**=======================================================================DICTIN**

 **DICTIN**

 **PROGRAM DICTIN (Renamed from DICTION to eliminate conflict with DICTIN**

 **UNIX diction command - 12/22/02) DICTIN**

 **============== DICTIN**

 **VERSION 81-1 (SEPTEMBER 1981) DICTIN**

 **VERSION 82-1 (JANUARY 1982) DICTIN**

 **VERSION 83-1 (JANUARY 1983) \*KEEP ORIGINAL MOD. NUMBER DICTIN**

 **\*NEW, MORE COMPATIBLE I/O UNITS. DICTIN**

 **VERSION 84-1 (SEPTEMBER 1984)\*UPDATED TO HANDLE ENDF/B-VI FORMAT. DICTIN**

 **(PROGRAM WILL NOW WORK ON ALL DICTIN**

 **VERSIONS OF THE ENDF/B FORMAT). DICTIN**

 **VERSION 85-1 (AUGUST 1985) \*FORTRAN-77/H VERSION DICTIN**

 **VERSION 86-1 (JANUARY 1986) \*MAT ORDER CHECK. DICTIN**

 **\*IF NO HOLLERITH SECTION COPY MAT. DICTIN**

 **VERSION 88-1 (JULY 1988) \*OPTION...INTERNALLY DEFINE ALL I/O DICTIN**

 **FILE NAMES (SEE, SUBROUTINE FILEIO DICTIN**

 **FOR DETAILS). DICTIN**

 **\*IMPROVED BASED ON USER COMMENTS. DICTIN**

 **VERSION 89-1 (JANUARY 1989) \*PSYCHOANALYZED BY PROGRAM FREUD TO DICTIN**

 **INSURE PROGRAM WILL NOT DO ANYTHING DICTIN**

 **CRAZY. DICTIN**

 **\*IMPROVED BASED ON USER COMMENTS. DICTIN**

 **\*ADDED LIVERMORE CIVIC COMPILER DICTIN**

 **CONVENTIONS. DICTIN**

 **\*UPDATED TO USE NEW PROGRAM CONVERT DICTIN**

 **KEYWORDS. DICTIN**

 **VERSION 92-1 (JANUARY 1992) \*UPDATED BASED ON USER COMMENTS. DICTIN**

 **\*UP TO 6000 SECTIONS PER TAPE. DICTIN**

 **\*CHANGED DEFAULT MOD NUMBER FOR NEW DICTIN**

 **SECTIONS FROM 0 TO 1 DICTIN**

 **VERSION 94-1 (JANUARY 1994) \*VARIABLE ENDF/B DATA FILENAMES DICTIN**

 **TO ALLOW ACCESS TO FILE STRUCTURES DICTIN**

 **(WARNING - INPUT PARAMETER FORMAT DICTIN**

 **HAS BEEN CHANGED) DICTIN**

 **\*CLOSE ALL FILES BEFORE TERMINATING DICTIN**

 **(SEE, SUBROUTINE ENDIT) DICTIN**

 **\*ADDED FORTRAN SAVE OPTION DICTIN**

 **VERSION 96-1 (JANUARY 1996) \*COMPLETE RE-WRITE DICTIN**

 **\*IMPROVED COMPUTER INDEPENDENCE DICTIN**

 **\*ALL DOUBLE PRECISION DICTIN**

 **\*ON SCREEN OUTPUT DICTIN**

 **\*UNIFORM TREATMENT OF ENDF/B I/O DICTIN**

 **\*IMPROVED OUTPUT PRECISION DICTIN**

 **VERSION 99-1 (MARCH 1999) \*CORRECTED CHARACTER TO FLOATING DICTIN**

 **POINT READ FOR MORE DIGITS DICTIN**

 **\*UPDATED TEST FOR ENDF/B FORMAT DICTIN**

 **VERSION BASED ON RECENT FORMAT CHANGEDICTIN**

 **\*GENERAL IMPROVEMENTS BASED ON DICTIN**

 **USER FEEDBACK DICTIN**

 **VERS. 2000-1 (FEBRUARY 2000)\*GENERAL IMPROVEMENTS BASED ON DICTIN**

 **USER FEEDBACK DICTIN**

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

 **\*RENAMED dictin TO ELIMINATE CONFLICT DICTIN**

 **WITH UNIX diction COMMAND. DICTIN**

 **\*ADDED DOCUMENTATION LINE TO COMMENTS.DICTIN**

 **VERS. 2004-1 (JAN. 2004) \*GENERAL UPDATE BASED ON USER FEEDBACKDICTIN**

 **\*UP TO 100,000 SECTIONS PER TAPE. DICTIN**

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

