-02
51Sb124	9552	102	(n,gamma)	7.32e-01	3.48e-01	1.85e-01
			tot.absn.	7.32e-01	3.48e-01	1.85e-01
51Sb125	9555	102	(n,gamma)	3.07e-01	1.81e-01	1.05e-01
			tot.absn.	3.07e-01	1.81e-01	1.05e-01
51Sb126	9556	102	(n,gamma)	4.53e-01	2.37e-01	1.03e-01
			tot.absn.	4.53e-01	2.37e-01	1.03e-01

Table 4-5 (Cont'd)

Nuclide	MAT	MT	Reaction	1KMW Core	CFRMF	EBR2 Core
52Te120	9576	102	(n,gamma)	3.92e-01	2.67e-01	1.90e-01
			tot.absn.	3.92e-01	2.67e-01	1.90e-01
52Te122	9579	102	(n,gamma)	3.48e-01	2.52e-01	1.56e-01
			tot.absn.	3.48e-01	2.52e-01	1.56e-01
52Te123	9580	102	(n,gamma)	5.12e-01	3.23e-01	1.70e-01
			tot.absn.	5.12e-01	3.23e-01	1.70e-01
52Te124	9582	102	(n,gamma)	2.50e-01	1.66e-01	1.29e-01
			tot.absn.	2.50e-01	1.66e-01	1.29e-01
52Te125	9583	102	(n,gamma)	3.80e-01	2.00e-01	9.59e-02
			tot.absn.	3.80e-01	2.00e-01	9.59e-02
52Te126	9585	102	(n,gamma)	1.06e-01	7.86e-02	5.25e-02
			tot.absn.	1.06e-01	7.86e-02	5.25e-02
52Te127m	9587	102	(n,gamma)	3.91e-01	2.24e-01	1.15e-01
			tot.absn.	3.91e-01	2.24e-01	1.15e-01
52Te128	9588	102	(n,gamma)	9.96e-02	7.00e-02	5.61e-02
			tot.absn.	9.96e-02	7.00e-02	5.61e-02
52Te129m	9590	102	(n,gamma)	1.31e-01	6.42e-02	2.76e-02
			tot.absn.	1.31e-01	6.42e-02	2.76e-02
52Te130	9591	102	(n,gamma)	1.54e-02	9.15e-03	6.57e-03
			tot.absn.	1.54e-02	9.15e-03	6.57e-03
52Te132	9594	102	(n,gamma)	3.60e-04	5.48e-04	6.05e-04
			tot.absn.	3.60e-04	5.48e-04	6.05e-04
53 I127	9606	102	(n,gamma)	5.96e-01	3.47e-01	1.60e-01
			tot.absn.	5.96e-01	3.47e-01	1.60e-01
53 I129	9608	102	(n,gamma)	3.59e-01	1.94e-01	9.32e-02
			tot.absn.	3.59e-01	1.94e-01	9.32e-02
53 I130	9609	102	(n,gamma)	5.91e-01	3.37e-01	8.66e-02
			tot.absn.	5.91e-01	3.37e-01	8.66e-02
53 I131	9611	102	(n,gamma)	1.56e-01	7.54e-02	2.58e-02
			tot.absn.	1.56e-01	7.54e-02	2.58e-02
53 I135	9618	102	(n,gamma)	6.49e-04	4.40e-04	4.00e-04
			tot.absn.	6.49e-04	4.40e-04	4.00e-04
54Xe124	1335	16	(n,2n)	4.82e-05	9.46e-05	9.63e-05
		17	(n,3n)	6.25e-09	1.23e-08	1.25e-08
		102	(n,gamma)	4.04e-01	2.61e-01	1.63e-01
		103	(n,p)	3.71e-06	7.39e-06	8.03e-06
		104	(n,d)	1.23e-07	2.41e-07	2.46e-07
		105	(n,t)	7.54e-09	1.48e-08	1.51e-08
		106	(n,he3)	2.99e-09	5.96e-09	6.27e-09
		107	(n,a)	3.04e-06	6.14e-06	6.63e-06
			tot.absn.	4.04e-01	2.61e-01	1.64e-01
54Xe126	1339	16	(n,2n)	9.68e-05	1.90e-04	1.94e-04
		17	(n,3n)	2.39e-08	4.68e-08	4.77e-08
		102	(n,gamma)	2.56e-01	1.75e-01	1.04e-01
		103	(n,p)	9.68e-07	1.93e-06	2.04e-06
		104	(n,d)	5.25e-08	1.03e-07	1.05e-07
		105	(n,t)	2.30e-09	4.51e-09	4.59e-09
		106	(n,he3)	6.32e-09	1.24e-08	1.28e-08
		107	(n,a)	9.13e-07	1.83e-06	1.93e-06
			tot.absn.	2.56e-01	1.75e-01	1.04e-01
54Xe128	1348	16	(n,2n)	1.67e-04	3.29e-04	3.35e-04
		17	(n,3n)	1.08e-07	2.13e-07	2.16e-07
		102	(n,gamma)	1.77e-01	1.17e-01	7.60e-02
		103	(n,p)	5.05e-06	9.95e-06	1.09e-05
		104	(n,d)	2.92e-08	5.74e-08	5.84e-08
		105	(n,t)	3.12e-09	6.13e-09	6.24e-09
		106	(n,he3)	1.90e-09	3.72e-09	3.79e-09
		107	(n,a)	2.29e-07	4.53e-07	4.68e-07
			tot.absn.	1.77e-01	1.17e-01	7.63e-02
54Xe129	1349	16	(n,2n)	1.18e-03	2.32e-03	2.37e-03
		17	(n,3n)	1.47e-07	2.89e-07	2.94e-07
		102	(n,gamma)	4.47e-01	2.55e-01	1.18e-01
		103	(n,p)	1.07e-06	2.13e-06	2.29e-06
		104	(n,d)	2.40e-08	4.71e-08	4.80e-08
		105	(n,t)	1.33e-08	2.62e-08	2.67e-08
		107	(n,a)	1.49e-06	3.01e-06	3.24e-06
			tot.absn.	4.48e-01	2.57e-01	1.21e-01

Table 4-5 (Cont'd)

Nuclide	MAT	MT	Reaction	1KMW Core	CFRMF	EBR2 Core
54Xe130	1350	16	(n,2n)	1.97e-04	3.87e-04	3.94e-04
		17	(n,3n)	2.46e-07	4.83e-07	4.92e-07
		102	(n,gamma)	1.22e-01	8.32e-02	6.27e-02
		103	(n,p)	9.75e-07	1.93e-06	2.08e-06
		104	(n,d)	1.92e-08	3.78e-08	3.84e-08
		105	(n,t)	1.60e-09	3.14e-09	3.20e-09
		107	(n,a)	7.30e-08	1.43e-07	1.46e-07
			tot.absn.	1.23e-01	8.36e-02	6.31e-02
54Xe131	1351	16	(n,2n)	1.82e-03	3.57e-03	3.63e-03
		17	(n,3n)	2.80e-07	5.51e-07	5.60e-07
		102	(n,gamma)	2.62e-01	1.66e-01	6.50e-02
		103	(n,p)	1.65e-06	3.23e-06	3.67e-06
		104	(n,d)	1.45e-08	2.84e-08	2.89e-08
		105	(n,t)	1.51e-08	2.97e-08	3.02e-08
		107	(n,a)	5.17e-07	1.03e-06	1.09e-06
			tot.absn.	2.64e-01	1.69e-01	6.86e-02
54Xe132	1352	16	(n,2n)	2.87e-04	5.64e-04	5.74e-04
		17	(n,3n)	4.04e-07	7.93e-07	8.07e-07
		102	(n,gamma)	7.18e-02	4.83e-02	3.63e-02
		103	(n,p)	3.24e-07	6.43e-07	6.79e-07
		104	(n,d)	8.93e-09	1.75e-08	1.78e-08
		105	(n,t)	8.09e-10	1.59e-09	1.62e-09
		107	(n,a)	2.22e-08	4.36e-08	4.44e-08
			tot.absn.	7.21e-02	4.88e-02	3.69e-02
54Xe133	9643	102	(n,gamma)	1.11e-01	1.13e-01	1.93e-02
			tot.absn.	1.11e-01	1.13e-01	1.93e-02
54Xe134	1354	16	(n,2n)	3.92e-04	7.69e-04	7.83e-04
		17	(n,3n)	5.35e-07	1.05e-06	1.07e-06
		102	(n,gamma)	3.75e-02	2.50e-02	1.89e-02
		103	(n,p)	2.33e-07	4.68e-07	5.00e-07
		104	(n,d)	6.98e-09	1.37e-08	1.39e-08
		105	(n,t)	6.29e-10	1.24e-09	1.26e-09
		107	(n,a)	1.13e-08	2.21e-08	2.25e-08
			tot.absn.	3.79e-02	2.57e-02	1.97e-02
54Xe135	1294	102	(n,gamma)	5.82e-03	3.33e-03	1.23e-03
			tot.absn.	5.82e-03	3.33e-03	1.23e-03
54Xe136	1356	16	(n,2n)	4.89e-04	9.60e-04	9.77e-04
		17	(n,3n)	6.68e-07	1.31e-06	1.34e-06
		102	(n,gamma)	3.01e-03	1.89e-03	1.37e-03
		103	(n,p)	9.21e-09	1.81e-08	1.84e-08
		104	(n,d)	3.34e-09	6.56e-09	6.67e-09
		105	(n,t)	5.14e-10	1.01e-09	1.03e-09
		107	(n,a)	6.53e-09	1.28e-08	1.30e-08
			tot.absn.	3.50e-03	2.85e-03	2.35e-03
55Cs133	1355	16	(n,2n)	2.23e-04	4.37e-04	4.45e-04
		102	(n,gamma)	4.99e-01	2.82e-01	1.31e-01
		103	(n,p)	2.97e-05	6.04e-05	6.66e-05
		107	(n,a)	4.03e-07	7.91e-07	8.05e-07
			tot.absn.	4.99e-01	2.82e-01	1.32e-01
55Cs134	9663	102	(n,gamma)	5.80e-01	2.92e-01	1.01e-01
			tot.absn.	5.80e-01	2.92e-01	1.01e-01
55Cs135	9665	102	(n,gamma)	7.34e-02	4.90e-02	1.37e-02
			tot.absn.	7.34e-02	4.90e-02	1.37e-02
55Cs136	9667	102	(n,gamma)	2.82e-01	1.52e-01	5.72e-02
			tot.absn.	2.82e-01	1.52e-01	5.72e-02
55Cs137	9669	102	(n,gamma)	1.45e-02	7.26e-03	2.32e-03
			tot.absn.	1.45e-02	7.26e-03	2.32e-03
56Ba134	9684	102	(n,gamma)	1.12e-01	8.65e-02	5.17e-02
			tot.absn.	1.12e-01	8.65e-02	5.17e-02
56Ba135	9685	102	(n,gamma)	3.58e-01	2.27e-01	9.42e-02
			tot.absn.	3.58e-01	2.27e-01	9.42e-02
56Ba136	9687	102	(n,gamma)	4.91e-02	3.13e-02	2.10e-02
			tot.absn.	4.91e-02	3.13e-02	2.10e-02
56Ba137	9689	102	(n,gamma)	6.03e-02	3.29e-02	1.58e-02
			tot.absn.	6.03e-02	3.29e-02	1.58e-02

Table 4-5 (Cont'd)

Nuclide	MAT	MT	Reaction	1KMW Core	CFRMF	EBR2 Core
56Ba138	1353	16	(n,2n)	4.47e-04	8.78e-04	8.94e-04
		17	(n,3n)	5.24e-07	1.03e-06	1.05e-06
		102	(n,gamma)	5.74e-03	3.54e-03	2.69e-03
		103	(n,p)	1.23e-06	2.41e-06	2.46e-06
		107	(n,a)	1.91e-04	3.84e-04	4.52e-04
			tot.absn.	6.38e-03	4.81e-03	4.04e-03
56Ba140	9693	102	(n,gamma)	4.83e-02	3.60e-02	1.90e-03
			tot.absn.	4.83e-02	3.60e-02	1.90e-03
57La139	9707	102	(n,gamma)	3.78e-02	2.25e-02	1.01e-02
			tot.absn.	3.78e-02	2.25e-02	1.01e-02
57La140	9708	102	(n,gamma)	3.29e-01	1.94e-01	5.18e-02
			tot.absn.	3.29e-01	1.94e-01	5.18e-02
58Ce140	9724	102	(n,gamma)	1.79e-02	1.49e-02	1.41e-02
			tot.absn.	1.79e-02	1.49e-02	1.41e-02
58Ce141	9725	102	(n,gamma)	1.46e-01	9.19e-02	5.56e-02
			tot.absn.	1.46e-01	9.19e-02	5.56e-02
58Ce142	9726	102	(n,gamma)	3.44e-02	2.45e-02	2.05e-02
			tot.absn.	3.44e-02	2.45e-02	2.05e-02
58Ce143	9727	102	(n,gamma)	2.88e-01	1.54e-01	2.48e-02
			tot.absn.	2.88e-01	1.54e-01	2.48e-02
58Ce144	9728	102	(n,gamma)	5.76e-02	2.70e-02	1.37e-02
			tot.absn.	5.76e-02	2.70e-02	1.37e-02
59Pr141	9742	16	(n,2n)	1.73e-04	3.40e-04	3.46e-04
		17	(n,3n)	4.62e-08	9.08e-08	9.24e-08
		22	(n,n'a)	7.77e-08	1.54e-07	1.61e-07
		28	(n,n'p)	9.23e-08	1.84e-07	1.93e-07
		102	(n,gamma)	1.38e-01	8.01e-02	2.84e-02
		103	(n,p)	2.44e-06	3.94e-06	4.11e-06
		104	(n,d)	4.38e-07	8.60e-07	8.76e-07
		105	(n,t)	4.31e-08	8.46e-08	8.61e-08
		106	(n,he3)	3.05e-10	5.99e-10	6.09e-10
		107	(n,a)	5.32e-05	5.67e-05	5.78e-05
			tot.absn.	1.39e-01	8.05e-02	2.88e-02
59Pr142	9743	102	(n,gamma)	4.38e-01	2.36e-01	7.51e-02
			tot.absn.	4.38e-01	2.36e-01	7.51e-02
59Pr143	9745	102	(n,gamma)	3.77e-01	2.36e-01	9.48e-02
			tot.absn.	3.77e-01	2.36e-01	9.48e-02
60Nd142	9763	102	(n,gamma)	3.99e-02	3.00e-02	2.45e-02
			tot.absn.	3.99e-02	3.00e-02	2.45e-02
60Nd143	9764	16	(n,2n)	2.63e-03	5.16e-03	5.26e-03
		17	(n,3n)	2.05e-07	4.03e-07	4.10e-07
		22	(n,n'a)	4.33e-06	4.88e-06	5.04e-06
		28	(n,n'p)	4.10e-08	8.06e-08	8.20e-08
		102	(n,gamma)	3.32e-01	2.17e-01	9.87e-02
		103	(n,p)	1.19e-06	2.36e-06	2.47e-06
		104	(n,d)	6.85e-08	1.34e-07	1.37e-07
		105	(n,t)	1.00e-07	1.97e-07	2.01e-07
		106	(n,he3)	3.33e-10	6.53e-10	6.65e-10
		107	(n,a)	6.99e-05	8.68e-05	9.20e-05
			tot.absn.	3.35e-01	2.22e-01	1.04e-01
60Nd144	9765	102	(n,gamma)	8.45e-02	5.63e-02	3.68e-02
			tot.absn.	8.45e-02	5.63e-02	3.68e-02
60Nd145	9766	16	(n,2n)	3.42e-03	6.73e-03	6.87e-03
		17	(n,3n)	1.57e-06	3.09e-06	3.14e-06
		22	(n,n'a)	1.52e-06	1.79e-06	1.84e-06
		28	(n,n'p)	2.48e-08	4.88e-08	4.96e-08
		102	(n,gamma)	4.63e-01	2.79e-01	1.33e-01
		103	(n,p)	4.08e-07	8.05e-07	8.28e-07
		104	(n,d)	3.69e-08	7.24e-08	7.37e-08
		105	(n,t)	6.03e-08	1.18e-07	1.20e-07
		106	(n,he3)	1.01e-10	1.99e-10	2.02e-10
		107	(n,a)	4.53e-05	5.21e-05	5.38e-05
			tot.absn.	4.67e-01	2.86e-01	1.39e-01

Table 4-5 (Cont'd)

Nuclide	MAT	MT	Reaction	1KMW Core	CFRMF	EBR2 Core
60Nd146	9767	16	(n,2n)	9.48e-04	1.86e-03	1.89e-03
		17	(n,3n)	2.47e-06	4.84e-06	4.93e-06
		22	(n,n'a)	2.57e-06	2.79e-06	2.83e-06
		28	(n,n'p)	6.15e-09	1.21e-08	1.23e-08
		102	(n,gamma)	1.08e-01	7.24e-02	5.62e-02
		103	(n,p)	6.01e-08	1.18e-07	1.20e-07
		104	(n,d)	1.84e-08	3.61e-08	3.67e-08
		105	(n,t)	1.40e-08	2.74e-08	2.79e-08
		106	(n,he3)	3.68e-11	7.23e-11	7.36e-11
		107	(n,a)	3.51e-05	3.73e-05	3.81e-05
			tot.absn.	1.09e-01	7.43e-02	5.81e-02
60Nd147	9768	102	(n,gamma)	7.33e-01	4.30e-01	1.45e-01
			tot.absn.	7.33e-01	4.30e-01	1.45e-01
60Nd148	9769	16	(n,2n)	1.04e-03	2.04e-03	2.08e-03
		17	(n,3n)	6.77e-06	1.33e-05	1.35e-05
		22	(n,n'a)	2.79e-06	2.95e-06	3.00e-06
		28	(n,n'p)	2.99e-09	5.86e-09	5.97e-09
		102	(n,gamma)	1.47e-01	1.16e-01	7.36e-02
		103	(n,p)	2.10e-08	4.13e-08	4.21e-08
		104	(n,d)	1.09e-08	2.14e-08	2.17e-08
		105	(n,t)	8.36e-09	1.64e-08	1.67e-08
		106	(n,he3)	4.39e-12	8.61e-12	8.76e-12
		107	(n,a)	2.46e-05	2.60e-05	2.65e-05
			tot.absn.	1.48e-01	1.18e-01	7.57e-02
60Nd150	9771	16	(n,2n)	1.03e-03	2.02e-03	2.06e-03
		17	(n,3n)	1.02e-05	2.00e-05	2.03e-05
		22	(n,n'a)	3.96e-07	7.77e-07	9.51e-07
		28	(n,n'p)	1.77e-09	3.47e-09	3.53e-09
		102	(n,gamma)	1.67e-01	9.88e-02	5.43e-02
		103	(n,p)	1.36e-08	2.67e-08	2.72e-08
		104	(n,d)	6.91e-09	1.36e-08	1.38e-08
		105	(n,t)	2.42e-09	4.74e-09	4.83e-09
		107	(n,a)	1.52e-05	1.59e-05	1.62e-05
			tot.absn.	1.68e-01	1.01e-01	5.64e-02
61Pm147	9783	16	(n,2n)	8.92e-04	1.75e-03	1.78e-03
		17	(n,3n)	1.15e-06	2.26e-06	2.30e-06
		22	(n,n'a)	2.55e-06	2.88e-06	2.94e-06
		28	(n,n'p)	9.40e-08	1.87e-07	1.95e-07
		102	(n,gamma)	1.32e+00	7.35e-01	2.88e-01
		103	(n,p)	7.57e-07	1.50e-06	1.57e-06
		104	(n,d)	2.64e-07	5.18e-07	5.27e-07
		105	(n,t)	1.01e-07	1.97e-07	2.01e-07
		106	(n,he3)	1.23e-10	2.41e-10	2.45e-10
		107	(n,a)	4.23e-05	4.58e-05	4.68e-05
			tot.absn.	1.32e+00	7.37e-01	2.90e-01
61Pm148	9784	102	(n,gamma)	3.79e+00	2.08e+00	1.13e+00
			tot.absn.	3.79e+00	2.08e+00	1.13e+00
61Pm148m	9785	102	(n,gamma)	3.95e+00	2.29e+00	1.13e+00
			tot.absn.	3.95e+00	2.29e+00	1.13e+00
61Pm149	9786	102	(n,gamma)	3.35e+00	1.96e+00	9.99e-01
			tot.absn.	3.35e+00	1.96e+00	9.99e-01
61Pm151	9788	102	(n,gamma)	3.36e-02	3.25e-02	5.35e-03
			tot.absn.	3.36e-02	3.25e-02	5.35e-03
62Sm144	9803	102	(n,gamma)	3.15e-01	2.53e-01	2.02e-01
			tot.absn.	3.15e-01	2.53e-01	2.02e-01
62Sm147	9806	16	(n,2n)	2.07e-03	4.06e-03	4.13e-03
		17	(n,3n)	6.28e-07	1.23e-06	1.25e-06
		22	(n,n'a)	2.58e-06	3.17e-06	3.31e-06
		28	(n,n'p)	1.07e-07	2.09e-07	2.13e-07
		102	(n,gamma)	1.31e+00	8.11e-01	3.92e-01
		103	(n,p)	3.91e-06	5.85e-06	6.10e-06
		104	(n,d)	8.51e-08	1.67e-07	1.70e-07
		105	(n,t)	9.15e-08	1.80e-07	1.83e-07
		106	(n,he3)	4.74e-10	9.31e-10	9.47e-10
		107	(n,a)	8.87e-05	1.09e-04	1.16e-04
			tot.absn.	1.31e+00	8.15e-01	3.96e-01

Table 4-5 (Cont'd)

