======================================================================= Activate

 Activate

 PROGRAM ACTIVATE Activate

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 VERS. 2000-1 (APRIL 2000) \*INITIAL VERSION. Activate

 VERS. 2002-1 (MAY 2002) \*OPTIONAL INPUT PARAMETERS Activate

 VERS. 2004-1 (JAN. 2004) \*CORRECTED ERROR - FIRST RECORD AFTER Activate

 MF=10 WAS MISSING. Activate

 \*ADDED INCLUDE TO DEFINE COMMON Activate

 \*INCREASED MAX. POINTS FROM 100,000 Activate

 TO 1,000,000. Activate

 VERS. 2007-1 (JAN. 2007) \*CHECKED AGAINST ALL ENDF/B-VII Activate

 VERS. 2007-2 (DEC. 2007) \*72 CHARACTER FILE NAMES. Activate

 VERS. 2010-1 (Apr. 2010) \*General update based on user feedback Activate

 VERS. 2012-1 (Aug. 2012) \*Added CODENAME Activate

 \*Added ERROR stop Activate

 \*32 and 64 bit Compatible Activate

 VERS. 2015-1 (Jan. 2015) \*Corrected ERROR for missing or extra Activate

 SEND and MEND lines. Activate

 \*Changed MF=8 pointer from MF=9 to 10. Activate

 \*INCREASED MAX. POINTS to 3,000,000. Activate

 \*Added Consistency checks, e.g., Activate

 Any MT in MF=9 requires data in MF=3. Activate

 \*Extended OUT9 - OUT10 is not used. Activate

 \*Only processes ONE ENDF Tape - this Activate

 restriction is necessary to insure Activate

 compatibility with ALL PREPRO codes. Activate

 \*Changed to current ENDF sequence Activate

 number convention, e.g., reset number Activate

 for each section (MAT/MF/MT). Activate

 \*Replaced ALL 3 way IF statements. Activate

 Activate

 Acknowledgement 2015 Activate

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 Currently almost all improvements to this code are based upon Activate

