cc-69-18

*EZPLOT

by
Dave Fuhrer
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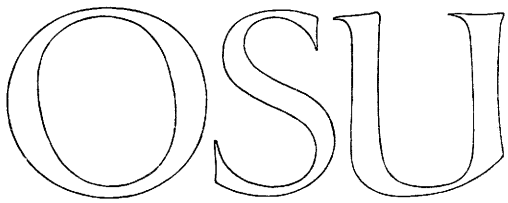
August, 1969



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August 29, 1969

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PROGRAM: *EZPLOT is a Teletype operated plotting routine which will make as many plots as desired.

PURPOSE: General plotting of any data from a file, either as X-Y, Y-X, or time series points.

USAGE: Equip Logical Units (lun) to your data file(s), and to either the plotter (PLOT) or an empty file(FILE). Then type *EZPLOT (while in control mode (#)).

INPUTS: PLOT LUN Logical unit to plot on.

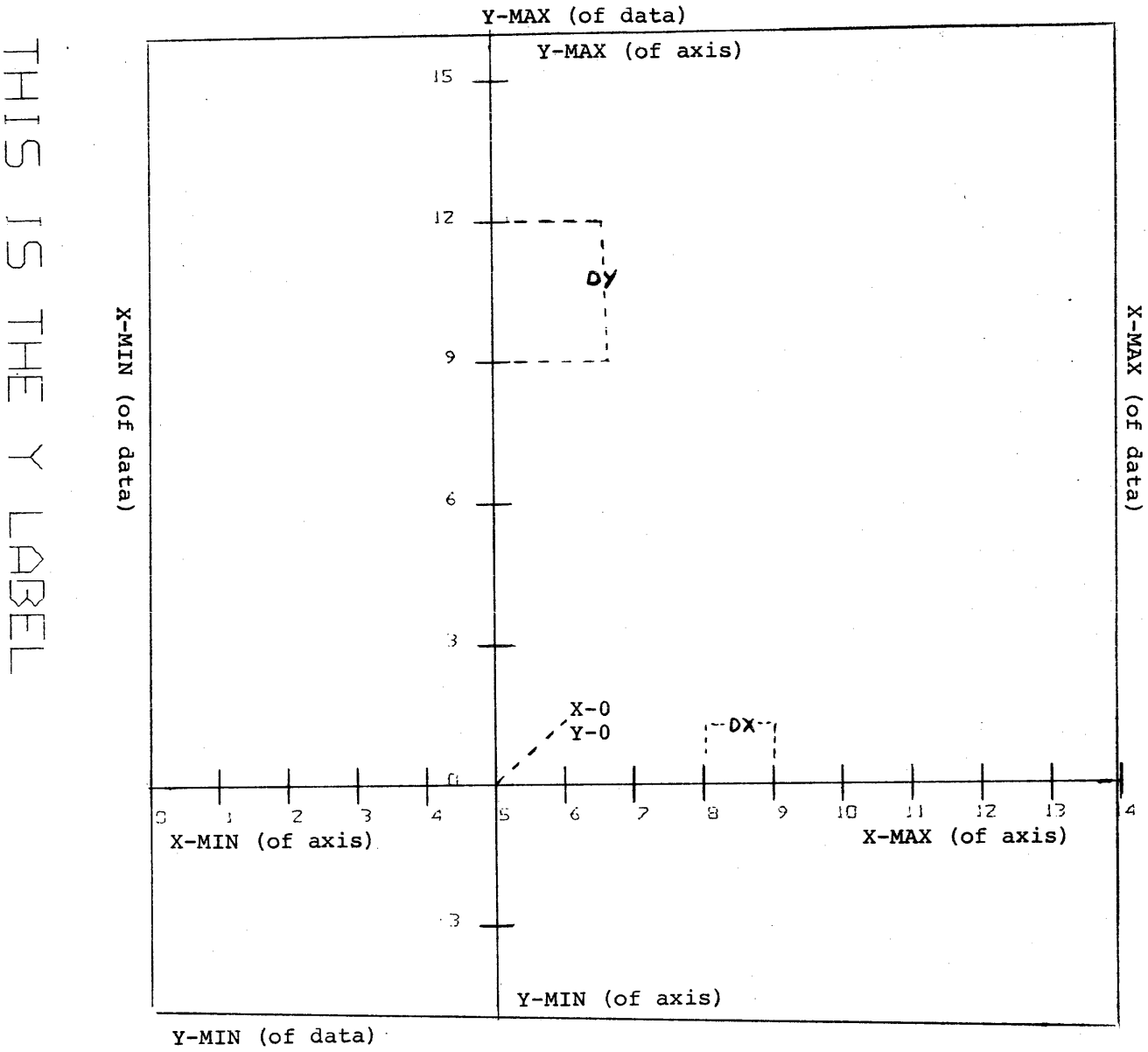
[See Figure 1 for graphical explanation of these Parameters].