Nuclide	MAT	MT	Reaction	1KMW Core	CFRMF	EBR2 Core
62Sm148	9807	102	(n,gamma)	3.50e-01	2.74e-01	2.10e-01
			tot.absn.	3.50e-01	2.74e-01	2.10e-01
62Sm149	1319	16	(n,2n)	1.35e-03	2.66e-03	2.70e-03
		17	(n,3n)	5.68e-07	1.12e-06	1.14e-06
		102	(n,gamma)	2.46e+00	1.38e+00	5.40e-01
		103	(n,p)	1.57e-05	3.16e-05	3.40e-05
		107	(n,a)	1.57e-05	3.16e-05	3.40e-05
			tot.absn.	2.46e+00	1.39e+00	5.43e-01
62Sm150	9809	102	(n,gamma)	4.22e-01	2.99e-01	1.92e-01
			tot.absn.	4.22e-01	2.99e-01	1.92e-01
62Sm151	9810	16	(n,2n)	4.79e-03	9.45e-03	9.74e-03
		17	(n,3n)	1.83e-06	3.59e-06	3.65e-06
		22	(n,n'a)	2.69e-06	3.20e-06	3.29e-06
		28	(n,n'p)	3.30e-08	6.48e-08	6.59e-08
		102	(n,gamma)	2.76e+00	1.52e+00	6.12e-01
		103	(n,p)	4.23e-07	8.38e-07	8.70e-07
		104	(n,d)	2.05e-08	4.02e-08	4.09e-08
		105	(n,t)	3.71e-08	7.28e-08	7.41e-08
		106	(n,he3)	3.76e-11	7.38e-11	7.51e-11
		107	(n,a)	3.37e-05	3.77e-05	3.87e-05
			tot.absn.	2.76e+00	1.53e+00	6.22e-01
62Sm152	9811	16	(n,2n)	5.23e-04	1.03e-03	1.05e-03
		17	(n,3n)	1.41e-06	2.77e-06	2.82e-06
		22	(n,n'a)	4.51e-06	4.76e-06	4.84e-06
		28	(n,n'p)	7.43e-09	1.46e-08	1.49e-08
		102	(n,gamma)	5.09e-01	3.27e-01	1.80e-01
		103	(n,p)	6.21e-08	1.22e-07	1.24e-07
		104	(n,d)	1.52e-08	2.98e-08	3.04e-08
		105	(n,t)	2.63e-09	5.15e-09	5.25e-09
		106	(n,he3)	1.35e-11	2.65e-11	2.70e-11
		107	(n,a)	2.98e-05	3.14e-05	3.20e-05
			tot.absn.	5.09e-01	3.28e-01	1.81e-01
62Sm153	9812	102	(n,gamma)	4.16e-02	7.55e-02	1.86e-03
			tot.absn.	4.16e-02	7.55e-02	1.86e-03
62Sm154	9813	102	(n,gamma)	2.23e-01	1.46e-01	7.90e-02
			tot.absn.	2.23e-01	1.46e-01	7.90e-02
63Eu151	1357	16	(n,2n)	3.34e-04	6.57e-04	6.68e-04
		17	(n,3n)	1.93e-07	3.79e-07	3.85e-07
		22	(n,n'a)	2.31e-09	4.53e-09	4.61e-09
		28	(n,n'p)	9.20e-10	1.81e-09	1.84e-09
		102	(n,gamma)	4.29e+00	2.30e+00	9.90e-01
		103	(n,p)	9.03e-06	1.77e-05	1.90e-05
		104	(n,d)	3.70e-07	7.28e-07	7.48e-07
		105	(n,t)	9.73e-08	1.91e-07	1.95e-07
		106	(n,he3)	4.05e-09	7.97e-09	8.18e-09
		107	(n,a)	2.10e-05	3.85e-05	4.53e-05
			tot.absn.	4.29e+00	2.30e+00	9.91e-01
63Eu152	1292	16	(n,2n)	1.25e-03	2.45e-03	2.49e-03
		17	(n,3n)	5.10e-07	1.00e-06	1.02e-06
		22	(n,n'a)	8.88e-10	1.74e-09	1.77e-09
		28	(n,n'p)	3.68e-10	7.22e-10	7.35e-10
		102	(n,gamma)	4.92e+00	2.67e+00	1.23e+00
		103	(n,p)	2.69e-05	5.18e-05	5.87e-05
		104	(n,d)	1.88e-07	3.69e-07	3.77e-07
		105	(n,t)	3.42e-07	6.73e-07	6.89e-07
		106	(n,he3)	1.56e-09	3.06e-09	3.11e-09
		107	(n,a)	2.57e-05	4.76e-05	5.57e-05
			tot.absn.	4.92e+00	2.68e+00	1.23e+00
63Eu153	1359	16	(n,2n)	4.93e-04	9.68e-04	9.85e-04
		17	(n,3n)	4.37e-07	8.58e-07	8.74e-07
		22	(n,n'a)	1.29e-07	2.52e-07	2.57e-07
		28	(n,n'p)	7.76e-08	1.53e-07	1.56e-07
		102	(n,gamma)	2.63e+00	1.45e+00	6.57e-01
		103	(n,p)	1.43e-06	2.76e-06	3.05e-06
		104	(n,d)	1.44e-07	2.83e-07	2.89e-07
		105	(n,t)	2.99e-08	5.87e-08	5.98e-08
		106	(n,he3)	7.23e-10	1.42e-09	1.44e-09
		107	(n,a)	1.58e-05	2.77e-05	3.30e-05
			tot.absn.	2.63e+00	1.45e+00	6.58e-01

Table 4-5 (Cont'd)

Nuclide	MAT	MT	Reaction	1KMW Core	CFRMF	EBR2 Core
63Eu154	1293	16	(n,2n)	8.24e-04	1.62e-03	1.65e-03
		17	(n,3n)	2.22e-07	4.36e-07	4.44e-07
		22	(n,n'a)	2.75e-12	5.39e-12	5.49e-12
		28	(n,n'p)	3.57e-11	7.01e-11	7.14e-11
		102	(n,gamma)	2.96e+00	1.59e+00	6.71e-01
		103	(n,p)	4.66e-05	8.81e-05	9.62e-05
		104	(n,d)	6.47e-08	1.27e-07	1.29e-07
		105	(n,t)	1.11e-07	2.19e-07	2.23e-07
		106	(n,he3)	4.69e-10	9.21e-10	9.37e-10
		107	(n,a)	3.79e-05	6.93e-05	8.16e-05
			tot.absn.	2.96e+00	1.59e+00	6.73e-01
63Eu155	9832	16	(n,2n)	6.64e-04	1.30e-03	1.33e-03
		17	(n,3n)	8.57e-07	1.68e-06	1.71e-06
		22	(n,n'a)	3.10e-07	6.02e-07	7.66e-07
		28	(n,n'p)	5.16e-08	1.01e-07	1.03e-07
		102	(n,gamma)	2.74e+00	1.65e+00	8.57e-01
		103	(n,p)	1.79e-07	3.54e-07	3.64e-07
		104	(n,d)	5.33e-08	1.05e-07	1.06e-07
		105	(n,t)	1.69e-08	3.33e-08	3.38e-08
		106	(n,he3)	5.08e-12	9.97e-12	1.01e-11
		107	(n,a)	2.05e-05	2.15e-05	2.20e-05
			tot.absn.	2.74e+00	1.66e+00	8.58e-01
63Eu156	9833	102	(n,gamma)	6.49e-02	3.91e-02	7.22e-03
			tot.absn.	6.49e-02	3.91e-02	7.22e-03
63Eu157	9834	102	(n,gamma)	4.08e-02	2.82e-02	8.34e-03
			tot.absn.	4.08e-02	2.82e-02	8.34e-03
64Gd152	1362	16	(n,2n)	3.95e-04	7.75e-04	7.89e-04
		22	(n,n'a)	1.47e-06	2.90e-06	3.21e-06
		28	(n,n'p)	6.15e-07	1.21e-06	1.23e-06
		102	(n,gamma)	7.19e-01	6.05e-01	4.09e-01
		103	(n,p)	2.04e-06	4.01e-06	4.62e-06
		107	(n,a)	1.38e-06	2.71e-06	3.13e-06
			tot.absn.	7.19e-01	6.06e-01	4.10e-01
64Gd154	1364	16	(n,2n)	3.89e-04	7.63e-04	7.76e-04
		22	(n,n'a)	5.58e-07	1.10e-06	1.22e-06
		28	(n,n'p)	5.02e-07	9.86e-07	1.00e-06
		102	(n,gamma)	1.31e+00	7.89e-01	4.43e-01
		103	(n,p)	1.72e-06	3.37e-06	3.88e-06
		107	(n,a)	3.62e-07	7.10e-07	8.15e-07
			tot.absn.	1.31e+00	7.89e-01	4.44e-01
64Gd155	1365	16	(n,2n)	1.88e-03	3.68e-03	3.75e-03
		22	(n,n'a)	1.71e-06	3.36e-06	3.75e-06
		28	(n,n'p)	1.31e-06	2.57e-06	2.61e-06
		102	(n,gamma)	2.71e+00	1.40e+00	5.50e-01
		103	(n,p)	6.15e-06	1.21e-05	1.40e-05
		107	(n,a)	1.38e-06	2.72e-06	3.13e-06
			tot.absn.	2.71e+00	1.41e+00	5.54e-01
64Gd156	1366	16	(n,2n)	4.27e-04	8.38e-04	8.53e-04
		22	(n,n'a)	4.10e-07	8.00e-07	9.00e-07
		28	(n,n'p)	3.34e-07	6.55e-07	6.67e-07
		102	(n,gamma)	6.14e-01	3.68e-01	1.84e-01
		103	(n,p)	2.52e-06	4.97e-06	5.61e-06
		107	(n,a)	2.82e-06	4.62e-06	5.11e-06
			tot.absn.	6.15e-01	3.69e-01	1.85e-01
64Gd157	1367	16	(n,2n)	2.03e-03	3.99e-03	4.06e-03
		22	(n,n'a)	8.36e-07	1.65e-06	1.85e-06
		28	(n,n'p)	5.59e-07	1.10e-06	1.12e-06
		102	(n,gamma)	1.50e+00	7.50e-01	2.27e-01
		103	(n,p)	1.18e-06	2.32e-06	2.68e-06
		107	(n,a)	5.56e-07	1.09e-06	1.24e-06
			tot.absn.	1.50e+00	7.54e-01	2.31e-01
64Gd158	1368	16	(n,2n)	5.86e-04	1.15e-03	1.17e-03
		22	(n,n'a)	3.11e-07	6.09e-07	7.03e-07
		28	(n,n'p)	1.48e-07	2.90e-07	2.96e-07
		102	(n,gamma)	3.16e-01	1.97e-01	1.17e-01
		103	(n,p)	3.20e-07	6.38e-07	6.93e-07
		107	(n,a)	3.82e-07	7.52e-07	8.51e-07
			tot.absn.	3.17e-01	1.98e-01	1.18e-01

Table 4-5 (Cont'd)

Nuclide	MAT	MT	Reaction	1KMW Core	CFRMF	EBR2 Core
64Gd160	1370	16	(n,2n)	9.97e-04	1.96e-03	1.99e-03
		22	(n,n'a)	1.89e-07	3.70e-07	4.47e-07
		28	(n,n'p)	6.84e-08	1.34e-07	1.37e-07
		102	(n,gamma)	1.72e-01	1.06e-01	6.75e-02
		103	(n,p)	2.34e-07	4.67e-07	4.92e-07
		107	(n,a)	2.27e-07	4.51e-07	4.91e-07
			tot.absn.	1.73e-01	1.08e-01	6.95e-02
65Tb159	9857	102	(n,gamma)	1.93e+00	9.90e-01	3.57e-01
			tot.absn.	1.93e+00	9.90e-01	3.57e-01
65Tb160	9858	102	(n,gamma)	1.57e-01	8.06e-02	1.48e-02
			tot.absn.	1.57e-01	8.06e-02	1.48e-02
66Dy160	9864	102	(n,gamma)	2.05e+00	1.43e+00	8.04e-01
			tot.absn.	2.05e+00	1.43e+00	8.04e-01
66Dy161	9865	102	(n,gamma)	2.38e+00	1.22e+00	3.44e-01
			tot.absn.	2.38e+00	1.22e+00	3.44e-01
66Dy162	9866	102	(n,gamma)	8.75e-01	5.98e-01	3.37e-01
			tot.absn.	8.75e-01	5.98e-01	3.37e-01
66Dy163	9867	102	(n,gamma)	1.03e+00	5.45e-01	1.74e-01
			tot.absn.	1.03e+00	5.45e-01	1.74e-01
66Dy164	1031	16	(n,2n)	6.72e-04	1.32e-03	1.34e-03
		17	(n,3n)	2.22e-06	4.36e-06	4.44e-06
		102	(n,gamma)	2.63e-01	2.02e-01	1.36e-01
		103	(n,p)	2.68e-06	5.43e-06	6.13e-06
		107	(n,a)	2.34e-05	4.55e-05	5.68e-05
			tot.absn.	2.63e-01	2.03e-01	1.38e-01
67Ho165	9872	102	(n,gamma)	1.66e+00	9.07e-01	3.28e-01
			tot.absn.	1.66e+00	9.07e-01	3.28e-01
68Er166	9875	102	(n,gamma)	4.70e-01	3.15e-01	1.82e-01
			tot.absn.	4.70e-01	3.15e-01	1.82e-01
68Er167	9876	102	(n,gamma)	1.56e+00	8.50e-01	2.77e-01
			tot.absn.	1.56e+00	8.50e-01	2.77e-01
90Th230	8030	16	(n,2n)	1.75e-03	3.44e-03	3.50e-03
		17	(n,3n)	5.11e-06	1.00e-05	1.02e-05
		18	fission	2.98e-02	5.76e-02	7.61e-02
		102	(n,gamma)	1.96e-01	1.37e-01	4.17e-02
			tot.absn.	2.27e-01	1.98e-01	1.21e-01
90Th232	1390	16	(n,2n)	1.74e-03	3.41e-03	3.47e-03
		17	(n,3n)	1.80e-05	3.52e-05	3.59e-05
		18	fission	1.01e-02	1.91e-02	2.55e-02
		102	(n,gamma)	3.97e-01	2.58e-01	1.52e-01
			tot.absn.	4.09e-01	2.81e-01	1.81e-01
91Pa231	8131	16	(n,2n)	1.18e-03	2.32e-03	2.36e-03
		17	(n,3n)	2.01e-06	3.95e-06	4.02e-06
		18	fission	2.36e-01	4.51e-01	5.56e-01
		102	(n,gamma)	3.23e+00	1.76e+00	1.02e+00
			tot.absn.	3.47e+00	2.21e+00	1.58e+00
91Pa233	1391	16	(n,2n)	5.00e-04	9.81e-04	9.98e-04
		17	(n,3n)	5.82e-06	1.14e-05	1.16e-05
		18	fission	6.53e-02	1.24e-01	1.67e-01
		102	(n,gamma)	1.14e+00	6.21e-01	3.08e-01
			tot.absn.	1.21e+00	7.46e-01	4.75e-01
92 U232	3232	16	(n,2n)	8.41e-04	1.65e-03	1.68e-03
		17	(n,3n)	3.07e-06	6.02e-06	6.13e-06
		18	fission	2.26e+00	2.38e+00	2.28e+00
		102	(n,gamma)	7.13e-01	3.95e-01	2.29e-01
			tot.absn.	2.97e+00	2.77e+00	2.51e+00
92 U233	1393	16	(n,2n)	6.15e-04	1.21e-03	1.23e-03
		17	(n,3n)	1.36e-07	2.68e-07	2.73e-07
		18	fission	2.82e+00	2.35e+00	2.05e+00
		102	(n,gamma)	2.87e-01	1.88e-01	1.29e-01
			tot.absn.	3.11e+00	2.54e+00	2.18e+00
92 U234	1394	16	(n,2n)	1.73e-04	3.39e-04	3.45e-04
		17	(n,3n)	3.05e-06	5.98e-06	6.09e-06
		18	fission	3.20e-01	5.93e-01	7.22e-01
		102	(n,gamma)	6.40e-01	4.33e-01	2.72e-01
			tot.absn.	9.60e-01	1.03e+00	9.94e-01

Table 4-5 (Cont'd)

Nuclide	MAT	MT	Reaction	1KMW Core	CFRMF	EBR2 Core
92 U235	1395	16	(n,2n)	8.68e-04	1.71e-03	1.77e-03
		17	(n,3n)	8.16e-07	1.60e-06	1.63e-06
		18	fission	1.97e+00	1.56e+00	1.30e+00
		102	(n,gamma)	6.04e-01	3.54e-01	2.09e-01
			tot.absn.	2.57e+00	1.91e+00	1.51e+00
92 U236	1396	16	(n,2n)	8.98e-04	1.76e-03	1.79e-03
		17	(n,3n)	1.49e-05	2.92e-05	2.98e-05
		18	fission	1.04e-01	1.93e-01	2.49e-01
		102	(n,gamma)	5.84e-01	4.01e-01	2.71e-01
			tot.absn.	6.88e-01	5.96e-01	5.22e-01
92 U237	8237	16	(n,2n)	2.59e-03	5.09e-03	5.23e-03
		17	(n,3n)	2.43e-05	4.77e-05	4.85e-05
		18	fission	6.13e-01	6.46e-01	6.66e-01
		102	(n,gamma)	5.26e-01	3.25e-01	1.40e-01
			tot.absn.	1.14e+00	9.76e-01	8.11e-01
92 U238	1398	16	(n,2n)	1.72e-03	3.37e-03	3.43e-03
		17	(n,3n)	1.20e-05	2.36e-05	2.40e-05
		18	fission	4.24e-02	8.01e-02	1.08e-01
		102	(n,gamma)	3.64e-01	2.20e-01	1.23e-01
			tot.absn.	4.08e-01	3.04e-01	2.34e-01
93Np237	1337	16	(n,2n)	1.61e-04	3.16e-04	3.22e-04
		17	(n,3n)	1.81e-06	3.55e-06	3.61e-06
		18	fission	3.25e-01	6.12e-01	7.54e-01
		102	(n,gamma)	1.81e+00	9.56e-01	4.83e-01
			tot.absn.	2.14e+00	1.57e+00	1.24e+00
93Np238	8338	18	fission	6.41e-01	2.91e-01	6.86e-03
		102	(n,gamma)	1.01e-01	4.61e-02	9.15e-04
			tot.absn.	7.42e-01	3.37e-01	7.78e-03
94Pu236	8436	16	(n,2n)	3.30e-04	6.48e-04	6.60e-04
		17	(n,3n)	3.40e-06	6.67e-06	6.78e-06
		18	fission	1.48e+00	1.67e+00	1.73e+00
		102	(n,gamma)	4.26e-01	2.39e-01	1.08e-01
			tot.absn.	1.91e+00	1.91e+00	1.84e+00
94Pu237	8437	16	(n,2n)	2.44e-04	4.78e-04	4.87e-04
		17	(n,3n)	2.06e-06	4.05e-06	4.12e-06
		18	fission	3.75e+00	3.38e+00	3.07e+00
		102	(n,gamma)	2.11e-01	1.21e-01	6.81e-02
			tot.absn.	3.96e+00	3.50e+00	3.14e+00
94Pu238	1338	16	(n,2n)	4.68e-04	9.18e-04	9.35e-04
		17	(n,3n)	1.20e-05	2.36e-05	2.40e-05
		18	fission	1.12e+00	1.37e+00	1.47e+00
		102	(n,gamma)	7.87e-01	4.90e-01	2.91e-01
			tot.absn.	1.91e+00	1.86e+00	1.76e+00
94Pu239	1399	16	(n,2n)	3.66e-04	7.19e-04	7.34e-04
		17	(n,3n)	6.31e-07	1.24e-06	1.26e-06
		18	fission	1.85e+00	1.78e+00	1.67e+00
		37	(n,4n)	5.71e-10	1.12e-09	1.14e-09
		102	(n,gamma)	5.55e-01	3.09e-01	1.25e-01
			tot.absn.	2.40e+00	2.09e+00	1.80e+00
94Pu240	1380	16	(n,2n)	1.62e-04	3.17e-04	3.23e-04
		17	(n,3n)	2.05e-06	4.03e-06	4.10e-06
		18	fission	3.66e-01	6.29e-01	7.64e-01
		102	(n,gamma)	6.00e-01	3.65e-01	1.81e-01
			tot.absn.	9.65e-01	9.94e-01	9.45e-01
94Pu241	1381	16	(n,2n)	2.33e-03	4.64e-03	4.86e-03
		17	(n,3n)	4.64e-06	9.12e-06	9.28e-06
		18	fission	2.59e+00	2.06e+00	1.72e+00
		102	(n,gamma)	4.94e-01	2.97e-01	1.79e-01
			tot.absn.	3.09e+00	2.36e+00	1.90e+00
94Pu242	1342	16	(n,2n)	7.12e-04	1.40e-03	1.42e-03
		17	(n,3n)	7.18e-06	1.41e-05	1.44e-05
		18	fission	2.57e-01	4.84e-01	6.05e-01
		102	(n,gamma)	4.73e-01	2.67e-01	1.46e-01
			tot.absn.	7.30e-01	7.53e-01	7.52e-01
94Pu243	8443	16	(n,2n)	5.76e-03	1.16e-02	1.23e-02
		17	(n,3n)	3.75e-05	7.37e-05	7.50e-05
		18	fission	8.77e-01	8.07e-01	7.35e-01
		37	(n,4n)	2.80e-07	5.49e-07	5.59e-07
		102	(n,gamma)	4.13e-01	2.27e-01	1.13e-01
			tot.absn.	1.30e+00	1.05e+00	8.61e-01

Table 4-5 (Cont'd)

