Addendum to the User's Guide for the SIGPLOT Plotting Package

The SIGPLOT software is described in the User's Guide from 1991, which is available as a (scanned) pdf file: SIGPLOT User's Guide 1991.pdf

The SIGPLOT software is offered as an option, but it must be recognized that the software is old and the documentation not complete.

The software was developed by Joe Chang of George Mason University, VA.

The software has been enhanced over the years. The enhancements are briefly described here. Note that the format of certain template files (INQ files) has changed, so the current version of SIGPLOT will not always work with old template files.

The User's Guide to the Model Validation Kit describes in detail how SIGPLOT can be used in the context of the Model Validation Kit. The material here is not strictly necessary for this application.

In the following brief description it is assumed that the user is already familiar with the original version of SIGPLOT.

- Important change of format in the input data file: Just before the main data section, N additional lines are now required to specify the legend for each of the N groups of points (or each of the N curves). Each line should contain a character string enclosed by single quotes. An empty string, ' ', will disable the legend for the corresponding curve. See *Figure 1.*

- In the template (INQ) file, the line where XMIN, XMAX, and DX are specified now accepts a fourth parameter (MINRX, integer) that specifies the number of minor divisions between two major tick marks. This fourth parameter is required for some types of plots, and omitting it will result in errors stating: *Data transfer beyond end of file...Error occurred at..* If MINRX is specified and if DX is negative (N.B., XMAX is always greater than XMIN), then the user also needs to specify after MINRX in the same line (XMAX-XMIN)/|DX|+1 character strings, enclosed by single quotes, that are used to label major tick marks. For example, a line
    1 7 -2 2 'JAN' 'MAR' 'MAY' 'JUL'
  will cause SIGPLOT to label the x-axis as JAN, MAR, MAY, and JUL, rather than 1, 3, 5, and 7. Furthermore, there will be one minor tick mark (i.e., two minor divisions) between two major tick marks. The above changes also apply to the line where YMIN, YMAX, and DY are specified.

- Higher-quality fonts are now used by SIGPLOT, where subscripts, superscripts, and Greek letters are also supported. For example, use C\sub{p} to print C_p, use m\sup{3} to print m^3, use \sigma\ to print σ. For lower case Greek letter, you type, say, \gamma\. For upper case Greek letter, you type, say, \Gamma\.

- If the user decides to use the logarithmic scale for, say, the x-axis, then the axis labels will be written as 10n if (1) XMIN and XMAX are exact powers of 10, (2) DX = 10, and (3) the format specifier for the x-axis is in the form of "(e...)." In this case, it is suggested that the

user also specifies the optional MINRX parameter as 9, so that each cycle of 10 is adequately labelled.

- The translator program, PS, that converts a Tektronix picture file to a PostScript file has been modified slightly. The PS program now generates an encapsulated PostScript (EPS) file, which can be directly imported into other applications if there is only one page of output. The EPS file can still be directly printed out on a PostScript printer.

- A program called EPS2HP was developed. EPS2HP translates an encapsulated PostScript file, created by the PS program, to an HP-GL file. If an encapsulated PostScript file, say, 1.EPS, was created by the PS program, then by typing "EPS2HP 1", an HP-GL file called 1.HGL will be created. (using the program will result often result in an message stating *Access is denied*, but the program nevertheless produces the files it is supposed to).

- SIGPLOT now allows the user to generate multiple Tektronix picture files, one file per frame, in a single run by typing "SIGPLOT BREAK." In this case, the user needs to specify only the file name, but no extensions, for the Tektronix picture files. Extensions 001, 002, 003, etc. will be automatically added by SIGPLOT.

- SIGPLOT now allows up to 10000 points per line.

- More patterns of scatter plots are now supported, which will give the figures a more polished look. In particular, the following symbols are supported.
O: filled circle
o: empty circle
S: filled square
s: empty square
T: filled triangle
t: empty triangle
+: cross

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Kincaid scatter                          Kincaid scatter
c\sub{obs}/q                             c\sub{obs}/q
c\sub{obs}/q                             c\sub{obs}/q
338 1                                    338 1
' '                                        73.3    93.0    3.0  0.300 -241.4  2076.
   73.3    93.0    3.0  0.300 -241.4  2076.   53.9    85.0    3.0  0.310 -186.8  2092.
   53.9    85.0    3.0  0.310 -186.8  2092.
```

Figure 1 Left: example of the current format in input data file.
Right: example of the previous format.