X - SIZE Size of X axis in inches (up to 200 inches).
Y - SIZE Size of Y axis in inches (up to 27 inches).
AXIS 1 if a coordinate system is to be drawn.
0 if no coordinates are desired.

If AXIS = 1, then these 8 inputs will appear and apply only to the coordinates and not to the data.
X-MIN - Minimum value of X axis
X-MAX - Maximum value of X axis
X-0 - X origin
DX - Increment of X axis ticks (must be integer).
Y-MIN - Minimum value of Y axis
Y-MAX - Maximum value of Y axis
Y-0 - Y origin
DY - Increment of Y axis ticks (must be integer).
X-LABEL (Y-LABEL) = 1 and then a space and then type label (CR) (LF) or = 0 and continue without label.
DATA LUN - Logical unit where data can be found.
FORMAT = 1 and then a space and then type in format with both right and left parenthesis (CR) (LF).
= 0, program uses function SCANIN* to read data.

*See booklet "SCANIN" number cc-68-10 by Walt Pawley

Figure 1


Y-MAX (of data)
Y-MAX (of axis)
15
12
9
6
3
0
-3
DY
DX
X-0
Y-0
X-MIN (of data)
X-MAX (of data)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
X-MIN (of axis)
X-MAX (of axis)
Y-MIN (of axis)
Y-MIN (of data)
THIS IS THE Y LABEL
THIS IS THE X LABEL

The data is read one or two numbers at a time, therefore you must have your file set up in two columns (vertical), rather than two lines (horizontal). It must be (F) format. The (I) format will not work.

IS THIS A TIME SERIES

= 0. If it is not a time series.

= value of time series increment (integer or floating point.) If it is a time series your format should have only one column i.e. (F11.5) etc. This will be plotted as the Y value. Values for X will be generated, starting with zero and incremented by this value you type in.

IS X THE FIRST PARAMETER (This parameter is given only if time series = 0)

= 1 reads XY

= 0 reads YX

AUTO SCALE = 1 program scales data according to the maximum and minimum values of the data.

= 0 gives next 4 inputs

X-MIN
X-MAX
Y-MIN
Y-MAX

These maximum and minimum values are the actual bounding values of your plot. Your data should fall within these boundaries.

DRAG PEN = 1 yes

= 0 no

TYPE MARK Any alphanumeric character or a minus (-) sign followed by a standard code (i.e., 1-32)* (CR) (LF)

INTERVAL = Some integer other than zero. If you use a standard code data mark, after the number of points plotted reaches INTERVAL, the data mark is changed for one point. For example if you want a different marking every N^{th} point,

*See last page.

INTERVAL=N. If you want no change in data marks then INTERVAL=some negative number. This different data mark is one of the standard codes and equals TYPE MARK plus 2.

DATA = 0 if no more data is to be plotted on this set of axis.

= 1 if more data is to be plotted on same axis. It returns to DATA LUN for additional sets of data. They can be on the same file or a different file.

= 2 if more data is to be plotted on same axis. It returns to reading in a second set of data on the same DATA LUN and uses the same FORMAT. The sets of data are seperated by an EOF or EOD.

OUTPUT: After telling the program that it is to plot a time series or that it is to read XY or YX, it will print out the first ten ordered pairs (i.e.(X,Y)). At this point it is possible to determine whether or not it is reading the correct values. It does this in (F6.1, F6.1, 3X, F6,1, F6.1).

Do not be alarmed if these values do not look like your data points. Remember that they are printed out with only one place after the decimal point, so your points appear to be rounded off. However, this is only a check and your data values, which are to be plotted, have not been changed.

Before AUTO SCALE the program types the XMIN and XMAX, and YMIN and YMAX of the data. These are related to the data to be plotted and not to the axis. Now is the time to determine whether you want to scale it yourself or to use AUTO SCALE.