 **\*UP TO 500,000 SECTIONS PER TAPE. DICTIN**

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

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

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

 **\*32 and 64 bit Compatible DICTIN**

 **\*Added ERROR stops DICTIN**

 **VERS. 2015-1 (Jan. 2015) \*Corrected END = it was saying ERROR. DICTIN**

 **\*Replaced ALL 3 way IF Statements. DICTIN**

 **VERS. 2015-2 (Mar. 2015) \*Corrected Seqence Numbers DICTIN**

 **1) Restart at 1 for each MAT/MF/MT. DICTIN**

 **2) 99999 on section end, MT=0 DICTIN**

 **3) 0 on MF = 0 DICTIN**

 **VERS. 2017-1 (May 2017) \*Updated based on user feedback. DICTIN**

 **VERS. 2018-1 (Jan. 2018) \*Added on-line output for ALL ENDERRORDICTIN**

 **VERS. 2020-1 (Feb. 2020) \*Identical to 2018-1. DICTIN**

 **DICTIN**

 **2015-2 Acknowledgment DICTIN**

 **===================== DICTIN**

 **I thank Jean-Christophe Sublet (UKAEA) for contributing MAC DICTIN**

 **executables and Bojan Zefran (IJS, Slovenia) for contributing DICTIN**

 **LINUX (32 or 64 bit) executables. And most of all I must thank DICTIN**

 **Andrej Trkov (NDS, IAEA) for overseeing the entire PREPRO project DICTIN**

 **at IAEA, Vienna. This was a truly International team who worked DICTIN**

 **together to produce PREPRO 2015-2. DICTIN**

 **DICTIN**

 **OWNED, MAINTAINED AND DISTRIBUTED BY DICTIN**

 **------------------------------------ DICTIN**

 **THE NUCLEAR DATA SECTION DICTIN**

 **INTERNATIONAL ATOMIC ENERGY AGENCY DICTIN**

 **P.O. BOX 100 DICTIN**

 **A-1400, VIENNA, AUSTRIA DICTIN**

 **EUROPE DICTIN**

 **DICTIN**

 **ORIGINALLY WRITTEN BY DICTIN**

 **------------------------------------ DICTIN**

 **Dermott E. Cullen DICTIN**

 **DICTIN**

 **PRESENT CONTACT INFORMATION DICTIN**

 **--------------------------- DICTIN**

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 **DICTIN**

 **AUTHORS MESSAGE DICTIN**

 **--------------- DICTIN**

 **THE COMMENTS BELOW SHOULD BE CONSIDERED THE LATEST DOCUMENATION DICTIN**

 **FOR THIS PROGRAM INCLUDING ALL RECENT IMPROVEMENTS. PLEASE READ DICTIN**

 **ALL OF THESE COMMENTS BEFORE IMPLEMENTATION. DICTIN**

 **DICTIN**

 **AT THE PRESENT TIME WE ARE ATTEMPTING TO DEVELOP A SET OF COMPUTERDICTIN**

 **INDEPENDENT PROGRAMS THAT CAN EASILY BE IMPLEMENTED ON ANY ONE DICTIN**

 **OF A WIDE VARIETY OF COMPUTERS. IN ORDER TO ASSIST IN THIS PROJECTDICTIN**

 **IT WOULD BE APPECIATED IF YOU WOULD NOTIFY THE AUTHOR OF ANY DICTIN**

 **COMPILER DIAGNOSTICS, OPERATING PROBLEMS OR SUGGESTIONS ON HOW TO DICTIN**

 **IMPROVE THIS PROGRAM. HOPEFULLY, IN THIS WAY FUTURE VERSIONS OF DICTIN**

 **THIS PROGRAM WILL BE COMPLETELY COMPATIBLE FOR USE ON YOUR DICTIN**

 **COMPUTER. DICTIN**

 **DICTIN**

 **PURPOSE DICTIN**

 **------- DICTIN**

 **THIS PROGRAM IS DESIGNED TO CREATE A REACTION INDEX FOR EACH DICTIN**

 **MATERIAL ON AN ENDF/B FORMATTED TAPE AND TO INSERT THIS REACTION DICTIN**

 **INDEX IN FILE 1, SECTION 451 OF EACH MATERIAL. DICTIN**

 **DICTIN**

 **IN THE DESCRIPTION THAT FOLLOWS FOR SIMPLICITY THE ENDF/B DICTIN**

 **TERMINOLOGY---ENDF/B TAPE---WILL BE USED. IN FACT THE ACTUAL DICTIN**

 **MEDIUM MAY BE TAPE, CARDS, DISK, OR ANY OTHER MEDIUM. DICTIN**

 **DICTIN**

 **ENDF/B FORMAT DICTIN**

 **------------- DICTIN**

 **THIS PROGRAM ONLY USES THE ENDF/B BCD OR CARD IMAGE FORMAT (AS DICTIN**

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

