				Specti
PROGRAM	SPECT	'RA		Specti
=======				Specti
An exter	nsion	of LINEAR to 1	inearize AL1 MF=5 spectra.	Specti
			utron induced, photon spectra.	Specti
05, 20, 2		114464 111 15 116	acton inaccea, photon spectra.	Specti
First re	elease	ed in 2010 - Ea	rlier below dates refer to LINEAR.	Specti
				Specti
VERSION	74-1	(MAY 1974)		Spect
		(APRIL 1975)		Spect
		(OCTOBER 1976)		Spect
		(JANUARY 1977)		Spect
		(JULY 1978)		Spect
			C-7600 AND CRAY-1 VERSION.	Spect
VERSION	80-1	(MAY 1980) IBM	, CDC AND CRAY VERSION.	Spect
		(DECEMBER 1980	•	Spect
		(MARCH 1981)	•	Spect
VERSION	82-1	(JANUARY 1982)	IMPROVED COMPUTER COMPATIBILITY.	Spect
			*MAJOR RE-DESIGN.	Spect
		•	*PAGE SIZE INCREASED - 1002 TO 3006.	Spect
			*ELIMINATED COMPUTER DEPENDENT CODING.	_
			*NEW, MORE COMPATIBLE I/O UNIT NUMBER.	_
			*ADDED OPTION TO KEEP ALL ORIGINAL	Spect
			ENERGY POINTS FROM EVALUATION.	Spect
			*ADDED STANDARD ALLOWABLE ERROR OPTION	
			(CURRENTLY 0.1 PER-CENT).	Spect
VERSION	83-2	(OCTOBER 1983)	IMPROVED BASED ON USER COMMENTS.	Spect
		(APRIL 1984)	IMPROVED BASED ON USER COMMENTS.	Spect
			*UPDATED FOR ENDF/B-VI FORMATS.	Spect
			*SPECIAL I/O ROUTINES TO GUARANTEE	Spect
			ACCURACY OF ENERGY.	Spect
			*DOUBLE PRECISION TREATMENT OF ENERGY	Spect
			(REQUIRED FOR NARROW RESONANCES).	Spect
VERSION	85-1	(AUGUST 1985)	*FORTRAN-77/H VERSION	Spect
			*ENDF/B-VI FORMAT	Spect
			*DOUBLE PRECISION TREATMENT OF CROSS	Spect
		•	SECTION	Spect
VERSION	88-1	(JULY 1988)	*OPTIONINTERNALLY DEFINE ALL I/O	Spect
			FILE NAMES (SEE, SUBROUTINE FILEIO	Spect
			FOR DETAILS).	Spect
			*IMPROVED BASED ON USER COMMENTS.	Spect
VERSION	89-1	(JANUARY 1989)	*PSYCHOANALYZED BY PROGRAM FREUD TO	Spect
			INSURE PROGRAM WILL NOT DO ANYTHING	Spect
			CRAZY.	Spect
			*UPDATED TO USE NEW PROGRAM CONVERT	Spect
			KEYWORDS.	Spect
			*ADDED LIVERMORE CIVIC COMPILER	Spect
			CONVENTIONS.	Spect
VERSION	90-1	(JUNE 1990)	*EXTENDED TO LINEARIZE PHOTON	Spect
			INTERACTION DATA, MF=23 AND 27	Spect
			*ADDED FORTRAN SAVE OPTION	Spect
			*UPDATED BASED ON USER COMMENTS.	Spect
			*NEW MORE CONSISTENT ENERGY OUTPUT	Spect
			ROUTINE.	Spect
			*WARNINGINPUT PARAMETER FORMAT	Spect
			HAS BEEN CHANGEDSEE DESCRIPTION	Spect
			BELOW.	Spect
				Spect
VERSION	91-1	(JULY 1991)	*ADDED INTERPOLATION LAW 6 - ONLY USED	Speci
VERSION	91-1	(JULY 1991)	*ADDED INTERPOLATION LAW 6 - ONLY USED FOR CHARGED PARTICLE CROSS SECTIONS	_
VERSION	91-1	(JULY 1991)		Spect
			FOR CHARGED PARTICLE CROSS SECTIONS	Spect Spect
			FOR CHARGED PARTICLE CROSS SECTIONS FOR COULOMB PENETRABILITIES.	Spect Spect Spect
			FOR CHARGED PARTICLE CROSS SECTIONS FOR COULOMB PENETRABILITIES. *ADDED NU-BAR (TOTAL, DELAYED, PROMPT)	Spect Spect Spect Spect
		(JANUARY 1992)	FOR CHARGED PARTICLE CROSS SECTIONS FOR COULOMB PENETRABILITIES. *ADDED NU-BAR (TOTAL, DELAYED, PROMPT) POLYNOMIAL OR TABULATED ALL CONVERTED	Spect Spect Spect Spect Spect
		(JANUARY 1992)	FOR CHARGED PARTICLE CROSS SECTIONS FOR COULOMB PENETRABILITIES. *ADDED NU-BAR (TOTAL, DELAYED, PROMPT) POLYNOMIAL OR TABULATED ALL CONVERTED TO LINEARLY INTERPOLABLE	Spect Spect Spect Spect Spect Spect
		(JANUARY 1992)	FOR CHARGED PARTICLE CROSS SECTIONS FOR COULOMB PENETRABILITIES. *ADDED NU-BAR (TOTAL, DELAYED, PROMPT) POLYNOMIAL OR TABULATED ALL CONVERTED TO LINEARLY INTERPOLABLE *INCREASED PAGE SIZE FROM 3006 TO 5010	Spect Spect Spect Spect Spect Spect Spect
		(JANUARY 1992)	FOR CHARGED PARTICLE CROSS SECTIONS FOR COULOMB PENETRABILITIES. *ADDED NU-BAR (TOTAL, DELAYED, PROMPT) POLYNOMIAL OR TABULATED ALL CONVERTED TO LINEARLY INTERPOLABLE *INCREASED PAGE SIZE FROM 3006 TO 5010 POINTS.	Spect Spect Spect Spect Spect Spect Spect Spect
		(JANUARY 1992)	FOR CHARGED PARTICLE CROSS SECTIONS FOR COULOMB PENETRABILITIES. *ADDED NU-BAR (TOTAL, DELAYED, PROMPT) POLYNOMIAL OR TABULATED ALL CONVERTED TO LINEARLY INTERPOLABLE *INCREASED PAGE SIZE FROM 3006 TO 5010 POINTS. *ALL ENERGIES INTERNALLY ROUNDED PRIOR TO CALCULATIONS.	Spect Spect Spect Spect Spect Spect Spect Spect Spect
		(JANUARY 1992)	FOR CHARGED PARTICLE CROSS SECTIONS FOR COULOMB PENETRABILITIES. *ADDED NU-BAR (TOTAL, DELAYED, PROMPT) POLYNOMIAL OR TABULATED ALL CONVERTED TO LINEARLY INTERPOLABLE *INCREASED PAGE SIZE FROM 3006 TO 5010 POINTS. *ALL ENERGIES INTERNALLY ROUNDED PRIOR	Spect Spect Spect Spect Spect Spect Spect Spect Spect

