				Fixup Fixup
PROGRAM	FIXUP			Fixup
				Fixup
		(NOVEMBER 1984)		Fixup
VERSION	86-1	(JANUARY 1986)	*IMPROVED BASED ON USER COMMENTS	Fixup
VEDGION	86-2	(JUNE 1986)	*FORTRAN-77/H VERSION *ALLOW CREATION OF SECTIONS OF CROSS	Fixup Fixup
VERSION	00-2	(DONE 1900)	SECTIONS WHICH ARE NOT PRESENT IN	Fixup
			THE ORIGINAL EVALUATION	Fixup
VERSION	88-1	(JULY 1988)	*OPTIONINTERNALLY DEFINE ALL I/O	Fixup
			FILE NAMES (SEE, SUBROUTINE FILEIO	Fixup
			FOR DETAILS).	Fixup
VEDGION	90_1	(TANILADY 1000)	*IMPROVED BASED ON USER COMMENTS. *PSYCHOANALYZED BY PROGRAM FREUD TO	Fixup Fixup
VERSION	09-1	(JANUARI 1909)	INSURE PROGRAM WILL NOT DO ANYTHING	Fixup
			CRAZY.	Fixup
			*UPDATED TO USE NEW PROGRAM CONVERT	Fixup
			KEYWORDS.	Fixup
			*ADDED LIVERMORE CIVIC COMPILER	Fixup
VERCION	80-0	(MARCH 1989)	CONVENTIONS. *ADDED ENDF-6 SUMMATION RULES AND	Fixup Fixup
VIU I GATELY	0 J-Z	(1903)	ADDED ENDF-6 SUMMATION ROLES AND DEFINED MF AND MT NUMBERS. PROGRAM	Fixup
			WILL NOW USE MF=1, MT=451 TO DEFINE	Fixup
			THE ENDF FORMAT OF THE DATA (E.G.,	Fixup
			ENDF-6 OR EARLIER) AND USE THE	Fixup
			CORRECT SUMMATION RULES FOR EACH	Fixup
			VERSION OF THE ENDF FORMAT. IF MF=1, MT=451 IS NOT PRESENT PROGRAM	Fixup Fixup
			WILL USE ENDF-6 SUMMATION	Fixup
			CONVENTIONS AS A DEFAULT.	Fixup
VERSION	90-1	(JUNE 1990)	*UPDATED BASED ON USER COMMENTS	Fixup
			*ADDED PHOTON INTERACTION, MF=23	Fixup
VERSION	91-1	(JUNE 1991)	*ADDED FORTRAN SAVE OPTION	Fixup
			*NEW MORE CONSISTENT ENERGY OUTPUT	Fixup
VERSION	92-1	(.TANUARY 1992)	ROUTINE *ADDED OPTION TO CALCULATE RATIOS,	Fixup Fixup
V BILO I OIL	<i>72</i> 1	(0111(0111(1-1992)	E.G., CAPTURE/FISSION AND PRODUCTS,	Fixup
			NU-BAR*FISSION - AND OUTPUT THE	Fixup
			RESULTS IN THE ENDF FORMAT (SEE,	Fixup
			BELOW - CREATING RATIOS AND PRODUCTS)	-
			*ALLOW TOTAL NU-BAR (MF=1, MT=452) TO BE USED IN DEFINING RATIOS OR	Fixup Fixup
			PRODUCTS.	Fixup
			*ALLOW ALL CROSS SECTIONS TO BE PUT	Fixup
			ON A UNIFORM ENERGY GRID.	Fixup
			*NOTE, CHANGE IN INPUT FORMAT FOR	Fixup
			RANGES OF MT NUMBERS	Fixup
			*COMPLETELY CONSISTENT I/O ROUTINES - TO MINIMIZE COMPUTER DEPENDENCE.	-
VERSION	93-1	(JULY 1993)	*CORRECTED ALGORITHM TO CREATE UNIFORM	Fixup
)	(0001 1000)	ENERGY GRID.	Fixup
VERSION	94-1	(JANUARY 1993)	*VARIABLE ENDF/B DATA FILENAMES	Fixup
			TO ALLOW ACCESS TO FILE STRUCTURES	Fixup
			(WARNING - INPUT PARAMETER FORMAT	Fixup
			HAS BEEN CHANGED) *INCREASED PAGE SIZE FROM 1002 TO	Fixup Fixup
			12000 DATA POINTS.	Fixup
			*CLOSE ALL FILES BEFORE TERMINATING	Fixup
			(SEE, SUBROUTINE ENDIT)	Fixup
VERSION	96-1	(JANUARY 1996)	*COMPLETE RE-WRITE	Fixup
			*IMPROVED COMPUTER INDEPENDENCE	Fixup
			*ALL DOUBLE PRECISION	Fixup
			*ON SCREEN OUTPUT *UNIFORM TREATMENT OF ENDF I/O	Fixup Fixup
			*IMPROVED OUTPUT PRECISION	Fixup
			*DEFINED SCRATCH FILE NAMES	Fixup
			*INCREASED PAGE SIZE FROM 12000 TO	Fixup
		(MARCH 1999)	36000 DATA POINTS. *CORRECTED CHARACTER TO FLOATING	Fixup Fixup

	*UPDATED TEST FOR ENDF FORMAT VERSION BASED ON RECENT FORMAT CHANGE *GENERAL IMPROVEMENTS BASED ON	Fixup
VERSION 99-2 (JUNE 1999)	USER FEEDBACK *ASSUME ENDF-6, NOT 5, IF MISSING MF=1, MT-451.	Fixup Fixup Fixup
VERS. 2000-1 (FEBRUARY 2000)	*FIXED CREATION OF SECTIONS *GENERAL IMPROVEMENTS BASED ON USER FEEDBACK	Fixup Fixup Fixup
VERS. 2002-1 (MAY 2002)	*OPTIONAL INPUT PARAMETERS *SUMMATION RULES ARE DEFINED BASED	Fixup Fixup
VERS. 2004-1 (JAN. 2004)	ON CONTENTS OF TABLES. *GENERAL UPDATE BASED ON USER FEEDBACK *INCREASED PAGE SIZE FROM 36000 TO	Fixup Fixup Fixup
VERS. 2005-1 (JAN. 2005)	60000 DATA POINTS. *UPDATED MT CREATION TO ALLOW MAT =0 INDICATING CREATE FOR ALL MATS.	Fixup Fixup
VERS. 2007-1 (JAN. 2007)	*CHECKED AGAINST ALL ENDF/B-VII DATA *INCREASED PAGE SIZE FROM 60,000 TO	Fixup Fixup Fixup
VERS. 2007-2 (OCT. 2007)	600,000 DATA POINTS. *ADDED MT=16 AS SUM MT=875 THRU 891 *72 CHARACTER FILE NAMES	Fixup Fixup Fixup
VERS. 2010-1 (Apr. 2010)	*Defining cross sections by summation to now mandatory - either build-in	Fixup Fixup
VERS. 2011-1 (March 2011)	rules or by user input. *Added new MT # to allowed and summation rules.	Fixup Fixup Fixup
VERS. 2012-1 (Aug. 2012)	*Corrected definition of MT=3 to avoid double counting of MT=18.	Fixup Fixup
	<pre>*Extended incident particle list to include photon (ZA = 0). *Added CODENAME</pre>	Fixup Fixup Fixup