CAUTION TO USERS:

1) It is best to plot on a file and then to copy this file on to the plotter. This allows you to detect mistakes and gives you the option of plotting, or not plotting thus not wasting plotter time. (See figure 1)

2) Rewind the plot unit (PLOT LUN) before reusing so bad or unwanted plots are erased.

3) The two LABELS, the FORMAT and the TYPE MARK must all be followed by a carriage return-line feed.

4) Plotting in the 3rd quadrant without any space in the other 3 will cause plot XY error messages but these can be ignored and still have a good plot. It is best to have a minimum of area in quadrants 1, 2, and 4.

5) Mistakes in LABELS or FORMAT can be corrected by typing CONTROL-A and the GO followed by the correct LABEL or FORMAT.

6) To end FORTRAN execution set X-size = -1.

7) Perhaps the most important caution to the user concerns the scaling. Remember the following point: The first set of MIN and MAX you type in are used to label the axis only. They have nothing to do with the plotting of the data. The second set of MIN and MAX you give are used to define the values for the outer limits of the graph. If AUTO SCALE = 1 the machine searches the data for a minimum and maximum value and defines the boundaries of your plot as such. If you do not want these numbers for your bounding values, then you must scale it yourself. One point must be clear. The values you gave for the first MIN and MAX have absolutely nothing to do with the plotting. They only set up labels for your axis. It is the MIN and MAX found in your data or else defined by you in AUTO SCALE that define the bounding limits of your graph. In most cases the two sets of MAX and MIN are equal.

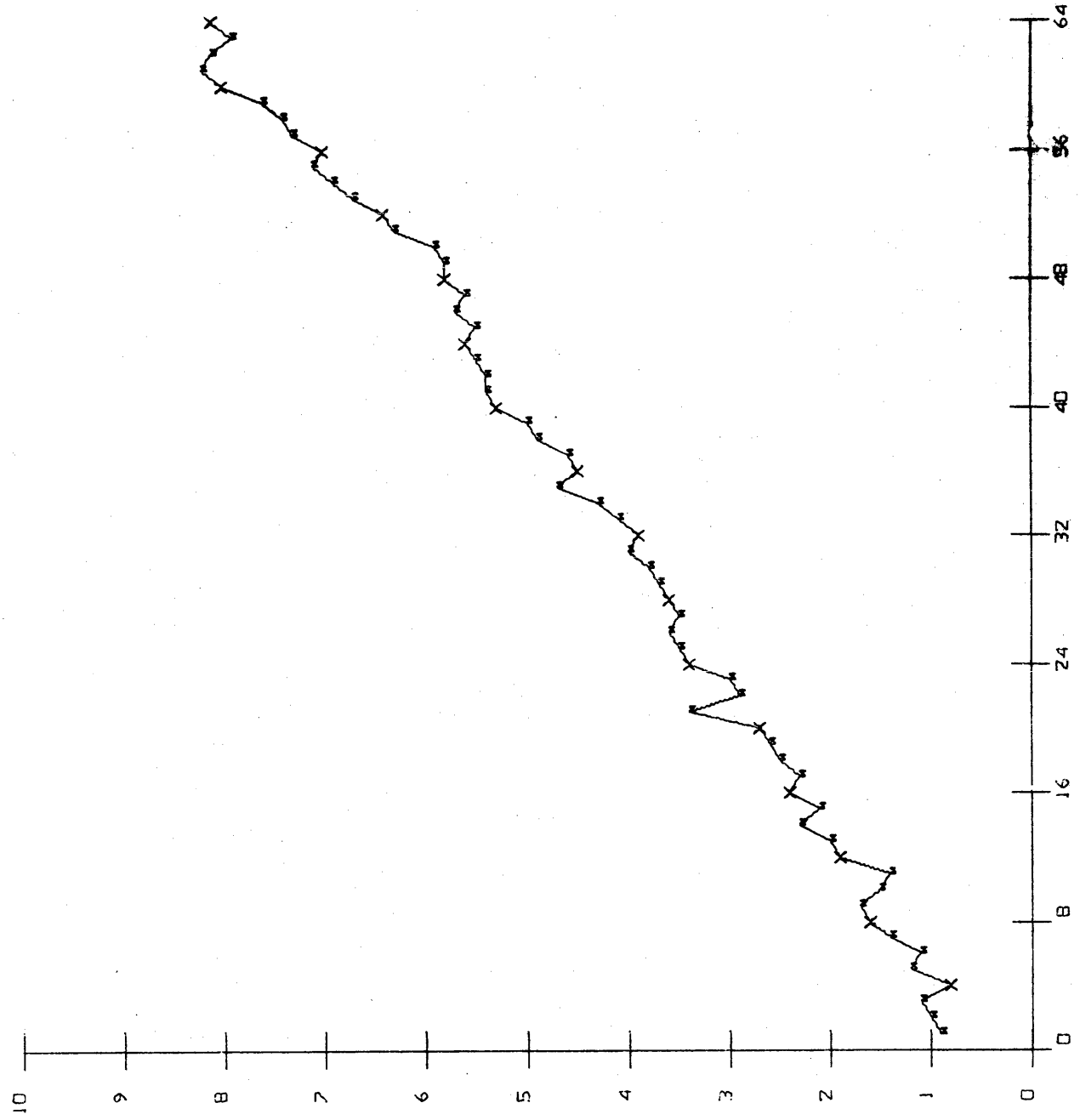
*EZPLOT was written by Nathan Keith of Oregon State Oceanography department. It was modified and documented by Dave Fuhrer and Jo Ann Baughman of Oregon State Computer Center. Any questions about *EZPLOT should be directed to Dave Fuhrer.

