CO-OP 41 Plotter Module

USER'S MANUAL



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The CO-OP 41 Plotter Module User's Manual

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How to Use This Manual

This manual contains both tutorial and reference information for the CO-OP 41 Plotter Module. The first part of this manual contains tutorial information designed to get you up to speed quickly. The second part of this manual provides the additional material you will need to get the most use out of the Plotter Module.

This manual assumes that you are familiar with the CO-OP 41 Data Collector, and have read through the CO-OP 41 Surveying Module User's Manual. It also assumes that you are familiar with entering jobs into the CO-OP 41 Data Collector, and that you are familiar with the use of the random point file (see the CO-OP 41 Surveying Module User's Manual for details on these).

The tutorial information in this manual is in the form of an instructional course on using the CO-OP 41 Plotter Module and Data Collector. This course is designed to be read from beginning to end, and should get you feeling comfortable with using the functions in the Plotter Module.

The main part of the first chapter contains concepts and conventions used in the Plotter Module. There are not many concepts and conventions, but it takes a thorough understanding of them to ensure that you get the maximum use from your CO-OP 41 Plotter Module. Also presented is a short example, so that you can see how easy it is to create a plot using the CO-OP 41 Plotting Module.

Chapter 2 continues to use the job that was presented in the CO-OP 41 Surveying Module Owner's Manual (the FIRST job). It presents the basic functions needed to create a working plot of the FIRST job. Chapter 3 finishes out the major work on the FIRST job. Functions are presented so that you can print various notes on the plat, and plot with several different line types.

Chapter 4 includes a reference section for function keys.

The keystroke and display format used in this manual matches that used in the CO-OP 41 Surveying Module User's Manual.

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Chapter 1

Getting Started

Your CO-OP 41 Plotter Module package includes the following:

- The CO-OP 41 Plotter Module for the HP-41.
- The CO-OP 41 Plotter Module User's Manual
- An HP-41 keyboard overlay.

The CO-OP 41 Plotter Module is designed to be used with the CO-OP 41 Data Collector and a plotter. (The CO-OP 41 plotter module supports plotters that use the HP/GL or DM/PL command language.)

PLUGGING IN THE MODULE

The procedure for plugging in the module to the HP-41 and the CO-OP 41 Data Collector is as follows:

- 1. Make sure the HP-41 is off.
- 2. If the CO-OP 41 Data Collector is attached to the HP-41 then remove it (refer to the Surveying Module User's Manual if needed).
- 3. Install the CO-OP Plotter Module in port 1 or 2 on the HP-41. A diagram that reveals the port numbers is shown on the bottom of the HP-41.
- 4. Connect the CO-OP 41 Data Collector to the HP-41.

Caution: Do not touch any metal parts on the module or the HP-41 during assembly. Electrostatic discharge from your body can cause damage to the electronic parts.

CONNECTING THE CO-OP 41 TO A PLOTTER

To connect the CO-OP 41 Data Collector to a plotter, simply attach the "CO-OP 41 to plotter" cable to the CO-OP 41's serial port, and connect the other end of the cable to the plotter's serial connector. Next turn on the plotter.

INITIALIZING THE PLOTTER FUNCTIONS

The CO-OP 41 Data Collector must be initialized for the plotter you are using before it will plot. Initialization is accomplished by executing one of two programs: HP function or HI. For example, you would use the keystrokes (XEQ) (ALPHA) HP (ALPHA) to execute the HP function.

The HP function is used when you are going to be working with a Hewlett-Packard plotter or other plotter using the HP/GL. The HI function is used when you are going to be using a Houston Instrument's plotter or other plotter that uses DM/PL.

If the plotter's baud rate and parity are selectable, they should be set to:

9600 baud No parity 8 data bits 1 stop bit

THE PLOTTING SHIFT KEY

Most of the plotting functions are activated by first pressing the plotting shift key [SHIFT] and then the plotting function key. The plotting shift key is the upper right hand key on the keyboard that, in ALPHA mode, is the E key.

Note: The plotting [SHIFT] key is the [E] (or [LN]) key.



Example: To execute the LINES function, you would press:

SHIFT LINES

where **SHIFT** is the plotting shift key.