Nuclide	MAT	MT	Reaction	1KMW Core	CFRMF	EBR2 Core
94Pu244	8444	16	(n,2n)	2.21e-03	4.33e-03	4.41e-03
		17	(n,3n)	1.51e-05	2.96e-05	3.02e-05
		18	fission	2.17e-01	4.11e-01	5.18e-01
		37	(n,4n)	1.82e-08	3.58e-08	3.64e-08
		102	(n,gamma)	2.45e-01	1.44e-01	3.97e-02
			tot.absn.	4.65e-01	5.59e-01	5.63e-01
95Am241	1361	16	(n,2n)	1.30e-04	2.55e-04	2.60e-04
		17	(n,3n)	2.24e-06	4.40e-06	4.48e-06
		18	fission	2.89e-01	5.39e-01	6.88e-01
		102	(n,gamma)	1.86e+00	1.11e+00	6.61e-01
			tot.absn.	2.15e+00	1.65e+00	1.35e+00
95Am242	8542	18	fission	5.89e-01	2.69e-01	6.28e-03
		102	(n,gamma)	9.29e-02	4.28e-02	8.40e-04
			tot.absn.	6.82e-01	3.12e-01	7.12e-03
95Am242m	1369	16	(n,2n)	1.30e-03	2.56e-03	2.63e-03
		17	(n,3n)	9.38e-06	1.84e-05	1.87e-05
		18	fission	4.21e+00	3.18e+00	2.45e+00
		37	(n,4n)	1.78e-09	3.50e-09	3.56e-09
		102	(n,gamma)	4.46e-01	2.09e-01	6.45e-02
			tot.absn.	4.66e+00	3.39e+00	2.51e+00
95Am243	1363	16	(n,2n)	8.21e-05	1.61e-04	1.64e-04
		17	(n,3n)	1.90e-06	3.73e-06	3.79e-06
		18	fission	2.27e-01	4.29e-01	5.52e-01
		37	(n,4n)	3.18e-09	6.25e-09	6.36e-09
		102	(n,gamma)	1.18e+00	5.98e-01	2.36e-01
			tot.absn.	1.40e+00	1.03e+00	7.88e-01
96Cm241	8641	16	(n,2n)	4.87e-05	9.56e-05	9.73e-05
		17	(n,3n)	2.53e-08	4.97e-08	5.05e-08
		18	fission	3.24e+00	2.87e+00	2.60e+00
		102	(n,gamma)	2.12e-01	1.19e-01	6.84e-02
			tot.absn.	3.45e+00	2.99e+00	2.66e+00
96Cm242	8642	16	(n,2n)	1.98e-05	3.88e-05	3.95e-05
		17	(n,3n)	4.45e-08	8.73e-08	8.89e-08
		18	fission	1.64e-01	3.13e-01	4.07e-01
		102	(n,gamma)	3.60e-01	2.01e-01	6.14e-02
			tot.absn.	5.24e-01	5.15e-01	4.69e-01
96Cm243	1343	16	(n,2n)	1.25e-03	2.47e-03	2.53e-03
		17	(n,3n)	2.25e-06	4.41e-06	4.49e-06
		18	fission	2.75e+00	2.31e+00	1.95e+00
		37	(n,4n)	2.23e-09	4.37e-09	4.45e-09
		102	(n,gamma)	2.71e-01	1.39e-01	5.34e-02
			tot.absn.	3.02e+00	2.45e+00	2.01e+00
96Cm244	1344	16	(n,2n)	4.05e-04	7.96e-04	8.10e-04
		17	(n,3n)	1.22e-05	2.40e-05	2.44e-05
		18	fission	4.14e-01	7.46e-01	9.07e-01
		102	(n,gamma)	9.03e-01	5.21e-01	3.07e-01
			tot.absn.	1.32e+00	1.27e+00	1.22e+00
96Cm245	1345	16	(n,2n)	2.20e-03	4.35e-03	4.50e-03
		17	(n,3n)	1.38e-05	2.71e-05	2.75e-05
		18	fission	2.72e+00	2.29e+00	2.03e+00
		37	(n,4n)	8.68e-09	1.70e-08	1.73e-08
		102	(n,gamma)	3.40e-01	1.85e-01	1.13e-01
			tot.absn.	3.06e+00	2.48e+00	2.15e+00
96Cm246	1346	16	(n,2n)	5.51e-04	1.08e-03	1.10e-03
		17	(n,3n)	2.46e-05	4.84e-05	4.92e-05
		18	fission	2.64e-01	5.14e-01	6.57e-01
		37	(n,4n)	2.00e-08	3.93e-08	4.00e-08
		102	(n,gamma)	2.51e-01	1.55e-01	8.50e-02
			tot.absn.	5.16e-01	6.71e-01	7.43e-01
96Cm247	8647	16	(n,2n)	3.48e-03	6.98e-03	7.41e-03
		17	(n,3n)	1.71e-05	3.37e-05	3.42e-05
		18	fission	1.92e+00	1.97e+00	1.99e+00
		37	(n,4n)	1.13e-07	2.22e-07	2.26e-07
		102	(n,gamma)	3.34e-01	1.86e-01	1.13e-01
			tot.absn.	2.26e+00	2.16e+00	2.11e+00

Table 4-5 (Cont'd)

Nuclide	MAT	MT	Reaction	1KMW Core	CFRMF	EBR2 Core
96Cm248	8648	16	(n,2n)	6.95e-04	1.37e-03	1.39e-03
		17	(n,3n)	2.48e-05	4.86e-05	4.95e-05
		18	fission	3.00e-01	5.53e-01	6.93e-01
		37	(n,4n)	5.90e-08	1.16e-07	1.18e-07
		102	(n,gamma)	2.58e-01	1.68e-01	8.40e-02
			tot.absn.	5.59e-01	7.22e-01	7.79e-01
97Bk249	8749	16	(n,2n)	2.32e-03	4.56e-03	4.64e-03
		17	(n,3n)	3.39e-05	6.66e-05	6.78e-05
		18	fission	1.58e-01	2.93e-01	3.82e-01
		37	(n,4n)	1.08e-07	2.12e-07	2.16e-07
		102	(n,gamma)	1.04e+00	6.14e-01	1.33e-01
			tot.absn.	1.20e+00	9.12e-01	5.20e-01
98Cf249	8849	16	(n,2n)	2.42e-03	4.77e-03	4.90e-03
		17	(n,3n)	1.80e-05	3.53e-05	3.59e-05
		18	fission	2.74e+00	2.16e+00	1.79e+00
		37	(n,4n)	2.10e-08	4.12e-08	4.19e-08
		102	(n,gamma)	3.95e-01	2.36e-01	1.31e-01
			tot.absn.	3.14e+00	2.40e+00	1.92e+00
98Cf250	8850	16	(n,2n)	1.22e-03	2.39e-03	2.43e-03
		17	(n,3n)	1.69e-05	3.32e-05	3.38e-05
		18	fission	1.01e+00	1.50e+00	1.69e+00
		37	(n,4n)	2.30e-08	4.51e-08	4.59e-08
		102	(n,gamma)	4.43e-01	2.83e-01	1.31e-01
			tot.absn.	1.45e+00	1.78e+00	1.82e+00
98Cf251	8851	16	(n,2n)	4.07e-03	8.14e-03	8.62e-03
		17	(n,3n)	1.76e-05	3.46e-05	3.52e-05
		18	fission	2.38e+00	1.99e+00	1.79e+00
		37	(n,4n)	8.95e-08	1.76e-07	1.79e-07
		102	(n,gamma)	3.37e-01	2.08e-01	1.30e-01
			tot.absn.	2.72e+00	2.21e+00	1.93e+00
98Cf252	8852	16	(n,2n)	9.44e-04	1.85e-03	1.89e-03
		17	(n,3n)	1.15e-05	2.25e-05	2.29e-05
		18	fission	7.03e-01	9.82e-01	1.08e+00
		37	(n,4n)	9.70e-09	1.90e-08	1.94e-08
		102	(n,gamma)	3.17e-01	1.79e-01	1.06e-01
			tot.absn.	1.02e+00	1.16e+00	1.19e+00
98Cf253	8853	18	fission	7.69e-01	3.48e-01	9.04e-03
		102	(n,gamma)	2.16e-01	1.11e-01	1.11e-03
			tot.absn.	9.85e-01	4.59e-01	1.02e-02
99Es253	8953	102	(n,gamma)	2.54e-01	1.62e-01	9.91e-04
			tot.absn.	2.54e-01	1.62e-01	9.91e-04

Section 5

FINAL COMMENTS

We have attempted to provide the user with the most useful and complete information possible while preserving a record of pertinent data from ENDF/B-V. For this dual purpose, the appendices are significant because some data not included in ENDF/B-V are included at this point, along with an important comparison of ENDF/B-V decay energies with those in the Japanese file (20) for high-Q nuclides (see Table C-3). The Japanese file values for these are based on model calculations (19- 21), using the Gross Theory of Beta Decay, not on experimental data. For aggregate beta and gamma calculations, these do appear to provide better agreement with fission pulse experiments (6,7), as did ENDF/B-IV (23,24). Except for the identification of "Pandemonium Nuclides" in Table C-2, we have no suggestion as to which individual nuclide in either file might have the more correct average energies.

As a general comment on the quality of ENDF/B-V data, we have found little or no reason to question branching ratios, halflives, etc. for any significant errors, and the yields, cross sections, and spectra are greatly improved over ENDF/B-IV. Only aggregate calculations of decay energies following a fission pulse indicate a need for reexamining the average energies for some of the high-Q nuclides. For total decay heating and activity following extended fission in reactors, the data are very good.

Section 6

REFERENCES

1. The Evaluated Nuclear Data File, Versions IV and V (ENDF/B-IV and -V), available from and maintained by the National Nuclear Data Center at Brookhaven National Laboratory).

2. T. R. England and R. E. Schenter, "ENDF/B-IV Fission-Product Files: Summary of Major Nuclide Data," Los Alamos Scientific Laboratory report LA-6116-MS (ENDF-223) (October 1975).

3. W. B. Wilson, T. R. England, R. J. LaBauve, and R. M. Boicourt, "The TOAFEW-V Multigroup Cross-Section Collapsing Code and Library of 154-Group Processed ENDF/B-V Fission-Product and Actinide Cross Sections," Electric Power Research Institute report EPRI NP-2345. Los Alamos National Laboratory document LA-UR 81-1762 REV (April 1982).

4. T. R. England, R. J. LaBauve, W. B. Wilson, and N. L. Whittemore, "SPEC5: Code to Produce Multigroup Spectra," in "Applied Nuclear Data Research and Development January 1-March 31, 1982," Los Alamos Scientific Laboratory report LA-8874-PR (July 1981).

5. B. F. Rider and M. E. Meek, "Compilation of Fission Product Yields," General Electric Co. report NEDO-12154-2E(E) (June 1976).

6. R. J. LaBauve, T. R. England, and D. C. George, "Integral Data Testing of ENDF/B Fission Product Data and Comparisons of ENDF/B with Other Fission Product Data Files," Los Alamos National Laboratory report LA-9090-MS (ENDF-320) (November 1981).

7. C. R. Weisbin, et al., Ed., "Benchmark Data Testing of ENDF/B-V," Brookhaven National Laboratory report BNL-NCS-31531 (ENDF-311) (August 1982).

8. C. W. Reich, "Status of Beta- and Gamma-Decay and Spontaneous-Fission Data from Transactinium Isotopes," Idaho National Engineering Laboratory report ANCR-1299 (April 1976).

9. C. W. Reich, "Application of Fission Product Decay Data," Proc. of Isotope On-Line Separator Workshop, Brookhaven National Laboratory, October 31-November 1, 1977, Brookhaven National Laboratory report BNL 50847 (1978).

10. R. L. Bunting and C. W. Reich, "Evaluation Procedures for Experimental Decay Data," Proc. Conf. on Nuclear Data Evaluation Methods and Procedures, Brookhaven National Laboratory, September 22-25, 1980, Brookhaven National Laboratory report BNL-NCS-51363 (March 1981).

11. F. Schmittroth, "Theoretical Estimates of Decay Information for 'Non-Experimental' Nuclides," Proc. Conf. on Nuclear Data Evaluation Methods and Procedures, Brookhaven National Laboratory, September 22-25, 1980, Brookhaven National Laboratory report BNL-NCS-51363 (March 1981).

12. B. F. Rider, T. R. England, D. G. Madland, J. R. Liaw, and R. E. Schenter, "Evaluation of Fission Product Yields for the U. S. National Nuclear Data Files," Proc. Conf. on Nuclear Data Evaluation Methods and Procedures, Brookhaven National Laboratory, September 22-25, 1980, BNL-NCS-51363 (March 1981).

13. T. R. England and B. F. Rider, "Status of Fission Yield Evaluations," Proc. Specialists' Meeting on Yields and Decay Data for Fission Product Nuclides," Brookhaven National Laboratory, October 24-27, 1983 (sponsored by the OECD/NEA Nuclear Data Committee) (report in Conf. 8310104). Los Alamos National Laboratory document LA-UR-83-3531.

14. R. E. Schenter and T. R. England, "ENDF/B-V Fission Product Cross Section Evaluations," Proc. of NEANDC Specialists' Meeting on Neutron Cross Sections of Fission Product Nuclei, Bologna, Italy, December 12-14, 1979, [NEANDC(E) 209 "L"], p. 253.

15. W. B. Wilson, R. J. LaBauve, and T. R. England, "Calculation of Spent Thermal Reaction Fuel Nuclide Inventories in Comparison with Measurements," Proc. Conf. on Thermal Reactor Benchmark Calculations, Techniques, Results, and Applications, Brookhaven National Laboratory, May 17-18, 1982. Electric Power Research Institute report EPRI NP-2855 (February 1983).

16. R. Kinsey, "Data Formats and Procedures for the Evaluated Nuclear Data File, ENDF," Brookhaven National Laboratory report BNL-NCS-50496 (ENDF-102) (October 1979).

17. R. E. MacFarlane, D. W. Muir, and R. M. Boicourt, "The NJOY Nuclear Data Processing System, Volume I: User's Manual," Los Alamos National Laboratory report LA-9303-MS (ENDF-324) (May 1982).

18. J. C. Hardy, L. C. Carray, B. Johnson, and P. G. Hansen, "The Essential Decay of Pandemonium: A Demonstration of Errors in Complex Beta-Decay Schemes," Phys. Lett. 71B, No. 2 (November 1977).

19. T. Yoshida, "Estimation of Nuclear Decay Heat for Hort-Lived Fission Products," Nucl. Sci. Eng. 63, 376-390 (1977). [See also K. Takahashi and M. Yamada, Prog. Theor. Phys. 41, 1470 (1969) and S. Kayama, K. Takahashi, and M. Yamada, Prog. Theor. Phys. 44, 663 (1970).

20. T. Yamamoto, M. Akiyama, Z. Matumoto, and R. Nakasima, "JNDC FP Decay Data File," Japan Atomic Energy Research Institute report JAERI-M-9357 February 1981).

21. T. Yoshida, M. Akiyama, Z. Matumoto, J. Katakura, and R. Nakasima, "Decay Heat Data Needs," invited paper to be published in Proc. of the Specialists' Meeting on Yields and Data Decay for Fission Product Nuclides, October 24-27, 1983, Brookhaven National Laboratory (sponsored by the OECD/NED Nuclear Data Committee).

22. R. J. LaBauve and W. B. Wilson, "Proposal to Extend CSEWG Neutron and Photons Multigroup Structures for Wider Applications," Los Alamos Scientific Laboratory proposal report LA-6240-P (February 1976).

23. R. E. Schenter, F. Schmittroth and T. R. England, "Integral Determinations of Fission Product Inventory and Decay Power," Review paper published in Proc. IAEA Second Advisory Group Meeting on FPND, Petten, The Netherlands, IAEA-213 (September 1977).

24. T. R. England, R. E. Schenter, and F. Schmittroth, "Integral Decay-Heat Measurements and Comparison to ENDF/B-IV and V," Los Alamos Scientific Laboratory report LA-7422-MS [NUREG/CR-0305] (August 1978). Also published in Proc. of Seminar on "Nuclear Data Problems for Thermal Reactor Applications," held at Brookhaven National Laboratory, May 22-24, 1978. [EPRI-NP-1098, BNL-NC-25047 (ENDF-270), June 1979.]

Appendix A

ENDF/B-V FISSION-PRODUCT DATA DIAGRAMS

The radioactive decay and neutron absorption properties of 1188 fission-product (F.P.) nuclides are shown here in 12 diagrams. All 877 nuclides of the ENDF/B-V F.P. file are shown in solid squares, with halflives and decay energy (keV) values. Decay paths, decay branching fractions, processed 900-K (n,γ) thermal cross sections, σ(0.0253 eV), and resonance integrals I(0.5 eV-20 MeV), and the ^{235}U thermal fission yield fractions are also shown.

The F.P. decay and neutron absorption properties are given in the F.P. file; F.P. yield fractions are included with data describing each fissionable nuclide. Many nuclides assigned nonzero yield fractions in one or more of the 20 yield sets of ENDF/B-V are absent from the F.P. file. These 308 nuclides are shown here in dashed squares, and the decay paths of these are shown with dashed lines. An additional three nuclides (^{96}Tc, ^{96m}Tc, and ^{124}I), absent from both the F.P. file and the yield sets, have been added to complete mass chains and are also shown with dashed squares.

Some 19 isomeric state nuclides of the F.P. file are absent from the yield sets, and their yields have necessarily been assigned values from portions of yields of associated ground or lower isomeric states present in the yield data. The affected yield values, as well as all data values additional to or in variance with ENDF/B-V, are indicated with an asterisk. These data include Pn values of 17 of the 105 delayed neutron precursors identified in the F.P. data file [see Ref. (1)] as well as all neutron absorption branching fractions (2).

REFERENCES - APPENDIX A

1. T. R. England, W. B. Wilson, R. E. Schenter, and F. M. Mann, "Aggregate Delayed Neutron Intensities and Spectra Using Augmented ENDF/B-V Precursor Data," Nucl. Sci. Eng., 62, pp. 139-155 (Ocober 1983).

2. T. R. England, W. B. Wilson, and N. L. Whittemore, "Neutron Capture Branching Fractions," in Applied Nuclear Data Research and Developments April 1-June 30, 1981, Los Alamos National Laboratory report LA-9060-PR (December 1981), p. 46.

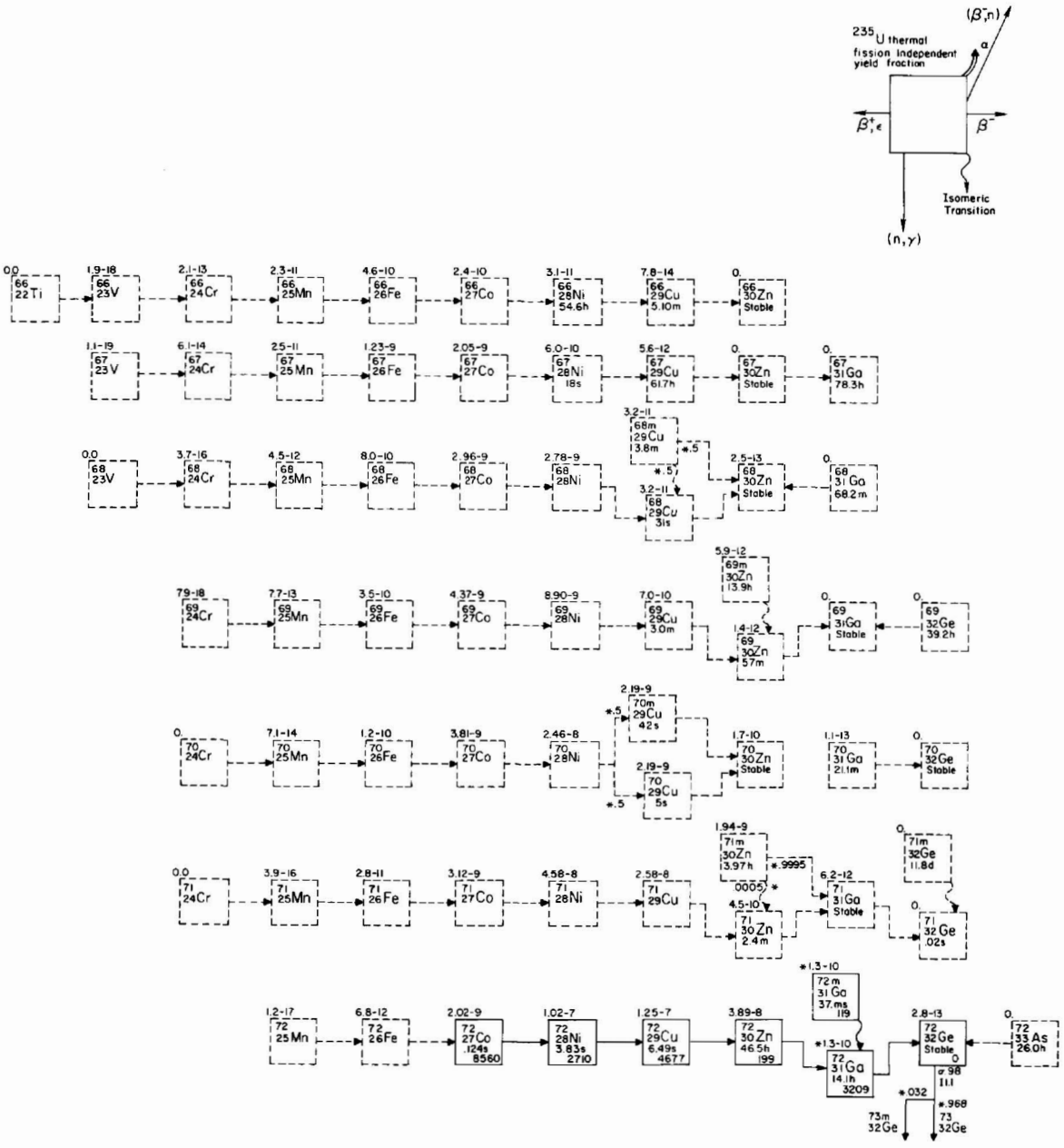


Fig. A-1. Diagram of ENDF/B-V Fission Product Decay

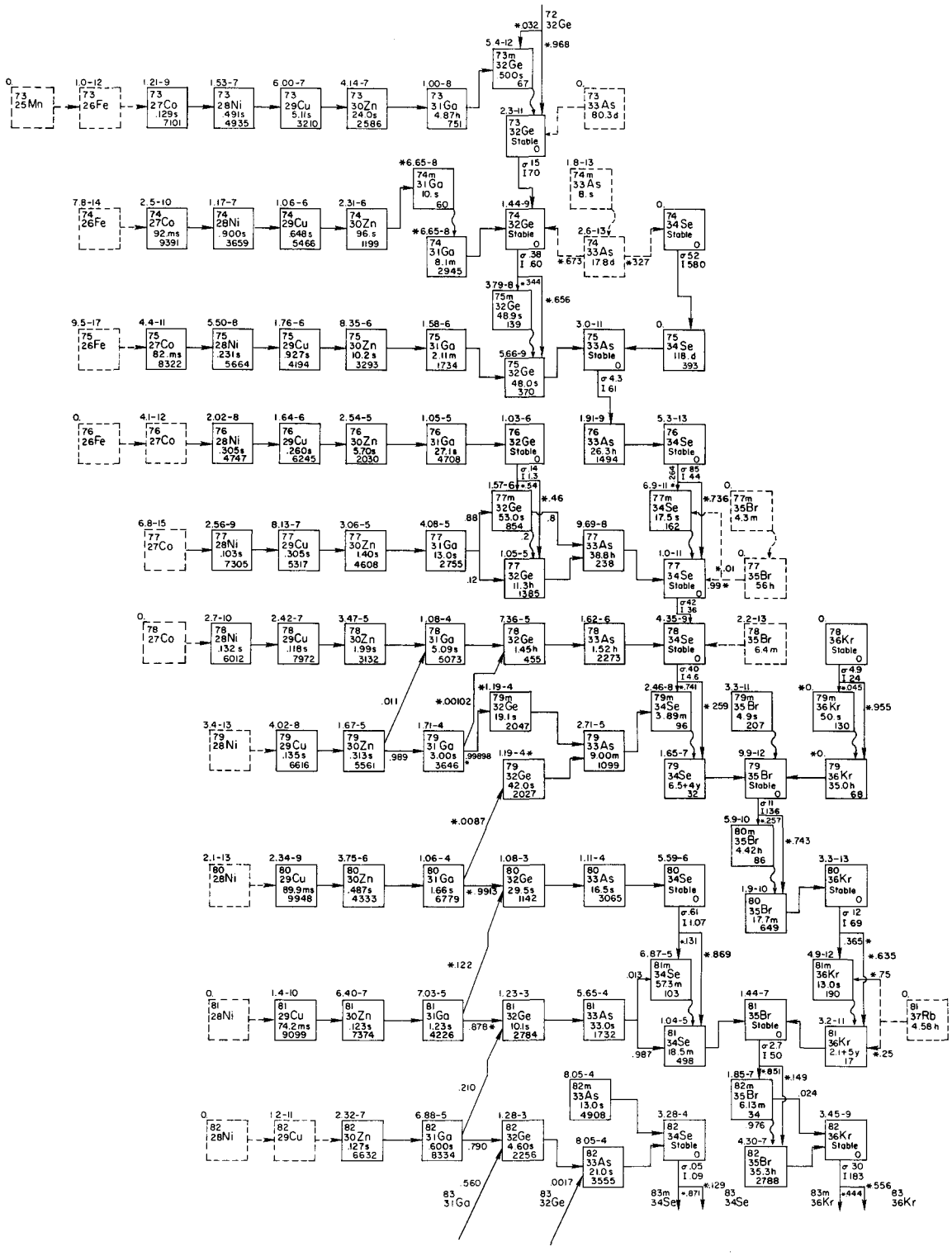


Fig. A-1 (cont.)