==:

VERSI	ON 92-2	(JULY 1992)	*CORRECTED CONVERSION OF NU-BAR FROM	Spectra
			POLYNOMIAL TO TABULATED - COPY	Spectra
			SPONTANEOUS NU-BAR (BY DEFINITION	Spectra
			THE SPONTANEOUS NU-BAR IS NOT AN	Spectra
			ENERGY DEPENDENT QUANTITY).	Spectra
VERSI	ON 93-1	(MARCH 1993)	*UPDATED FOR USE WITH LAHEY COMPILER	Spectra
			ON IBM-PCS.	Spectra
			*INCREASED PAGE SIZE FROM 5010 TO 30000 POINTS	Spectra
TEDET	ONT 04-1	/ TANITADY 100/1	*VARIABLE ENDF/B DATA FILENAMES	Spectra
VERSI	JN 34-1	(UANUARI 1994)	TO ALLOW ACCESS TO FILE STRUCTURES	Spectra
			(WARNING - INPUT PARAMETER FORMAT	Spectra Spectra
			HAS BEEN CHANGED)	Spectra
			*CLOSE ALL FILES BEFORE TERMINATING	Spectra
			(SEE, SUBROUTINE ENDIT)	Spectra
VERSI	ON 96-1	(JANUARY 1996)	*COMPLETE RE-WRITE	Spectra
		•	*IMPROVED COMPUTER INDEPENDENCE	Spectra
			*ALL DOUBLE PRECISION	Spectra
			*ON SCREEN OUTPUT	Spectra
			*UNIFORM TREATMENT OF ENDF/B I/O	Spectra
			*IMPROVED OUTPUT PRECISION	Spectra
			*DEFINED SCRATCH FILE NAMES	Spectra
			*ALWAYS INCLUDE THERMAL VALUE	Spectra
			*INCREASED PAGE SIZE FROM 30000 TO	Spectra
			60000 POINTS	Spectra
VERSI	ON 99-1	(MARCH 1999)	*CORRECTED CHARACTER TO FLOATING	Spectra
			POINT READ FOR MORE DIGITS	Spectra
			*UPDATED TEST FOR ENDF/B FORMAT	Spectra
			VERSION BASED ON RECENT FORMAT CHANGE *GENERAL IMPROVEMENTS BASED ON	_
			USER FEEDBACK	Spectra Spectra
VERST	ONT 99-2	(JUNE 1999)	*ASSUME ENDF/B-VI, NOT V, IF MISSING	Spectra
VIIIOI	JI	(0011 1333)	MF=1, MT-451.	Spectra
VERS.	2000-1	(FEBRUARY 2000) *ADDED MF = 9 AND 10 LINEARIZATION	Spectra
		•	*GENERAL IMPROVEMENTS BASED ON	Spectra
			USER FEEDBACK	Spectra
VERS.	2002-1	(MAY 2002)	*OPTIONAL INPUT PARAMETERS	Spectra
VERS.	2004-1	(JAN. 2004)	*GENERAL UPDATE BASED ON USER FEEDBACK	Spectra
VERS.	2005-1	(JAN. 2005)	*ALWAYS KEEP ORIGINAL TABULATED	Spectra
			NU-BAR POINTS.	Spectra
VERS.	2006-1	(FEB. 2006)	*CORRECTED INT=6 NEAR THRESHOLD	Spectra
			*NO SUBDIVIDE BELOW MINIMUM XCMIN	Spectra
VERS.	2007-1	(JAN. 2007)	*CHECKED AGAINST ALL ENDF/B-VII.	Spectra
			*INCREASED PAGE SIZE FROM 60,000 TO	Spectra
TEDE	2010-1	(JUNE 2010)	600,000 POINTS *ADDED MF = 5 - MF = 6 STILL PLANNED.	Spectra
VERS.	2010-1	(DONE 2010)	*72 CHARACTER FILE NAMES.	Spectra Spectra
			*ONLY PROCESS MF=5 - SKIP ALL OTHERS	Spectra
			TO PREVENT CONFLICT WITH LINEAR	Spectra
			THINNING.	Spectra
VERS.	2012-1	(Aug. 2012)	*Added MF=15, neutron induced photon	Spectra
		- ,	spectra.	Spectra
			*Added CODENAME	Spectra
			*32 and 64 bit Compatible	Spectra
			*Added ERROR stop	Spectra
VERS.	2015-1	(Jan. 2015)	*Extended OUT9.	Spectra
			*Replaced ALL 3 way IF Statements.	Spectra
			*Corrected MF=15 Data - it was adding	Spectra
			SEND between sub-sections.	Spectra
			*Deleted unused parts, e.g., NUBAR.	Spectra
(MEDO	2017 1	(Marr 2017)	*Increased page size to 3,000,000	Spectra
VERS.	2017-1	(May 2017)		Speatre
VERS.	2017-1	(May 2017)	*Updated based on user feedback	Spectra Spectra
VERS.	2017-1	(May 2017)	*Updated based on user feedback *Changed DGAMMA to REDGAMMA to avoid	Spectra
VERS.	2017-1	(May 2017)	*Updated based on user feedback *Changed DGAMMA to REDGAMMA to avoid conflict with possble RESERVED NAME	Spectra Spectra
VERS.	2017-1	(May 2017)	*Updated based on user feedback *Changed DGAMMA to REDGAMMA to avoid conflict with possble RESERVED NAME *All floating input parameters changed	Spectra Spectra Spectra
		(May 2017)	*Updated based on user feedback *Changed DGAMMA to REDGAMMA to avoid conflict with possble RESERVED NAME	Spectra Spectra
			*Updated based on user feedback *Changed DGAMMA to REDGAMMA to avoid conflict with possble RESERVED NAME *All floating input parameters changed to character input + IN9 conversion.	Spectra Spectra Spectra Spectra
VERS.	2018-1		*Updated based on user feedback *Changed DGAMMA to REDGAMMA to avoid conflict with possble RESERVED NAME *All floating input parameters changed to character input + IN9 conversion. *On-line output for ALL ENDERROR	Spectra Spectra Spectra Spectra Spectra
VERS.	2018-1	(Jan. 2018)	*Updated based on user feedback *Changed DGAMMA to REDGAMMA to avoid conflict with possble RESERVED NAME *All floating input parameters changed to character input + IN9 conversion. *On-line output for ALL ENDERROR	Spectra Spectra Spectra Spectra Spectra
VERS.	2018-1 , MAINTA	(Jan. 2018)	*Updated based on user feedback *Changed DGAMMA to REDGAMMA to avoid conflict with possble RESERVED NAME *All floating input parameters changed to character input + IN9 conversion. *On-line output for ALL ENDERROR	Spectra Spectra Spectra Spectra Spectra Spectra Spectra