PLOTTING WITH THE RANDOM POINT FILE

Virtually all of the functions that plot part or all of your job use the random point file.

First we will key in a small traverse that defines a triangle, and then we will plot it to show how easily a plot can be made. The first step is to key in the job.

Start the triangle job:

[] [JOBS]	NEW JOB	*
(ENTER)	JOB NAME?	
TRIG R/S	N/E ONLY	*

(ENTER)	PTS?
4 (R/S)	RAWDAT OFF 🛛
ENTER	N=E=5000
ENTER	1.0000
Traverse from point 1 to point 2:	
	:AZIMUTH?
30 (R/S)	:ZENITH∠?
R/S	:H DIST?
200 (R/S)	2.0000
	TRAVRS
	:AZIMUTH?
Traverse from point 2 to point 3:	
150 R/S	:H DIST?
200 (R/S)	3.0000
	TRAVRS
	:AZIMUTH?

For this plotting example you don't need to close the traverse, so we won't traverse back to point 1. At this point you should have your CO-OP 41 connected to your plotter (see Chapter 1 Getting Started, if you have not done this). The next step is to initialize the plotter by executing the HI or HP function. (Note: You should also have a sheet of plotting paper in your plotter!).

[XEQ] [ALPHA] HP [ALPHA]

PEN NO.?

The above keystrokes assume you are using an HP plotter (execute the HI function if you are using a Houston Instrument's plotter).

The CO-OP 41 is now asking what pen to use while plotting. If you have a single pen plotter, then simply press [R/S]. If you have a multi-pen plotter, then key in the pen number to use while plotting. We will assume that you are using a single pen plotter.

TEXT SLANT

When printing text, the plotter can either print the text at a slant, or print it without any slant. Assume we don't want any slant when printing text, so we will choose no slant.

(R/S)	NO SLANT	*
(ENTER)	LETTER SIZE?	

The plotter can print any text in a variety of sizes, the smaller the number you key in for the LETTER SIZE? prompt, the smaller the text will be. If you just press [R/S] the text size is taken to be a default of 12. Select this default for now.

R/S

SCALE?

DOT MARKER

This is asking for the scale of the drawing to be used. The default is 100 feet in the job to 1 inch on the plat. Again, choose the default for now.

For positioning the job on the plat, the CO-OP 41 needs to know what the lowest north/east coordinate of your job is. You can either key in a value, or press [R/S]. If you just press [R/S], the CO-OP 41 automatically finds the point with the southeastern most coordinates. For now, let the CO-OP 41 figure it out.

At this point, the real work of the initialization function is done. The CO-OP 41 is now simply checking if you want to print the points in the current job. At this point you could execute a different plotting function, or plot the points in the job. We want to plot the points, so press the ENTER key.

You can either plot a series of points (for example, from point 1 to point 3) or a group of points defined in the random point file. This prompt is asking if you want to plot a series of points, which is what we want to do, so press [ENTER].

We want to plot points 1 through 3.

ENTER]

ENTER

R/S

R/S

R/S

[R/S]

LOW NORTH?

CONSECUTIVE ↗

FROM PT?

PLOT PTS

[ENTER]

1 (R/S)

3 (R/S)

If everything is working correctly, the plotter should put a dot on the plat for each of the three points, and print the point number beside each point. If this didn't work, then follow the steps below.

- 1. Make certain the plotter is properly connected to the CO-OP 41. Check the instructions above and the plotter manual.
- 2. Execute the plotter initialization function again.
- 3. Try the triangle plot again. If it still doesn't work, then call your local dealer.

2

3

1



The Fundamentals

In this chapter and for the rest of the tutorial section, we will go back to working with the FIRST job that was presented in the Surveying Module User's Manual. If you have not entered this into the CO-OP 41 Data Collector, you can either go back to the Surveying Module User's Manual, or consult Appendix A *The FIRST Job* in this manual for the required keystrokes.

(XEQ) (ALPHA) OLDJOB (ALPHA)

JOB NAME?

FIRST R/S

RAWDAT OFF

(ENTER)

It is assumed that you have already executed the plotter initialization function. If you haven't, then do so now.