 feedback from code users who report problems. This feedback Activate

 benefits ALL users of this code, and ALL users are encouraged Activate

 to report problems. Activate

 Activate

 Improvements on the 2015 version of this code based on user Activate

 feedback, including IMPORTANT feedback from Andrej Trkov, up Activate

 to and including Feb. 2015. Activate

 Activate

 OWNED, MAINTAINED AND DISTRIBUTED BY Activate

 ------------------------------------ Activate

 THE NUCLEAR DATA SECTION Activate

 INTERNATIONAL ATOMIC ENERGY AGENCY Activate

 P.O. BOX 100 Activate

 A-1400, VIENNA, AUSTRIA Activate

 EUROPE Activate

 Activate

 ORIGINALLY WRITTEN BY Activate

 ------------------------------------ Activate

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 AUTHORS MESSAGE Activate

 --------------- Activate

 THE REPORT DESCRIBED ABOVE IS THE LATEST PUBLISHED DOCUMENTATION Activate

 FOR THIS PROGRAM. HOWEVER, THE COMMENTS BELOW SHOULD BE CONSIDERED Activate

 THE LATEST DOCUMENTATION INCLUDING ALL RECENT IMPROVEMENTS. PLEASE Activate

 READ ALL OF THESE COMMENTS BEFORE IMPLEMENTATION. Activate

 Activate

 AT THE PRESENT TIME WE ARE ATTEMPTING TO DEVELOP A SET OF COMPUTER Activate

 INDEPENDENT PROGRAMS THAT CAN EASILY BE IMPLEMENTED ON ANY ONE Activate

 OF A WIDE VARIETY OF COMPUTERS. IN ORDER TO ASSIST IN THIS PROJECT Activate

 IT WOULD BE APPECIATED IF YOU WOULD NOTIFY THE AUTHOR OF ANY Activate

 COMPILER DIAGNOSTICS, OPERATING PROBLEMS OR SUGGESTIONS ON HOW TO Activate

 IMPROVE THIS PROGRAM. HOPEFULLY, IN THIS WAY FUTURE VERSIONS OF Activate

 THIS PROGRAM WILL BE COMPLETELY COMPATIBLE FOR USE ON YOUR Activate

 COMPUTER. Activate

 Activate

 PURPOSE Activate

 ------- Activate

 THIS PROGRAM IS DESIGNED TO CREATE FILE 10 ACTIVATION CROSS Activate

 SECTIONS BY COMBINING FILE 3 CROSS SECTIONS AND FILE 9 MULTIPLIERS Activate

 Activate

 IN THE FOLLOWING DISCUSSION FOR SIMPLICITY THE ENDF TERMINOLOGY Activate

 ---ENDF TAPE---WILL BE USED. IN FACT THE ACTUAL MEDIUM MAY BE Activate

 TAPE, CARDS, DISK OR ANY OTHER MEDIUM. Activate

 Activate

 ASSUMPTIONS Activate

 ----------- Activate

 IT IS ASSUMED THAT THE FILE 3 AND 9 DATA HAVE BEEN LINEARIZED Activate

 BEFORE THIS CODE IS USED - FILE 3 AND 9 DATA CAN BE LINEARIZED Activate

 USING PROGRAM LINEAR. Activate

 Activate

 IT IS ASSUMED THAT THE FILE 9 MULTIPLIERS ARE FAIRLY SMOOTH VERSUS Activate

 ENERGY, AND THAT THE ACTIVATION CROSS SECTIONS FOR FILE 10 CAN BE Activate

 DEFINED AT EXACTLY THE SAME ENERGIES AS THE FILE 3 CROSS SECTIONS, Activate

 AND THAT THESE NEED MERELY BE MULTIPLIED BY THE FILE 9 TO DEFINE Activate

 THE FILE 10 ACTIVATION CROSS SECTIONS. Activate

 Activate

 ENDF FORMAT Activate

 ----------- Activate

 THIS PROGRAM ONLY USES THE ENDF BCD OR CARD IMAGE FORMAT (AS Activate

 OPPOSED TO THE BINARY FORMAT) AND CAN HANDLE DATA IN ANY VERSION Activate

 OF THE ENDF FORMAT (I.E., ENDF-1, 2, 3, 4, 5 OR 6 FORMAT). Activate

 Activate

 IT IS ASSUMED THAT THE DATA IS CORRECTLY CODED IN THE ENDF Activate

 FORMAT AND NO ERROR CHECKING IS PERFORMED. IN PARTICULAR IT IS Activate

 ASSUMED THAT THE MAT, MF AND MT ON EACH LINE IS CORRECT. SEQUENCE Activate

 NUMBERS (COLUMNS 76-80) ARE IGNORED ON INPUT, BUT WILL BE Activate

 CORRECTLY OUTPUT ON ALL LINES. THE FORMAT OF SECTION MF=1, MT=451 Activate

 AND ALL SECTIONS OF MF=3 MUST BE CORRECT. THE PROGRAM COPIES ALL Activate

 OTHER SECTION OF DATA AS HOLLERITH AND AS SUCH IS INSENSITIVE TO Activate

 THE CORRECTNESS OR INCORRECTNESS OF ALL OTHER SECTIONS. Activate

 Activate

 OUTPUT FORMAT Activate

 ------------- Activate

 ALL ENERGIES WILL BE OUTPUT IN F (INSTEAD OF E) FORMAT IN ORDER Activate

 TO ALLOW ENERGIES TO BE WRITTEN WITH UP TO 9 DIGITS OF ACCURACY. Activate

 COMPARISON OF THE NORMAL ENDF CONVENTION OF 6 DIGITS TO THE 9 Activate

 DIGIT OUTPUT FROM THIS PROGRAM DEMONSTRATED THAT FAILURE TO USE Activate

 THE 9 DIGIT OUTPUT CAN LEAD TO LARGE ERRORS IN THE DATA DUE TO Activate

 TRUNCATION OF ENERGIES TO 6 DIGITS DURING OUTPUT. Activate

 Activate

 CONTENTS OF OUTPUT Activate

 ------------------ Activate

 ENTIRE EVALUATIONS ARE OUTPUT, NOT JUST THE PROCESSED DATA, E.G., Activate

 ANGULAR AND ENERGY DISTRIBUTIONS ARE ALSO INCLUDED. Activate

 Activate

 DOCUMENTATION Activate

 ------------- Activate

 THE FACT THAT THIS PROGRAM HAS OPERATED ON THE DATA IS DOCUMENTED Activate

 BY THE ADDITION OF 3 COMMENT LINES AT THE END OF EACH HOLLERITH Activate

 SECTION IN THE FORM Activate

 Activate

 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* PROGRAM ACTIVATE (2015-1) \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Activate