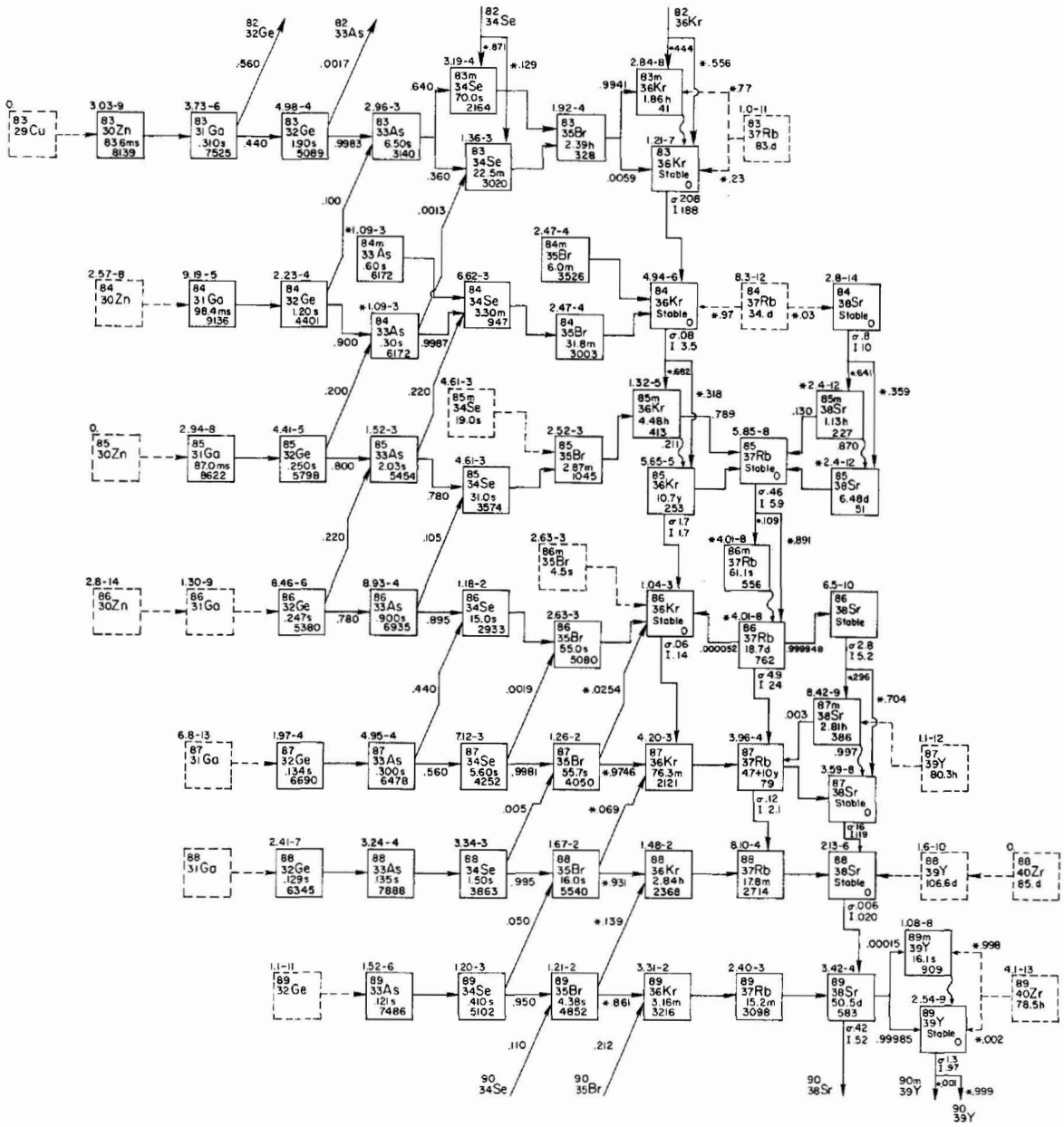


Fig. A-1 (cont.)

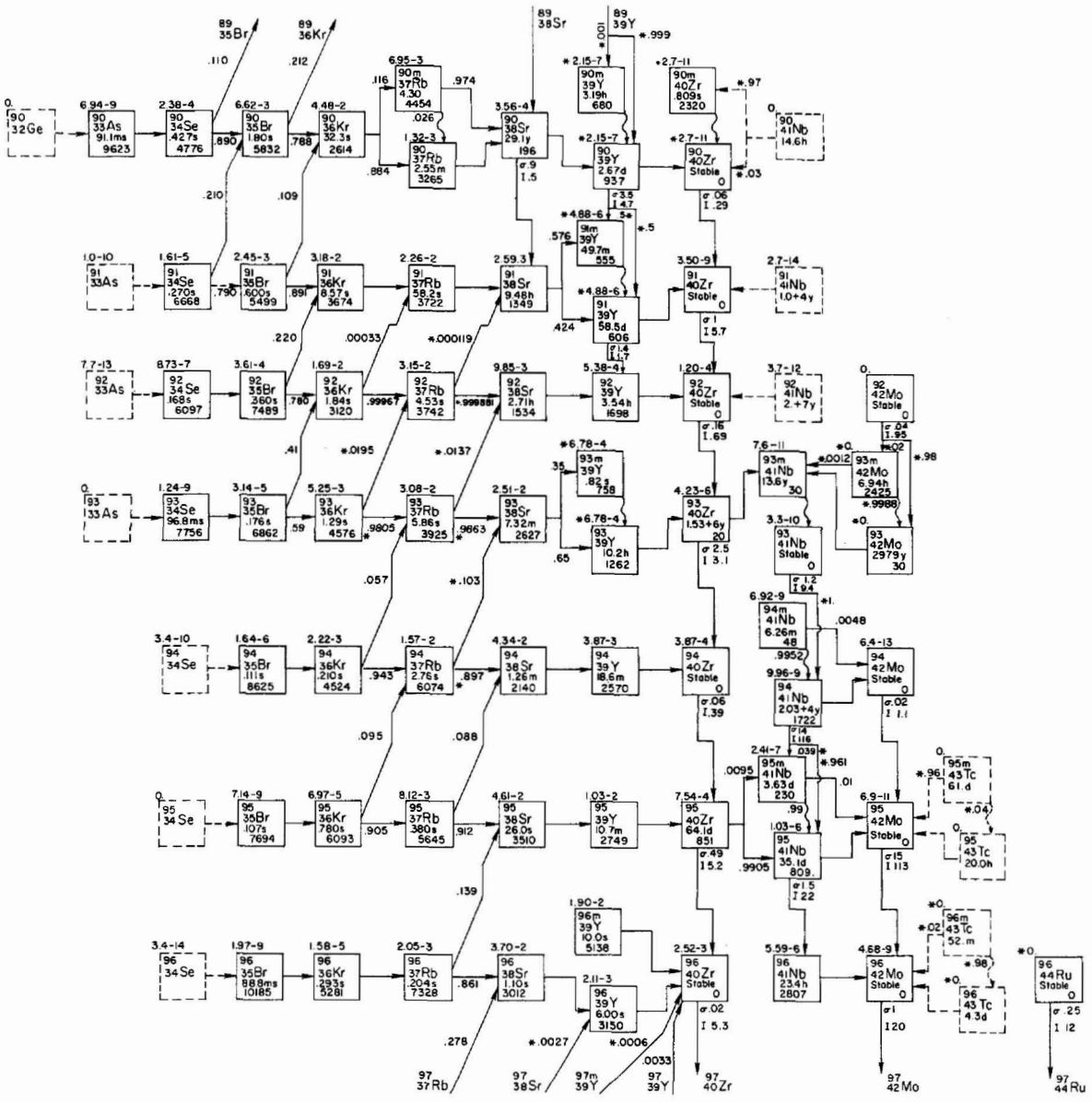


Fig. A-1 (cont.)

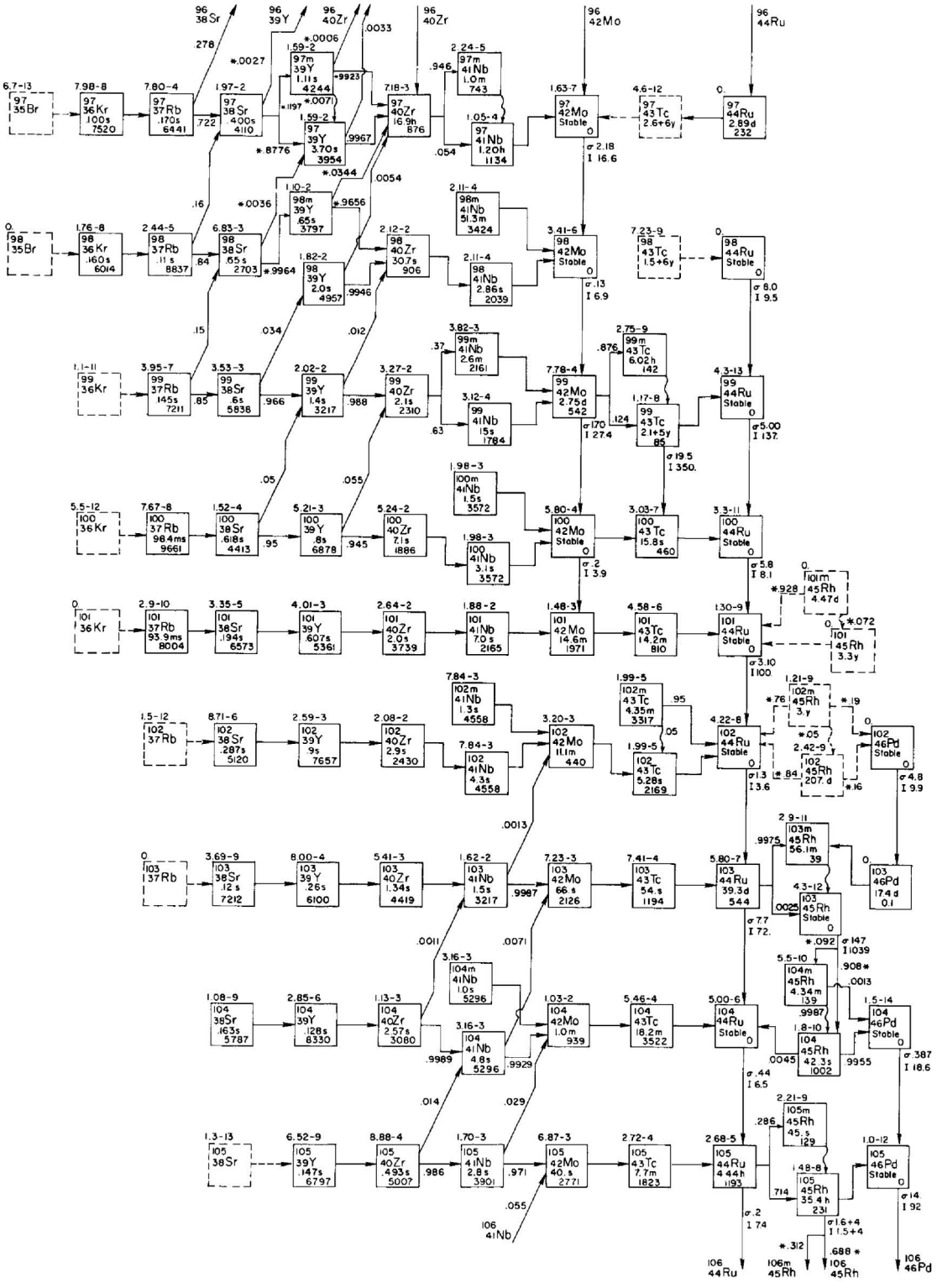


Fig. A-1 (cont.)

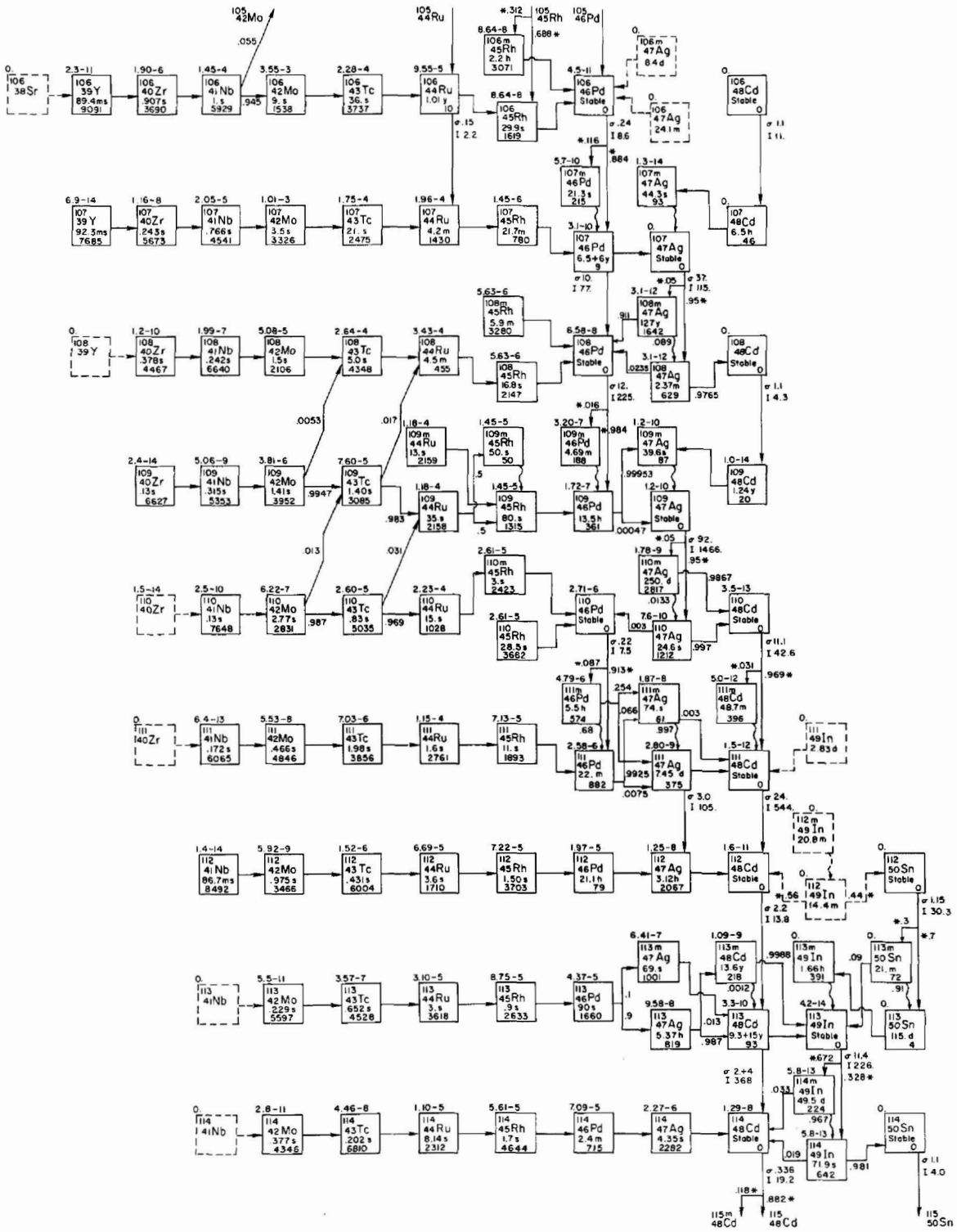


Fig. A-1 (cont.)

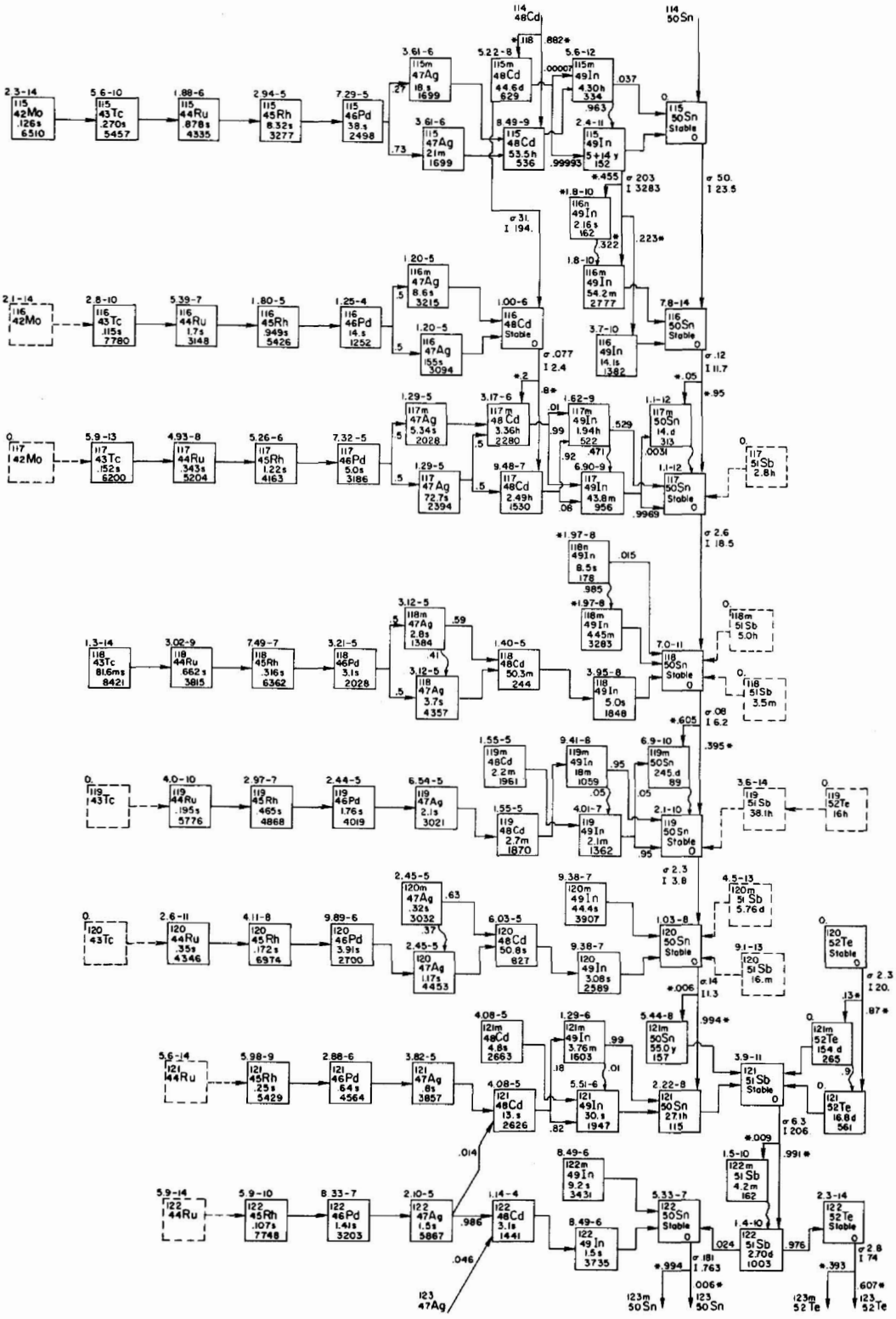


Fig. A-1 (cont.)