THE FAST PLOT FUNCTIONS

Generally, the plotting functions operate as follows:

- If you are plotting points, then the function will either plot all of the points, or allow you to specify a series of points to plot, or plot the points contained in the random point file.
- If you are plotting lines, then the function will plot lines between the point numbers stored in the random point file.

There are several fast plot functions. These are:

- FASTP: Fast points
- FPL: Fast points and lines
- FPLC: Fast points, lines, and calls

When you execute the FASTP function it will plot all of the points in the job file (as long as they are continuous) and plot point numbers for them.

SHIFT FASTP

LETTER SIZE?

9 (R/S)

SCALE?

115 R/S



The FPL function will plot all of the points in the job and put lines between the points defined in the random point file. Before we execute this function we must, therefore, set up the random point file.

PLOTTING WITH THE RANDOM POINT FILE

When plotting with the random point file, you set up the random point file in the same way that you did for the surveying functions (using the RDM-PTS function). There are several things to keep in mind, however.

The CO-OP 41 will plot lines between all points, unless the point is entered as a negative number. If you enter the numbers (1, 2, -3, 4) the plotter will draw a line between points 1 and 2, then lift the pen and move to point 3, and then draw a line to point 4.

Curves are specified exactly like they are for the surveying functions. Briefly, curves are entered as negative fractional decimal numbers, with the integer part of the number the beginning point, and the fractional part of the number the end point of the curve. -23.0025 defines a curve from point 23 to point 25. If you enter the point definitions for a curve, the CO-OP 41 will prompt for the radius of the curve (see the CO-OP 41 Surveying Module User's Manual for more details).

For the first job, we want to have lines drawn around the outer points, and have a line distinguishing the new property boundary between points 6 and 10. To do this we will enter the following into the random point file:

RDM-PTS	PT?
1.0008 (R/S)	PT?
6 [CHS] [R/S]	PT?
10 (R/S)	PT?

0 [R/S]

PT?

Once this has been entered we can execute the FPL function.

	SHIFT)	(FPL)
--	--------	-------

LETTER SIZE?

9 (R/S)

SCALE?

115 **R/S**



The last fast plot function is the FPLC function. This function operates much the same as the FPL function, but it also puts calls on the lines that it plots. We can use the same random point file that is used above for this function.

(SHIFT) (FPLC)	LETTER SIZE?
9 (R/S)	SCALE?
115 (R/S)	



THE NORMAL PLOTTING FUNCTIONS

The fast plot functions are usually used to make certain there are no mistakes in your file, and are not used for the final plot. To do a finalized plot there are several functions available that allow you greater freedom when specifying what points and lines to plot. These functions are the PTS, LINES, and CALLS functions.

The PTS function will plot the points in the job but, unlike the FPL function, we can define what points to plot. When executed, the CO-OP 41 will prompt whether we wish to plot a range of points or the points contained in the random point file.

CONSECUTIVE	*
RDMPTS FILE	*

Choosing CONSECUTIVE allows us to plot a range of points that we define (from one point number to another). RDMPTS FILE will plot the points contained in the random point file.

All of the regular plotting functions allow you to select whether to plot from consecutive points or points contained in the random point file.

For the FIRST job, we only really need to see a few of the many points in the job. The rest of the points simply help define the boundary lines of objects. Therefore the first thing that we want to do is to plot the points on the perimeter of the job, and the dividing line of the property. For this we will need a new random point file.

RDM-PTS

PT?

1.0007 (R/S)	PT?
10 [R/S]	PT?
21 (R/S)	PT?
22 (R/S)	PT?
23 (R/S)	PT?
26 (R/S)	PT?
25 (R/S)	PT?
28 (R/S)	PT?
14 (R/S)	PT?
16 (R/S)	PT?

0 **R/S**

Now we can run the PTS function and plot the points in the random point file.

PTS	PLOT PTS	*
(ENTER)	CONSECUTIVE	*
(R/S)	RDMPTS FILE	*
(ENTER)		

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The next step is to define the lines that we want plotted. Again for this we will need a new random point file:

() (RDM-PTS)	PT?
1.0007 (R/S)	PT?
1 (R/S)	PT?

That defines the boundary of the job. Now we need to define the dividing line from point 6 to point 10.

10 [R/S]

6 CHS

Next, we define the outline of the house.