 FILE 10 ACTIVATION CROSS SECTIONS HAVE BEEN DEFINED BY COMBINING Activate

 FILE 3 CROSS SECTIONS AND FILE 9 MULTIPLIERS. FILE 9 DELETED. Activate

 Activate

 THE ORDER OF SIMILAR COMMENTS (FROM RECENT, SIGMA1 AND GROUPIE) Activate

 REPRESENTS A COMPLETE HISTORY OF ALL OPERATIONS PERFORMED ON Activate

 THE DATA BY THESE PROGRAMS. Activate

 Activate

 THESE COMMENT LINES ARE ONLY ADDED TO EXISTING HOLLERITH SECTIONS, Activate

 I.E., THIS PROGRAM WILL NOT CREATE A HOLLERITH SECTION. THE FORMAT Activate

 OF THE HOLLERITH SECTION IN ENDF-5 DIFFERS FROM THE THAT OF Activate

 EARLIER VERSIONS OF ENDF. BY READING AN EXISTING MF=1, MT=451 Activate

 IT IS POSSIBLE FOR THIS PROGRAM TO DETERMINE WHICH VERSION OF Activate

 THE ENDF FORMAT THE DATA IS IN. WITHOUT HAVING A SECTION OF Activate

 MF=1, MT=451 PRESENT IT IS IMPOSSIBLE FOR THIS PROGRAM TO Activate

 DETERMINE WHICH VERSION OF THE ENDF FORMAT THE DATA IS IN, AND Activate

 AS SUCH IT IS IMPOSSIBLE FOR THE PROGRAM TO DETERMINE WHAT FORMAT Activate

 SHOULD BE USED TO CREATE A HOLLERITH SECTION. Activate

 Activate

 REACTION INDEX Activate

 -------------- Activate

 THIS PROGRAM DOES NOT USE THE REACTION INDEX WHICH IS GIVEN IN Activate

 SECTION MF=1, MT=451 OF EACH EVALUATION. Activate

 Activate

 THIS PROGRAM DOES NOT UPDATE THE REACTION INDEX IN MF=1, MT=451. Activate

 THIS CONVENTION HAS BEEN ADOPTED BECAUSE MOST USERS DO NOT Activate

 REQUIRE A CORRECT REACTION INDEX FOR THEIR APPLICATIONS AND IT WAS Activate

 NOT CONSIDERED WORTHWHILE TO INCLUDE THE OVERHEAD OF CONSTRUCTING Activate

 A CORRECT REACTION INDEX IN THIS PROGRAM. HOWEVER, IF YOU REQUIRE Activate

 A REACTION INDEX FOR YOUR APPLICATIONS, AFTER RUNNING THIS PROGRAM Activate

 YOU MAY USE PROGRAM DICTIN TO CREATE A CORRECT REACTION INDEX. Activate

 Activate

 SECTION SIZE Activate

 ------------ Activate

 SECTIONS OF MF=9 MULTIPLIERS ARE LIMITED TO A MAXIMUM OF 3,000,000 Activate

 ENERGY POINTS. Activate

 Activate

 THERE IS NO LIMIT ON THE NUMBER OF ENERGY POINTS IN MF=3 AND 10 Activate

 TABLES = THIS DATA IS READ AS CHARACTERS, ONE LINE AT A TIME. Activate

 Activate

 SELECTION OF DATA Activate

 ----------------- Activate

 THE PROGRAM PROCESSES ALL ENDF DATA ON ONE ENDF TAPE. Activate

 Activate

 2015 - IT NOW ONLY DOES ONE ENDF TAPE. Activate

 Activate

 PROGRAM OPERATION Activate

 ----------------- Activate

 PASS #1 Activate

 ------- Activate

 THE ENTIRE MAT IS COPIED TO A SCRATCH FILE IN THE ENDF ASCII Activate

 FORMAT AND WHILE COPYING IT TO SCRATCH MF=3, 9, AND 10 ARE ALSO Activate

 COPIED TO SEPERATE SCRATCH FILES, I.E., THERE ARE A TOTAL OF 4 Activate

 SCRATCH FILES - SEE THEIR DEFINITIONS BELOW. Activate

 Activate

 PASS #2 Activate

 ------- Activate

 IF NO MF=9 MULTIPLIERS ARE FOUND DURING PASS #1, THE ENTIRE MAT Activate

 IS COPIED FROM SCRATCH TO THE OUTPUT FILE, WITHOUT ANY CHECKS. Activate

 Activate

 IF MF=9 MULTIPLIERS ARE FOUND THEY ARE USED WITH MF=3 CROSS Activate

 SECTIONS TO CREATE MF=10 ACTIVATION CROSS SECTIONS. Activate

 Activate

 FOR ANY SECTION OF MF=10 DATA FOR WHICH NO MF=9 MULTIPLIERS ARE Activate