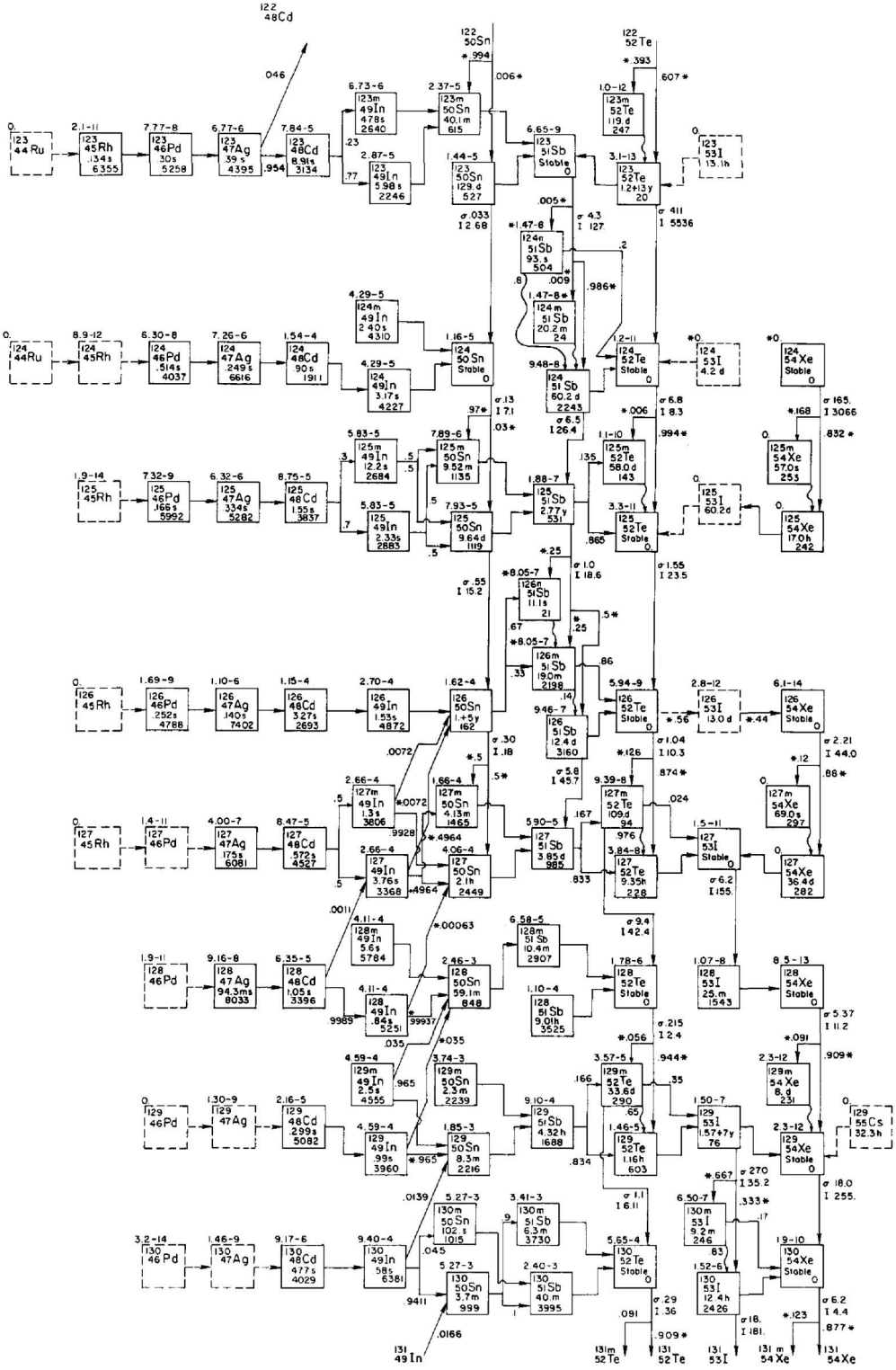


Fig. A-1 (cont.)

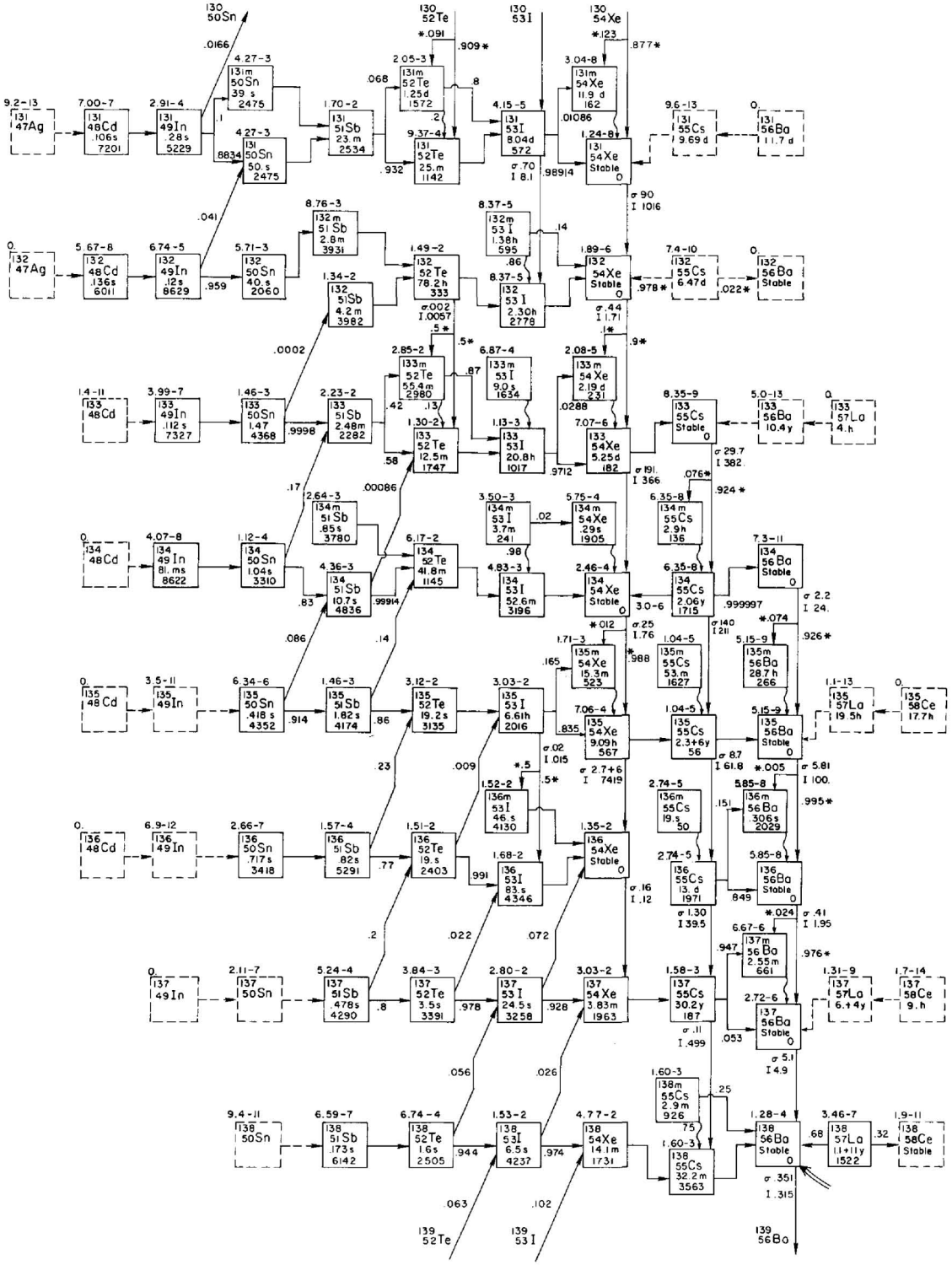


Fig. A-1 (cont.)

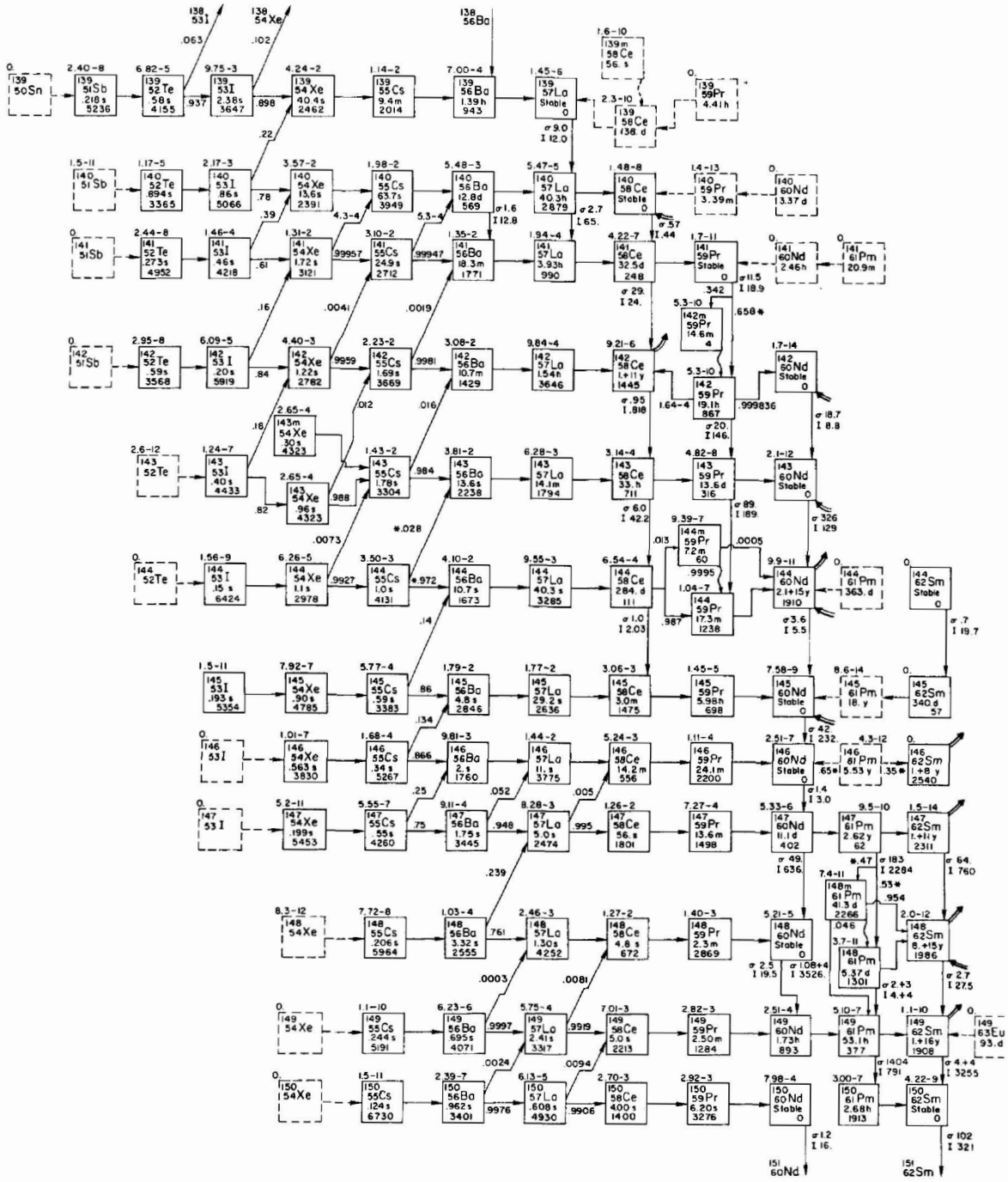


Fig. A-1 (cont.)

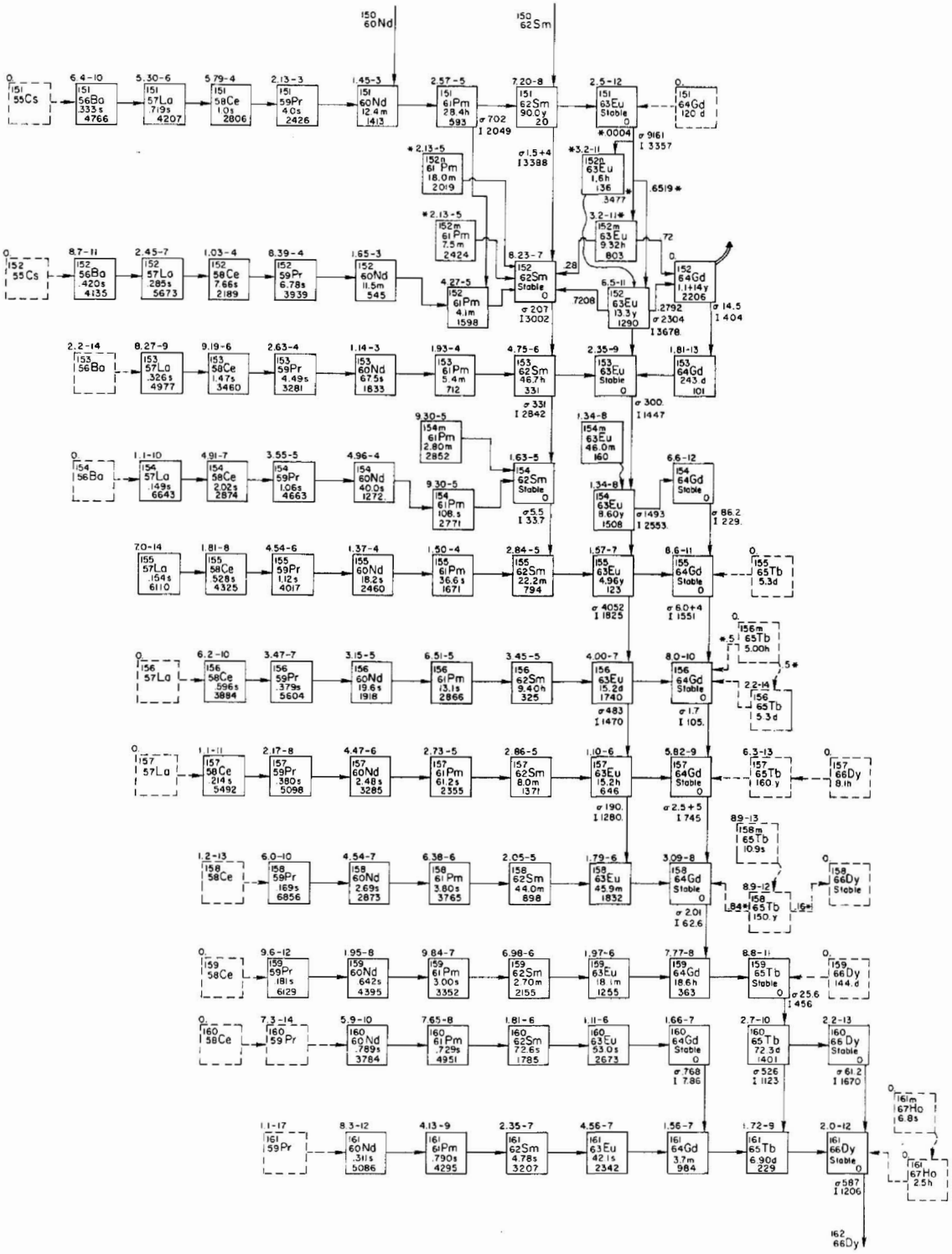


Fig. A-1 (cont.)

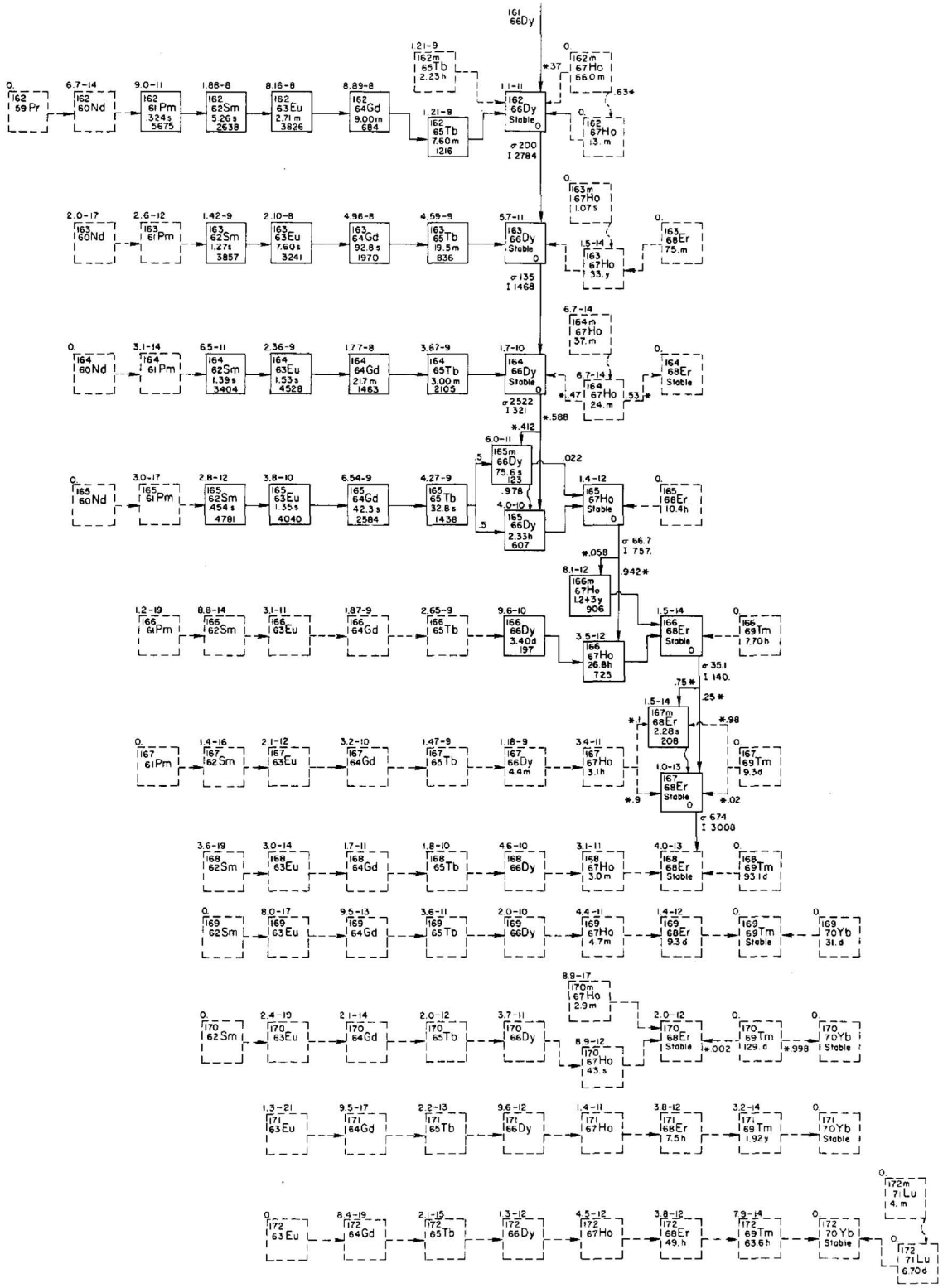


Fig. A-1 (cont.)

Appendix B

AUGMENTED ENDF/B-V ACTINIDE DATA DIAGRAMS

The radioactive decay and neutron absorption properties of 144 actinides that may be produced in reactor fuel are shown here in three diagrams. The 60 actinide nuclides of the ENDF/B-V actinide file are shown in solid squares, with halflives and decay energy (keV) values. Decay paths, decay branching fractions, processed 900-K (n,γ) thermal cross sections σ(0.0253 eV), and resonance integrals I(0.5 eV-20 MeV), and significant (n,2n) paths are also shown. An additional 84 actinide nuclides are shown with dashed squares, and their decay paths are indicated with dashed lines. Decay data for 51 of these were obtained from the INEL supplemental actinide data file of Reich and Bunting. Data for the remaining actinides result from the processing of data of Ref. (1).