 **OF THE ENDF/B FORMAT (I.E., ENDF/B-I, II,III, IV, V OR VI FORMAT).DICTIN**

 **DICTIN**

 **THIS PROGRAM WILL AUTOMATICALLY DETERMINE WHICH VERSION OF THE DICTIN**

 **ENDF/B FORMAT EACH MAT IS IN AND WILL THEN PROPERLY REPLACE THE DICTIN**

 **REACTION INDEX FOR EACH MAT. DIFFERENT MATS ON THE SAME TAPE MAY DICTIN**

 **EVEN BE IN DIFFERENT VERSIONS OF THE ENDF/B FORMAT. DICTIN**

 **DICTIN**

 **IT IS ASSUMED THAT THE DATA IS CORRECTLY CODED IN THE ENDF/B DICTIN**

 **FORMAT AND NO ERROR CHECKING IS PERFORMED. IN PARTICULAR IT IS DICTIN**

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

 **NUMBERS (COLUMNS 76-80) NEED NOT BE PRESENT ON INPUT, BUT WILL BE DICTIN**

 **CORRECTLY OUTPUT ON ALL LINES. DICTIN**

 **DICTIN**

 **ENDF/B FORMAT VERSION DICTIN**

 **--------------------- DICTIN**

 **THE ENDF/B FORMAT CAN BE DETERMINED FROM THE SECOND LINE OF DICTIN**

 **THE HOLLERITH SECTION (MF=1, MT=451). DICTIN**

 **ENDF/B-IV = N1 - LINE COUNT (POSITIVE) DICTIN**

 **ENDFB/-V = N1 = N2 =0 DICTIN**

 **ENDF/B-VI = N1 =0, N2= VERSION NUMBER (6 OR MORE) DICTIN**

 **DICTIN**

 **SECTION SIZE DICTIN**

 **------------ DICTIN**

 **SINCE THIS PROGRAM ONLY READS THE DATA ONE LINE AT A TIME THERE DICTIN**

 **IS NO LIMIT TO THE SIZE OF ANY GIVEN SECTION, E.G. THE TOTAL DICTIN**

 **CROSS SECTION MAY BE DESCRIBED BY 200,000 DATA POINTS. DICTIN**

 **DICTIN**

 **NUMBER OF SECTIONS PER TAPE DICTIN**

 **--------------------------- DICTIN**

 **IT IS ASSUMED THAT THE ENDF/B TAPE CONTAINS 100,000 OR FEWER DICTIN**

 **SECTIONS = 100,000 OR FEWER MAT,MF,MT COMBINATIONS. IF THIS LIMIT DICTIN**

 **IS EXCEEDED THIS PROGRAM WILL TERMINATE EXECUTION. IF NEED BE THISDICTIN**

 **LIMIT CAN EASILY BE CHANGED BY CHANGING THE DIMENSION STATEMENT DICTIN**

 **BELOW AND RE-DEFINING THE VARIABLE MAXTAB IN THE BELOW DATA DICTIN**

 **STATEMENT. ALTERNATIVELY THE ENDF/B TAPE MAY BE DIVIDED INTO A DICTIN**

 **NUMBER SMALLER TAPES EACH CONTAINING 100,000 OR FEWER SECTIONS. DICTIN**

 **EACH ENDF/B TAPE CAN THEN RUN THROUGH THIS PROGRAM AND THE OUTPUT DICTIN**

 **FOR EACH ENDF/B TAPE CAN THEN BE RE-COMBINED (I.E., MERGED BACK DICTIN**

 **TOGETHER). DICTIN**

 **DICTIN**

 **HOLLERITH SECTION DICTIN**

 **----------------- DICTIN**

 **IF ANY MATERIAL DOES NOT INITIALLY CONATIN A SECTION MF=1, MT=451 DICTIN**

 **A WARNING MESSAGE WILL BE PRINTED AND THE MATERIAL WILL BE COPIED.DICTIN**

 **DICTIN**

 **IF ANY MATERIAL INITIALLY CONTAINS A SECTION MF=1, MT=451 A NEW