INTERNATIONAL ATOMIC ENERGY AGENCY P.O. BOX 100 A-1400, VIENNA, AUSTRIA EUROPE ORIGINALLY WRITTEN BY Dermott E. Cullen PRESENT CONTACT INFORMATION

-----Dermott E. Cullen 1466 Hudson Way Livermore, CA 94550 Telephone 925-443-1911 RedCullen1@Comcast.net E. Mail RedCullen1.net/HOMEPAGE.NEW Website

AUTHORS MESSAGE

THE REPORT DESCRIBED ABOVE IS THE LATEST PUBLISHED DOCUMENTATION FOR THIS PROGRAM. HOWEVER, THE COMMENTS BELOW SHOULD BE CONSIDERED Spectra THE LATEST DOCUMENTATION INCLUDING ALL RECENT IMPROVEMENTS. PLEASE READ ALL OF THESE COMMENTS BEFORE IMPLEMENTATION.

AT THE PRESENT TIME WE ARE ATTEMPTING TO DEVELOP A SET OF COMPUTER Spectra INDEPENDENT PROGRAMS THAT CAN EASILY BE IMPLEMENTED ON ANY ONE OF A WIDE VARIETY OF COMPUTERS. IN ORDER TO ASSIST IN THIS PROJECT Spectra IT WOULD BE APPECIATED IF YOU WOULD NOTIFY THE AUTHOR OF ANY COMPILER DIAGNOSTICS, OPERATING PROBLEMS OR SUGGESTIONS ON HOW TO IMPROVE THIS PROGRAM. HOPEFULLY, IN THIS WAY FUTURE VERSIONS OF THIS PROGRAM WILL BE COMPLETELY COMPATIBLE FOR USE ON YOUR COMPUTER.

PURPOSE

THIS PROGRAM IS DESIGNED TO CONVERT ENDF/B FILE 3, 23 AND 27 DATA TO LINEAR-LINEAR INTERPOLABLE FORM. ANY SECTION THAT IS ALREADY LINEAR-LINEAR INTERPOLABLE WILL BE THINNED.

IN THE FOLLOWING DISCUSSION FOR SIMPLICITY THE ENDF/B TERMINOLOGY ---ENDF/B TAPE---WILL BE USED. IN FACT THE ACTUAL MEDIUM MAY BE TAPE, CARDS, DISK OR ANY OTHER MEDIUM.

ENDF/B FORMAT

THIS PROGRAM ONLY USES THE ENDF/B BCD OR CARD IMAGE FORMAT (AS OPPOSED TO THE BINARY FORMAT) AND CAN HANDLE DATA IN ANY VERSION OF THE ENDF/B FORMAT (I.E., ENDF/B-I, II, III, IV, V OR VI FORMAT). Spectra

IT IS ASSUMED THAT THE DATA IS CORRECTLY CODED IN THE ENDF/B FORMAT AND NO ERROR CHECKING IS PERFORMED. IN PARTICULAR IT IS ASSUMED THAT THE MAT, MF AND MT ON EACH LINE IS CORRECT. SEQUENCE NUMBERS (COLUMNS 76-80) ARE IGNORED ON INPUT, BUT WILL BE CORRECTLY OUTPUT ON ALL LINES. THE FORMAT OF SECTION MF=1, MT=451 AND ALL SECTIONS OF MF=3 MUST BE CORRECT. THE PROGRAM COPIES ALL OTHER SECTION OF DATA AS HOLLERITH AND AS SUCH IS INSENSITIVE TO THE CORRECTNESS OR INCORRECTNESS OF ALL OTHER SECTIONS.

OUTPUT FORMAT

IN THIS VERSION OF LINEAR ALL ENERGIES WILL BE OUTPUT IN F (INSTEAD OF E) FORMAT IN ORDER TO ALLOW ENERGIES TO BE WRITTEN WITH UP TO 9 DIGITS OF ACCURACY. IN PREVIOUS VERSIONS THIS WAS AN OUTPUT OPTION. HOWEVER USE OF THIS OPTION TO COMPARE THE RESULTS OF ENERGIES WRITTEN IN THE NORMAL ENDF/B CONVENTION OF 6 DIGITS TO THE 9 DIGIT OUTPUT FROM THIS PROGRAM DEMONSTRATED THAT FAILURE TO USE THE 9 DIGIT OUTPUT CAN LEAD TO LARGE ERRORS IN THE DATA DUE TO TRUNCATION OF ENERGIES TO 6 DIGITS DURING OUTPUT.

Spectra Spectra

Spectra

Spectra

Spectra

Spectra Spectra

Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra

Spectra

Spectra Spectra

Spectra

Spectra

Spectra

Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra

Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra

CONTENTS OF OUTPUT

ENTIRE EVALUATIONS ARE OUTPUT, NOT JUST THE LINEARIZED DATA CROSS SECTIONS, E.G. ANGULAR AND ENERGY DISTRIBUTIONS ARE ALSO INCLUDED.