REFERENCE FOR APPENDIX B

1. C. M. Lederer and V. S. Shirley, Table of Isotopes, 7th Edition, John Wiley and Sons, Inc., New York (1978).

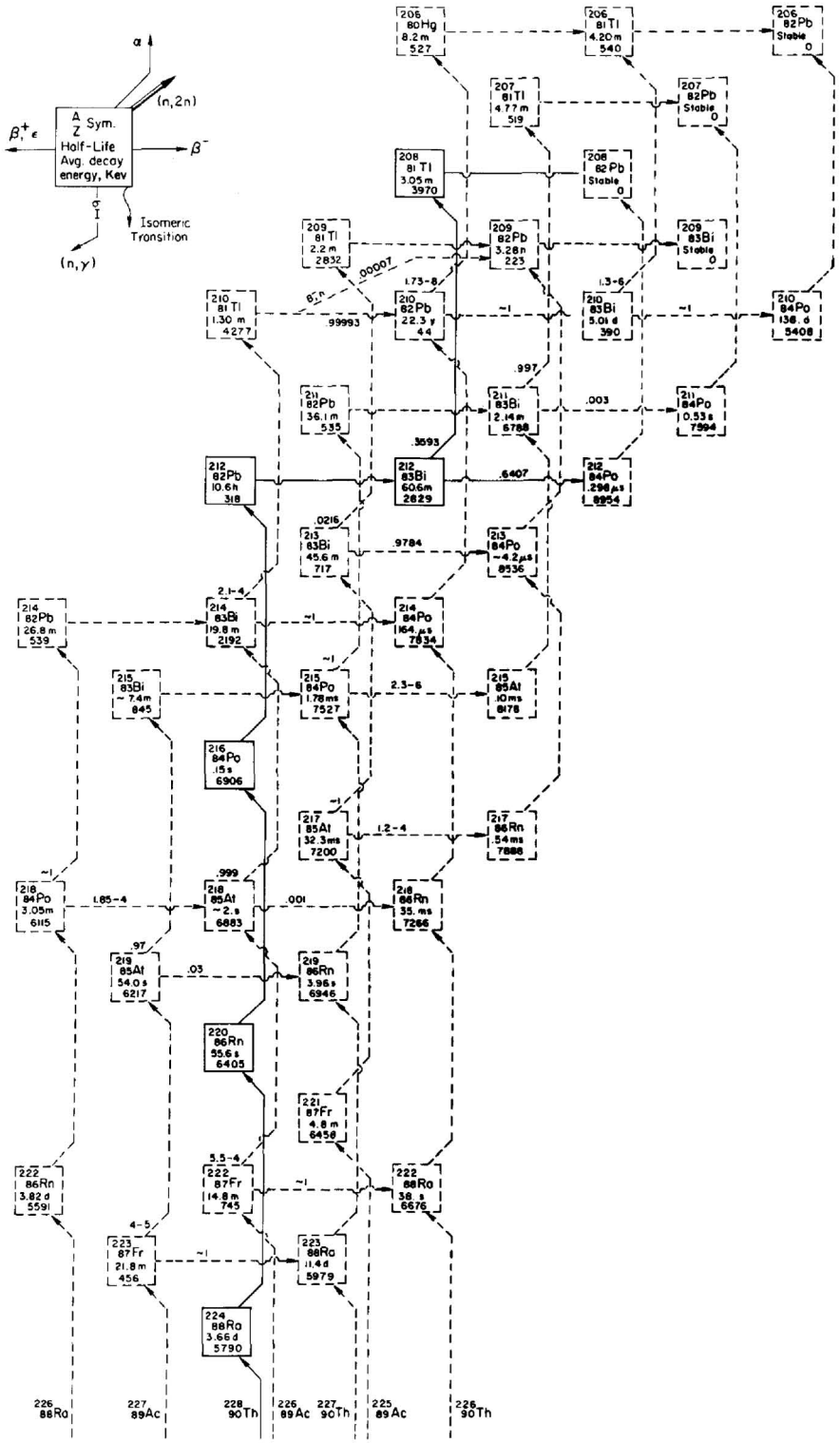


Fig. B-1. Diagram of 144 Actinides

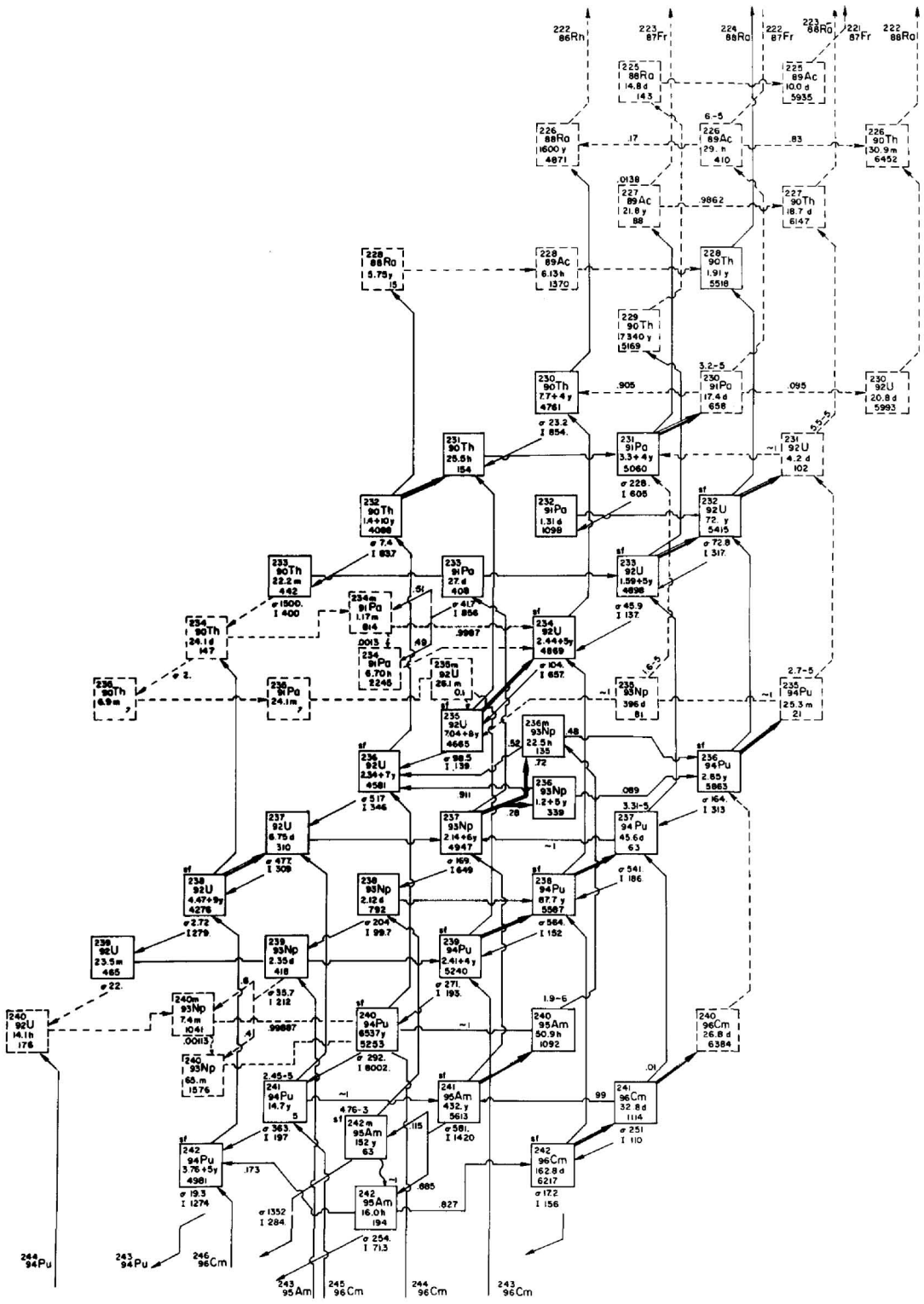


Fig. B-1 (Cont.)

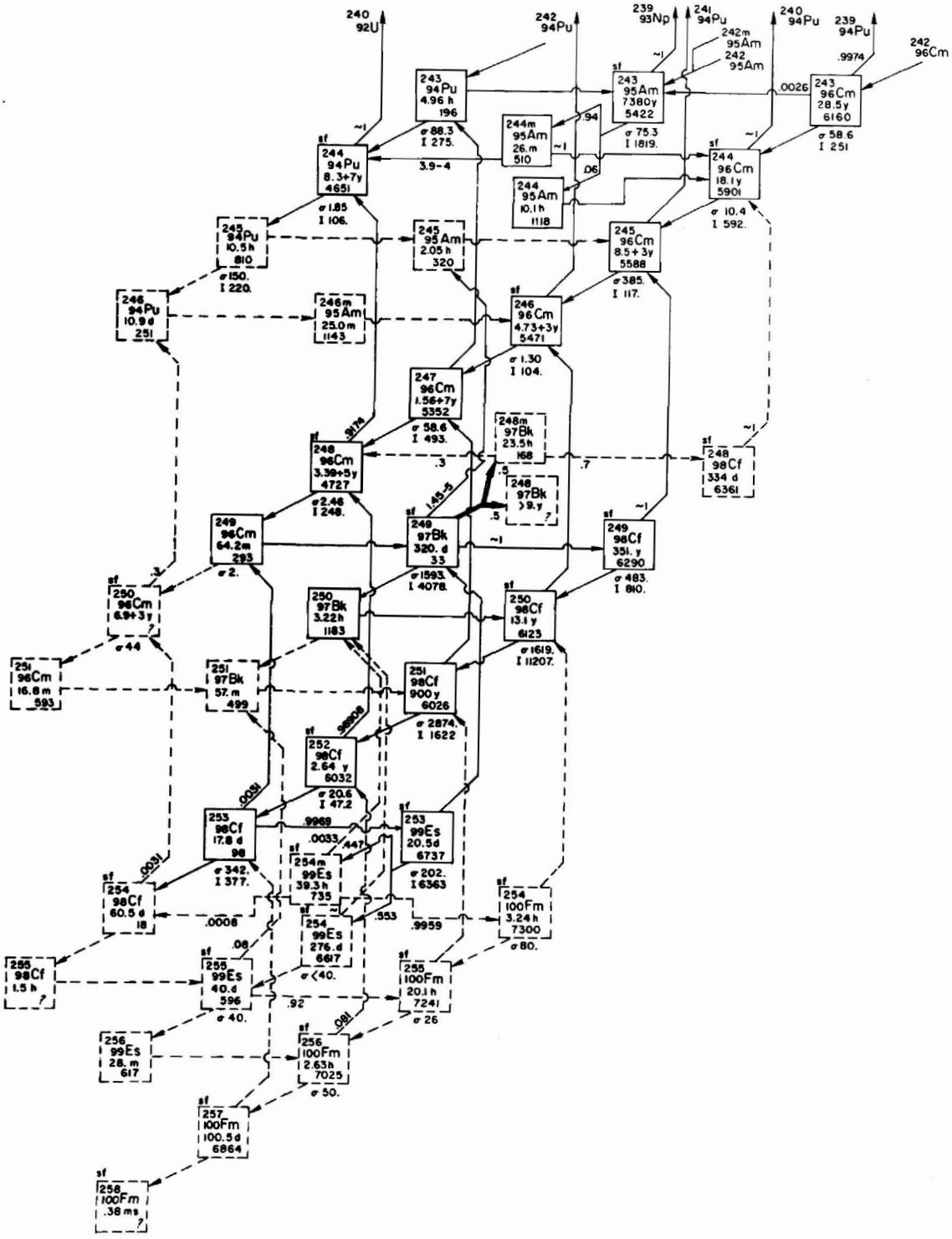

240 92U
242 94Pu
239 93Np
241 94Pu
242m 95Am
242 95Am
240 94Pu
239 94Pu
242 96Cm
243 94Pu 4.96 h 196
243 95Am 7380y 5422
243 96Cm 28.5y 6160
244m 95Am 26.m 510
244 94Pu 8.3+7y 4651
244 95Am 10.1 h 1118
244 96Cm 18.1 y 5901
245 94Pu 10.5 h 810
245 95 Am 2.05 h 320
245 96Cm 8.5+3y 5588
246 94Pu 10.9 d 251
246m 95Am 25.0 m 1143
246 96Cm 4.73+3y 5471
247 96Cm 1.56+7y 5352
248m 97Bk 23.5 h 168
248 96Cm 3.39+5y 4727
248 97Bk >9.y
248 98Cf 334 d 6361
249 96Cm 64.2m 293
249 97Bk 320. d 33
249 98Cf 351. y 6290
250 96Cm 6.9+3y
250 97Bk 3.22 h 1183
250 98Cf 13.1 y 6123
251 96Cm 16.8 m 593
251 97Bk 57. m 499
251 98Cf 900 y 6026
252 98Cf 2.64 y 6032
253 98Cf 17.8 d 98
253 99Es 20.5d 6737
254m 99Es 39.3 h 735
254 98Cf 60.5 d 18
254 99Es 276. d 6617
254 100Fm 3.24 h 7300
255 98Cf 1.5 h
255 99Es 40.d 596
255 100Fm 20.1 h 7241
256 99Es 28. m 617
256 100Fm 2.63h 7025
257 100Fm 100.5 d 6864
258 100Fm .38 ms

Fig. B-1 (Cont.)

Appendix C

LISTING OF NUCLIDES HAVING ENDF/B-V QUESTIONABLE DATA OR ERRORS

All of the ENDF/B-V fission-product and actinide data have been incorporated into summation codes, including decay spectra, and aggregate comparisons made with available measurements, as referenced in the main text. Additional comparison of many individual cross section and decay parameters with measurements and other evaluations have been made, and various consistency checks (e.g., the comparisons between average energies and values derived from spectra) have been made. Based on these comparisons and tests, we itemize in this Appendix those nuclides and their parameters that should be reviewed for the next version of ENDF/B or before using the current Version-V data.

Table C-1 provides a list of nuclides that were flagged with a "b" in Table 2-1, along with limited comments regarding questionable ENDF/B-V Rev "0" data or data errors. Most of these have no effect on the data in Table 2-1.

The so-called "Pandemonium Nuclides," flagged with a "c" in Table 2-1, are listed in Table C-2; average beta- and gamma-energies from ENDF/B-IV, -V, and the Japanese values are also included. This list includes those nuclides identified by C. W. Reich, Idaho National Engineering Laboratory.

Table C-3 compares ENDF/B-V values with Japanese average beta- and gamma-energies for a number of high-Q nuclides (see comments in Section 5). This list was supplied by T. Yoshida, NAIG Nuclear Research Laboratory.

Table C-4 lists nuclides flagged with a "d" in Table 2-1. These show a significant inconsistency between average decay energies tabulated in the spectral files with the values computed from the spectra. In some cases the inconsistency is between the total energy calculated from the spectra and the total Q value.

Table C-1

LISTING OF NUCLIDES HAVING ENDF/B-V QUESTIONABLE DATA OR ERRORS[a]

No.	Nuclide	MAT	Comment
6	31-Ga- 72m	9035	Q-value error. (Q=0.05MeV should be 0.12 MeV)
22	34-Se- 74	9089	Cross section interpolation error INT=2 should be INT=5
22	34-Se- 74	9089	Negative elastic scattering cross section
99	33-As- 83	9080	Half life to be reviewed (6.5s should be approx. 13.45s)
107	33-As- 84	9081	Half life error (0.3s should be 5.3s)
113	38-Sr- 84	9179	Cross section interpolation error INT=2 should be INT=5
117	34-Se- 85	9104	Q value error. (Q=14.0MeV should be 6.1 MeV)
122	38-Sr- 85	9180	Half life error (0.56+6s should be 0.56+7s)
221	44-Ru- 96	9325	Cross section interpolation error INT=2 should be INT=5
231	44-Ru- 97	9326	Review beta energy--some refs. do not use 0.0
241	44-Ru- 98	9327	Cross section interpolation error INT=2 should be INT=5
278	46-Pd-102	9379	Cross section interpolation error INT=2 should be INT=5
306	45-Rh-105	9355	Error in cap. cross sec. at E=0.5eV (change 360. to 3600.)
318	48-Cd-106	9440	Cross section interpolation error INT=2 should be INT=5
380	45-Rh-112	9367	Half life error (1.5s should be 4.6s)1.5s
384	50-Sn-112	9513	Cross section interpolation error INT=2 should be INT=5
375	48-Cd-111m	9446	Q value error (Q=0.05 MeV should be 0.396 MeV)
407	50-Sn-114	9516	Cross section interpolation error INT=2 should be INT=5
452	49-In-118n	9486	Spectra energies need to be reviewed
463	50-Sn-119m	9523	Spectra energies need to be reviewed
463	50-Sn-119m	9523	Q values need to be reviewed--some refs differ.
473	52-Te-120	9576	Cross section interpolation error INT=2 should be INT=5
485	52-Te-121m	9578	Review beta energy--some refs differ from 0.0
505	52-Te-123	9580	Negative elastic scattering cross section
528	54-Xe-125	9631	Review beta energy--some refs differ from 0.0
529	54-Xe-125m	9632	Review beta energy--some refs differ from 0.0
607	53-I -133	9614	Beta decay branching needs to be reviewed
667	53-I -140	9624	Review Q value--some refs differ
708	60-Nd-144	9765	Negative elastic scattering cross section
709	62-Sm-144	9803	Cross section interpolation error INT=2 should be INT=5
718	62-Sm-145	9804	Q value and ave. energies in error (Q value=6.15 MeV should be 0.615 MeV)
741	60-Nd-148	9769	Negative elastic scattering cross section
737	56-Ba-148	9701	Halflife needs review (3.325s is 0.55s in tab of isotopes)
825	62-Sm-158	9817	Halflife needs review (2640s recently reported as 330s)
854	66-Dy-162	9866	Negative elastic scattering cross section
876	68-Er-167	9876	Negative elastic scattering cross section
901	93-Np-237	1337	Thermal cross sections updated on second release, 6/83
912	95-Am-241	1361	Fast capture cross section needs review
919	95-Am-243	1363	Fast capture cross section updated on second release, 6/83
921	94-Pu-244	8444	X-ray energy and other spectral errors, corr. on second rel. 6/83
928	96-Cm-248	8648	X-ray energy and other spectral errors, corr. on second rel. 6/83
936	98-Cf-253	8853	X-ray energy and other spectral errors, corr. on second rel. 6/83

[a]The "No." and MAT columns in this table correspond to the sequence and MAT values in Table 2-1.

The X-ray energy and spectral errors do not affect the average energies in Table 2-1. Spontaneous fission energy is not included in the average alpha energy, as is required by the ENDF/B-V formats manual.

All noted cross section errors were corrected before processing the few-group values in Sec. 4.

See also Tables C-2 through C-4. Table C-4 lists nuclides having spectra that do not reproduce one or more average energies as listed in the spectral files.

Table C-2

NUCLIDES TO BE EXAMINED FOR PANDEMONIUM EFFECT
AND
ENERGY COMPARISON WITH JNDC FILES[a]

Nuclide	MAT	Halflife(s)	Q(MeV)	ENDF/B-IV Beta	ENDF/B-IV Gamma	ENDF/B-V Beta	ENDF/B-V Gamma	JAPAN Beta	JAPAN Gamma
33-As 80	9076	1.650+01	6.000	2.523	0.607	2.455	0.610	2.478	0.259
33-As 82	9078	2.100+01	7.200	3.211	0.288	3.155	0.400	1.990	2.954
33-As 82m	9079	1.300+01	7.200	1.819	2.995	1.808	3.100	1.954	2.763
35-Br 87	9125	5.570+01	6.840	2.136	1.726	2.496	1.554	1.813	2.410
35-Br 88	9126	1.600+01	8.600	3.067	1.881	2.540	3.000	2.454	3.210
36-Kr 91	9152	8.570+00	6.120	2.578	0.724	1.941	1.733	2.055	1.617
36-Kr 92	9153	1.840+00	5.970	2.403	0.752	2.368	0.752	2.262	1.078
37-Rb 92	9169	4.530+00	7.770	3.459	0.261	3.481	0.261	2.856	1.566
36-Kr 93	9154	1.289+00	7.510	2.758	2.040	2.336	2.240	2.727	2.757
37-Rb 93	9170	5.860+00	7.360	2.027	1.415	2.605	1.320	2.147	2.675
39-Y 96	9213	6.000+00	6.500	2.408	1.461	3.147	0.003	3.024	0.000
39-Y 96m	9214	1.000+01	7.000	0.000	0.000	1.107	4.031	1.124	4.031
38-Sr 97	9194	4.000-01	7.400	2.350	1.838	2.620	1.490	2.603	1.501
39-Y 97	9215	3.700+00	6.670	2.162	0.935	2.154	1.800	2.472	1.231
39-Y 97m	9216	1.110+00	7.337	0.000	0.000	2.423	1.821	2.683	1.472
38-Sr 98	9195	6.500-01	5.810	1.690	1.496	2.527	0.176	2.139	1.051
39-Y 98	9217	2.000+00	7.300	2.845	1.943	1.806	3.151	3.216	2.041
39-Y 98m	9218	6.500-01	7.300	0.000	0.000	2.983	0.814	2.989	2.596
41-Nb 98	9258	2.860+00	4.585	1.865	0.140	1.959	0.080	1.965	0.080
39-Y 99	9219	1.400+00	6.390	2.092	1.647	2.606	0.611	2.375	1.147
40-Zr 99	9238	2.100+00	4.445	1.621	0.794	1.487	0.823	1.463	0.823
41-Nb101	9264	7.000+00	4.570	1.901	0.330	1.848	0.317	1.686	0.720
43-Tc102	9307	5.280+00	4.500	1.509	0.464	1.700	0.469	1.952	0.579
43-Tc102m	9308	2.610+02	5.000	0.720	2.547	0.940	2.377	0.855	2.430
43-Tc104	9310	1.092+03	5.400	1.193	1.448	1.582	1.940	1.244	2.678
44-Ru107	9336	2.520+02	3.150	1.238	0.251	1.250	0.180	1.212	0.241
45-Rh108	9360	1.680+01	4.500	1.828	0.709	1.800	0.347	1.813	0.338
45-Rh108m	9361	3.540+02	4.500	0.804	2.440	0.780	2.500	0.789	2.272
45-Rh110	9364	2.850+01	5.400	1.346	2.268	1.182	2.480	2.202	0.486
45-Rh110m	9365	3.000+00	5.400	2.481	0.056	2.367	0.056	2.237	0.777
49-In120	9489	3.080+00	5.400	1.039	3.060	2.258	0.331	2.228	0.331
49-In120m	9490	4.440+01	5.300	2.472	0.176	0.935	2.972	0.953	2.976
49-In121	9491	3.000+01	3.380	1.020	1.012	0.971	0.976	0.985	0.926
49-In121m	9492	2.256+02	3.100	1.091	1.082	1.483	0.120	1.503	0.053
51-Sb134	9569	1.070+01	8.490	3.952	0.000	2.800	2.036	2.781	2.256
51-Sb134m	9570	8.500-01	8.400	2.954	2.094	3.780	0.000	2.284	3.272
54-Xe139	9652	4.040+01	5.020	1.787	0.928	1.702	0.760	1.002	2.239
54-Xe140	9653	1.360+01	4.060	0.881	1.362	1.181	1.210	1.204	1.149
55-Cs140	9673	6.370+01	6.050	1.931	2.131	1.649	2.300	1.429	2.791
54-Xe141	9654	1.720+00	6.000	1.571	2.270	2.345	0.776	2.048	1.489
55-Cs141	9674	2.490+01	4.980	1.377	1.825	1.912	0.800	1.276	2.135
57-La142	9710	5.550+03	4.517	0.947	2.400	0.896	2.750	0.915	2.523
55-Cs144	9677	1.001+00	8.100	2.350	3.041	3.180	0.951	2.649	2.193
57-La144	9712	4.030+01	5.300	1.511	1.937	1.461	1.824	1.338	2.091
59-Pr148	9751	1.380+02	4.800	2.044	0.300	1.648	1.221	1.653	1.165
59-Pr149	9752	1.500+02	3.000	1.158	0.251	1.158	0.126	1.137	0.180
61-Pm152	9789	2.460+02	3.470	1.439	0.288	1.310	0.288	1.385	0.115
61-Pm152m	9790	4.500+02	3.470	0.900	1.287	1.134	1.290	0.864	1.466
61-Pm154	9793	1.080+02	4.000	0.760	1.885	0.915	1.856	0.839	1.852
61-Pm154m	9794	1.680+02	4.000	1.034	1.522	0.912	1.940	0.928	1.700

[a]These nuclides have complex spectra in ENDF/B-V (and for some in ENDF/B-IV) and therefore may have incorrect average energies (see text). The nuclides were identified by C. W. Reich; ENDF/B-V energies were taken from Table 2-1, and JNDC values from the 1981 library of Ref. (20).

