

EVALUATED NUCLEAR STRUCTURE DATA FILE (ENSDF)
Program Library (October 22, 2007)

ENSDF Program Library Distribution Notes:

1. Most of the programs listed below are written in ANSI standard FORTRAN 77 or FORTRAN 95.
2. Many of the programs below contain some machine specific codes. Except for the programs provided by Lawrence Berkeley National Laboratory and Australian National University, the utility program SETMDC may be used to convert from one machine specific version of a program to another (for example, UNIX code to ANSI code).
3. A program with 'mch' in the file extension field is available in OpenVMS,¹ standard ANSI, LINUX (Lahey/Fujitsu FORTRAN 95 or Intel FORTRAN 90), or MS Windows version (Compaq/Digital FORTRAN).
4. Report files are generally 133 column printer listings using standard FORTRAN carriage control characters.
5. The required subroutine libraries and sample inputs and outputs are listed with each program.
6. Most programs have associated with them a "read me" file (*e.g.*, README-ADDGAM.TXT for the program ADDGAM). These files give a basic description of the program, input and output, special options, terminal dialog, compilation and loading instructions, revision history, and references to additional documentation if available.
7. Informal documentation is also available for some of the programs and subroutine libraries. These are generally in the form of memos generated by Digital Standard Runoff (extension: MEM), Portable Document Format (extension: PDF), or POSTSCRIPT files (extension: PS) generated by a variety of programs.

¹ Open VMS versions are no longer maintained or updated.

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I. Distribution Program Version Numbers.

Program	Version	Date	Comments
ADDGAM	1.4	07-Feb-2001	
ALPHAD	2.0a	06-Nov-2006	Converted to FORTRAN 95
BrIcc	2.0b	12-Jan-2007	
ComTrans	7.1	24-Nov-2003	Converted to FORTRAN 95. ENSDF dictionary updated to May 4, 2007
DELTA	1.01	15-Apr-1993	
ENSDAT	12.13	05-Jul-2007	Converted to FORTRAN 95. ENSDF dictionary updated to August 6, 2007
FMTCHK	10.3a	28-Sep-2007	Converted to FORTRAN 95
GABS	9.2	07-Feb-2001	
GTOL	7.2e	01-Jul-2007	Converted to FORTRAN 95
HSICC	1.13f	09-Oct-2001	
HSMRG	7.1a	17-Sep-2001	
BLDHST	3.6	09-Feb-2001	
SEQHST	3.4	09-Feb-2001	
LOGFT	7.2a	20-Mar-2001	
NSDFLIB	1.6g	14-Nov-2005	Converted to FORTRAN 95
PANDORA	7.0b	01-May-2007	Converted to FORTRAN 95
RadList	5.5	05-Oct-1988	MEDNEW.DAT and RADMAS.DAT updated (April 1999)
RULER	3.2a	06-Aug-2007	Converted to FORTRAN 95
SETMDC	7.0	Jul-2003	Converted to FORTRAN 95
TREND	8.3	07-Feb-2001	

II. Analysis Programs.

1. ALPHAD.mch Program ALPHAD (mch-ANS, VAX, DVF, Linux, UNIX).
 Calculates α HF's and theoretical half-lives
 - a. NSDFLIB95.F String handling and NSD conversion subroutines
 - b. alphad.inp Sample input
 - c. alphad.new Sample output
 - d. alphad.rpt Sample report output
2. BrIcc.mch Program BrIcc (mch-DVF, Linux, UNIX)
 Calculates internal conversion coefficients, internal electron-positron pair formation coefficients, and E0 electronic form factors
 - a. NSDFLIB95.f String handling and NSD conversion subroutines
 - b. BrIccFO.idx Binary index file
 - c. BrIccFO.icc Binary data file

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3. DELTA.FOR Program DELTA (as received from Lund, Sweden).
Analyzes Gamma-Gamma Angular Correlations from unaligned States.
 - a. DELTA.DAT Sample input data for program DELTA.
 - b. DELTA.RPT Sample output report.
4. GABS.mch Program GABS (mch-ANS, VAX, DVF, UNIX).
Gamma-ray absolute intensity calculation.
 - a. NSDFLIB.FOR String handling and NSD conversion subroutine library.
 - b. GABS.IN Sample input data.
 - c. GABSPC.RPT Sample output report.
 - d. GABS.OUT Sample output file.
5. GTOL.mch Program GTOL (mch-ANS, DVF, UNIX).
Performs a least-squares fit to the gamma-energies and calculates the net feedings to levels.
 - a. NSDFLIB95.f String handling and NSD conversion subroutine library.
 - b. gtol.inp Sample input data for program GTOL
 - c. gtol.out Sample output
 - d. gtol.rpt Sample report.
6. HSICC.mch Program HSICC (mch-ANS, VAX, DVF, UNIX).
Calculates internal conversion coefficients.
BLDHST.mch Builds random access ICC table (mch-ANS, VAX, DVF, UNIX).
SEQHST.mch Drops random access ICC table back to sequential mode (mch-ANS, VAX, DVF, UNIX).
HSMRG.mch Merge G cards created by HSICC with original data file (mch-ANS, VAX, DVF, UNIX).
 - a. NSDFLIB.FOR String handling and NSD conversion subroutine library.
 - b. ICCSEQ.DAT Sequential form of ICC data table.
 - c. DATA.TST Sample input data for program HSICC.
 - d. CARDS.NEW Sample output file containing new G/2G records generated.
 - e. HSICC.RPT Sample output report.
 - f. HSICC.RP2 Sample output report comparing old and new G/2G records.
 - g. HSMRG.NEW Sample generated new data set deck.
7. LOGFT.mch Program LOGFT (mch-ANS, VAX, DVF, UNIX).
Calculates log $f\tau$ values for beta, electron-capture decays, average beta energies, and capture fractions.
 - a. NSDFLIB.FOR String handling and NSD conversion subroutines library.
 - b. LOGFT.DAT LOGFT data table.
 - c. DATA.TST Sample input data for program LOGFT.
 - d. LOGFT.RPT Sample output report.
 - e. LOGFT.NEW Sample generated new data set file.
8. PANDORA.mch Program PANDORA (mch-ANS, DVF, UNIX). Physics checking in ENSDF and comparison of data between data sets.
 - a. NSDFLIB95.f String handling and NSD conversion subroutine library.
 - b. pandora.inp Sample input data for program PANDORA.
 - c. pandora.err Error report.
 - d. pandora.lev Level report.
 - e. pandora.gam Gamma report by gamma energy.
 - f. pandora.gle Gamma report by level energy.