DOCUMENTATION

THE FACT THAT THIS PROGRAM HAS OPERATED ON THE DATA IS DOCUMENTED BY THE ADDITION OF 3 COMMENT LINES AT THE END OF EACH HOLLERITH SECTION IN THE FORM

********* PROGRAM SPECTRA (2018-1) *********** FOR ALL DATA GREATER THAN 1.00000-10 IN ABSOLUTE VALUE DATA LINEARIZED TO WITHIN AN ACCURACY OF 0.1 PER-CENT

THE ORDER OF SIMILAR COMMENTS (FROM RECENT, SIGMA1 AND GROUPIE) REPRESENTS A COMPLETE HISTORY OF ALL OPERATIONS PERFORMED ON THE DATA BY THESE PROGRAMS.

THESE COMMENT LINES ARE ONLY ADDED TO EXISTING HOLLERITH SECTIONS, I.E., THIS PROGRAM WILL NOT CREATE A HOLLERITH SECTION. THE FORMAT Spectra OF THE HOLLERITH SECTION IN ENDF/B-V DIFFERS FROM THE THAT OF EARLIER VERSIONS OF ENDF/B. BY READING AN EXISTING MF=1, MT=451 IT IS POSSIBLE FOR THIS PROGRAM TO DETERMINE WHICH VERSION OF THE ENDF/B FORMAT THE DATA IS IN. WITHOUT HAVING A SECTION OF MF=1, MT=451 PRESENT IT IS IMPOSSIBLE FOR THIS PROGRAM TO DETERMINE WHICH VERSION OF THE ENDF/B FORMAT THE DATA IS IN, AND AS SUCH IT IS IMPOSSIBLE FOR THE PROGRAM TO DETERMINE WHAT FORMAT SHOULD BE USED TO CREATE A HOLLERITH SECTION.

REACTION INDEX

THIS PROGRAM DOES NOT USE THE REACTION INDEX WHICH IS GIVEN IN SECTION MF=1, MT=451 OF EACH EVALUATION.

THIS PROGRAM DOES NOT UPDATE THE REACTION INDEX IN MF=1, MT=451. THIS CONVENTION HAS BEEN ADOPTED BECAUSE MOST USERS DO NOT REOUIRE A CORRECT REACTION INDEX FOR THEIR APPLICATIONS AND IT WAS Spectra NOT CONSIDERED WORTHWHILE TO INCLUDE THE OVERHEAD OF CONSTRUCTING A CORRECT REACTION INDEX IN THIS PROGRAM. HOWEVER, IF YOU REQUIRE A REACTION INDEX FOR YOUR APPLICATIONS, AFTER RUNNING THIS PROGRAM Spectra YOU MAY USE PROGRAM DICTIN TO CREATE A CORRECT REACTION INDEX.

SECTION SIZE

SINCE THIS PROGRAM USES A LOGICAL PAGING SYSTEM THERE IS NO LIMIT TO THE NUMBER OF POINTS IN ANY SECTION, E.G., THE TOTAL CROSS SECTION MAY BE REPRESENTED BY 200,000 DATA POINTS.

FOR ANY LINEARIZED SECTION THAT CONTAINS 60000 OR FEWER POINTS THE ENTIRE OPERATION WILL BE PERFORMED IN CORE AND THE LINEARIZED DATA WILL BE OUTPUT DIRECTLY TO THE ENDF/B FORMAT. FOR ANY SECTION THAT CONTAINS MORE POINTS THE DATA WILL BE LINEARIZED A PAGE AT A TIME (1 PAGE = 60000 POINTS) AND OUTPUT TO SCRATCH. AFTER THE ENTIRE SECTION HAS BEEN LINEARIZED THE DATA WILL BE READ BACK FROM Spectra SCRATCH AND OUTPUT TO THE ENDF/B FORMAT.

SELECTION OF DATA

THE PROGRAM SELECTS DATA TO BE LINEARIZED BASED EITHER ON EITHER MAT (ENDF/B MAT NO.) OR ZA AS WELL AS MF AND MT NUMBERS. THIS PROGRAM ALLOWS UP TO 100 MAT/MF/MT OR ZA/MF/MT RANGES TO BE SPECIFIED BY INPUT PARAMETERS. THE PROGRAM WILL ASSUME THAT THE ENDF/B TAPE IS IN MAT ORDER, REGARDLESS OF THE CRITERIA USED TO RETRIEVE MATERIALS. IF RETRIEVAL IS BY MAT RANGE THE PROGRAM WILL TERMINATE WHEN A MAT IS FOUND THAT IS ABOVE ALL REQUESTED MAT RANGES. IF RETRIEVAL IS BY ZA RANGE THE PROGRAM WILL SEARCH THE ENTIRE ENDF/B TAPE.

PROGRAM OPERATION

Spectra Spectra Spectra Spectra Spectra Spectra Spectra

Spectra

Spectra

Spectra Spectra Spectra Spectra Spectra Spectra

Spectra Spectra Spectra Spectra Spectra

Spectra Spectra Spectra Spectra Spectra Spectra

Spectra Spectra Spectra Spectra Spectra

Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra

Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra

Spectra

Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra

Spectra Spectra Spectra Spectra

Spectra Spectra

EACH SECTION OF DATA IS CONSIDERED SEPARATELY. EACH SECTION OF ENDF/B DATA TO LINEARIZE IS REPRESENTED BY A TABLE OF ENERGY VS. CROSS SECTION AND ANY ONE OF FIVE ALLOWABLE INTERPOLATION LAWS BETWEEN ANY TWO TABULATED POINTS. THIS PROGRAM WILL REPLACE EACH SECTION OF DATA CROSS SECTIONS BY A NEW TABLE OF ENERGY VS. CROSS SECTION IN WHICH THE INTERPOLATION LAW IS ALWAYS LINEAR IN ENERGY AND CROSS SECTION BETWEEN ANY TWO TABULATED POINTS.

DATA IS READ AND LINEARIZED A PAGE AT A TIME (ONE PAGE CONTAINS 60000 DATA POINTS). IF THE FINAL LINEARIZED SECTION CONTAINS TWO PAGES OR LESS, DATA POINTS IT WILL BE ENTIRELY CORE RESIDENT AFTER IT HAS BEEN LINEARIZED AND WILL BE WRITTEN DIRECTLY FROM CORE TO THE OUTPUT TAPE. IF THE LINEARIZED SECTION IS LARGER THAN TWO PAGES, AFTER EACH PAGE IS LINEARIZED IT WILL BE WRITTEN TO SCRATCH. AFTER THE ENTIRE SECTION HAS BEEN LINEARIZED IT WILL BE READ BACK FROM SCRATCH, TWO PAGES AT A TIME, AND WRITTEN TO THE OUTPUT TAPE.