NUMBER	DATA MARKS	MARK
-0	No data mark	
-1-2	Up arrow, datum at the point	↑
-3-4	Right arrow, datum at the point	→
-5-6	Down arrow, datum at the point	↓
-7-8	Left arrow, datum at the point	←
-9-10	Vertical cross, datum at its center	+
-11-12	X within a box, datum at its center	☒
-13-14	Hourglass dot, datum at lower left corner	⧖
-15-16	Diagonal cross, datum at the center	X
-17-18	Vertical caret, datum at the point	v
-19-20	Horizontal caret, datum at the point	>
-21-22	Right angle, L orientation, datum at point	L
-23-24	Same, turned 180 degrees, datum at point	⅂
-25-26	Tee, on its side, datum at intersection	⊢
-27-28	Tee, datum at intersection	T
-29-30	Vertical bar, datum at its center	|
-31-32	Horizontal bar, datum at its center	-

Odd numbers define small marks, marks defined by even numbers correspond to marks defined by odd numbers, but are twice as large.

FIGURE 1

```
##########
#EQUIP,1=FILE
#EQUIP,2=*DATA007
#*EZPLOT
 PLOT LUN=  1
 X-SIZE=7
 Y-SIZE=7
 AXES 1
 X-MIN= 0
 X-MAX= 64
 X0=0
 DX=8
 Y-MIN= 0
 Y-MAX= 10
 Y0=0
 DY=1
 X-LABEL0
 Y-LABEL1 TEST PLOT 1
 DATA LUN=  2
 FORMAT 1 (F5.3)
IS THIS A TIME SERIES    1
     0     .9       1.0    1.0
   2.0    1.1       3.0     .8
   4.0    1.2       5.0    1.1
   6.0    1.4       7.0    1.6
   8.0    1.7       9.0    1.5
MIN AND MAX           0   63.00000     .80000    8.20000
AUTO SCALE  0
 X-MIN= -1
 X-MAX= 63
 Y-MIN= 0
 Y-MAX= 10
DRAG PEN1

TYPE MARK
-14
INTERVAL =  4
DATA0
 X-SIZE=-1




END OF FORTRAN EXECUTION

#EQUIP,3=PLOT
#REWIND,1
#LABEL,3/FGHREE

#COPY,I=1,O=3

#LOGOFF
TIME 3.617 SECONDS  4PRUKS 13  COST $0.66
```