 FOUND, THE ORIGINAL MF=10 IS OUTPUT. Activate

 Activate

 FOR CONSISTENCY ALL MF=9 MULTIPLIERS ARE DELETED, I.E., THEY ARE Activate

 NOT INCLUDED IN THE OUTPUT. Activate

 Activate

 KEEP EVALUATED DATA POINTS Activate

 -------------------------- Activate

 THE FILE 10 OUTPUT WILL BE AT EXACTLY THE SAME ENERGY POINTS AS Activate

 THE FILE 3 CROSS SECTIONS USED TO DEFINE THE FILE 10 ACTIVATION Activate

 CROSS SECTIONS. Activate

 Activate

 INPUT FILES Activate

 ----------- Activate

 UNIT DESCRIPTION Activate

 ---- ----------- Activate

 2 INPUT LINES (BCD - 80 CHARACTERS/RECORD) Activate

 10 ORIGINAL ENDF DATA (BCD - 80 CHARACTERS/RECORD) Activate

 Activate

 OUTPUT FILES Activate

 ------------ Activate

 UNIT DESCRIPTION Activate

 ---- ----------- Activate

 3 OUTPUT REPORT (BCD - 120 CHARACTERS/RECORD) Activate

 11 FINAL ENDF DATA (BCD - 80 CHARACTERS/RECORD) Activate

 Activate

 SCRATCH FILES Activate

 ------------- Activate

 UNIT DESCRIPTION Activate

 ---- ----------- Activate

 12 SCRATCH FILE FOR ALL MAT (BCD - 80 CHARACTERS/RECORD) Activate

 14 SCRATCH FILE FOR MF=3 DATA (BCD - 80 CHARACTERS/RECORD) Activate

 15 SCRATCH FILE FOR MF=9 DATA (BCD - 80 CHARACTERS/RECORD) Activate

 16 SCRATCH FILE FOR MF=10 DATA (BCD - 80 CHARACTERS/RECORD) Activate

 Activate

 OPTIONAL STANDARD FILE NAMES (SEE SUBROUTINE FILEIO) Activate

 ---------------------------------------------------- Activate

 UNIT FILE NAME Activate

 ---- ---------- Activate

 2 ACTIVATE.INP Activate

 3 ACTIVATE.LST Activate

 10 ENDFB.IN Activate

 11 ENDFB.OUT Activate

 12 (SCRATCH) Activate

 14 (SCRATCH) Activate

 15 (SCRATCH) Activate

 Activate

 INPUT PARAMETERS Activate

 ---------------- Activate

 Activate

 LINE COLS. DESCRIPTION Activate

 ---- ----- ----------- Activate

 1 1-72 ENDF INPUT DATA FILENAME Activate

 (STANDARD OPTION = ENDFB.IN) Activate

 2 1-72 ENDF OUTPUT DATA FILENAME Activate

 (STANDARD OPTION = ENDFB.OUT) Activate

 Activate

 ONE PAIR OF INPUT LINES MAY BE USED, TO PROCESS ANY ENDF TAPE. Activate

 Activate

 2015 - NOW ONLY DOES ONE ENDF TAPE. Activate

 Activate

 EXAMPLE INPUT NO. 1 Activate

 ------------------- Activate

 PROCESS ENDF TAPE NAMED ACTIVATE.IN AND NAME THE OUTPUT FILE Activate

 ACTIVATE.OUT. Activate

 Activate

 IN THIS CASE THE FOLLOWING 2 INPUT LINES ARE REQUIRED Activate

 Activate

 ACTIVATE.IN Activate

 ACTIVATE.OUT Activate

 Activate

 EXAMPLE INPUT NO. 2 Activate

 ------------------- Activate

 SAME AS THE ABOVE CASE, EXCEPT THAT IN THIS CASE THE ORIGINAL Activate

 TAPE IS IN A DIRECTORY NAMED \ENDFB6\ORIGINAL, AND THE Activate

 RESULTS WILL BE WRITTEN INTO A DIRECTORY NAMED \ENDFB6\ACTIVATE. Activate

 Activate

 IN THIS CASE THE FOLLOWING 6 INPUT LINES ARE REQUIRED Activate

 Activate

 \ENDFB6\ORIGINAL\ACTIVATE.IN Activate

 \ENDFB6\ACTIVATE\ACTIVATE.OUT Activate

 Activate

 EXAMPLE INPUT NO. 3 Activate

 ------------------- Activate

 IF THERE IS NO ACTIVATE.INP FILE, OR THE FILENAMES ARE BLANK Activate

 THIS CODE WILL USE THE DEFAULT NAMES, Activate

 Activate

 ENDFB.IN Activate

 ENDFB.OUT Activate

 Activate

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