Table C-3

COMPARISON OF AVERAGE BETA- AND GAMMA-RAY ENERGIES[a]

		E-Beta (MeV)			E-Gamma (MeV)		
	Nuclide	JNDC(E)	JNDC(G)	ENDF/B-V	JNDC(E)	JNDC(G)	ENDF/B-V
c	34Se 85	1.70	1.63	2.18	2.24	2.39	1.39
c	34Se 86	1.15	1.35	1.86	2.35	1.96	1.07
	35Br 86	1.74	1.95	1.78	3.64	2.94	3.30
c	34Se 87	2.49	2.08	2.54	1.96	2.64	1.71
b	35Br 87	1.54	1.81	2.50	3.86	2.41	1.55
c	34Se 88	2.38	2.40	2.39	1.72	1.72	1.47
b	35Br 88	2.62	2.45	2.54	3.06	3.21	3.00
	37Rb 88	2.09	1.19	2.06	0.64	2.49	0.66
c	35Br 90	4.39	3.09	3.21	1.13	3.66	2.62
	37Rb 90m	1.29	1.54	1.36	3.35	2.67	3.10
	37Rb 90	1.89	1.57	2.20	2.16	2.76	1.06
b	36Kr 91	1.99	2.06	1.94	1.73	1.62	1.73
	37Rb 91	1.52	1.48	1.50	2.22	2.30	2.23
b	36Kr 92	2.41	2.26	2.37	0.72	1.08	0.75
b	37Rb 92	3.49	2.86	3.48	0.27	1.57	0.26
b	36Kr 93	2.89	2.73	2.34	2.28	2.76	2.24
b	37Rb 93	2.72	2.15	2.61	1.39	2.68	1.32
c	38Sr 95	2.27	1.59	2.11	1.03	2.44	1.40
c	38Sr 96	1.98	1.96	1.88	0.91	0.96	1.13
b	38Sr 97	2.54	2.60	2.62	1.49	1.50	1.49
b	39Y 97m	2.40	2.68	2.42	1.81	1.47	1.82
b	39Y 97	2.15	2.47	2.15	1.81	1.23	1.80
c	37Rb 98	3.81	3.71	4.15	1.25	2.92	4.68
b	38Sr 98	2.53	2.14	2.53	0.17	1.05	0.18
b	39Y 98m	2.68	2.99	2.98	3.11	2.60	0.81
b	39Y 98	3.95	3.22	1.81	0.81	2.04	3.15
b	39Y 99	2.48	2.38	2.61	0.49	1.15	0.61
c	40Zr101	2.50	2.16	2.21	0.35	1.09	1.53
b	43Tc104	1.68	1.24	1.58	1.84	2.68	1.94
c	42Mo105	2.26	1.29	1.68	0.15	2.37	1.09
c	43Tc108	3.29	2.25	2.47	0.80	2.99	1.88
b	45Rh110m	1.35	2.24	2.37	2.21	0.78	0.06
b	45Rh110	2.38	2.20	1.18	0.06	0.49	2.48
c	50Sn131m	1.17	1.10	1.47	1.63	2.39	1.00
c	49In132	2.24	3.16	3.63	4.78	2.90	5.00
	51Sb132	1.20	1.20	1.38	2.57	2.73	2.60
c	50Sn133	3.10	2.41	2.39	0.39	1.86	1.98
b	51Sb134m	3.14	2.28	3.78	2.03	3.27	0.0
b	51Sb134	3.84	2.78	2.80	0.00	2.26	2.04
	52Te135	2.44	1.53	2.40	0.69	2.62	0.74
	53I 136m	2.31	1.76	2.13	2.00	2.94	2.00
	53I 136	2.05	1.76	1.97	2.47	2.94	2.38
	53I 137	1.97	1.27	2.29	0.75	2.46	0.97
	55Cs138m	0.40	0.28	0.39	0.53	0.73	0.54
	55Cs138	1.25	1.09	1.20	2.33	2.68	2.36
b	54Xe139	1.74	1.00	1.70	0.89	2.24	0.76
b	55Cs140	1.75	1.43	1.65	2.22	2.79	2.30
b	54Xe141	2.36	2.05	2.35	1.04	1.49	0.78
	55Cs141	2.09	1.28	1.91	0.67	2.14	0.80
c	54Xe142	1.85	1.76	1.66	1.19	0.98	1.12
	55Cs142	2.62	2.45	2.50	3.81	1.79	1.17
b	57La144	1.79	1.34	1.46	1.31	2.09	1.82
c	57La146	2.46	2.18	2.05	0.72	1.35	1.73
c	57La148	2.74	2.18	2.21	0.88	1.36	2.04
c	59Pr150	2.31	2.02	1.84	0.26	1.08	1.43

[a]This comparison was supplied by T. Yoshida, April 1981. JNDC(G) refers to model calculations using the gross theory of beta decay. These values were adopted into the JNDC fission product library. JNDC(E) refers to experimentally based energies.

[b]Nuclides from Table C-2 to be examined again for ENDF/B-VI.

[c]These nuclides are not based on spectra or beta strength functions in ENDF/B-V.

Table C-4

NUCLIDES IN ENDF/B-V REV "0" HAVING SOME SPECTRA ERRORS

Nuclide	Nuclide
35-Br- 82m	62-Sm-151
40-Zr- 93	90-Th-232
44-Ru-106	90-Th-233
46-Pd-107	91-Pa-233
47-Ag-111	92- U-237
48-Cd-109	94-Pu-237
49-In-116m	94-Pu-241
49-In-118n	96-Cm-241
50-Sn-119m	95-Am-242m
51-Sb-126n	96-Cm-243
52-Te-133m	94-Pu-244
53- I-134m	96-Cm-248
59-Pr-149	97-Bk-249
61-Pm-149	98-Cf-253
61-Pm-152m	

[a]This listing of nuclides is based on a comparison of average energies derived from individual spectra with either the total Q value or average energies for individual spectra as tabulated in the files. Nuclides showing differences greater than 15% in any component are tabulated.

Appendix D

(n,2n) GROUP CROSS SECTIONS

Table D-1 lists (n,2n) cross sections and the (n,2n) threshold Q-value for all nuclides having any cross section data in the ENDF/B-V fission-product and actinide files. The energy group bounds are listed following the table as well as the source of these data.

Table D-1

N,2N CROSS SECTIONS

Nuclide	Thres.	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9	Meth.
*** Fission Products ***											
32 Ge 720	10.80	1.1880	1.1880	1.1880	0.9982	0.0859	0.	0.	0.	0.	1
32 Ge 730	6.79	1.3270	1.7494	1.7494	1.7494	1.7494	1.4665	0.0803	0.	0.	1
32 Ge 740	10.20	1.2720	1.2720	1.2720	1.2654	0.3412	0.	0.	0.	0.	1
32 Ge 760	9.45	0.7140	1.0079	1.3578	1.1220	0.7645	0.3203	0.	0.	0.	4
33 As 750	10.20	1.1562	1.1832	1.1525	1.0268	0.6546	0.1447	0.	0.	0.	4
34 Se 740	12.10	1.0060	1.0060	0.9371	0.1693	0.	0.	0.	0.	0.	1
34 Se 760	11.20	0.5967	0.7295	0.8895	0.8674	0.4236	0.	0.	0.	0.	4
34 Se 770	7.42	1.5825	1.6612	1.6612	1.6612	1.6612	1.0047	0.0020	0.	0.	1
34 Se 780	10.50	1.0977	1.1166	1.0808	0.9748	0.6667	0.0842	0.	0.	0.	2
34 Se 800	9.90	1.0408	1.2474	1.2420	1.1879	0.9891	0.3239	0.	0.	0.	2
34 Se 820	9.26	0.8304	1.2472	1.3545	1.3274	1.2129	0.6333	0.0062	0.	0.	2
35 Br 790	10.70	0.7749	0.8832	0.9591	0.8929	0.4293	0.0104	0.	0.	0.	4
35 Br 810	10.20	0.5706	0.6676	0.7837	0.7089	0.4354	0.1019	0.	0.	0.	4
36 Kr 780	11.90	0.3690	0.3568	0.3110	0.2030	0.0401	0.	0.	0.	0.	3
36 Kr 800	11.50	1.1665	1.1415	1.0417	0.7865	0.2830	0.0025	0.	0.	0.	3
36 Kr 820	11.00	1.3477	1.3366	1.2817	1.1139	0.6214	0.0385	0.	0.	0.	3
36 Kr 830	7.47	1.4131	1.4200	1.4200	1.4136	1.3972	1.2858	0.5860	0.	0.	3
36 Kr 840	10.50	1.4326	1.4625	1.4252	1.3049	0.9120	0.1144	0.	0.	0.	3
36 Kr 850	7.01	1.2704	1.3119	1.3091	1.3018	1.2771	1.1655	0.6129	0.0206	0.	2
36 Kr 860	9.85	1.3809	1.5427	1.5083	1.4094	1.1187	0.2482	0.	0.	0.	3
37 Rb 850	10.50	1.2125	1.2770	1.3225	1.1849	0.7209	0.1038	0.	0.	0.	4
37 Rb 860	8.19	1.5534	1.5534	1.5534	1.5534	1.5534	0.4435	0.	0.	0.	1
37 Rb 870	9.94	1.2110	1.2901	1.3088	1.2059	0.9938	0.5874	0.	0.	0.	4
38 Sr 840	11.80	1.6251	1.6624	1.4747	0.8357	0.2605	0.	0.	0.	0.	4
38 Sr 860	11.50	1.0900	1.0900	1.0900	0.5228	0.0036	0.	0.	0.	0.	1
38 Sr 870	8.44	1.5184	1.5184	1.5184	1.5184	1.5043	0.2844	0.	0.	0.	1
38 Sr 880	11.10	0.2497	0.2759	0.2508	0.2176	0.1119	0.	0.	0.	0.	4
38 Sr 890	6.57	1.2573	1.3068	1.3067	1.3049	1.2976	1.2587	0.9740	0.1368	0.	2
38 Sr 900	7.57	0.4730	0.8285	1.2484	1.3413	1.2970	1.0959	0.2757	0.	0.	2
39 Y 890	11.50	1.2000	1.1633	1.0051	0.8550	0.2021	0.	0.	0.	0.	4
39 Y 900	6.63	1.1947	1.7703	1.7718	1.7718	1.7718	1.5675	0.1327	0.	0.	1
39 Y 910	8.22	0.6391	0.9992	1.2659	1.2786	1.2249	1.0001	0.2532	0.	0.	2
40 Zr 900	12.00	1.1526	1.1318	0.9908	0.6303	0.1433	0.	0.	0.	0.	3
40 Zr 910	7.19	1.1640	1.1640	1.1631	1.1593	1.1450	1.0646	0.5223	0.0072	0.	3
40 Zr 920	8.64	0.8239	1.1402	1.2240	1.2034	1.1206	0.7804	0.0555	0.	0.	3
40 Zr 930	6.50	0.7901	1.1359	1.2919	1.2957	1.2838	1.2228	0.8173	0.0477	0.	2
40 Zr 940	8.23	0.6566	1.0495	1.3246	1.3333	1.2749	1.0076	0.1506	0.	0.	3
40 Zr 950	6.32	0.6320	1.0325	1.3657	1.4062	1.3984	1.3542	1.0248	0.1501	0.	2
40 Zr 960	7.84	0.4836	0.8807	1.3468	1.4409	1.4034	1.2144	0.3025	0.	0.	3
41 Nb 930	8.82	1.0456	1.1466	1.2183	1.2167	1.1006	0.5853	0.0359	0.	0.	3
41 Nb 940	7.37	1.5748	1.6682	1.6682	1.6682	1.6682	1.0453	0.0033	0.	0.	1
41 Nb 950	8.61	0.7521	1.1459	1.2878	1.2780	1.2251	0.9426	0.1174	0.	0.	2
42 Mo 920	12.60	0.6111	0.4189	0.2625	0.1286	0.0078	0.	0.	0.	0.	4
42 Mo 940	9.69	1.3434	1.3434	1.3434	1.3434	0.7289	0.0036	0.	0.	0.	1
42 Mo 950	7.37	1.0195	1.1464	1.1494	1.1463	1.1333	1.0532	0.4602	0.0013	0.	2
42 Mo 960	9.16	0.9351	1.1942	1.2153	1.1897	1.0918	0.6118	0.0124	0.	0.	2
42 Mo 970	6.82	0.8521	1.2015	1.2900	1.2896	1.2835	1.2410	0.8574	0.0375	0.	2
42 Mo 980	8.64	0.6594	1.1055	1.3365	1.3325	1.2741	0.9500	0.1042	0.	0.	2
42 Mo 990	5.74	0.4649	0.8813	1.3299	1.4050	1.4035	1.3914	1.2531	0.3976	0.	2
42 Mo1000	8.30	0.3247	0.6999	1.2794	1.4405	1.4002	1.1528	0.1694	0.	0.	2
43 Tc 990	8.58	1.6976	1.6151	1.5158	1.4255	1.2583	0.7641	0.0616	0.	0.	3
44 Ru 960	10.10	1.2860	1.2860	1.2860	1.2860	0.4096	0.	0.	0.	0.	1
44 Ru 980	10.30	1.2580	1.2580	1.2580	1.2352	0.2812	0.	0.	0.	0.	1
44 Ru 990	7.47	1.5885	1.6542	1.6542	1.6542	1.6542	0.9661	0.0010	0.	0.	1
44 Ru1000	9.67	1.0527	1.2048	1.1986	1.1603	1.0122	0.3640	0.	0.	0.	2
44 Ru1010	6.81	0.9693	1.2480	1.2810	1.2801	1.2752	1.2395	0.8802	0.0440	0.	2
44 Ru1020	9.22	0.8105	1.2268	1.3341	1.3101	1.2065	0.6641	0.0104	0.	0.	2
44 Ru1030	6.40	0.7154	1.1648	1.3906	1.3998	1.3977	1.3800	1.1819	0.2587	0.	2
44 Ru1040	8.89	0.5403	1.0294	1.4149	1.4294	1.3554	0.9336	0.0325	0.	0.	2
44 Ru1050	5.94	0.4676	1.7878	1.8684	1.8684	1.8684	1.8684	0.6255	0.0003	0.	1
44 Ru1060	8.43	0.3658	0.7835	1.3864	1.5235	1.4698	1.1581	0.1513	0.	0.	2
45 Rh1030	9.31	0.7149	0.7347	0.7587	0.7854	0.6931	0.2941	0.	0.	0.	3
45 Rh1050	9.02	0.8100	1.2599	1.3902	1.3744	1.2985	0.8704	0.0438	0.	0.	2

Table D-1

N,2N CROSS SECTIONS

Nuclide	Thres.	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9	Meth.
46 Pd1020	10.60	1.2160	1.2160	1.2160	1.1090	0.1455	0.	0.	0.	0.	1
46 Pd1040	10.00	1.1339	1.1912	1.1699	1.1017	0.8830	0.2651	0.	0.	0.	2
46 Pd1050	7.09	1.1415	1.2667	1.2694	1.2669	1.2556	1.1885	0.7040	0.0264	0.	2
46 Pd1060	9.55	1.0561	1.3093	1.3177	1.2726	1.1109	0.5013	0.	0.	0.	2
46 Pd1070	6.55	0.9735	1.3196	1.3927	1.3924	1.3876	1.3544	1.0494	0.1543	0.	2
46 Pd1080	9.23	0.8512	1.2816	1.4264	1.3888	1.2473	0.6485	0.0095	0.	0.	2
46 Pd1100	8.81	0.6536	1.1219	1.4894	1.4958	1.3880	0.9251	0.0456	0.	0.	2
47 Ag1070	9.53	1.4459	1.4736	1.5069	1.4906	1.3428	0.6557	0.	0.	0.	3
47 Ag1090	9.18	1.3373	1.3607	1.3889	1.3795	1.2747	0.7210	0.0140	0.	0.	3
47 Ag1110	8.71	0.7625	1.2607	1.4809	1.4679	1.3867	0.9614	0.0439	0.	0.	2
48 Cd1060	10.90	1.4719	1.5295	1.5908	1.3103	0.6755	0.	0.	0.	0.	4
48 Cd1080	10.30	1.2580	1.2580	1.2580	1.2352	0.2812	0.	0.	0.	0.	1
48 Cd1100	9.86	1.1208	1.3183	1.3144	1.2768	1.1107	0.3215	0.	0.	0.	2
48 Cd1110	6.98	1.0962	1.3693	1.3860	1.3858	1.3818	1.3500	0.9489	0.0427	0.	2
48 Cd1120	9.40	0.9156	1.3612	1.4346	1.4103	1.2994	0.6550	0.0011	0.	0.	2
48 Cd1130	6.54	1.7320	1.7320	1.7320	1.7344	1.6489	1.2379	0.3407	0.	0.	3
48 Cd1140	9.05	0.6314	1.2007	1.5222	1.5184	1.4403	0.9623	0.0471	0.	0.	2
48 Cd1151	6.16	0.6844	1.8016	1.8376	1.8376	1.8376	1.8063	0.4119	0.	0.	1
48 Cd1160	8.69	0.9737	1.2846	1.5347	1.6470	1.5285	0.9043	0.	0.	0.	4
49 In1130	9.43	1.4400	1.4584	1.4849	1.4466	1.1963	0.5119	0.	0.	0.	4
49 In1150	9.03	1.9658	1.8888	1.7230	1.7584	1.2562	0.6081	0.	0.	0.	4
50 Sn1120	11.10	1.2125	1.2658	1.2882	1.1726	0.7195	0.	0.	0.	0.	4
50 Sn1140	10.30	1.2580	1.2580	1.2580	1.2352	0.2812	0.	0.	0.	0.	1
50 Sn1150	7.54	1.5945	1.6444	1.6444	1.6444	1.6444	0.9152	0.0002	0.	0.	1
50 Sn1160	9.56	1.3616	1.3616	1.3616	1.3616	0.8342	0.0085	0.	0.	0.	1
50 Sn1170	6.94	1.0556	1.4392	1.4880	1.4878	1.4845	1.4543	1.0480	0.0485	0.	2
50 Sn1180	9.33	0.9387	1.4301	1.5278	1.5019	1.3853	0.7303	0.0057	0.	0.	2
50 Sn1190	6.48	0.8340	1.3743	1.5767	1.5810	1.5797	1.5643	1.3242	0.2247	0.	2
50 Sn1200	9.11	0.6909	1.2809	1.6037	1.5953	1.5000	0.9581	0.0435	0.	0.	2
50 Sn1220	8.80	0.4662	1.0294	1.6250	1.6847	1.6314	1.2361	0.0690	0.	0.	2
50 Sn1230	5.90	0.4975	1.0374	1.6401	1.7290	1.7280	1.7179	1.5728	0.5098	0.	2
50 Sn1240	8.51	0.3164	0.7812	1.5570	1.7521	1.7176	1.4339	0.2020	0.	0.	2
50 Sn1250	5.75	0.3006	1.7540	1.8950	1.8950	1.8950	1.8950	0.8562	0.0061	0.	1
50 Sn1260	8.19	0.2016	0.5523	1.3834	1.8001	1.7893	1.5920	0.4178	0.	0.	2
51 Sb1210	9.25	1.5344	1.7037	1.7480	1.5208	1.1253	0.5091	0.	0.	0.	4
51 Sb1230	8.98	1.1685	1.2826	1.3405	1.2521	1.1244	0.6345	0.	0.	0.	4
51 Sb1240	6.45	1.0088	1.7893	1.7970	1.7970	1.7970	1.6706	0.2150	0.	0.	1
51 Sb1250	8.71	0.5500	1.1554	1.6848	1.7212	1.6742	1.3143	0.0994	0.	0.	2
51 Sb1260	6.31	0.8510	1.7987	1.8166	1.8166	1.8166	1.7412	0.2991	0.	0.	1
52 Te1200	10.30	1.2580	1.2580	1.2580	1.2352	0.2812	0.	0.	0.	0.	1
52 Te1220	10.10	1.2860	1.2860	1.2860	1.2860	0.4096	0.	0.	0.	0.	1
52 Te1230	6.94	1.4238	1.7284	1.7284	1.7284	1.7284	1.3635	0.0459	0.	0.	1
52 Te1240	9.41	1.3826	1.3826	1.3826	1.3826	0.9465	0.0183	0.	0.	0.	1
52 Te1250	6.60	0.9657	1.5021	1.6600	1.6614	1.6581	1.6304	1.3031	0.1961	0.	2
52 Te1260	9.09	1.4274	1.4274	1.4274	1.4274	1.1755	0.0598	0.	0.	0.	1
52 Te1271	6.35	0.7371	1.3426	1.7146	1.7331	1.7311	1.7143	1.4825	0.3022	0.	2
52 Te1280	8.75	0.5062	1.1065	1.7024	1.7545	1.7033	1.3131	0.0834	0.	0.	2
52 Te1291	6.08	0.5291	1.1064	1.7164	1.7960	1.7948	1.7827	1.6085	0.6255	0.	2
52 Te1300	8.39	0.3565	0.8544	1.6360	1.8154	1.7790	1.4970	0.1908	0.	0.	2
52 Te1320	8.05	0.2894	0.7030	1.5215	1.8613	1.8383	1.6203	0.4442	0.	0.	2
53 I 1270	9.15	0.9901	1.4969	1.7154	1.6332	1.3796	0.6892	0.0228	0.	0.	4
53 I 1290	8.77	0.7559	1.3977	1.7222	1.7226	1.6661	1.2511	0.0645	0.	0.	2
53 I 1300	6.58	1.1471	1.7762	1.7788	1.7788	1.7788	1.5999	0.1528	0.	0.	1
53 I 1310	8.34	0.5546	1.1660	1.7402	1.7871	1.7376	1.3801	0.1691	0.	0.	2
53 I 1350	7.78	1.5955	1.6108	1.6108	1.6108	1.6108	0.7357	0.	0.	0.	1
54 Xe1240	10.50	0.9901	1.0039	0.9887	0.9337	0.7405	0.1160	0.	0.	0.	3
54 Xe1260	10.20	1.4241	1.5144	1.5073	1.4598	1.2365	0.3491	0.	0.	0.	3
54 Xe1280	9.48	1.3679	1.7962	1.8333	1.7966	1.6401	0.8238	0.	0.	0.	3
54 Xe1290	6.91	1.3337	1.8223	1.9000	1.9000	1.8951	1.8462	1.3032	0.0388	0.	3
54 Xe1300	9.26	1.0740	1.7296	1.9210	1.9060	1.7984	0.9851	0.0165	0.	0.	3
54 Xe1310	6.60	1.0198	1.6829	1.9451	1.9500	1.9500	1.9225	1.5508	0.2311	0.	3
54 Xe1320	8.93	0.7959	1.5092	1.9439	1.9585	1.8822	1.3262	0.0740	0.	0.	3
54 Xe1330	6.58	0.7627	1.3873	1.7797	1.8008	1.7980	1.7739	1.4733	0.1969	0.	2
54 Xe1340	8.46	0.6328	1.2912	1.9311	2.0085	1.9470	1.5439	0.2048	0.	0.	3
54 Xe1350	6.48	1.0426	1.7866	1.7928	1.7928	1.7928	1.6545	0.1993	0.	0.	1
54 Xe1360	7.88	0.4218	0.8928	1.5352	1.6975	1.6661	1.4564	0.4071	0.	0.	3
55 Cs1330	9.04	1.5941	1.6027	1.6129	1.6023	1.5302	1.0537	0.0532	0.	0.	3
55 Cs1340	6.82	0.9550	1.5542	1.7676	1.7708	1.7653	1.7209	1.2148	0.0409	0.	2