	*32 and 64 bit Compatible *Added ERROR stops.	Fixup Fixup
VERS. 2015-1 (Jan. 2015)	*Extended OUT9. *Replaced ALL 3 way IF Statements	Fixup Fixup Fixup
OWNED, MAINTAINED AND DISTRI		Fixup Fixup
THE NUCLEAR DATA SECTION INTERNATIONAL ATOMIC ENERGY	AGENCY	Fixup Fixup
P.O. BOX 100 A-1400, VIENNA, AUSTRIA		Fixup Fixup
EUROPE		Fixup Fixup
ORIGINALLY WRITTEN BY		Fixup Fixup
Dermott E. Cullen		Fixup
PRESENT CONTACT INFORMATION		Fixup Fixup
		Fixup
Dermott E. Cullen 1466 Hudson Way		Fixup Fixup
Livermore, CA 94550		Fixup
U.S.A. Telephone 925-443-1911		Fixup Fixup
E. Mail RedCullen1@Comcas	t.net	Fixup
Website http://home.comca	st.net/~redcullen1	Fixup
PURPOSE		Fixup Fixup
		Fixup
	READ EVALUATED DATA IN THE ENDF AND OUTPUT THE RESULT IN THE ENDF	Fixup Fixup
FORMAT. TWO TYPES OF CORRECT (2) OPTIONAL (BASED ON USER	TIONS ARE POSSIBLE (1) AUTOMATIC AND INPUT) CORRECTIONS.	Fixup Fixup
ONE OF THE MOST IMPORTANT FU	NCTIONS OF THIS PROGRAM IS TO	Fixup Fixup
RE-DEFINE ALL REDUNDANT CROSS SECTIONS (E.G. TOTAL) TO BE EXACTLY		
EQUAL TO THE SUM OF ITS PARTS. THIS PROCEDURE ELIMINATES THE PROBLEM WITH MANY ENDF EVALUATIONS, WHERE DUE TO THE USE OF		
	IS THE TOTAL MAY BE EQUAL TO THE SUM	Fixup Fixup

OF ITS PARTS AT ALL TABULATED ENERGIES, BUT BASED ON THE Fixup Fixup INTERPOLATION LAWS IT CAN BE QUITE DIFFERENT AT ENERGIES BETWEEN TABULATED ENERGIES. Fixup Fixup AUTOMATIC CHECKS/CORRECTIONS Fixup _____ Fixup (1) CHECK THAT MAT/MF/MT DOES NOT CHANGE UNLESS A MEND/FEND/SEND Fixup LINE IS READ. IF MAT/MF/MT CHANGES A WARNING MESSAGE IS Fixup PRINTED BUT NO CORRECTIVE ACTION IS TAKEN. Fixup (2) ALL LINES WITHIN A GIVEN MAT WILL BE SEQUENTIALLY NUMBERED Fixup ON OUTPUT. Fixup Fixup OPTIONAL CHECKS/CORRECTIONS Fixup _____ Fixup THE FOLLOWING NUMBERS CORRESPOND TO THE INPUT DATA OPTION COLUMNS Fixup (SEE THE DESCRIPTION OF THE INPUT BELOW) Fixup Fixup (1) CORRECT ZA AND AWR IN ALL SECTIONS. CHECK TO INSURE THAT THE Fixup C1 AND C2 VALUES (ZA AND AWR) ARE THE SAME IN ALL SECTIONS. Fixup THE C1 AND C2 OF THE FIRST SECTION READ ARE ASSUMED TO BE Fixup CORRECT AND ARE USED FOR COMPARISON. IF THE C1 AND/OR C2 OF Fixup THE FIRST SECTION ARE NOT POSITIVE AN ERROR MESSAGE IS OUTPUT Fixup AND THE MATERIAL IS COPIED WITHOUT CHANGE. Fixup NOTE....TO CHANGE THE ZA AND/OR AWR OF ANY MATERIAL IT IS Fixup MERELY NECESSARY TO CHANGE THE ZA AND/OR AWR IN THE FIRST Fixup SECTION OF THE MATERIAL AND USE THIS OPTION TO AUTOMATICALLY Fixup CHANGE ALL OTHER SECTIONS. Fixup (2) CORRECT CROSS SECTION (MF=3) THRESHOLDS. THE Q-VALUE AND AWR Fixup ARE USED TO DERIVE THE REACTION THRESHOLD USING THE RELATION, Fixup Fixup E-THRESHOLD = - (Q-VALUE) * (AWRE+1.0) / AWRE Fixup Fixup IF THE THRESHOLD IS POSITIVE THE CROSS SECTION IS CHECKED TO Fixup INSURE THAT THE FIRST TABULATED POINT IS AT THE THRESHOLD AND Fixup HAS A ZERO CROSS SECTION. IF NOT, THE CROSS SECTION WILL BE Fixup CHANGED. Fixup Fixup (A) IF THE FIRST TABULATED POINT IS ABOVE THE THRESHOLD AND HAS A ZERO CROSS SECTION, THE POINT IS DELETED AND A POINT Fixup IS INSERTED AT THE THRESHOLD. Fixup (B) IF THE FIRST TABULATED POINT IS ABOVE THE THRESHOLD AND Fixup HAS A NON-ZERO CROSS SECTION, A POINT WITH ZERO CROSS Fixup SECTION IS INSERTED AT THE THRESHOLD. Fixup (C) IF THE FIRST TABULATED POINT IS BELOW THE THRESHOLD AND Fixup HAS A NON-ZERO CROSS SECTION, ALL POINTS BELOW THE Fixup THRESHOLD ARE DELETED AND A POINT WITH ZERO CROSS SECTION Fixup IS INSERTED AT THE THRESHOLD. Fixup (3) EXTEND ALL CROSS SECTIONS (MF=3) TO 20 MEV. IF THE TABULATED Fixup CROSS SECTION ENDS BELOW 20 MEV IT WILL BE EXTENDED TO 20 MEV Fixup AS EITHER ZERO (IMOPS(3)=1) OR CONSTANT (IMOPS(3)=2) EQUAL Fixup TO THE LAST TABULATED VALUE. Fixup (4) ALLOW REACTION (MF=3, ANY MT) DELETION. ALL SPECIFIED Fixup REACTIONS WILL BE DELETED WHEN THE DATA IS READ FROM THE Fixup INPUT ENDF DATA FILE AND WILL NOT BE IN THE OUTPUT ENDF Fixup DATA FILE. WARNING DELETED REACTIONS MAY NOT BE USED TO DEFINE Fixup ANY RECONSTRUCTED REACTIONS (I.E. REACTIONS DEFINED BY SUMMING Fixup OTHER REACTIONS). SINCE DELETED REACTIONS ARE DELETED DURING Fixup READING IT IS AS IF THEY NEVER EXISTED AND IF ANY DELETED Fixup REACTION IS REQUIRED LATER TO DEFINE ANY SUM AN ERROR WILL Fixup RESULT. THE USER MAY SPECIFY THAT THE DELETION RULES ARE TO BE Fixup Fixup READ FROM INPUT (IMOPS(4)=1) OR THAT THE BUILT IN