KEEP EVALUATED DATA POINTS

SOMETIMES IT IS CONVENIENT TO KEEP ALL ENERGY POINTS WHICH WERE PRESENT IN THE ORIGINAL EVALUATION AND TO MERELY SUPPLEMENT THESE POINTS WITH ADDITIONAL ENERGY POINTS IN ORDER TO LINEARIZE THE CROSS SECTIONS. FOR EXAMPLE, IT IS OFTEN CONVENIENT TO KEEP THE THERMAL VALUE (AT 0.0253 EV) OR THE VALUE AT 14.1 MEV.

THE CURRENT VERSION OF THIS PROGRAM WILL ALLOW THE USER TO KEEP ALL ORIGINAL EVALUATED DATA POINTS BY SPECIFYING 1 IN COLUMNS 34-44 OF THE FIRST INPUT LINE. THIS WILL TURN OFF THE BACKWARD THINNING (SEE UCRL-50400, VOL. 17, PART A FOR EXPLANATION) AND RESULT IN ALL ORIGINAL ENERGY POINTS BEING KEPT. CAUTION SHOULD BE EXERCISED IN USING THIS OPTION SINCE IT CAN RESULT IN A CONSIDERABLE INCREASE IN THE NUMBER OF DATA POINTS OUTPUT BY THIS CODE.

FOR ALL USERS WHO ARE NOT INTERESTED IN THIS OPTIONS NO CHANGES ARE REQUIRED IN THE INPUT TO THIS PROGRAM, I. E. IF COLUMNS 34-44 ARE BLANK (AS FOR ALL PREVIOUS VERSIONS OF THIS CODE) THE PROGRAM WILL OPERATE EXACTLY AS IT DID BEFORE.

ALLOWABLE ERROR

ALLOWABLE ERROR MUST ALWAYS BE SPECIFIED IN THE INPUT TO THIS PROGRAM AS A FRACTION, NOT A PER-CENT. FOR EXAMPLE, INPUT THE ALLOWABLE FRACTIONAL ERROR 0.001 IN ORDER TO OBTAIN DATA THAT IS ACCURATE TO WITHIN 0.1 PER-CENT.

THE CONVERSION OF THE DATA FROM THE GENERAL INTERPOLATION FORM TO LINARLY INTERPOLABLE FORM CANNOT BE PERFORMED EXACTLY. HOWEVER, IT Spectra CAN BE PERFORMED TO VIRTUALLY ANY REQUIRED ACCURACY AND MOST IMPORTANTLY CAN BE PERFORMED TO A TOLERANCE THAT IS SMALL COMPARED Spectra TO THE UNCERTAINTY IN THE CROSS SECTIONS THEMSELVES. AS SUCH THE CONVERSION OF CROSS SECTIONS TO LINEARLY INTERPOLABLE FORM CAN BE PERFORMED WITH ESSENTIALLY NO LOSE OF INFORMATION.

THE ALLOWABLE ERROR MAY BE ENERGY INDEPENDENT (CONSTANT) OR ENERGY Spectra DEPENDENT. THE ALLOWABLE ERROR IS DESCRIBED BY A TABULATED FUNCTION OF UP TO 20 (ENERGY, ERROR) PAIRS AND LINEAR INTERPOLATION Spectra BETWEEN TABULATED POINTS. IF ONLY ONE TABULATED POINT IS GIVEN THE Spectra ERROR WILL BE CONSIDERED CONSTANT OVER THE ENTIRE ENERGY RANGE. WITH THIS ENERGY DEPENDENT ERROR ONE MAY OPTIMIZE THE OUTPUT FOR ANY GIVEN APPLICATION BY USING A SMALL ERROR IN THE ENERGY RANGE OF INTEREST AND A LESS STRINGENT ERROR IN OTHER ENERGY RANGES.

DEFAULT ALLOWABLE ERROR

IN ORDER TO INSURE CONVERGENCE OF THE LINEARIZING ALGORITHM THE ALLOWABLE ERROR MUST BE POSITIVE. IF THE USER INPUTS AN ERROR THAT IS NOT POSITIVE IT WILL AUTOMATICALLY BE SET TO THE DEFAULT VALUE (CURRENTLY 0.001, CORRESPONDING TO 0.1 PER-CENT) AND