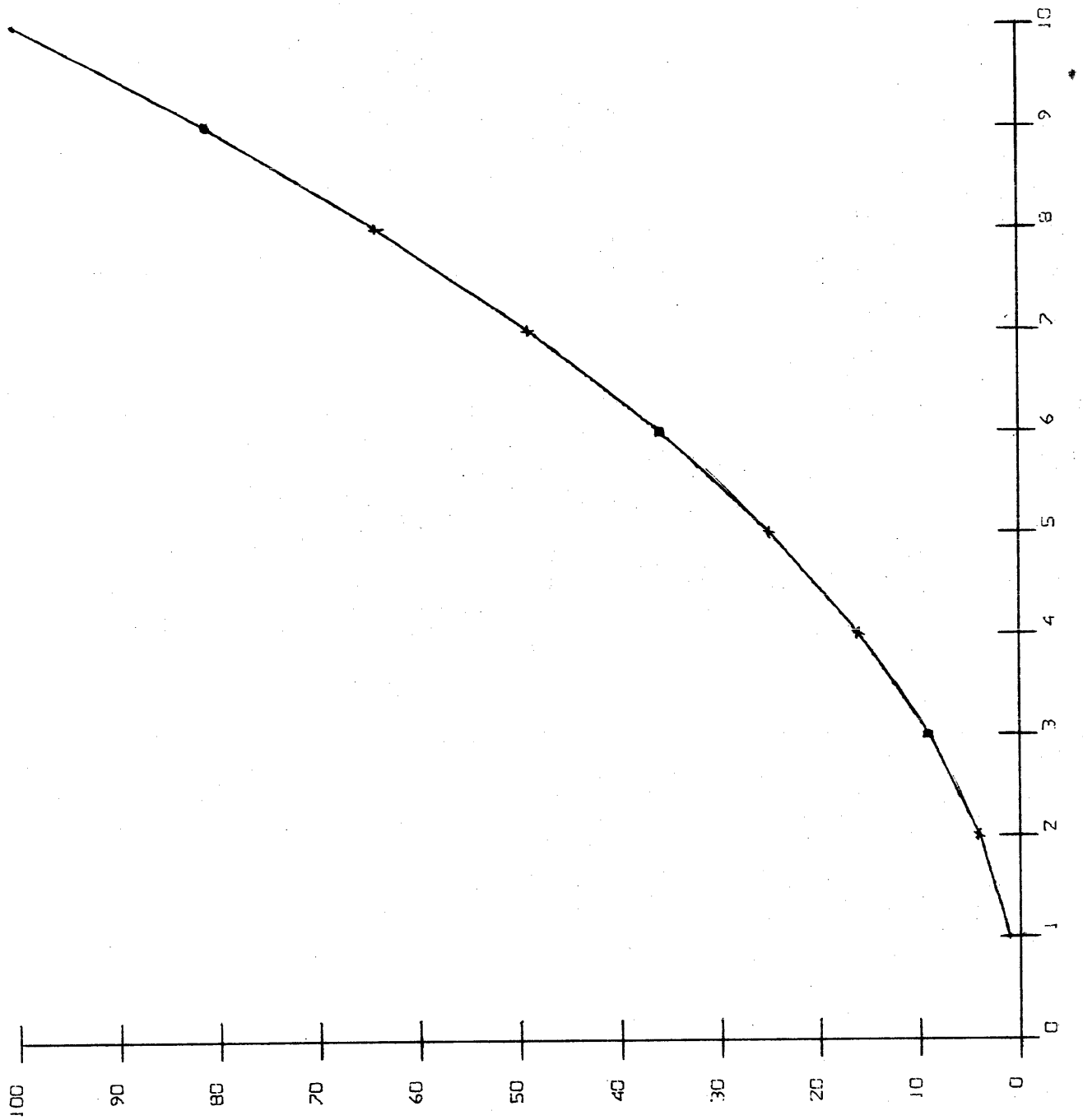


TEST PLOT 1

FUHRER

FIGURE 2

```
##########
#EQUIP,1=PLOT
#EQUIP,2=*TEST1
#LABEL,1/FUHRER

#*EZPLOT
 PLOT LUN=  1
 X-SIZE=7
 Y-SIZE=7
 AXES 1
 X-MIN= 0
 X-MAX= 10
 X0=0
 DX=1
 Y-MIN= 0
 Y-MAX= 100
 Y0=0
 DY=10
 X-LABEL0
 Y-LABEL1 TEST PLOT 2
 DATA LUN=  2
 FORMAT 1 (2F4.0)
IS THIS A TIME SERIES   0
IS X THE FIRST PARAMETER1
   1.0   1.0      2.0   4.0
   3.0   9.0      4.0  16.0
   5.0  25.0      6.0  36.0
   7.0  49.0      8.0  64.0
   9.0  81.0     10.0 100.0
MIN AND MAX   1.00000  10.00000   1.00000 100.00000
AUTO SCALE  0
 X-MIN= 0
 X-MAX= 10
 Y-MIN= 0
 Y-MAX= 100
DRAW PEN1

TYPE MARK
-9
INTERVAL =  3
DATA0
 X-SIZE=-1




END OF FORTRAN EXECUTION

#LOGOFF
TIME 2.447 SECONDS  MFBLKS 6  COST $0.51
```



TEST PLOT 2

FUHRER