SUMMATION RULES ARE TO BE USED (MOPS(4)=2). AT THE PRESENT TIME THE Fixup BUILT-IN DELETION RULES ARE THAT NO SECTIONS SHOULD BE DELETED Fixup (THE USER MAY OVERRIDE THIS CONVENTION BY INPUT). Fixup (5) ALLOW REACTION (MF=3, ANY MT) RECONSTRUCTION BY SUMMING OTHER Fixup REACTIONS. IN ORDER TO OPTIMIZE THE RUNNING TIME OF THIS Fixup PROGRAM CARE SHOULD BE EXERCISED TO MINIMIZE THE NUMBER OF Fixup TIMES THAT EACH CONTRIBUTING CROSS SECTION MUST BE USED. Fixup THE USED MAY SPECIFY THAT THE SUMMATION RULES ARE TO BE READ Fixup AS INPUT (IMOPS(5)=1) OR THAT THE BUILT IN SUMMATION RULES Fixup ARE TO BE USED (IMOPS(5)=2). THE BUILT IN SUMMATION RULES ARE Fixup DESIGNED TO USE ENDF CONVENTIONS AND TO MINIMIZE THE NUMBER Fixup

		Fixup
. ,		Fixup
	ERO OR POSITIVE). DURING READING ALL NEGATIVE CROSS SECTIONS ILL BE SET EQUAL TO ZERO AND TREATED AS SUCH DURING ALL	Fixup
		Fixup Fixup
		Fixup
		Fixup
TI	HE RESONANCE CONTRIBUTION HAS BEEN ADDED TO THE BACKGROUND	Fixup
T	O DEFINE THE ACTUAL CROSS SECTION IS IT VALID TO ELIMINATE	Fixup
	EGATIVE CROSS SECTIONS.	Fixup
		Fixup
		Fixup Fixup
		Fixup
		Fixup
C	ONTRIBUTIONS OF CAPTURE AND FISSION (THUS AVOIDING NUMERICAL	Fixup
II	NSTABILITY PROBLEMS DURING SELF-SHIELDING CALCULATIONS).	Fixup
. ,		Fixup
		Fixup
	ITHIN EACH SECTION OF CROSS SECTIONS ELIMINATE DUPLICATE OINTS (SUCCESSIVE POINTS WITH THE SAME ENERGY-CROSS SECTION).	Fixup
	EST THAT ALL SECTIONS ARE IN ASCENDING MAT/MF/MT ORDER.	Fixup Fixup
		Fixup
		Fixup
(-) -		Fixup
		Fixup
	,	Fixup
. ,		Fixup Fixup
	ECONSTRUCT AND OUTPUT SECTIONS IF THE SECTION IS PRESENT	Fixup
	N THE ORIGINAL EVALUATION. THIS PROCEDURE IS FOLLOWED BECAUSE	-
	ORMALLY THE PROGRAM DOES NOT KNOW HOW TO DEFINE THE CONTENTS	Fixup
0	F THE FIRST TWO LINES OF THE SECTION (E.G., Q-VALUE,	Fixup
	EMPERATURE, INITIAL AND FINAL STATES). THIS OPTION MAY BE	Fixup
	SED TO ALLOW THE PROGRAM TO READ AND SAVE A TABLE DEFINING	Fixup
	HE CONTENTS OF THE FIRST TWO LINES OF EACH SECTION TO BE REATED.	Fixup Fixup
		Fixup
		Fixup
(12)A		Fixup
		Fixup
		Fixup
	NSERT AN ENERGY POINT AT THERMAL ENERGY (0.0253 EV). IF N MAT AND/OR MT IS ZERO THIS IMPLIES = ALL - INSERT THE	Fixup
		Fixup Fixup
		Fixup
. ,		Fixup
	HICH APPEAR IN AT LEAST ONE SECTION OF DATA. PARAMETERS	Fixup
	MT=251 THROUGH 255) ARE NOT INCLUDED IN THE UNIFORM ENERGY	Fixup
		Fixup
		Fixup Fixup
		Fixup
		Fixup
CREAT	ING RATIOS AND PRODUCTS	Fixup
	==================	Fixup
		Fixup
DO TWO		Fixup
1) DEI		Fixup Fixup
,		Fixup
		Fixup
2) USI	E THE CREATE MT NUMBER OPTION AND INPUT THE FIRST TWO LINES	Fixup
OF		Fixup
דאד דא די א די		Fixup
		Fixup Fixup
TIN TUI		Fixup
TWO SI		Fixup
RATIO		Fixup
		Fixup

ALPHA (MT=254) = CAPTURE (MT=102)/FISSION (MT=18)	Fixup
ETA (MT=255) = NU-BAR (MT=452)*FISSION (MT=18)/ABSORPTION (MT=27)	Fixup Fixup
	Fixup
ABSORPTION (MT=27) = FISSION (MT=18) + SUM (MT=102 THROUGH 116)	Fixup Fixup
AS YET THERE IS NO STANDARD DEFINITION OF MT NUMBERS FOR RATIO	Fixup
OR PRODUCT DATA. YOU ARE FREE TO USE ANY MT NUMBERS NORMALLY NOT USED IN THE ENDF. HOWEVER, IT WILL THEN BE YOUR RESPONSIBILITY	Fixup Fixup
TO PROPERLY INTERPRET THE RESULTS, I.E., NOBODY ELSE WILL HAVE	Fixup
ANY IDEA HOW TO INTERPRET A TABLE OF DATA ASSOCIATED WITH THE MT NUMBERS YOU HAVE USED.	Fixup Fixup
	Fixup
THIS PROGRAM CAN BE ONLY DIRECTLY DEFINE RATIOS AND PRODUCTS USING TWO MT NUMBERS = BINARY OPERATIONS, E.G., DEFINE THE CAPTURE	Fixup Fixup
TO FISSION RATIO, OR DEFINE THE PRODUCT NU-BAR*FISSION.	Fixup
THIS PROGRAM CANNOT DIRECTLY DEFINE RATIO OR PRODUCT OF A SUM OF	Fixup Fixup
SECTIONS TO THE SUM OF ANOTHER SET OF SECTIONS. HOWEVER, THIS CAN	Fixup
BE DONE INDIRECTLY BY FIRST DEFINING A DUMMY MT NUMBER (ANY MT NUMBER NOT NORMALLY USED IN ENDF) TO BE A SUM OF SECTIONS AND	Fixup Fixup
A SECOND DUMMY MT NUMBER TO BE A SECOND SUM OF SECTIONS. YOU CAN	Fixup
THEN DEFINE RATIO OR PRODUCT YOU REQUIRE TO BE THE RATIO OF THESE TWO DUMMY MT NUMBERS.	Fixup Fixup
	Fixup
FOR EXAMPLE, TO DEFINE ETA, 1) FIRST DEFINE (MT=27) = (MT=27) + (SUM OF MT=102 THROUGH 116)	Fixup Fixup
2) NEXT DEFINE (MT=333) = (MT=452) * (MT=18) 2) LACE DEFINE (MT=255) = (MT=222) (MT=27)	Fixup
3) LAST DEFINE (MT=255) = (MT=333)/(MT=27) DO NOT FORGET TO TURN ON THE CREATE SECTION OPTION (ON THE FIRST	Fixup Fixup
INPUT LINE) AND INPUT THE FIRST TWO LINES OF SECTION MT=255 - OTHERWISE YOU WILL NOT GET ANY ENDF FORMATTED OUTPUT.	Fixup
