

Extended Input File Commands for ENSDAT
May 4, 2007

The input file for ENSDAT consists of data sets and may include various control cards. The control cards refer to the data set that precedes them.

A data set begins with a Data Set ID (DSID), a set of data cards conforming to the ENSDF formats, and terminates with a blank card image. In general, the tables and drawings for the given data set will be created and output as a PostScript file to the output file the user specifies. The inclusion of control cards in the input file allows the user to control many aspects of the tables and drawings, which are output.

A list of the various control cards is given in the following tables. In general, the program uses the first three characters of the control cards to determine the desired command, but the capitals in the command name show the minimum number of characters required.

In general, a control card is limited to no more than 80 characters. However, the LEVel, GAMma, BETa, ELEctron, ALPha, and PARticle control cards may be continued onto one or more continuation cards. The continuation cards must immediately follow the control card and the first five characters must be blank. The control cards are free formatted for the inclusion of the various options associated with each control card. In general, an option is signaled by a slash (/), an alphabetic character (A-Z), and a colon (:). In some cases, the colon (:) may be followed by an alphanumeric string.

Note: Any command can be made inoperative by a '!' or 'REM ' in the first column(s) of the command line.

The commands are of three kinds, first are those that apply generally to the titling and pagination, second are those that apply only to tables, and third are those that apply only to drawings.

General Commands for Titling and Pagination	
Command	Meaning
ALTID dsid	The given DSID will be substituted for the DSID of the preceding data set as its title on the output. It must follow the DSID and precede any other command.
PAGE	Begin a new page. (If not given, paging is decided automatically.) Options for PAGE are: /N:nn nn is the page number to appear at the bottom of the page. If not given the page number is incremented automatically on the previous page number. /S:nn Output a sequence number (starting at nn) for the pages within a given Z along with the isotopic notation at the top of the page. If nn=0 then no sequence number is included in the page heading.
NOPAGE	Forces the next table to be output on the current page even when the program would normally start a new page. If the next table changes the current Z, then an appropriate heading is output. Option /S:0 suppresses sequence number when Z changes.

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General Commands for Tables	
Command	Meaning
ALPha	The options given on this card control the table generated from a data set's alpha cards. The table will be output even if there are no alpha cards.
BETa	The options given on this card control the table generated from a data set's beta cards. The table will be output even if there are no beta cards.
ELEctron	See BETA
GAMma	The options given on this card control the table generated from a data set's gamma cards. The table will be output even if there are no beta cards.
GENCOM	Generate general comments section
LEVel	The options given on this card control the table generated from a data set's level cards. The table will be output even if there are no level cards.
PARticle	The options given on this card control the table generated from a data sets (delayed-)particle cards. The table will be output with the appropriate title even if there are no (delayed-)particle data cards.
REORder	Reorder the gamma table by level energy rather than gamma energy.
XREF n	List the cross reference data sets and include the cross reference data column. This is the default for all adopted data sets. n is the number of symbols to uniquely define for entries in the cross-reference list. The default of 'n' is 15 (<i>i.e.</i> , if fifteen or more data sets are listed then the fifteenth and above as given is the XREF list will all be given the symbol 'O'). NOTE: This record must precede the data set.
NOXref	Suppress the cross-reference table and data column.

Unbracketed global options for LEVel, GAMma, BETA, ELEctron, ALPha, and PARticle control cards	
Option	Meaning
/D:a[,b,c...]	Delete data column(s) specified by the alphabetic code 'a' [and 'b' and others if given]. Codes are given in a following table. For this option only, if a=ALL, all data columns are deleted. For a=ALL, uncertainties associated with the ALPHA, BETA, and ELECTRON records quantities will be shown on the drawings.
/E:a	Allows for outputting energy level uncertainties, on level energies given in the associated radiation tables. It is intended to be used when the level table has been suppressed. The choices of "a" are as follows: N – Don't show uncertainties for the level energies. (default if /E: not given) U – Show the level energy uncertainties.
/F:a[,b,c...]	Outputs a data line in a table only if at least one of the corresponding column(s) as given by a[,b,c...] contain(s) data. All field footnotes are converted to comments but column footnotes are not. A comment is also output which specifies which fields where selected and refers the reader to the drawing of this dataset. Uncertainties associated with the ALPHA, BETA, and ELECTRON records quantities will be shown on the drawings.
/O:a[,b,c...]	Output data column(s) specified by the alphabetic code "a" (and "b" and others, if given) as comments.
/P:	The specified table will start a new page.
/P:N	/P:N Suppress automatic paging of this table.