13 CHS (R/S)	PT?
12 (R/S)	PT?
14.0016 R/S	PT?

Now we need to define the road (notice the definition of the curve from point 23 to 25, and from point 26 to 28).

22 CHS R/S	PT?
23 (R/S)	PT?
23.0025 CHS (R/S)	RADIUS?
165 (CHS) (R/S)	PT?

PT? PT?

F I :	
PT?	
PT2	

14 (R/S)	PT?
21 (CHS) (R/S)	PT?
26 (R/S)	PT?
26.0028 CHS (R/S)	RADIUS?
135 (CHS) (R/S)	PT?
16 (R/S)	PT?

0 (R/S)

(ENTER)

Now that the random point file is set up, we can plot the lines.

SHIFT LINESCONSECUTIVER/SRDMPTS FILE



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Finally, we need to put calls on the lines that we have plotted. This time, however, lets do the plotting of the call on the line from 1 to 2 a bit differently. First lets put the calls on all the lines, but this one, again we need to define another random point file:

RDM-PTS	PT?
2.0007 (R/S)	PT?
6 [CHS] [R/S]	PT?
10 (R/S)	PT?
0 (R/S)	PT?

Now that this is defined we can print the calls.

SHIFT CALLS	LETTER SIZE?	
9 (R/S)	IN/OUT	7

The CALLS function allows us to define where we want the calls to be printed (on the inside, outside, or on both sides of the line, and what we want to be plotted). Right now we want to print on both sides of the lines.

ENTER

The CO-OP 41 should now put the calls on these lines. For the line from 1 to 2 lets put the bearing and distance from 1 to 2 on the outside of that line. Then we can put the distances between the dividing lines of 1 to 10, 10 to 22, and 21 to 2 on the inside of the line. First lets put the call on the outside of the line from 1 to 2.

[] [RDM-PTS]	PT?
1.0002 (R/S)	PT?
0 (R/S)	
(SHIFT) (CALLS)	LETTER SIZE?
Lets make the calls out a bit bigger	letter then the others.
10 (R/S)	IN/OUT
(R/S)	RESUME 🗾
(R/S)	OUT B/D
(ENTER)	

Now we just have to put the distances on the inside of the line.

RDM-PTS	PT?
1 (R/S)	PT?
10 (R/S)	PT?
22 (R/S)	PT?

Note we don't want a distance to be put between the line from 22 to 21, so we must enter point 21 as a negative number.

PT?

21 [HS	R/S
------	----	-----

2 (R/S)	PT?	
0 (R/S)		
(SHIFT) (CALLS)	LETTER SIZE?	
9 R/S	IN/OUT	*
(R/S)	RESUME	7
R/S	OUT B/D	~
R/S	IN DIST	7
(ENTER)		



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Chapter 3

Refining the Plot

This chapter defines those functions that can be used to modify the plot, or add special features to it. The first step in using these functions, is to learn how to move the pen around on the plat.

MOVING THE PEN

There several functions provided in the CO-OP Plotter Module that allow you to move the pen around. The first of these functions move the pen in a specified direction. If you look at the plotter overlay you will notice several keys marked N, E, W, and S. These keys will move the plotter pen in that direction.

(SHIFT) (N)

The plotter pen should start moving to the north on the plat. Pressing $\boxed{R/S}$ should cause the pen to stop moving. Likewise,

SHIFT E

Should move the plotter pen to the east on the plat. Again, pressing R/S will cause the pen to stop moving.

There is also a PEN HOME key on the keyboard. This will cause the plotter pen to move to the "HOME" position (the lowest south-east corner of the plat).

Finally there are the PEN UP, and PEN DOWN keys. These will either raise the pen off the plat (the default condition) or rest the pen against the plat. Note: if the pen is resting against the plat, then when you issue a pen movement command (like E) then as the pen moves, a line will be drawn on the plat.

WORKING WITH TEXT

The CO-OP 41 Plotter Module also contains several functions that allow the printing of text on the plat. The easiest to use of these functions is the PRINT NOTE function. Before you use this you must position the plotter pen where you want the text to appear on the plat (use the plotter pen movement commands explained above). Position the pen in the south west corner of your plat (leave enough room to print the text).