UIRERWISE 100 WILL NOT GET ANT ENDE FORMATTED OUTFOI.	Fixup Fixup
THE ONLY SPECIAL CONVENTIONS USED BY THIS PROGRAM IN CALCULATING RATIOS ARE WHEN THE DENOMINATOR OF THE RATIO IS ZERO. IN THIS	Fixup
CASE IF THE NUMERATOR IS ALSO ZERO THE RATIO IS DEFINED TO BE ONE.	Fixup Fixup
IN THIS CASE IF THE NUMERATOR IS NOT ZERO THE RATIO IS DEFINED TO BE ZERO.	Fixup
IO DE ZERO.	Fixup Fixup
ENDF FORMAT	Fixup Fixup
THIS PROGRAM MAY BE USED WITH DATA IN ANY VERSION OF THE ENDF	Fixup
FORMAT (I.E. ENDF-1, 2, 3, 4, 5 OR 6 FORMAT). SINCE A PAGING SYSTEM IS USED STORE CROSS SECTION TABLES ON SCRATCH FILES	Fixup Fixup
THERE IS NO LIMIT TO THE SIZE OF TABLES (E.G. THE TOTAL CROSS	Fixup
SECTION MAY BE REPRESENTED BY 200,000 TABULATED POINTS).	Fixup Fixup
WARNING	Fixup
====== (1) FOR EACH SECTION OF CROSS SECTIONS (I.E. EACH MT, MF=3) IN	Fixup Fixup
THE ORIGINAL EVALUATION (I.E. ENDF/B DATA READ) ONE SECTION	Fixup
OF DATA WILL BE OUTPUT, UNLESS THE SECTION HAS BEEN DELETED. THIS INCLUDES ANY SECTIONS WHICH ARE NOT PRESENT IN THE	Fixup Fixup
ORIGINAL EVALUATION, BUT THE USER INDICATES (BY INPUT) SHOULD	Fixup
BE CREATED.	Fixup Fixup
THE PROGRAM WILL NOT OUTPUT ANY SECTION RECONSTRUCTED BY	Fixup
SUMMATION UNLESS THE CORRESPONDING SECTION (MT NUMBER) IS PRESENT IN THE ORIGINAL EVALUATION OR USER INPUT INDICATES	Fixup Fixup
SHOULD BE CREATED AND OUTPUT. THIS IS (A) BECAUSE THE	Fixup
PROGRAM CANNOT DEFINE THE PARAMETERS TO APPEAR ON THE FIRST TWO LINES OF THE SECTION, (B) TO AVOID OUTPUTTING TOO MUCH	Fixup Fixup
DATA WHICH THE USER MAY NOT BE INTERESTED IN.	Fixup
(2) FOR ANY SECTIONS THAT DO NOT APPEAR IN THE ORIGINAL DATA THE	Fixup Fixup
USER MAY SPECIFY THAT THEY BE DEFINED BY SUMMATION. ANY SUCH	Fixup
SECTION MAY BE USED BE DEFINE SUBSEQUENT SUMS, BUT THE SECTION ITSELF WILL NOT BE OUTPUT (E.G. GENERALLY MT=27 AND 101 ARE	Fixup Fixup
NOT PRESENT IN EVALUATIONS. HOWEVER, THE BUILT-IN SUMMATION	Fixup Fixup
RULES OF THIS PROGRAM USES THE ENDF SUMMATION RULES TO DEFINE MT=27 AND 101, WHICH IN TURN ARE USED TO DEFINE THE	Fixup Fixup
Service in 2, may ror, which in rora into one to berine the	- Tunh

NON-ELASTIC CROSS SECTION, MT=3. SECTIONS MT=27 AND 101 ARE Fixup NOT OUTPUT). Fixup Fixup (3) ALL DATA IN FILE 3 AND 23 MUST BE LINEARLY INTERPOLABLE. IF Fixup THE DATA IS NOT LINEARLY INTERPOLABLE THIS PROGRAM WILL Fixup TERMINATE. Fixup Fixup Fixup PROGRAM OPERATION _____ Fixup ALL MAT NUMBER ON AN ENDF TAPE ARE PROCESSED. EACH MAT IS Fixup TREATED SEPARATELY. WITHIN EACH MAT, EACH SECTION BEFORE MF=3 Fixup IS READ, CHECKED/CORRECTED (BASED ON INPUT OPTIONS) AND OUTPUT. Fixup WHEN MF=3 IS LOCATED ALL CROSS SECTIONS ARE READ, SECTIONS TO BE Fixup DELETED ARE DELETED, SECTIONS WHICH ARE NOT PRESENTED AND USER Fixup INPUT INDICATES SHOULD BE CREATED ARE CREATE, SECTIONS TO BE KEPT Fixup ARE CHECKED/CORRECTED (BASED ON INPUT OPTIONS) AND WRITTEN TO A Fixup SCRATCH FILE. NEXT, IF THE USER SPECIFIES THAT THEY SHOULD, Fixup SECTIONS ARE RECONSTRUCTED. FINALLY ALL CROSS SECTIONS (OLD AND Fixup NEW) ARE OUTPUT. WITHIN THE SAME MAT, EACH SECTION AFTER MF=3 IS Fixup READ, CHECKED/CORRECTED (BASED ON INPUT OPTIONS) AND OUTPUT. Fixup Fixup Fixup MF=3 ____ Fixup THE TREATMENT OF THE CROSS SECTIONS REQUIRES UP TO 4 PASSES FOR Fixup CROSS SECTIONS. IN THE PROGRAM THEY CORRESPOND TO SUBROUTINES Fixup PASS1, PASS2, PASS3 AND PASS4. THE ORIGINAL AND FINAL ENDF DATA Fixup FILES, 5 SCRATCH FILES AND 3 IN CORE ARRAYS ARE USED. OPERATIONS Fixup PERFORMED DURING EACH PASS ARE, Fixup Fixup PASS1 Fixup ____ Fixup READ ALL CROSS SECTIONS FROM ITAPE. DELETED ANY SECTIONS. CREATE Fixup ANY SECTIONS. CHECK/CORRECT THEM AND WRITE THEM TO SCRATCH FILE. Fixup DATA IS READ INTO ARRAY A, TRANSFERRED TO ARRAY C (AFTER EDITING) Fixup AND OUTPUT TO ISCRC FROM ARRAY C. Fixup Fixup ITAPE - UNIT ORIGINAL ENDF DATA IS READ FROM. ISCRC - SCRATCH UNIT THAT EDITED DATA IS WRITTEN ON. Fixup TABA - ARRAY INTO WHICH ORIGINAL DATA IS READ. Fixup - ARRAY INTO WHICH EDITED DATA IS TRANSFERRED TO AND TABC Fixup FROM WHICH IT IS WRITTEN TO ISCRC. Fixup Fixup PASS2 Fixup Fixup ____ IF A UNIFORM ENERGY GRID IS REQUESTED IT IS CREATED DURING THIS Fixup PASS. FIRST ALL OF THE CROSS SECTIONS FROM PASS1 ARE READ AND A Fixup UNIFORM ENERGY GRID IS CREATED = ALL ENERGIES THAT ARE INCLUDED