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- g. pandora.rad Beta and electron capture report.
 - h. pandora.rep Report of ignored records, etc.
 - i. pandora.xrf Cross-reference records.
 - j. pandora.out Sample output data set.
9. RADLST.mch Program RADLST (mch-ANS, DVF, VAX).
Calculates atomic and nuclear radiation energies, intensities, and dose.
- a. NSDFLIB.FOR String handling and NSD conversion subroutine library.
 - b. RADLST.INP Sample input file.
 - c. MEDNEW.DAT Auxiliary data file-Atomic data (Updated April 1999).
 - d. MEDNEW_OLD.DAT Old version of the atomic data.
 - e. RADMAS.DAT Auxiliary data file-Atomic mass data (Updated April 1999).
 - f. RADMAS_OLD.DAT Old version of the atomic mass data.
 - g. RADLST1.OUT Sample outputs with default options.
 - h. RADLST2.OUT Sample outputs for the ENDF option.
 - i. RADLST3.OUT Sample outputs for the database file option.
 - j. RADLST4.OUT Sample outputs when continua with bremsstrahlung is chosen.
 - k. RADLST5.OUT Sample outputs for the ENDF with continua with bremsstrahlung chosen.
10. RULER.mch Program RULER (mch-ANS, DVF ,UNIX).
Calculates reduced transition probabilities.
- a. |NSDFLIB95.F String handling and NSD conversion subroutine library.
 - b. RULER.IN Sample input data.
 - c. RULER1.RPT Sample output report comparing reduced transition probabilities with Recommended Upper Limits (RUL's).
 - d. RULER2.RPT Sample output report for calculating BELW's and BMLW's.
 - e. RULER.NEW Sample output data set.

III. Utility Programs.

1. ADDGAM.mch Program ADDGAM (mch-ANS, VAX, DVF, UNIX). Add gammas to adopted level data set, if gammas are from only one data set.
 - a. NSDFLIB.FOR String handling and NSD conversion subroutine library.
 - b. ADDGML.DAT Sample input data. Level file.
 - c. ADDGMG.DAT Sample input data. Gamma file.
 - d. ADDGAM.NEW Sample output data.
2. COMTRANS Program COMTRANS
The program COMTRANS is a nuclear structure evaluator tool for translating comments in the Evaluated Nuclear Structures Data File (ENSDF) from the all upper case form to the currently approved upper/lower case form. Not only is the newer form easier to read but also the comments no longer need to be used with a dictionary. Executables for MS-Windows and Linux are available.
 - a. ra_ensdf_dic.dat- ENSDF translation dictionary file
3. ENSDAT Program ENSDAT
Creation of tables and drawings similar to those in the Nuclear Data Sheets. Executables for MS-Windows and Linux are available
 - a. ra_ensdf_dic.dat - ENSDF translation dictionary file
 - b. ensdat.config - ENSDAT configuration file (Windows only)

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- c. adopted.186 - sample input for ENSDF
 - d. ad_186.ps - PostScript output for sample input
 - e. ad_186.log - output message file for sample case
4. FMTCHK.mch Program FMTCHK (mch-ANS, DVF, UNIX).
ENSDF format and syntax checking.
- a. NSDFLIB95.f String handling and NSD conversion subroutine library.
 - b. fmtchk.inp Sample input data.
 - c. fmtchk.rpt Sample output report.
5. TREND.mch Program TREND (mch-ANS, VAX, DVF, UNIX). Presents ENSDF data in a tabular form with optional screen display.
- a. NSDFLIB.FOR String handling and NSD conversion subroutine library.
 - b. DATA.TST Sample input data.
 - c. TREND.RPT Sample output report.
6. SETMDC.mch Program SETMDC (mch-ANS, VAX, DVF, UNIX).
Converts programs for use on other machines. *i.e.*, between VAX, ANS, DVF, *etc.*