(SHIFT) (PRINT NOTE)

PRINT NOTE has several options, but right now we just want to print some text, so we will choose this menu option.

(ENTER)

28

13 R/S

We can now key in the note that we want printed.

F. IRST JOB R/S

Notice that the CO-OP 41 printed out the text that we just entered. We now have the option of printing text on the next line, or continuing printing on the same line, or of

NOTE?

NEXT LINE

LETTER SIZE?

PRINT NOTE

7
exiting the PRINT NOTE function. Let's exit the function for right now.

R/S

SAME LINE? 🗾

END NOTES

R/S

(ENTER)

PRINT NOTE also allows us to print the acreage and square footage information. For this, lets calculate and plot the acreage information for the small parcel of land, cut off by line 6-10. First we need to calculate the area.

(RDM-PTS)	PT?
1 (R/S)	PT?
10 (R/S)	PT?
6 (R/S)	PT?
7 (R/S)	PT?
1 (R/S)	PT?
0 [R/S] [] [AUTO]	ACRES = 2.0000

Now that the acreage has been computed, move the plotter pen inside the small area defined by 1-10-6-7 (move the pen so that there is enough room to plot both the acreage and square footage - one above the other). Now execute the PRINT NOTE function.

(SHIFT) (PRINT NOTE)

LETTER SIZE?

10 (R/S)	PRINT NOTE	*
(R/S)	TEXT DIR	*
(R/S)	PRT ACRES	×

(ENTER)

After plotting this, we can also plot the square footage.

(SHIFT) (PRINT NOTE)	LETTER SIZE?
10 (R/S)	PRINT NOTE
(R/S)	TEXT DIR 🗾
(R/S)	PRT ACRES 🗸
(R/S)	PRT SQ FT 🛛

ENTER

There are other functions that can print several lines of text at once (PRINT TEXT and VARY TEXT. See CHAPTER 5 of this manual for more details on these functions).

CHANGING THE OPTIONS

There are several functions that allow the changing of the way other functions operate. The most useful of these is changing the line type.

Line Type

The LINE TYPE function is entered with a number in the X-Reg that defines the new line type. This varies from plotter model to plotter model. It allows you to plot dashed lines, dotted lines or other various types of lines. For the FIRST job let's plot the center line of the road in a dashed line. To do this we must set up the random point file, and define the center line of the road.

RDM-PTS	PT?
17 (R/S)	PT?
19 (R/S)	PT?
19.0020 (CHS) (R/S)	RADIUS?
150 (CHS) (R/S)	PT?
15 (5/5)	

0 (R/S)

Now we need to tell the plotter to plot with a dashed line (I am using an HP plotter so will use a 2 as the line type, check your plotter manual for the number that defines a dashed line for your plotter).

2 (SHIFT) (LINE TYPE)

LINE TYPE:2

Now we can plot the line as normal.

(SHIFT) (LINES)

CONSECUTIVE 🛛 🖍

R/S

ENTER)

Note: Once a line type has been entered, it becomes the default line type until it is changed again, or until the RESET function is done. See the RESET function in the reference section for more information.

Text Direction

The TEXT DIR function allows you to change the direction in which text is printed. It is entered with the angle (from 0 to 360 with 0 being north) to print the text along. Normally this is 90 (east-west).

Pen Speed

The last of these functions PEN SPEED changes the speed at which the plotter pen moves on the plat. This is useful when using the N, E, W, and S keys, as you can slow down the pen speed for accurate positioning of the pen (See the reference section of this manual for more details).

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MOVING THE JOB

If you let the CO-OP 41 determine the low north and east of the plat, your job will usually be off the center of the paper. You can easily move your job to anywhere on the paper by one of the following methods:

- 1. Use the MOVE JOB function. This function allows you to move a point of your job to a digitized location and the rest of the points will be moved accordingly. This function also allows you to move your job by specifying the north movement and east movement. Please refer to the MOVE JOB function in Chapter 4 for more details.
- 2. Specify the low north and low east of the plat. This is an easy way to move the job on the plat. Key in your own low north and east coordinate instead of letting the CO-OP 41 find them for you. For example: Your job is a box made up of the following points.

