VI.F.4. Format of the MXW File

In order to generate stellar (Maxwellian) averages of capture cross sections (see Section V.D), two pieces of input are needed. In the alphanumeric portion (card set 3) of the INPut file, the line

```
MAXWELLIAN AVERAGED capture cross sections are wanted
```

or

```
STELLAR AVERAGED CAPture cross sections are wanted
```

must be included (the two phrases are treated identically within the code). It is also necessary to specify the temperatures at which the stellar averages are to be calculated; these are given in a "MXW" file whose name is specified immediately following the name of the DATa file in the input stream. The format of the MXW file is one temperature per line, in F10.1 format, in units of eV.

When calculating stellar averages, it is often desirable to include cross sections at energies above the resolved resonance region. In SAMMY, this may be done by providing the "smooth cross section" in the ENDF File 3 format. Users must also include the following line

```
ADD CROSS SECTIONS From endf/b file 3
```

in the alphanumeric portion of the INPut file.

For users unfamiliar with ENDF formats, a description of the relevant portions of File 3 is presented in Table VI F4.1. Note that the parameter INT specifies an interpolation scheme for NBT energy points. For INT = 1, the cross section from E_i to E_{i+1} is constant and equal to C_i. For INT = 2, the cross section for $E_i < E < E_{i+1}$ is linearly interpolated between the two values. (Note that other options are available in ENDF but only these two have been implemented in SAMMY.)

Examples for stellar averaging are given in test cases tr042, tr049, and tr051.

Table VI F4.1. Format for File 3 cross sections to be added for stellar averages
A decimal point must occur somewhere with an F format

Line Number	Variable	Col-umns	Format	Notes
1	(Nothing on this line is important to SAMMY runs)			
2	NR	45-55	I11	Number of energy regions
	NP	56-66	I11	Total number of energy points to be specified
3	NBT(1)	1-11	I11	Number of energy points in region 1
	INT(1)	12-22	I11	Interpolation type for region 1 (INT=1 implies constant, INT=2 implies linear; contact the SAMMY author if other options are needed.)
	NBT(2)	23-33	I11	Number of energy points in region 2
	INT(2)	34-44	I11	Interpolation type for region 2
	NBT(3)	45-55	I11	Number of energy points in region 3
	INT(3)	56-66	I11	Interpolation type for region 3
4,5, ...	Repeat Line 3 until all NR regions have been specified. Note that the sum of the NBT values must equal NP.			
6	E(1)	1-11	F11	First energy value
	C(1)	12-22	F11	Value of cross section at energy E(1)
	E(2)	23-33	F11	Next energy value
	C(2)	23-44	F11	Value of cross section at energy E(2)
	E(3)	45-55	F11	Next energy value
	C(4)	56-66	F11	Value of cross section at energy E(3)
7,8,...	Repeat Line 6 until all NP energy points have been specified			