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/Q:nn	Controls the output of a Q line in the general comments section of an adopted levels table. nn is the page of the table on which the Q line and its comments will be output (<i>i.e.</i> , 2 - second page, <i>etc.</i>). Used when the general comments fill more than one page. The default (no /Q option) is the first page.
/W:nn	nn is the width, in characters, of the table, its comments, and its footnotes when given outside of any brackets. Intended for use when a drawing is to be placed to the right of the table.

Bracketed options for LEVel, GAMma, BETa, ELEctron, ALPha, and PARticle control cards	
{ } The following options must be within these brackets. More than one set of brackets are allowed but they may not be nested. Each set of brackets requires one and only one /B: option.	
Option	Meaning
/B:xx[:gg]	The table will break at the specified energy (level or radiation) and continue with the specified energy in the lower right portion of the current table or on the next page if /C: is also given. 'xx' is the numeric value of the first data column, above which the break will occur. "gg" is the numeric value of the second data column, above which the break will occur if the first value has reached the break point. "gg" is intended to be used only in reordered gamma tables when breaks are required in a list of unplaced gammas or the list of gammas from a single level is too large to fit on a page. For unplaced gammas xx=0.0.
/B:B	When used with /W:, it specifies the width of a band table for the centering of its title and any band comments.
/B:F	Set /L:, /W:, or /C: options for the footnotes. If /L: is given, then the footnotes are placed into the lower right corner of the table. If /C: is given, then the footnotes are allowed to be continued on the next page if there is not enough space on the page. If /W:116/L:n is used, then the footnotes will start n lines from the bottom of the page at the left margin. Note that this command will suppress automatic page advance. This is especially useful if there is only a line or two of footnotes.
/R:a[,b,c...]	Restore data column(s) when suppressed in a preceding energy range with a /S:.
/S:a[,b,c...]	Suppress data column(s) above the given energy.
/W:nn	nn is the maximum width of a portion of the table in characters.

Alphabetic codes for data column headings			
Code	Column	Code	Column
E	Energy	T	Half life of level
LEV	Energy from associated level card	MR	Mixing ratio
J	Spin and parity	LOGFT	Log <i>ft</i>
RI	Relative photon intensity	L	Angular momentum
IB	Intensity of $\beta^{+/-}$ decay branch	CC	Total conversion coefficient
IA	Intensity of α decay	S	Spectroscopic strength
IP	Intensity of (delayed-)particle decay	TI	Relative total transition intensity
XREF	Cross reference	EI	Energy level of the "intermediate" nucleus for a delayed particle
M	Multipolarity of the transition	COMM	Comments for data lines in the table.

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IE	Intensity of electron capture branch	T	Half life of level
HF	Hindrance factor	MR	Mixing ratio

Commands for Drawings	
Command	Meaning
BAND(x)	Where x is one of the characters used to flag the desired band in the data set. The current data set will be redrawn using only those levels flagged with the flags given in this command. BAND is like DRAW command and takes the following options:
	/H: Command will cause that band and subsequent bands to be plotted horizontally until the next DRAW, PAGE, or table command.
	/W:xx Sets the band (ladder) width to xx.
	/X:xx Sets the offset for the first band ladder to xx in the positive x direction.
	/S:xx Specifies a distance, xx, for the inter-band spacing.
	/TITLE If last option on the band command is /TITLE then next record in the control file, starting at col. 1, will be read and used as the new title for the band.
	/F:nn nn is the level below which no gammas are drawn.
	/G:nn nn is the level above which no gammas are drawn.
/K:x	x=Y – Suppress interband γ 's
	x=N – restore interband γ 's.
DRAW	Make drawing for the preceding data set (see Table-1 for options)
MAxlev	The single integer numeric field specifies the maximum number of levels that will be processed from this data set.
MIInlev	The single integer numeric field specifies the level below which the data will be ignored when drawing the ladder for the data set. Only the given level and those above will be drawn.
NOPARENT	Suppresses the display of parent nucleus
NOTitle	Suppresses the title and all subtitles on the drawing.
PARENT	Options for drawing the parent nuclide in decay drawing
	/D:xx xx is the change in distance in inches from the parent level to the edge of the ladder in the x direction.
/U:text	This replaces the text to be used with the arrow (e.g., /U:%EC+B+=100). Example: PARENT /U:%EC+%B+=99.1 4 This will cause the text generated by the program from the N card to be on the drawing.