POINT #		NORTH	EAST
1	5,000	5,000	
2	5,100	5,000	
3	5,100	5,100	
4	5,000	5,100	

The lowest north-east point for this job is 5,000 5,000. To position the plot of this job closer to the center of the plat then we give the following answers:

LOW NORTH?

LOW EAST?

4,500 R/S

4,500 R/S

We have given a low north-east 500 feet less then the actual points. If our scale is the default (100' = 1") then our plot would be moved 5 inches to the north, and 5 inches to the east of the plat.

ROTATING THE JOB

Your job can be rotated around a given point by a specified degree of rotation. The CO-OP 41 will prompt you for the pivot point number and the rotation degree. Please refer to the ROTATE function in Chapter 4 for more details.

SPUR AZIMUTHS

If you are plotting calls and there is not enough room on the line between two points, the CO-OP 41 will prompt:

SPUR AZIMUTH?

This is asking for the azimuth along which to print the calls for the short line. The azimuth is entered just like an azimuth for a traverse. When you enter a spur azimuth the CO-OP 41 will automatically store the spur information in the random point file and will always automatically draw the spur azimuth as long as the random point file is not changed or deleted.

SPUR AZIMUTH'S ON A CURVE

The second place that a spur azimuth is prompted for is whenever a call is requested on a curve. When you define the spur azimuth for a curve the CO-OP 41 will print the radius and arc length of the defined curve along the spur azimuth. In the FIRST job lets put calls on the two curves that define the road boundary. To do this we need to set up the random point file for the printing of the calls.

(RDM-PTS)	PT?
23 (R/S)	PT?
23.0025 CHS (R/S)	RADIUS?
165 CHS (R/S)	PT?
26 (CHS) (R/S)	PT?
26.0028 [CHS] [R/S]	RADIUS?
135 [<u>CHS</u>] (<u>R/S</u>]	PT?

0 [R/S]

Once the random point file is set up we can print calls for the curves.

(SHIFT) (CALLS)	LETTER SIZE?	
10 (R/S)	IN/OUT	*
[ENTER]	SPUR AZ?	

This is asking for the spur azimuth for the first curve, we want it rotated away from the road so:

135 (R/S)	SPUR AZ?
-----------	----------

This is prompting for the spur azimuth of the second curve. To look nice, we will print this spur at an azimuth directly opposite the previous one.

315 R/S



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Chapter 4

Special Notes on Plotting Functions

SCALE FACTOR

When you set up the calculator to do plotting functions (HI and HP), the CO-OP 41 will prompt for the scale factor. The scale factor is the size reduction to use when plotting the job. In our coordinate system, each unit is one foot. A scale of 100 means 100 feet will be drawn as 1 inch on the paper. The default scale is 100 (100'=1").

PLOTTING THE JOB FILE

When you enter the points in a job into the CO-OP 41 and are planning to plot them, special considerations need to be kept in mind. When the CO-OP 41 goes to find the lowest north and east of a job, it searches the job file from the beginning and stops whenever it encounters an empty point. It is therefore important that you don't allow any "holes" in the job file (a "hole" is defined as a point number that you have skipped over).

Example: If you have traversed from point 1 to 2 to 3, and then key in the information for point 5 there will be a hole in your data at point 4 (as far as the plotting functions are concerned you have only entered points 1 thru 3). It is important that you keep the points consecutive for plotting.

This will only affect when you fast plot points, and the determination of low north and east. It will not affect the plotting of points from the random point file.

Format For Keyword Entries

Name: Gives the name of the function.

Purpose: Describes what the function does.

Keystrokes: Shows what keys need to be pressed in order to execute the function

Entry Conditions: Describes what needs to be done, or set up before executing the function.

Operation: Explains how the function works, and what information to enter. Also explains any information that the function calculates.

Remarks: Special things to keep in mind when using the function.

See Also: Identifies other functions that are similar to, or effect the function.

Examples: Illustrates some of the different ways you can use the function.

ALC

Name: Automatic Lines and Calls

Purpose: The CO-OP 41 will automatically plot the lines between the points stored in the random point file, and put calls on the lines.

Keystrokes: [ALC]

Entry Conditions: The points to be plotted must be in the Random Point file.