Fixup IN AT LEAST ONE SECTION (MT) OF CROSS SECTIONS. Fixup ISCRA - SCRATCH UNIT CONTAINING UNIFORM ENERGY GRID. Fixup ISCRB - SCRATCH UNIT CONTAINING UNIFORM ENERGY GRID. Fixup ISCRC - SCRATCH UNIT THAT EDITED DATA IS READ FROM. Fixup Fixup TABA - ARRAY CONTAINING UNIFORM ENERGY GRID. - ARRAY CONTAINING UNIFORM ENERGY GRID. TABB Fixup - ARRAY CONTAINING EDITED DATA. Fixup TABC Fixup THE UNIFORM ENERGY GRID ENDS UP ON ISCRB. NEXT EACH SECTION OF Fixup CROSS SECTIONS FROM PASS1 IS READ FROM ISCRC, INTERPOLATED TO Fixup THE UNIFORM ENERGY GRID AND OUTPUT TO ISCRA. FINALLY ISCRA AND Fixup ISCRC ARE SWITCH, SO THAT AT THE END OF THIS PASS THE DATA WILL Fixup AGAIN BE ON ISCRC (EXACTLY AS AT THE END OF PASS1), WITH UPDATED Fixup POINT COUNTS. Fixup ISCRA - SCRATCH UNIT THAT UNIFORM ENERGY GRID DATA IS WRITTEN ON. Fixup ISCRB - SCRATCH UNIT CONTAINING UNIFORM ENERGY GRID. Fixup ISCRC - SCRATCH UNIT THAT EDITED DATA IS READ FROM. Fixup TABA - ARRAY CONTAINING UNIFORM ENERGY GRID DATA. Fixup TABB - ARRAY CONTAINING UNIFORM ENERGY GRID. Fixup TABC - ARRAY CONTAINING EDITED DATA. Fixup Fixup Fixup PASS3 ____ Fixup SUMMATION CROSS SECTIONS ARE DEFINED BY READING DATA FROM ISCRC Fixup AND MERGING THEM ONTO ISCRA. THE FIRST SECTION THAT CONTRIBUTES Fixup

TO A SUM IS MERELY COPIED FROM C TO A. IF MORE SECTIONS WILL Fixup Fixup CONTRIBUTE TO THE SUM THE DATA IN A IS TRANSFERRED TO B, A SECTION OF DATA FROM C IS ADDED TO THE DATA IN B AND STORED IN Fixup A. THE CYLE OF ADDED C AND B TO A, FOLLOWED BY MOVING A TO B Fixup IS CONTINUED UNTIL ALL CONTRIBUTING SECTIONS HAVE BEEN ADDED. Fixup THE SUM IS THEN COPIED FROM A TO D. IF NEWLY CONSTRUCTED SECTION Fixup IS REQUIRED FOR ANY LATER SUMMUATIONS IT IS ALSO COPIED TO E. Fixup THE CYCLE OF ADDED SECTIONS FROM C AND B TO A IS REPEATED FOR Fixup EACH REQUIRED SUMMATION REACTION. IN ADDITION TO SECTIONS FROM Fixup C, AFTER THE FIRST SUMMATION SECTIONS MAY ALSO BE ADDED TO A Fixup FROM E (THE CONTRIBUTION OF NEW RECONSTRUCTED CROSS SECTIONS). Fixup WHEN ALL REQUIRED SECTIONS HAVE BEEN RECONSTRUCTED THE NEW Fixup SECTIONS WILL BE ON E AND THE ORIGINAL SECTIONS ON C. Fixup ISCRC - SCRATCH FILE FROM WHICH ORIGINAL DATA IS READ. Fixup ISCRA - SCRATCH FILE ONTO WHICH SUM FOR ONE SECTION IS WRITTEN. Fixup ISCRD - SCRATCH FILE ONTO WHICH ALL SUM CROSS SECTIONS ARE Fixup WRITTEN. Fixup ISCRE - SCRATCH FILE ONTO WHICH ALL SUM CROSS SECTIONS WHICH Fixup ARE REQUIRED FOR LATER SUMS ARE WRITTEN. Fixup ISCRB - UTILITY SCRATCH FILE USED TO CREATE SUM CROSS SECTIONS. Fixup TABA - ARRAY INTO WHICH SUMS ARE WRITTEN. Fixup - ARRAY INTO WHICH PARTIAL SUMS ARE WRITTEN. TABB Fixup TABC - ARRAY INTO WHICH ORIGINAL DATA IS READ. Fixup Fixup PASS4 Fixup ____ Fixup CROSS SECTIONS ARE READ FROM ISCRC (ORIGINAL) AND ISCRD (NEW) Fixup AND ARE WRITTEN IN THE ENDF FORMAT ON OTAPE. THE BEGINNING OF Fixup EACH SECTION OF ORIGINAL DATA IS READ FROM ISCRC (TO DEFINE Fixup SECTION HEADER INFORMATION). IF THIS MT HAS NOT BEEN RECOSTRUCTED Fixup ON ISCRD THE ORIGINAL SECTION IS OUTPUT. IF THE SECTION HAS BEEN Fixup RECONSTRUCTED THE ORIGINAL SECTION IS SKIPPED AND THE NEW SECTION Fixup IS OUTPUT. Fixup OTAPE - OUTPUT DATA IN THE ENDF FORMAT. Fixup ISCRC - SCRATCH FILE FROM WHICH ORIGINAL DATA IS READ. Fixup ISCRD - SCRATCH FILE FROM WHICH NEW DATA IS READ. Fixup TABC - ARRAY INTO WHICH CROSS SECTIONS ARE READ FROM SCRATCH Fixup AND WRITTEN TO OTAPE Fixup Fixup I/O FILE DEFINITIONS Fixup _____ Fixup UNIT DESCRIPTION Fixup ==== _____ Fixup 2 INPUT PARAMETERS. Fixup 3 OUTPUT REPORT. Fixup ORIGINAL DATA IN THE ENDF FORMAT. 10 Fixup FINAL DATA IN THE ENDF FORMAT. 11 Fixup SCRATCH FILE 12 Fixup 14 SCRATCH FILE Fixup 15 SCRATCH FILE Fixup 16 SCRATCH FILE Fixup 17 SCRATCH FILE Fixup Fixup OPTIONAL STANDARD FILE NAMES (SEE SUBROUTINE FILIO1 AND FILIO2) Fixup _____ Fixup UNIT FILE NAME FORMAT Fixup ==== _____ _____ Fixup 2 FIXUP.INP BCD Fixup 3 FIXUP.LST BCD Fixup 10 ENDFB.IN BCD Fixup 11 ENDFB.OUT BCD Fixup 12-17 (SCRATCH) BINARY Fixup Fixup INPUT LINES Fixup _____ Fixup LINE COLUMNS FORMAT DESCRIPTION Fixup ____ ____ Fixup 1 1-14 1411 INPUT OPTIONS AS DESCRIBED ABOVE. Fixup EACH COLUMN OF THE INPUT LINE CONTROLS Fixup ONE OF THE TESTS/CORRECTIONS DESCRIBED Fixup ABOVE. TESTS/CORRECTION 1-14 (NOT ALL Fixup

			INDIEMENMED VEM) CODDECDOND MO COLUMNIC	F .