Spectra Spectra

Spectra

Spectra

Spectra Spectra

Spectra Spectra

Spectra

Spectra

Spectra

Spectra

Spectra

Spectra

INDICATED AS SUCH IN THE OUTPUT LISTING.	Spectra				
INDICATED AS SOON IN THE COTFOI DISTING.					
COULOMB PENETRABILITY (INTERPOLATION LAW = 6)	Spectra Spectra				
INTRODUCED FOR EMPLYD VI. THIS TO BELLED ID,	Spectra Spectra				
SIG(E) = C1*EXP(-C2/SQRT(E - T))	Spectra				
THIS PROGRAM ONLY CONSIDERS EXOTHERMIC REACTIONS - T = 0	Spectra Spectra				
INIO INOSKE ONLI CONDIDENO INCIDENTO INDICIDENO II - V	Spectra				
SIG(E) = C1*EXP(-C2/SQRT(E))	Spectra				
WARNINGTHIS INTERPOLATION LAW SHOULD ONLY BE USED FOR REACTIONS	Spectra				
WHICH HAVE A POSITIVE Q-VALUE (EXOTHERMIC REACTIONS),	Spectra				
SINCE HERE WE ONLY CONSIDER $T = 0.0$ IN THE FORMALISM.	Spectra				
IN ALL OTHER CASES A WARNING MESSAGE WILL BE PRINTED.	Spectra				
INPUT FILES	Spectra Spectra				
	Spectra				
UNIT DESCRIPTION	Spectra				
2 INPUT LINES (BCD - 80 CHARACTERS/RECORD)	Spectra Spectra				
10 ORIGINAL ENDF/B DATA (BCD - 80 CHARACTERS/RECORD)	Spectra				
	Spectra				
OUTPUT FILES	Spectra Spectra				
UNIT DESCRIPTION	Spectra				
	Spectra				
3 OUTPUT REPORT (BCD - 120 CHARACTERS/RECORD) 11 FINAL ENDF/B DATA (BCD - 80 CHARACTERS/RECORD)	Spectra Spectra				
II FINAL ENDI/B DATA (BCD - 60 CHARACIERS/RECORD)	Spectra				
SCRATCH FILES	Spectra				
UNIT DESCRIPTION	Spectra				
ONIT DESCRIPTION	Spectra Spectra				
12 SCRATCH FILE (BINARY - 180000 WORDS/RECORD	Spectra				
ODELOVAL GENERAL STATE VALUE (GDE GUIDDOUTENE TITLE)	Spectra				
OPTIONAL STANDARD FILE NAMES (SEE SUBROUTINE FILEIO)	Spectra Spectra				
UNIT FILE NAME	Spectra				
	Spectra				
2 SPECTRA.INP 3 SPECTRA.LST	Spectra Spectra				
10 ENDFB.IN	Spectra				
11 ENDFB.OUT	Spectra				
12 (SCRATCH)	Spectra Spectra				
	Spectra				
INPUT PARAMETERS	Spectra				
FOR VERSIONS EARLIER THAN 90-1 THIS PROGRAM ONLY ALLOWED THE USER	Spectra				
TO SPECIFY BY INPUT PARAMETERS WHICH MATERIALS (MAT) TO PROCESS.	Spectra Spectra				
FOR EACH REQUESTED MATERIAL NEUTRON INTERACTION CROSS SECTIONS	Spectra				
(MF=3) WOULD BE LINEARIZED AND THE REMAINDER OF THE MATERIAL WOULD BE COPIED.	Spectra				
WOOLD BE COPIED.	Spectra Spectra				
FOR VERSIONS 90-1 AND LATER THIS PROGRAM WILL ALLOW THE USER TO	Spectra				
TO SPECIFY BY INPUT PARAMETERS EXACTLY WHAT SECTIONS OF DATA	Spectra				
TO PROCESS. FOR EACH SECTION OF DATA, SPECIFIED BY MAT, MF, MT RANGES, SECTIONS OF MF=3, 23 AND 27 WILL BE LINEARIZED AND ALL	Spectra Spectra				
OTHER REQUESTED SECTIONS WILL BE COPIED. ALL SECTIONS WHICH ARE	Spectra				
NOT EXPLICITLY REQUESTED WILL BE SKIPPED AND WILL NOT APPEAR ON	Spectra				
ENDF/B FILE OUTPUT BY THIS PROGRAM.	Spectra Spectra				
WITH THIS NEW PROCEDURE YOU CAN MINIMIZE THE SIZE OF THE ENDF/B	Spectra				
FILE OUTPUT BY THIS PROGRAM, E.G., IF YOU ONLY WANT NEUTRON	Spectra				
CROSS SECTIONS FOR SUBSEQUENT PROCESSING YOU NEED ONLY REQUEST ONLY MF=3 DATA.	Spectra Spectra				
ONDI RE-5 DAIR.	Spectra				
	pectra				
HOWEVER, YOU MUST UNDERSTAND THAT ONLY THOSE SECTIONS WHICH YOU EXPLICITLY REQUEST WILL APPEAR ON THE ENDF/B FILE OUTPUT BY	Spectra Spectra				

THIS PROGRAM. FOR EXAMPLE, IF YOU WISH TO DOCUMENT EXACTLY HOW YOU LINEARIZED THE DATA BY INCLUDING COMMENTS IN MF=1, MT=451 THEN YOU MUST EXPLICITLY REQUEST THAT MF=1, MT=451 BE PROCESSED FOR EACH MATERIAL THAT YOU REQUEST. SIMILAR IF YOU WANT THE ENTIRE EVALUATION YOU MUST REQUEST ALL MF AND MT TO BE OUTPUT.

Spectra

Spectra

Spectra

Spectra

Spectra

Spectra

Spectra

Spectra

Spectra Spectra LINE COLS. DESCRIPTION Spectra Spectra 1-11 SELECTION CRITERIA (0=MAT, 1=ZA) 1 Spectra 12-22 MONITOR MODE SELECTOR Spectra = 0 - NORMAL OPERATION Spectra = 1 - MONITOR PROGRESS OF LINEARIZING OF THE DATA. Spectra EACH TIME A PAGE OF DATA POINTS IS WRITTEN TO Spectra THE SCRATCH FILE PRINT OUT THE TOTAL NUMBER OF Spectra POINTS ON SCRATCH AND THE LOWER AND UPPER ENERGY LIMITS OF THE PAGE (THIS OPTION MAY BE Spectra USED IN ORDER TO MONITOR THE EXECUTION SPEED Spectra OF LONG RUNNING JOBS). Spectra 23-33 MINIMUM CROSS SECTION OF INTEREST (BARNS). Spectra (IF 0.0 OR LESS IS INPUT THE PROGRAM WILL Spectra USE 1.0E-10). ENERGY INTERVALS WILL NOT BE Spectra SUB-DIVIDED IF THE ABSOLUTE VALUE OF THE CROSS Spectra SECTION WITHIN THE INTERVAL IS LESS THAN THIS VALUE. Spectra AN EXCEPTION TO THIS RULE IS NEAR THRESHOLDS ENERGY Spectra INTERVALS WILL BE SUB-DIVIDED UNTIL CONVERGENCE Spectra REGARDLESS OF THE MAGNITUDE OF THE CROSS SECTION. Spectra 34-44 KEEP ORIGINAL EVALUATED DATA POINTS. Spectra = 0 - NO.Spectra = 1 - YES - ADDITIONAL POINTS MAY BE ADDED IN ORDER Spectra TO LINEARIZE DATA, BUT ALL ORIGINAL Spectra DATA POINTS WILL BE INCLUDED IN THE Spectra RESULTS. Spectra 1-72 ENDF/B INPUT DATA FILENAME Spectra (STANDARD OPTION = ENDFB.IN) Spectra 1-72 ENDF/B OUTPUT DATA FILENAME Spectra (STANDARD OPTION = ENDFB.OUT) Spectra 1- 6 LOWER MAT OR ZA LIMIT 4 – N Spectra 7- 8 LOWER MF LIMIT Spectra 9-11 LOWER MT LIMIT Spectra 12-17 UPPER MAT OR ZA LIMIT Spectra UPPER MF LIMIT 18-19 Spectra 20-22 UPPER MT LIMIT Spectra UP TO 100 RANGES MAY BE SPECIFIED, ONLY ONE RANGE Spectra PER LINE. THE LIST OF RANGES IS TERMINATED BY A Spectra BLANK LINE. IF THE UPPER MAT LIMIT OF ANY REQUEST Spectra IS LESS THAN THE LOW LIMIT IT WILL BE SET EQUAL TO Spectra THE LOWER LIMIT. IF THE UPPER LIMIT IS STILL ZERO Spectra IT WILL BE SET EQUAL TO 999999. IF THE UPPER MF OR Spectra MT LIMIT IS ZERO IT WILL BE SET TO 99 OR 999 Spectra RESPECTIVELY. Spectra VARY 1-11 ENERGY FOR ERROR LAW Spectra 12-22 ALLOWABLE FRACTIONAL ERROR FOR ERROR LAW. Spectra THE ACCEPTABLE LINEARIZING ERROR MAY BE SPECIFIED TO Spectra BE EITHER ENERGY INDEPENDENT (DEFINED BY A SINGLE Spectra ERROR), OR ENERGY DEPENDENT (DEFINED BY UP TO 20 Spectra ENERGY, ERROR PAIRS). FOR THE ENERGY DEPENDENT CASE Spectra LINEAR INTERPOLATION WILL BE USED TO DEFINE THE ERROR Spectra AT ENERGIES BETWEEN THOSE AT WHICH IT IS TABULATED. Spectra IN ALL CASES THE ERROR LAW IS TERMINATED BY A BLANK Spectra LINE. IF ONLY ONE ENERGY, ERROR PAIR IS GIVEN THE Spectra THE LAW WILL BE CONSIDERED TO BE ENERGY INDEPENDENT. Spectra IF MORE THAN ONE PAIR IS GIVEN IT WILL BE CONSIDERED Spectra TO BE ENERGY DEPENDENT (NOTE, ENERGY INDEPENDENT Spectra FORM WILL RUN FASTER THAN THE EQUIVALENT ENERGY Spectra DEPENDENT FORM). FOR AN ENERGY DEPENDENT ERROR LAW Spectra ALL ENERGIES MUST BE ASCENDING ENERGY ORDER. FOR Spectra CONVERGENCE OF THE LINEARIZING ALGORITHM ALL ERRORS Spectra