DICTIN**

 **REACTION INDEX WILL BE CREATED AND INSERTED. THE INITIAL SECTION DICTIN**

 **MF=1, MT=451 MAY OR MAY NOT CONTAIN A REACTION INDEX. DICTIN**

 **DICTIN**

 **IF THE MATERIAL INITIALLY CONTAINS A REACTION INDEX IT WILL BE DICTIN**

 **USED TO DEFINE THE MOD NUMBER FOR CORRESPONDING SECTIONS IN THE DICTIN**

 **NEW REACTION INDEX (I.E. IF A SECTION FROM THE ORIGINAL REACTION DICTIN**

 **INDEX HAS THE SAME MF/MT NUMBERS AS A SECTION IN THE NEW REACTION DICTIN**

 **INDEX THE MOD NUMBER FROM THE ORIGINAL REACTION INDEX WILL BE USEDDICTIN**

 **IN THE NEW REACTION INDEX). OTHERWISE THE MOD NUMBER IN THE NEW DICTIN**

 **REACTION INDEX WILL BE SET EQUAL TO ZERO. DICTIN**

 **DICTIN**

 **PROGRAM OPERATION DICTIN**

 **----------------- DICTIN**

 **THE ENTIRE ENDF/B TAPE IS FIRST READ AND A DICTIONARY ENTRY IS DICTIN**

 **CREATED FOR EACH SECTION OF THE TAPE. THE ENDF/B TAPE IS THEN DICTIN**

 **REWOUND AND READ A SECOND TIME. DURING THIS SECOND PASS THE DICTIN**

 **DICTIONARY OF EACH MAT IS REPLACED. THIS VERSION OF DICTIN DICTIN**

 **DOES NOT USE SCRATCH FILES AND IS MORE EFFICIENT THAN EARLIER DICTIN**

 **VERSIONS OF DICTIN. DICTIN**

 **DICTIN**

 **INPUT LINES DICTIN**

 **----------- DICTIN**

 **LINE COLS. DESCRIPTION DICTIN**

 **---- ----- ------------------------------ DICTIN**

 **1 1-60 ENDF/B INPUT DATA FILENAME DICTIN**

 **(STANDARD OPTION = ENDFB.IN) DICTIN**

 **2 1-60 ENDF/B OUTPUT DATA FILENAME DICTIN**

 **(STANDARD OPTION = ENDFB.OUT) DICTIN**

 **DICTIN**

 **EXAMPLE INPUT NO. 1 DICTIN**

 **------------------- DICTIN**

 **READ \ENDFB6\K300\ENDFB.IN AND WRITE \ENDFB\K300\ENDFB.OUT. THE DICTIN**

 **FOLLOWING 2 INPUT LINES ARE REQUIRED, DICTIN**

 **DICTIN**

 **\ENDFB6\K300\ENDFB.IN DICTIN**

 **\ENDFB6\K300\ENDFB.OUT DICTIN**

 **DICTIN**

 **EXAMPLE INPUT NO. 2 DICTIN**

 **------------------- DICTIN**

 **USE THE DEFAULT FILENAMES TO READ ENDFB.IN AND WRITE ENDFB.OUT. DICTIN**

 **2 BLANK INPUT LINES ARE REQUIRED DICTIN**

 **DICTIN**

 **INPUT FILES DICTIN**

 **----------- DICTIN**

 **UNIT DESCRIPTION DICTIN**

 **---- ----------- DICTIN**

 **2 INPUT PARAMETERS (BCD - 80 CHARACTERS/RECORD) DICTIN**

 **10 ORIGINAL TAPE OF ENDF/B DATA (BCD - 80 CHARACTERS/RECORD) DICTIN**

 **DICTIN**

 **OUTPUT FILES DICTIN**

 **------------ DICTIN**

 **UNIT DESCRIPTION DICTIN**

 **---- ----------- DICTIN**

 **3 OUTPUT REPORT (BCD - 120 CHARACTERS/RECORD) DICTIN**

 **11 FINAL TAPE OF ENDF/B DATA (BCD - 80 CHARACTERS/RECORD) DICTIN**

 **DICTIN**

 **OPTIONAL STANDARD FILE NAMES (SEE SUBROUTINE FILIO1 AND FILIO2) DICTIN**

 **--------------------------------------------------------------- DICTIN**

 **UNIT FILE NAME DICTIN**

 **---- ---------- DICTIN**

 **2 DICTIN.INP DICTIN**

 **3 DICTIN.LST DICTIN**

 **10 ENDFB.IN DICTIN**

 **11 ENDFB.OUT DICTIN**

 **DICTIN**

 **=======================================================================DICTIN**