				Fixup
				Fixup
			= 0 - DO NOT PERFORM TEST/CORRECTION.= 1 - PERFORM TEST/CORRECTION.	Fixup
			FOR MT EXCLUSION FROM THRESHOLD TESTS	Fixup
			FOR MT EXCLUSION FROM THRESHOLD TESTS (COLUMN 2), DELETION (COLUMN 4), OR	Fixup Fixup
			SUMMATION (COLUMN 5) THE INPUT OPTION	
				Fixup
			= 1 - READ RULES FROM INPUT	Fixup
			= 2 - USE BUILT-IN RULES	Fixup
2	1-72	A72		Fixup
2	1 70			Fixup
3	1-72	A72		Fixup Fixup
4-M	1-5	FREE		-
		FORM		Fixup
			- R = RATIO - * = PRODUCT	Fixup
	6-72	TRAT	UP TO 10 LOWER AND UPPER MT RANGES WHICH	Fixup
	0 72	FORM		Fixup
			CROSS SECTION OR TO DEFINE MT RANGES WHICH	-
			ARE EXCLUDED FROM THRESHOLD TESTS.	Fixup
				Fixup
			EACH MT NUMBER IS DEFINED BY A CONTINUOUS	· 1
			STRING OF DIGITS, POSSIBILITY PRECEEDED BY	-
			A - (MINUS SIGN). EACH MT NUMBER MUST BE BLANK OR OTHERWISE (NOT A DIGIT) DELIMITED.	-
			BLANK OK OINERWISE (NOI A DIGII) DELIMITED.	Fixup
			COLUMNS 6-72 MAY CONTAIN STRINGS OF DIGITS	
			THE FIRST DIGIT STRING OF EACH PAIR MAY BE	
			PRECEEDED BY A - (MINUS SIGN).	Fixup
				Fixup
			EACH LINE WILL BE INTERPRETED AS FOLLOWS,	-
			*SUMMATION (OR DIFFERENCES)	Fixup Fixup
				Fixup
			COLUMNS $1-5 = S$ or blank followed by the	-
			MT NUMBER TO BE DEFINED BY SUMMATION	Fixup
				Fixup
			COLUMNS $6-72 = UP$ TO 10 MT RANGE (PAIRS OF	-
			MT NUMBERS) TO BE USED TO DEFINED THE SUM.	
			IF THE FIRST MT NUMBER OF A PAIR IS NEGATIVE THE RANGE OF MT NUMBERS IS	Fixup Fixup
			SUBTRACTED - AT LEAST ONE RANGE MUST BE	
			SPECIFIED.	Fixup
				Fixup
			*DELETIONS	Fixup
				Fixup
			COLUMNS 1-5 = D FOLLOWED BY BLANKS	Fixup
			COLUMNS 6-72 CONTAIN UP TO 10 MT RANGE	Fixup Fixup
			(PAIRS OF MT NUMBERS), EACH RANGE DEFINING	-
			A RANGE OF MT NUMBERS TO BE DELETED - AT	
			LEAST ONE RANGE MUST BE SPECIFIED.	Fixup
				Fixup
			*EXCLUSION FROM THRESHOLD TESTS	Fixup
				Fixup
			COLUMNS 1=5 = T FOLLOWED BY BLANKS	Fixup
			COLUMNS 6-72 CONTAIN UP TO 10 MT RANGE	Fixup Fixup
			(PAIRS OF MT NUMBERS), EACH RANGE DEFINING	
			A RANGE OF MT NUMBERS WHOSE THRESHOLD	Fixup
			ENERGY WILL NOT BE CHECKED - AT LEAST ONE	Fixup
			RANGE MUST BE SPECIFIED.	Fixup
			422 FT 0	Fixup
			*RATIO	Fixup

				Fixup
			COLUMNS 1-5 = R FOLLOWED BY THE MT NUMBER TO BE DEFINED BY A RATIO	Fixup Fixup
			IO DE DEFINED DI A NAIIO	Fixup
			COLUMNS 6-72 CONTAINS 2 MT NUMBERS TO BE	Fixup
			USED TO DEFINE THE RATIO.	Fixup
			* PRODUCT	Fixup Fixup
				Fixup
			COLUMNS $1-5 = *$ FOLLOWED BY THE MT NUMBER	Fixup
			TO BE DEFINED BY A PRODUCT	Fixup Fixup
			COLUMNS 6-72 CONTAINS 2 MT NUMBERS TO BE	Fixup
			USED TO DEFINE THE PRODUCT.	Fixup
				Fixup
			CONVENTIONS	Fixup Fixup
			*UP TO 20 DELETIONS AND 20 SUMMATIONS OR	Fixup
			RATIOS OR PRODUCTS MAY BE SPECIFIED.	Fixup
			*ONLY 1 EXCLUSION FROM THRESHOLD TESTS MAY BE SPECIFIED (THE 1 LINE MAY CONTAIN	Fixup Fixup
			UP TO 10 MT RANGES TO EXCLUDE FROM TESTS).	-
			*INPUT IS TERMINATED BY INPUTTNG 0 OR	Fixup
			BLANK IN COLUMNS 1-72 (I.E. THE LAST	Fixup
			INPUT LINE MUST BE BLANK). *THE UPPER LIMIT OF EACH RANGE MUST BE AT	Fixup Fixup
			LEAST AS BIG AS THE LOWER LIMIT (IN	Fixup
			ABSOLUTE VALUE).	Fixup
			*FOR RECONSTRUCTION POSITIVE MT RANGES WILL BE ADDED TO THE SUM AND NEGATIVE MT RANGES	-
			WILL BE SUBTRACTED.	Fixup
			*IF INPUT OPTION 2 (FIRST INPUT LINE) IS	Fixup
			0 THRESHOLD EXCLUSION IS NOT ALLOWED. *IF INPUT OPTION 4 (FIRST INPUT LINE) IS	Fixup Fixup
			0 DELETIONS ARE NOT ALLOWED.	Fixup Fixup
				Fixup
				Fixup
N-K			IF THE USER SPECIFIES THAT SECTIONS WHICH ARE NOT PRESENT IN THE ORIGINAL EVALUATION	
			MAY BE CREATED, TWO LINES MUST BE INPUT FOR	-
			EACH SECTION TO BE CREATED. THE TWO LINES	1
			DEFINE (C1, C2, L1 AND L2) FOR EACH OF THE FIRST TWO LINES OF THE SECTION TO BE	Fixup Fixup
			CREATED. THE FIRST LINE ALSO DEFINES (MAT	1
				Fixup
			FIRST LINE AND WILL BE CALCULATED BY THE PROGRAM FOR THE SECOND LINE.	Fixup Fixup
FIRST	1-11	E11.4	ZA OF SECTION TO BE CREATED	Fixup Fixup
LINE	12-22	E11.4		Fixup
	23-33	I11	L1 OF SECTION TO BE CREATED	Fixup
	34-44 45-48	I11 I4	L2 OF SECTION TO BE CREATED MAT OF SECTION TO BE CREATED	Fixup Fixup