MUST BE POSITIVE. IF AN ALLOWABLE ERROR IS NOT

POSITIVE IT WILL BE SET EQUAL TO THE STANDARD OPTION

(CURRENTLY 0.001, CORRESPONDING TO 0.1 PER-CENT).

IF THE FIRST ERROR LINE IS BLANK IT WILL TERMINATE

	Spectra				
THE ERROR LAW AND THE ERROR WILL BE TREATED AS ENERGY INDEPENDENT, EQUAL TO THE STANDARD OPTION					
(CURRENTLY 0.1 PER-CENT). (SEE EXAMPLE INPUT 4).	Spectra Spectra				
	Spectra				
EXAMPLE INPUT NO. 1	Spectra				
RETRIEVE DATA BY ZA IN ORDER TO FIND ALL URANIUM ISOTOPES AND	Spectra				
THORIUM 232. RETRIEVE ALL NEUTRON INTERACTION CROSS SECTIONS	Spectra Spectra				
(MF=3). ALL ENERGY INTERVALS IN WHICH THE CROSS SECTION IS	Spectra				
AT LEAST 1 MICRO-BARN (1.0E-06 BARNS) WILL BE SUBDIVIDED.	Spectra				
BACKWARD THINNING WILL BE PERFORMED. FROM 0 TO 100 EV LINEARIZE	Spectra				
TO WITHIN 0.1 PER-CENT ACCURACY. FROM 100 EV TO 1 KEV VARY	Spectra Spectra				
PER-CENT ACCURACY.					
EXPLICITLY SPECIFY THE STANDARD FILENAMES.	Spectra Spectra				
	Spectra				
IN THIS CASE THE FOLLOWING 11 INPUT LINES ARE REQUIRED	Spectra				
	Spectra				
1 0 1.00000- 6 0	Spectra				
ENDFB.IN ENDFB.OUT	Spectra				
92000 3 0 92999 3999	Spectra Spectra				
90232 3 0 0 3 0 (UPPER LIMIT AUTOMATICALLY SET TO 90232 3999)	_				
(END OF REQUEST LIST)	Spectra				
0.00000+ 0 1.00000-03	Spectra				
1.00000+ 2 1.00000-03	Spectra				
1.00000+ 3 1.00000-02	Spectra				
1.00000+ 9 1.00000-02	Spectra				
(END OF ERROR LAW)	Spectra Spectra				
EXAMPLE INPUT NO. 2	Spectra				
	Spectra				
SAME AS THE ABOVE CASE, EXCEPT LINEARIZE ALL DATA TO WITHIN THE	Spectra				
STANDARD ACCURACY (CURRENTLY 0.1 PER-CENT). IN ORDER TO USE THE	Spectra				
STANDARD ACCURACY YOU NEED NOT SPECIFY ANY ERROR LAW AT ALL. IN	Spectra				
THIS CASE INCLUDE THE HOLLERITH SECTION, MF=1, MT=451, FOR EACH MATERIAL.	Spectra Spectra				
	Spectra				
LEAVE THE DEFINITION OF THE FILENAMES BLANK - THE PROGRAM WILL	Spectra				
THEN USE STANDARD FILENAMES.	Spectra				
	Spectra				
IN THIS CASE THE FOLLOWING 9 INPUT LINES ARE REQUIRED	Spectra				
1 0 1.00000- 6 0	Spectra Spectra				
(USE DEFAULT FILENAME = ENDFB.IN)	Spectra				
(USE DEFAULT FILENAME = ENDFB.OUT)	Spectra				
92000 1451 92999 1451					
	Spectra				
92000 3 0 92999 3999	Spectra				
92000 3	Spectra Spectra				
92000 3 0 92999 3999 90232 1451 0 1451 90232 3 0 0 3 0 (UPPER LIMIT AUTOMATICALLY SET TO 90232 3999)	Spectra Spectra Spectra				
92000 3 0 92999 3999 90232 1451 0 1451 90232 3 0 0 3 0 (UPPER LIMIT AUTOMATICALLY SET TO 90232 3999) (END OF REQUEST LIST)	Spectra Spectra Spectra Spectra				
92000 3 0 92999 3999 90232 1451 0 1451 90232 3 0 0 3 0 (UPPER LIMIT AUTOMATICALLY SET TO 90232 3999)	Spectra Spectra Spectra				
92000 3 0 92999 3999 90232 1451 0 1451 90232 3 0 0 3 0 (UPPER LIMIT AUTOMATICALLY SET TO 90232 3999) (END OF REQUEST LIST)	Spectra Spectra Spectra Spectra Spectra				
92000 3 0 92999 3999 90232 1451 0 1451 90232 3 0 0 3 0 (UPPER LIMIT AUTOMATICALLY SET TO 90232 3999) (END OF REQUEST LIST) (0.1 PER-CENT ERROR, END OF ERROR LAW) EXAMPLE INPUT NO. 3	Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra				
92000 3 0 92999 3999 90232 1451 0 1451 90232 3 0 0 3 0 (UPPER LIMIT AUTOMATICALLY SET TO 90232 3999) (END OF REQUEST LIST) (0.1 PER-CENT ERROR, END OF ERROR LAW) EXAMPLE INPUT NO. 3	Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra				