Table D-1

N,2N CROSS SECTIONS

Nuclide	Thres.	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9	Meth.
55 Cs1350	8.86	0.8554	1.4982	1.7913	1.7853	1.7143	1.2585	0.0667	0.	0.	2
55 Cs1360	6.64	0.9028	1.5225	1.8232	1.8328	1.8273	1.7853	1.3167	0.0845	0.	2
55 Cs1370	8.38	0.6543	1.2660	1.8051	1.8491	1.8034	1.5123	0.2435	0.	0.	2
56 Ba1340	9.25	1.1808	1.6488	1.6945	1.6701	1.5476	0.8420	0.	0	0.	2
56 Ba1350	7.20	1.1942	1.6675	1.7378	1.7371	1.7313	1.6828	1.1586	0.0514	0.	2
56 Ba1360	9.23	1.0015	1.6000	1.7659	1.7472	1.6517	1.0740	0.0498	0.	0.	2
56 Ba1370	6.95	1.0740	1.6408	1.8037	1.8041	1.7982	1.7486	1.2177	0.0388	0.	2
56 Ba1380	8.54	0.4768	0.5573	1.3206	1.4996	1.5000	1.4623	0.3682	0.	0.	3
56 Ba1400	6.22	0.0140	0.0479	0.2203	0.6982	1.5349	1.8717	1.6186	0.2397	0.	2
57 La1390	8.79	1.1761	1.6978	1.8010	1.7824	1.7001	1.2328	0.0736	0.	0.	2
57 La1400	5.05	0.3824	0.8205	1.5506	1.8329	1.8387	1.8353	1.7833	1.3321	0.2387	2
58 Ce1400	9.04	0.6426	0.8390	1.0923	1.2978	1.0902	0.5304	0.	0.	0.	4
58 Ce1410	5.49	0.5925	1.1308	1.7117	1.8089	1.8083	1.8026	1.7221	1.0410	0.0122	2
58 Ce1420	7.21	1.0025	1.3068	1.6083	1.7521	1.7385	1.2060	0.4836	0.	0.	4
58 Ce1430	5.22	0.0542	0.1691	0.6210	1.4055	1.8489	1.8695	1.8389	1.4585	0.2819	2
58 Ce1440	6.92	0.0265	0.0926	0.4150	1.1581	1.8282	1.8671	1.3932	0.0510	0.	2
59 Pr1410	9.36	1.7343	1.8088	1.8546	1.7009	1.1501	0.4647	0.	0.	0.	4
59 Pr1420	5.90	0.8251	1.3925	1.7523	1.7758	1.7740	1.7619	1.6133	0.6053	0.0013	2
59 Pr1430	7.23	0.1334	0.3681	1.0523	1.7103	1.8015	1.7339	0.8805	0.0061	0.	2
60 Nd1420	9.81	1.6292	1.6931	1.6741	1.6072	1.3649	0.4168	0.	0.	0.	2
60 Nd1430	6.10	1.1100	1.5977	1.7369	1.7381	1.7358	1.7163	1.5002	0.5359	0.	2
60 Nd1440	7.83	0.2552	0.6331	1.4116	1.7641	1.7578	1.6278	0.5047	0.	0.	2
60 Nd1450	5.74	0.1851	0.4927	1.2600	1.7770	1.8110	1.8058	1.7141	0.7830	0.0041	2
60 Nd1460	7.56	0.1094	0.3306	1.0478	1.7523	1.8341	1.7499	0.8853	0.	0.	2
60 Nd1470	5.31	0.0838	0.2566	0.8648	1.6575	1.8740	1.8741	1.8370	1.3122	0.0885	2
60 Nd1480	7.33	0.0401	0.1429	0.6183	1.4946	1.8909	1.8510	1.0013	0.0087	0.	2
60 Nd1500	7.33	0.0272	0.1030	0.4976	1.3702	1.9284	1.9033	0.9934	0.0050	0.	2
61 Pm1470	7.57	0.1890	0.5281	1.3590	1.7970	1.8004	1.7053	0.7988	0.	0.	2
61 Pm1480	5.86	0.1546	0.4420	1.2313	1.8055	1.8457	1.8404	1.7372	0.6546	0.0006	2
61 Pm1481	5.86	0.1546	0.4420	1.2313	1.8055	1.8457	1.8404	1.7372	0.6546	0.0006	2
61 Pm1490	7.29	0.0743	0.2487	0.9153	1.7277	1.8733	1.8305	1.0559	0.0159	0.	2
61 Pm1510	7.66	0.0867	0.2964	1.0744	1.8514	1.9245	1.8125	0.5259	0.	0.	2
62 Sm1440	10.50	1.6807	1.7432	1.6600	1.4329	0.7143	0.0864	0.	0.	0.	4
62 Sm1470	6.33	0.4213	0.9567	1.6280	1.7370	1.7360	1.7240	1.5156	0.2826	0.	2
62 Sm1480	8.14	0.2852	0.7477	1.5636	1.7721	1.7545	1.5851	0.4466	0.	0.	2
62 Sm1490	5.85	0.5996	1.2033	1.6380	1.7827	1.7186	1.5540	1.1081	0.1962	0.0008	3
62 Sm1500	7.98	0.1324	0.4214	1.2799	1.8237	1.8348	1.7137	0.5658	0.	0.	2
62 Sm1510	5.68	0.1255	0.3902	1.1998	1.8328	1.8790	1.8773	1.8257	1.1968	0.0172	2
62 Sm1520	8.22	0.1186	0.3964	1.2855	1.8823	1.8913	1.7145	0.3312	0.	0.	2
62 Sm1530	5.93	0.2033	0.5987	1.5322	1.9326	1.9383	1.9353	1.8534	0.7662	0.0015	2
62 Sm1540	7.90	0.1196	0.4015	1.3121	1.9368	1.9541	1.8361	0.6202	0.	0.	2
63 Eu1510	7.93	1.3496	1.9457	2.1567	2.1700	2.0650	1.4792	0.1345	0.	0.	3
63 Eu1520	6.29	0.7256	1.4282	2.0934	2.2118	2.2082	2.0235	1.1042	0.1056	0.	3
63 Eu1530	8.54	0.8561	1.4641	1.9666	2.0241	1.9687	1.6092	0.3057	0.	0.	3
63 Eu1540	6.47	1.2868	1.8978	2.1744	2.2113	2.1956	1.9305	0.7621	0.0182	0.	3
63 Eu1550	7.96	0.2561	0.7529	1.7056	1.9386	1.9255	1.7695	0.5130	0.	0.	2
63 Eu1560	6.28	0.3152	0.8318	1.7368	1.9683	1.9678	1.9568	1.7452	0.3548	0.	2
63 Eu1570	7.66	0.1599	0.4803	1.3830	1.9670	1.9876	1.9197	1.0661	0.	0.	2
64 Gd1520	8.51	0.4078	1.0376	1.7833	1.8644	1.8372	1.5570	0.2150	0.	0.	3
64 Gd1540	8.61	0.4070	1.0595	1.8222	1.8993	1.8710	1.5713	0.2070	0.	0.	3
64 Gd1550	6.46	0.4437	1.0891	1.8047	1.8819	1.8813	1.8725	1.6673	0.2586	0.	3
64 Gd1560	8.53	0.3447	0.9462	1.7925	1.9098	1.8866	1.6318	0.2398	0.	0.	3
64 Gd1570	6.35	0.4303	1.0484	1.8307	1.9432	1.9422	1.9308	1.7133	0.3154	0.	3
64 Gd1580	7.93	0.2456	0.6905	1.6368	1.9665	1.9560	1.8214	0.4948	0.	0.	3
64 Gd1600	7.38	0.1162	0.3605	1.1666	1.9349	2.0152	1.9409	1.0639	0.	0.	3
65 Tb1590	8.18	0.3705	0.9757	1.8180	1.9429	1.9286	1.7707	0.5233	0.	0.	2
65 Tb1600	6.46	0.3076	0.8246	1.7398	1.9734	1.9733	1.9630	1.7522	0.3215	0.	2
66 Dy1600	8.59	0.5481	1.2702	1.8761	1.9112	1.8820	1.5951	0.2229	0.	0.	2
66 Dy1610	6.45	0.4796	1.1329	1.8620	1.9470	1.9460	1.9340	1.6946	0.2465	0.	2
66 Dy1620	8.20	0.3182	0.8588	1.7743	1.9729	1.9542	1.7661	0.4842	0.	0.	2
66 Dy1630	6.25	0.3127	0.8319	1.7574	2.0032	2.0033	1.9951	1.8161	0.4378	0.	2
66 Dy1640	7.66	0.2715	0.5879	1.3930	2.1381	2.1261	1.8156	0.6105	0.0001	0.	3
67 Ho1650	8.04	0.3291	0.8835	1.8068	2.0038	1.9896	1.8405	0.5818	0.	0.	2
68 Er1660	8.55	0.4806	1.1591	1.9010	1.9749	1.9463	1.6734	0.2500	0.	0.	2
68 Er1670	6.44	0.4902	1.1375	1.9038	2.0090	2.0075	1.9927	1.7319	0.2608	0.	2

Table D-1

N,2N CROSS SECTIONS

Nuclide	Thres.	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9	Meth.
				*** Actinides ***							
90 Th2300	6.79	1.3284	1.4902	1.5725	1.6687	1.7767	1.8000	1.4715	0.1226	0.	3
90 Th2320	6.34	0.3476	0.4129	0.7123	1.3782	1.8444	1.9548	1.5153	0.2349	0.	3
91 Pa2310	6.81	0.8712	1.0845	1.1726	1.3159	1.4619	1.2905	0.9810	0.0817	0.	3
91 Pa2330	6.66	0.3961	0.4237	0.4572	0.5148	0.5487	0.5655	0.4944	0.0490	0.	3
92 U 2320	7.26	1.4856	1.5886	1.6003	1.7010	1.7793	1.5905	0.8430	0.0365	0.	3
92 U 2330	5.74	0.0778	0.1758	0.3714	0.5012	0.4726	0.3761	0.2707	0.1810	0.0027	3
92 U 2340	6.77	0.2020	0.2020	0.2025	0.3619	0.4560	0.3157	0.1596	0.0105	0.	3
92 U 2350	5.31	0.0141	0.0614	0.1617	0.2887	0.4273	0.4521	0.4011	0.2303	0.0178	3
92 U 2360	6.91	0.2500	0.2500	0.2509	0.5212	0.8819	0.9395	0.8034	0.1269	0.	3
92 U 2370	5.12	0.2500	0.2500	0.2500	0.3127	0.6312	1.3385	1.3276	0.7075	0.0349	3
92 U 2380	6.14	0.1461	0.1931	0.4176	0.8530	1.2997	1.4348	1.2478	0.3532	0.	3
93 Np2370	6.76	0.0080	0.0339	0.0997	0.1867	0.2414	0.2309	0.1539	0.0139	0.	3
93 Np2380	5.35	0.0100	0.0100	0.0105	0.1786	0.5254	0.7128	0.6688	0.3524	0.0035	5
94 Pu2360	7.33	0.1000	0.1000	0.1016	0.5954	0.7977	0.7217	0.3452	0.0053	0.	3
94 Pu2370	5.83	0.0500	0.0500	0.0508	0.2649	0.3651	0.3139	0.1921	0.0380	0.0001	3
94 Pu2380	6.97	0.1786	0.1492	0.1154	0.5673	1.0589	1.0408	0.5028	0.0092	0.	3
94 Pu2390	5.66	0.0089	0.0380	0.1142	0.1990	0.2356	0.2288	0.1920	0.0991	0.0016	3
94 Pu2400	6.53	0.0089	0.0380	0.1142	0.1882	0.2321	0.2280	0.1519	0.0143	0.	3
94 Pu2410	5.25	0.0310	0.0310	0.0311	0.1059	0.4211	0.5734	0.6833	0.6520	0.1029	3
94 Pu2420	6.30	0.0084	0.0296	0.1372	0.4012	0.7399	0.7974	0.6110	0.1038	0.	3
94 Pu2430	5.04	0.2000	0.2000	0.2001	0.2226	0.3653	1.2192	1.2859	1.3626	0.4654	3
94 Pu2440	5.99	0.1000	0.1000	0.1005	0.2618	0.6142	1.1128	1.4579	0.6212	0.	3
95 Am2410	6.63	0.0500	0.0501	0.0680	0.1300	0.2100	0.2021	0.1254	0.0117	0.	3
95 Am2420	5.55	0.0100	0.0100	0.0105	0.1786	0.5254	0.7128	0.6688	0.3524	0.0035	5
95 Am2421	5.46	0.0100	0.0100	0.0105	0.1786	0.5254	0.7128	0.6688	0.3524	0.0035	3
95 Am2430	6.35	0.0400	0.0400	0.0400	0.0400	0.1101	0.1400	0.0664	0.0115	0.	3
96 Cm2410	6.04	0.0050	0.0050	0.0050	0.0079	0.0103	0.0135	0.0209	0.0167	0.	3
96 Cm2420	6.94	0.0050	0.0050	0.0050	0.0094	0.0151	0.0220	0.0224	0.0015	0.	3
96 Cm2430	5.68	0.0300	0.0300	0.0301	0.0736	0.1965	0.3152	0.4792	0.4259	0.0038	3
96 Cm2440	6.77	0.0500	0.0500	0.0500	0.0901	0.4578	0.5849	0.4260	0.0329	0.	3
96 Cm2450	5.52	0.2128	0.2319	0.2496	0.2500	0.5685	0.8465	0.8481	0.6573	0.0628	3
96 Cm2460	6.34	0.	0.	0.0075	0.0393	0.5881	1.2759	0.5224	0.0323	0.	3
96 Cm2470	5.15	0.1000	0.1000	0.1000	0.1000	0.2460	0.8632	0.8167	0.8520	0.2569	3
96 Cm2480	6.18	0.1000	0.1000	0.1004	0.2175	0.5378	0.9029	0.6213	0.1002	0.	3
97 Bk2490	6.20	0.2000	0.2138	0.2577	0.3069	0.9937	1.6618	1.4613	0.5815	0.	3
98 Cf2490	5.59	0.1036	0.1506	0.1681	0.1840	0.3928	1.1617	0.9860	0.7146	0.0443	3
98 Cf2500	6.61	0.1000	0.1036	0.1363	0.1946	0.5320	1.0333	0.8802	0.2588	0.	3
98 Cf2510	5.10	0.1000	0.1025	0.1348	0.1674	0.3626	1.1586	1.0125	1.0325	0.2745	3
98 Cf2520	6.17	0.1500	0.1500	0.1500	0.1500	0.1666	0.5906	0.5300	0.2661	0.	3
98 Cf2530	5.15	0.1000	0.1000	0.1000	0.1000	0.2460	0.8632	0.8167	0.8520	0.2569	5
99 Es2530	6.45	0.2000	0.2138	0.2577	0.3069	0.9937	1.6618	1.4613	0.5815	0.	5

[a]Listed values apply for the highest energy groups in the PRS group structure:

Group	Energy Range (MeV)	
1	10.000	18.221
2	18.221	16.905
3	16.905	14.918
4	14.918	13.499
5	13.499	11.912
6	11.912	10.000
7	10.000	7.788
8	7.788	6.065
9	6.065	4.724

Listed Q-value is the threshold in MeV.

Meth. refers to the origin of these cross sections:
- 1 refers to an unpublished model based on Q-values (R. E. Schenter)
- 2 refers to values produced by the THRESH code.
- 3 refers to evaluated ENDF/B-V evaluations.
- 4 refers to values based on BNL-325 plots.
- 5 refers to values based on Q values similar to one of the above.

EPRI NP-3787

Below are five index cards that allow for filing according to the four cross-references in addition to the title of the report. A brief abstract describing the major subject area covered in the report is included on each card.

EPRI

EPRI NP-3787
RP975-2
LA-UR 83-1285
ENDF-322
Final Report
December 1984

Summary of ENDF/B-V Data for Fission Products and Actinides

Contractor: Los Alamos National Laboratory

Most often, those engaged in reactor design, fuel-cycle optimization, and safety analysis use only a small subset of the evaluated nuclear data in the ENDF/B-V library. This summary of the yields, decay constants, and cross sections of fission-product and heavy-actinide nuclides offers those data in a convenient, concise format. 132 pp.

EPRI Project Manager: O. Ozer

Cross-References:

1. EPRI NP-3787
2. RP975-2
3. Code Development and Validation Program
4. Fission Products

ELECTRIC POWER RESEARCH INSTITUTE
Post Office Box 10412, Palo Alto, CA 94303 415-855-2000

EPRI NP-3787

EPRI

EPRI NP-3787
RP975-2
LA-UR 83-1285
ENDF-322
Final Report
December 1984

Summary of ENDF/B-V Data for Fission Products and Actinides

Contractor: Los Alamos National Laboratory

Most often, those engaged in reactor design, fuel-cycle optimization, and safety analysis use only a small subset of the evaluated nuclear data in the ENDF/B-V library. This summary of the yields, decay constants, and cross sections of fission-product and heavy-actinide nuclides offers those data in a convenient, concise format. 132 pp.

EPRI Project Manager: O. Ozer

Cross-References:

1. EPRI NP-3787
2. RP975-2
3. Code Development and Validation Program
4. Fission Products

ELECTRIC POWER RESEARCH INSTITUTE
Post Office Box 10412, Palo Alto, CA 94303 415-855-2000

RP975-2

EPRI

EPRI NP-3787
RP975-2
LA-UR 83-1285
ENDF-322
Final Report
December 1984

Summary of ENDF/B-V Data for Fission Products and Actinides

Contractor: Los Alamos National Laboratory

Most often, those engaged in reactor design, fuel-cycle optimization, and safety analysis use only a small subset of the evaluated nuclear data in the ENDF/B-V library. This summary of the yields, decay constants, and cross sections of fission-product and heavy-actinide nuclides offers those data in a convenient, concise format. 132 pp.

EPRI Project Manager: O. Ozer

Cross-References:

1. EPRI NP-3787
2. RP975-2
3. Code Development and Validation Program
4. Fission Products

ELECTRIC POWER RESEARCH INSTITUTE
Post Office Box 10412, Palo Alto, CA 94303 415-855-2000

CODE DEVELOPMENT AND VALIDATION PROGRAM

EPRI

EPRI NP-3787
RP975-2
LA-UR 83-1285
ENDF-322
Final Report
December 1984

Summary of ENDF/B-V Data for Fission Products and Actinides

Contractor: Los Alamos National Laboratory

Most often, those engaged in reactor design, fuel-cycle optimization, and safety analysis use only a small subset of the evaluated nuclear data in the ENDF/B-V library. This summary of the yields, decay constants, and cross sections of fission-product and heavy-actinide nuclides offers those data in a convenient, concise format. 132 pp.

EPRI Project Manager: O. Ozer

Cross-References:

1. EPRI NP-3787
2. RP975-2
3. Code Development and Validation Program
4. Fission Products

ELECTRIC POWER RESEARCH INSTITUTE
Post Office Box 10412, Palo Alto, CA 94303 415-855-2000

FISSION PRODUCTS

EPRI

EPRI NP-3787
RP975-2
LA-UR 83-1285
ENDF-322
Final Report
December 1984

Summary of ENDF/B-V Data for Fission Products and Actinides

Contractor: Los Alamos National Laboratory

Most often, those engaged in reactor design, fuel-cycle optimization, and safety analysis use only a small subset of the evaluated nuclear data in the ENDF/B-V library. This summary of the yields, decay constants, and cross sections of fission-product and heavy-actinide nuclides offers those data in a convenient, concise format. 132 pp.

EPRI Project Manager: O. Ozer

Cross-References:

1. EPRI NP-3787
2. RP975-2
3. Code Development and Validation Program
4. Fission Products

ELECTRIC POWER RESEARCH INSTITUTE
Post Office Box 10412, Palo Alto, CA 94303 415-855-2000