	49-51	I3	MT OF SECTION TO BE CREATED	Fixup
SECOND	1-11	E11.4	C1 OF SECTION TO BE CREATED	Fixup
LINE	12-22 23-33	E11.4 I11	C2 OF SECTION TO BE CREATED L1 OF SECTION TO BE CREATED	Fixup Fixup
	23-33 34-44	I11 I11	L2 OF SECTION TO BE CREATED	Fixup Fixup
			*PAIRS OF LINES MAY BE IN ANY MAT/MT ORDER	Fixup
			(E.G., THEY NEED NOT BE IN ASCENDING	Fixup
			MAT/MT ORDER). *UP TO 50 PAIRS OF LINES MAY BE USED TO	Fixup Fixup
			DEFINE SECTIONS TO BE CREATED. THE LIST	Fixup
			IS TERMINATED WHEN THE FIRST LINE OF A	Fixup
			PAIR CONTAINS A ZERO (OR BLANK) MAT AND/OR MT.	Fixup Fixup
M-N			IF THE USER SPECIFIES THAT ENERGIES WHICH	Fixup
			ARE NOT PRESENT IN THE ORIGINAL EVALUATION	-
			MAY BE INSERTED, ONE LINE MUST BE INPUT FOR EACH ENERGY TO BE INSERTED.	Fixup Fixup
	1-11	E11.4	EACH ENERGY TO BE INSERTED. ENERGY TO BE INSERTED	Fixup Fixup
	12-15	I4	MAT IN WHICH TO INSERT ENERGY = 0 = ALL	Fixup

	16-18 I3 M	MT IN WHICH TO INSERT ENERGY = 0 = ALL	Fixup
	*[JP TO 50 (ENERGY, MAT, MT) LINES MAY BE	Fixup
	t	JSED. THE LIST IS TERMINATED BY A BLANK	Fixup
		LINE.	Fixup
		INPUT MAY BE IN ANY (ENERGY, MAT, MT)	Fixup
		DRDER.	Fixup
		ENERGY POINTS CAN ONLY BE INSERTED WITHIN	Fixup
		THE ORIGINAL ENERGY RANGE OF A SECTION -	Fixup
		THIS OPTION CANNOT BE USED TO EXTEND THE	Fixup
		CROSS SECTION EITHER BELOW OR ABOVE THE	Fixup
	Ĺ	DRIGINAL TABULATED ENERGY RANGE.	Fixup
	EXAMPLE INPUT NO. 1		Fixup Fixup
	======================================		Fixup
		L OPTIONS, EXCEPT INSERT ENERGY POINTS)	Fixup
	(2) DELETE MT=900 (FOR E		Fixup
		G MT NUMBERS TO BE RECONSTRUCTED,	Fixup
		DF MT= 51 THROUGH 91	Fixup
		OF MT=700 THROUGH 718 (NOT 719)	Fixup
		OF MT=720 THROUGH 738 (NOT 739)	Fixup
		DF MT=740 THROUGH 758 (NOT 759)	Fixup
		OF MT=760 THROUGH 778 (NOT 779)	Fixup
	(MT=107) = THE SUM C	DF MT=780 THROUGH 798 (NOT 799)	Fixup
NEW	(MT= 16) = THE SUM C	DF MT=875 THROUGH 891	Fixup
	(MT=101) = THE SUM (DF MT=102 THROUGH 114	Fixup
	(MT= 18) = (MT=19) +	- (MT=20 AND 21) + (MT=38)	Fixup
	(IF TOTAI	FISSION, MT=18, IS NOT PRESENT, DEFINE	Fixup
	IT BY SUM	MING FIRST, SECOND, ETC. CHANCE - NOTE	Fixup
	THAT THIS	MUST BE DONE IN THIS ORDER, SINCE THE	Fixup
	NEXT SUM	INVOLVES USING MT=18.	Fixup
	(MT= 27) = THE SUM (DF MT= 18 AND 101	Fixup
	(MT=101 F	RECONSTRUCTED ABOVE USED IN SUM).	Fixup
	(MT = 3) = THE SUM C	DF (MT=4) + (MT=6-9) + (MT=16-17) + (MT=22-37) +	Fixup
	(MT=41-45	5)	Fixup
	(MT=4 ANI	27 RECONSTRUCTED ABOVE USED IN SUM).	Fixup
	(MT= 19) = (MT=18) -	- (MT=20 AND 21) - (MT=38)	Fixup
	(DEFINE B	FIRST CHANGE FISSION BY SUBTRACTION TO	Fixup
	ALLOW RES	SONANCE CONTRIBUTION FROM MT=18 TO BE	Fixup
	INCLUDED	IN MT=19).	Fixup
	(MT = 1) = THE SUM C	DF MT=2 AND 3	Fixup
	(MT=3 REC	CONSTRUCTED ABOVE USED IN SUM).	Fixup
	(4) THRESHOLD ENERGIES OF	THE FOLLOWING MT NUMBERS WILL NOT BE	Fixup
	TESTED OR CORRECTED.		Fixup
	MT=1, 4, 18, 19, 91,	103 THROUGH 114.	Fixup
		THE CAPTURE TO FISSION RATIO (MT=102/18)	Fixup
	(6) CREATE MAT=1300/MT=25	54 - NOTE, THIS IS NECESSARY IN ORDER TO	Fixup
	HAVE THE CAPTURE TO E	FISSION RATIO OUTPUT IN THE ENDF FORMAT	Fixup
			Fixup
	NOTE, ON THE FOLLOWING I	INPUT LINES THE CHARACTERS = () + , HAVE	Fixup
		THE INPUT MORE READABLE - THESE CHARACTERS	Fixup
		PROGRAM IN READING INPUT - THE RESULTS	Fixup
		ESE CHARACTERS WERE OMITTED, AS LONG AS	Fixup
		RE DELIMITED, I.E., THERE IS AT LEAST ONE	Fixup
		STWEEN MT NUMBERS. NOTE, THAT - (MINUS	Fixup
		IS USED DURING INPUT TO DEFINE MT RANGES	Fixup
	WHICH SHOULD BE SUBTRACT	TED, E.,G., SEE THE DEFINITION OF MT=19.	Fixup
			Fixup
	READ FILE /ENDFB6/K300/I	LEAD.IN AND WRITE /ENDFB6/K300/LEAD.OUT	Fixup
			Fixup
	THE FOLLOWING 21 INPUT I	JINES ARE REQUIRED.	Fixup
			Fixup
	1111111111		Fixup
	/ENDFB6/K300/LEAD.IN		Fixup
	/ENDFB6/K300/LEAD.OUT		Fixup
	D900		Fixup
	4 = (51, 91)		Fixup
	103=(700,718)		Fixup
	104=(720,738)		Fixup
			E i mun
	105=(740,758)		Fixup
	105=(740,758) 106=(760,778) 107=(780,798)		Fixup Fixup Fixup