92000 3 0 92999 3999 90232 1451 0 1451 90232 3 0 0 3 0 (UPPER LIMIT AUTOMATICALLY SET TO 90232 3999)	Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra				
92000 3 0 92999 3999 90232 1451 0 1451 90232 3 0 0 3 0 (UPPER LIMIT AUTOMATICALLY SET TO 90232 3999) (END OF REQUEST LIST) (0.1 PER-CENT ERROR, END OF ERROR LAW) EXAMPLE INPUT NO. 3	Spectra				
92000 3 0 92999 3999 90232 1451 0 1451 90232 3 0 0 3 0 (UPPER LIMIT AUTOMATICALLY SET TO 90232 3999)	Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra Spectra				
92000 3 0 92999 3999 90232 1451 0 1451 90232 3 0 0 3 0 (UPPER LIMIT AUTOMATICALLY SET TO 90232 3999)	Spectra				
92000 3 0 92999 3999 90232 1451 0 1451 90232 3 0 0 3 0 (UPPER LIMIT AUTOMATICALLY SET TO 90232 3999)	Spectra				
92000 3 0 92999 3999 90232 1451 0 1451 90232 3 0 0 3 0 (UPPER LIMIT AUTOMATICALLY SET TO 90232 3999)	Spectra				
92000 3 0 92999 3999 90232 1451 0 1451 90232 3 0 0 3 0 (UPPER LIMIT AUTOMATICALLY SET TO 90232 3999) (END OF REQUEST LIST) (0.1 PER-CENT ERROR, END OF ERROR LAW) EXAMPLE INPUT NO. 3 LINEARIZE ALL MATERIALS ON AN ENDF/B TAPE TO WITHIN AN ACCURACY OF 0.5 PER-CENT (0.005 AS A FRACTION). IN THIS CASE YOU NEED NOT SPECIFY THE MAT, MF, MT RANGES. READ THE ENDF/B DATA FROM \ENDFB6\ZA092238 AND WRITE THE ENDF/B DATA TO \ENDFB6\LINEAR\ZA092238. IN THIS CASE THE FOLLOWING 6 INPUT LINES ARE REQUIRED	Spectra				
92000 3 0 92999 3999 90232 1451 0 1451 90232 3 0 0 3 0 (UPPER LIMIT AUTOMATICALLY SET TO 90232 3999)	Spectra				
92000 3 0 92999 3999 90232 1451 0 1451 90232 3 0 0 3 0 (UPPER LIMIT AUTOMATICALLY SET TO 90232 3999) (END OF REQUEST LIST) (0.1 PER-CENT ERROR, END OF ERROR LAW) EXAMPLE INPUT NO. 3 LINEARIZE ALL MATERIALS ON AN ENDF/B TAPE TO WITHIN AN ACCURACY OF 0.5 PER-CENT (0.005 AS A FRACTION). IN THIS CASE YOU NEED NOT SPECIFY THE MAT, MF, MT RANGES. READ THE ENDF/B DATA FROM \ENDFB6\ZA092238 AND WRITE THE ENDF/B DATA TO \ENDFB6\LINEAR\ZA092238. IN THIS CASE THE FOLLOWING 6 INPUT LINES ARE REQUIRED	Spectra				
92000 3 0 92999 3999 90232 1451 0 1451 90232 3 0 0 3 0 (UPPER LIMIT AUTOMATICALLY SET TO 90232 3999)	Spectra				
92000 3 0 92999 3999 90232 1451 0 1451 90232 3 0 0 3 0 (UPPER LIMIT AUTOMATICALLY SET TO 90232 3999)	Spectra				

	Spectra
NOTE THAT IN THIS CASE IF THE INPUT HAD SPECIFIED AN EQUIVALENT	Spectra
ENERGY DEPENDENT ERROR LAW BY GIVING A NUMBER OF ENERGY POINTS	Spectra
AT EACH OF WHICH THE ERROR IS 0.5 PER-CENT THE PROGRAM WOULD TAKE	Spectra
LONGER TO RUN (I.E., ONLY USE AN ENERGY DEPENDENT ERROR LAW WHEN	Spectra
IT IS NECESSARY).	Spectra
	Spectra
EXAMPLE INPUT NO. 4	Spectra
	Spectra
IN ORDER TO LINEARIZE ALL MATERIALS ON AN ENDF/B TAPE TO THE	Spectra
STANDARD OPTION OF 0.1 PER-CENT IT IS ADEQUATE TO INPUT A SET	Spectra
OF COMPLETELY BLANK LINES WHICH WILL AUTOMATICALLY INVOKE ALL	Spectra
OF THE STANDARD OPTIONS.	Spectra
	Spectra
LEAVE THE DEFINITION OF THE FILENAMES BLANK - THE PROGRAM WILL	Spectra
THEN USE STANDARD FILENAMES.	Spectra
	Spectra
IN THIS CASE THE FOLLOWING THREE INPUT LINES ARE REQUIRED	Spectra
	Spectra
(MAT, 1.0E-10 BARNS, THIN)	Spectra
(USE DEFAULT FILENAME = ENDFB.IN)	Spectra
(USE DEFAULT FILENAME = ENDFB.OUT)	Spectra
(RETRIEVE ALL DATA, END REQUEST LIST)	Spectra
(0.1 PER-CENT ERROR, END OF ERROR LAW)	Spectra
	Spectra

======= Spectra