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	/W:xx	xx is the exact width to be used for the parent level. Width will not be expanded to fit other labeling.
	/X:xx	xx is the offset in the x direction for the text giving branching.
	/Y:yy	yy is the offset in the y direction for the text giving branching.
RADPLOT [options] (a:w:s) (b:w:s)	This command produces a RADWARE type of plot. The bands are drawn side by side with intraband and interband gammas shown. RADPLOT is similar to the DRAW command except that each RADPLOT command creates a new page. It takes the following options (not required):	
	/H:	Command will cause that band and subsequent bands to be plotted horizontally until the next DRAW, PAGE, or table command.
	/W:xx	Sets the default band (ladder) width to xx.
	/X:xx	Sets the offset for the first band ladder to xx in the positive x direction.
	/S:xx	Specifies a distance, xx, for the default inter-band spacing.
	The bands to be plotted on the page are specified by a character in parenthesis (required) and optionally the width or width and spacing of the band.	
(a:w:s)		a is the character used on the datasets BAND card to designate the band. w, if given, is the width of this band (must follow the colon) and s is the spacing between this band and the next band (must follow a colon which follows the width). The characters designating the bands must be given in the order they are given on the BAND cards in the dataset but all bands do not have to be plotted. (e.g., The bands are X Y Z A B C x y z as given and ordered in the dataset. They will be done on two vertical plots with a default width of 0.7 in., a spacing of 0.2 in., and skipping the Z and y bands. RADPLOT (X) (Y) (A) (B) RADPLOT (C) (x) (z)
Scale	A control card specifying a vertical scale of the drawing. The first numeric field is the maximum energy of this scale in keV. The second numeric field is the length of the scale in inches. The third numeric field, if it is given, contains the lower energy of the scale in keV. If not given, the lower energy is taken to be zero or the upper energy of the previous scale. Up to ten SCALE commands may be given per drawing.	

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SUBTitle	Up to two more lines of text may be added to the title with this command. A space is required to separate the command from the text and as with the TITLE card, the two lines are separated by a two single quotes. The first line is assumed to be capitalized.
USETIE	Causes the total intensity to be shown in the EC decay drawing tables rather than I(ec) or I(b+). This is not necessary if only the total intensity is given in the dataset.

Table-1	
Options for DRAW control cards	
Option	Meaning
/C:	Show the gamma and electron intensities rather than the total intensity.
/B:a[:xx]	Controls labeling and arrows for $\beta^{+/-}$ radiations.
	a=N No table or arrows
	a=A Draw only arrows
	a=L Show table and arrows (default)
/D:xx	xx is the distance between the scale and the ladder.
/E:N	Suppress measured particle energies.
/F:nn[:mm]	nn is the level number below which no gammas are drawn. mm is the number of the gamma on the given level below which no gammas are drawn.
/G:nn[:mm]	nn is the level number above which no gammas are drawn. mm is the number of the gamma on the given level above which no gammas are drawn.
/H:	Drawing to be plotted horizontally (i.e., in landscape mode)
/I:N	No isotope label is drawn for this ladder.
/J:xx[:y]	Will cause the gammas to "JUMP" back to the right side and begin plotting to the left from there. xx is the energy of the level at which this jump will take place. y is an offset in inches to move the gammas. EXAMPLE: DRAW/X:0.20/W:6.5/R:0.43/J:6500.:2.0
/M:xx	xx is the minimum width of the ladder.
/O:xx:y	Causes the gammas from the level above xx to be plotted in inverse order such that the last one (highest energy gamma) is plotted y inches to the left of the energy label.
/P:a:xx	Controls the increment to be used when a level is given as nnn.n+X, +Y, or +Z. a may be X, Y, or Z. xx is the increment value in keV.
/R:xx	xx is the space to be put between the rightmost gamma and the level energy label (default 0.2").
/S:a	Controls the drawing of the scale.
	a=L Draw left hand scale.
	a=R Draw right hand scale.
	a=B Draw both left and right hand scale.
The default is for no scale to be drawn.	

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/V:a	Draws vertical line(s).	
	a=B	Both sides
	a=L	Left side
	a=N	Never
	a=R	Right side
/T:a[:xx]	Controls output of the level half-lives.	
	a=N	No output
	a=Y	Output half lives to the right of the level (default for the DRAW command).
	a=U	Output half lives to the right of the level with uncertainties
	xx is the level energy above which no half-lives are output for the Y and U options.	
/U:a	Controls the outputting of uncertainties for β , ϵ , and α quantities	
	a=N	Do not output uncertainties. Default unless the "/D:ALL" or "/F: a[,b,c...]" option is used on the BETa, ELEctron, or ALPha command.
	a=Y	Output uncertainties. Default if the "/D:ALL" or "/F: a[,b,c...]" option is used on the BETa, ELEctron, or ALPha command.
/W:xx	xx is the width of ladder in inches.	
/X:xx	xx is the offset of the ladder from left margin	
/Y:yy	yy is the vertical offset of the ladder from the bottom margin	