16 = (875, 891)Fixup 101 = (102, 114)Fixup 18 = (19, 19) + (20, 21) + (38, 38)Fixup 27=(18, 18)+(101,101) Fixup 3=(4, 4)+(6, 9)+(16, 17)+(22, 37)+(41, 45)Fixup 19=(18, 18)-(20, 21)-(38, 38) Fixup 1=(2, 3) Fixup (1, 1) + (4, 4) + (18, 18) + (91, 91) + (103, 114)Fixup т R254 = (102 / 18)Fixup (BLANK LINE TO TERMINATE SUMMATION/DELETION RULES) Fixup 2.00400+ 3 0.00000+ 0 0 01300254 Fixup 0.00000+ 0 0.00000+ 0 Ο \cap Fixup (BLANK LINE TO TERMINATE SECTION CREATION RULES) Fixup Fixup NOTE, THE DELETION AND THRESHOLD EXCLUSION LINES MAY APPEAR IN Fixup IN ANY ORDER. HOWEVER, SUMMATION AND RATIO RULES MUST APPEAR IN Fixup THE ORDER IN WHICH YOU WANT THEM TO BE EXECUTED - E.G., THE Fixup ABOVE INPUT WILL FIRST RECONSTRUCT MT=4, WHICH CAN THEN BE USED Fixup TO CONTRIBUTE TO THE FOLLOWING SUM TO DEFINE MT=3, WHICH IN TURN Fixup CAN THEN BE USED TO CONTRIBUTE TO THE FOLLOWING SUM TO DEFINE Fixup MT=1. IF THE ORDER OF THE INPUT LINES IS CHANGED SUCH THAT MT=3 Fixup IS RECONSTRUCTED BEFORE MT=4, THE ORIGINAL MT=4 WILL BE USED IN Fixup THE SUMMATION TO DEFINE MT=3. THE SAME RULES APPLY TO CALCULATING Fixup RATIOS, IF EITHER THE NUMERATOR OR DENOMINATOR IS TO BE DEFINED Fixup BY SUMMATION, THIS SHOULD BE DONE BEFORE DEFINING THE RATIO BY Fixup INPUT PARAMETERS. Fixup Fixup EXAMPLE INPUT NO. 2 Fixup _____ Fixup (1) USE OPTIONS 1-11 (ALL OPTIONS, EXCEPT INSERT ENERGY POINTS) Fixup (2) USE BUILT-IN TABLES FOR SUMMATION/DELETION/THRESHOLD EXCLUSION Fixup (THIS ONLY REQUIRES COLUMNS 2, 4 AND 5 TO BE SET =2 ON THE Fixup FIRST INPUT LINE. THE BUILT-IN RULES EXACTLY CORRESPOND TO Fixup THE INPUT ABOVE UNDER EXAMPLE NO. 1, EXCEPT THAT NO MT NUMBERS Fixup WILL BE DELETED. Fixup (3) IF NOT PRESENT, CREATE MAT=1300/MT=1 Fixup Fixup USE THE STANDARD FILE NAMES ENDFB.IN AND ENDFB.OUT (THIS CAN BE Fixup DONE BY LEAVING THE SECOND AND THIRD INPUT LINES BLANK). Fixup Fixup THE FOLLOWING 6 INPUT LINES ARE REQUIRED. Fixup Fixup 12122111111 Fixup Fixup Fixup 2.00400 + 3 0.00000 + 02.00400+ 3 0.00000+ 0 0 0.00000+ 0 0.00000+ 0 0 01300 1 Fixup 0 Fixup (BLANK LINE TO TERMINATE SECTION CREATION RULES) Fixup Fixup EXAMPLE INPUT NO. 3 Fixup _____ Fixup (1) USE OPTIONS 1-10 (ALL OPTIONS PRESENTLY IMPLEMENTED, EXCEPT Fixup DO NOT ALLOW SECTION CREATION AND INSERT ENERGY POINTS). Fixup (2) USE BUILT-IN TABLES FOR SUMMATION/DELETION/THRESHOLD EXCLUSION Fixup (THIS ONLY REQUIRES COLUMNS 2, 4 AND 5 TO BE SET =2 ON THE Fixup FIRST INPUT LINE. THE BUILT-IN RULES EXACTLY CORRESPOND TO Fixup THE INPUT ABOVE UNDER EXAMPLE NO. 1, EXCEPT THAT NO MT NUMBERS Fixup WILL BE DELETED. Fixup (3) DO NOT CREATE ANY SECTIONS. Fixup Fixup READ FILE /ENDFB6/K300/LEAD.IN AND WRITE /ENDFB6/K300/LEAD.OUT Fixup Fixup THE FOLLOWING 3 INPUT LINES ARE REQUIRED. Fixup Fixup 1212211111 Fixup /ENDFB6/K300/LEAD.IN Fixup /ENDFB6/K300/LEAD.OUT Fixup Fixup EXAMPLE INPUT NO. 4 Fixup _____ Fixup SAME AS EXAMPLE NO. 3, ABOVE, EXCEPT INSERT AN ENERGY POINT AT Fixup

THERMAL FOR ALL REACTIONS WHICH SPAN THE THERMAL ENERGY RANG	E. Fixup Fixup
USE THE STANDARD FILE NAMES ENDFB.IN AND ENDFB.OUT (THIS CAN DONE BY LEAVING THE SECOND AND THIRD INPUT LINES BLANK).	-
THE FOLLOWING 5 INPUT LINES ARE REQUIRED.	Fixup
121221111101	Fixup Fixup
	Fixup
2.53000-2 0 0	Fixup
2.53000-2 0 0 (BLANK LINE TO TERMINATE ENERGY INSERTS)	Fixup Fixup
	Fixup
WARNING	Fixup
======	Fixup
ALTHOUGH THIS PROGRAM IS DESIGNED TO ALLOW REACTIONS TO BE D	-
BY ADDING OR SUBTRACTING REACTIONS THE USER SHOULD ALWAYS TR DEFINE REACTIONS BY SUMMING TO AVOID NEGATIVE CROSS SECTIONS	
EXAMPLE, IT IS POSSIBLE TO CALCULATE MT=3 AND DEFINE MT=1 AS	
SUM OF MT=2 AND 3 (THE RECOMMENDED APPROACH AS USED IN THE A	-
INPUT). ALTERATIVELY IT IS POSSIBLE TO CALCULATE MT=1 AND DE	-
MT=3 AS MT=1 MINUS MT=2 (THIS APPROACH IS NOT RECOMMENDED).	Fixup
	Fixup
THE ONLY BUILT-IN SUMMATION RULE THAT USES SUBTRACTION IS TH	- 1
CALCULATION OF THE FIRST CHANGE FISSION (MT=19) AS THE TOTAL	-
FISSION (MT=18) MINUS THE SECOND, THIRD AND FOURTH CHANGE FI (MT=20, 21, 38). THIS HAS BEEN DONE TO ALLOW THE RESONANCE	-
(MT=20, 21, 38). THIS HAS BEEN DONE TO ALLOW THE RESONANCE CONTRIBUTION, CALCULATED BY MANY CODES AND INCLUDED IN MT=18	Fixup , Fixup
TO BE CONSISTENTLY INCLUDED IN THE FIRST CHANCE FISSION.	, Fixup Fixup
	Fixup
	===== Fixup