Operation: This function has no prompts or displays. When executed the CO-OP 41 draws the specified lines and puts the calls on the lines (ALC puts the calls on both sides of the line).

Remarks: It is possible to change pens at any time during the plotting. Tap the (R/S) key to stop plotting, and change the pen. Tapping the (R/S) key again will start the plotting where it left off.

See Also: SPUR, CALLS, OPT, RDMPTS

BORDER

Name: Border

Purpose: Draw a border around your plot.

Keystrokes: SHIFT BORDER

Entry Conditions: None

Operation: When executed the CO-OP 41 will put up a scroll menu for the size of the border that you want drawn.

SIZE D	*
SIZE C	*
SIZE B	*
ENTER SIZE	×

ENTER SIZE ~ This allows you to enter the size of the border that you want to plot. The border will be drawn from the current pen position. Position the pen at the south-west corner fo where you want the border to begin. When selected it will prompt for border size information.

INCHES N?

Key in how many inches long the north-south border is to be.

INCHES E?

Key in how many inches long the east-west border is to be.

CALLS

Name: Calls

Purpose: Prints the calls on the lines, between the points stored in the random point file.

Keystrokes: SHIFT CALLS

Entry Conditions: The points to put the calls between must be stored in the random point file.

Operation: Calls are printed centered between the end points of the line. When the function is executed the CO-OP 41 will prompt for the size of the lettering to use on the calls.

LETTER SIZE?

When this is entered the CO-OP 41 will bring up a scroll menu allowing for the selection of where to place the calls, and what information to print.

IN/OUT	7
RESUME	*
OUT B/D	×
INSIDE DIST	×
OUT DIST	×

IN/OUT *•* This selection is for printing the bearing on the outside of the line, and the distance on the inside.

RESUME If for some reason you have interrupted the system while you were printing calls and wish to continue, then select this function. It will prompt for a point number.



Key in the point number that comes after the last call that was printed, and the CO-OP 41 will continue printing calls from that point. **OUT B/D** Will print both the bearing and the distance on the outside of the line. Note that this will not do spur azimuth's, and should only be used for long boundary lines.

INSIDE DIST Prints the distance on the inside of the lines, does not print the bearing.

OUT DIST *r* Prints the distance on the outside of the lines, does not print the bearing.

See Also: SPUR, OPT

CONTOUR

Name: Contour

Purpose: Plots contour tick marks at a specified interval on the plat, between points at different elevations.

Keystrokes: SHIFT CONTOUR

Entry Conditions: Must be in a job file with elevation stored with the points. Must also store the contour points in the random point file by using the RPC function.

Operation: When executed the CO-OP 41 prompts for the interval at which to plot the contour tick marks on the plat.

CONT INT?

After you enter this the CO-OP 41 will calculate the number of tick marks needed between the coordinate pairs given in the random point file and plot the ticks accordingly.

See Also: RPC

CSA

Name: Change Spur Azimuth

Purpose: Creates or changes a spur azimuth.

Keystrokes: [XEQ] [ALPHA] CSA [ALPHA]

Operation: When this function is executed the CO-OP 41 will prompt for the end point of the line to put the spur azimuth on.

TO PT?

Thus if you wanted to put a spur azimuth on the line that ran from point 2 to 3, you would key in 3 at the TO PT? prompt. After the point number is keyed in the CO-OP 41 will prompt for the azimuth along which to draw the spur (entered in degree, minute, second format).

SPUR AZ?

After you have keyed in the azimuth, the CO-OP 41 will prompt for the size of lettering to use when printing the distance and angle information on the spur.

LTR SIZE?

Remark: This function will not change the letter size of a curve spur azimuth, you only have the default letter size of 10.

CURVE

Name: Curve

Purpose: Used to plot a curve.

Keystrokes: SHIFT CURVE

Entry Conditions: None

Operation: When executed the CO-OP 41 will bring up a scroll menu allowing the selection of whether the plotted arc is to be a large or small arc.

SMALL ARC	7
LARGE ARC	Я

A large arc is an arc that has a delta larger then 180 degrees, while a small arc has a delta of 180 degrees or less. After you select the size of the arc the CO-OP 41 will prompt for the point to start the curve at.

:1ST PT?

When this is keyed in the CO-OP 41 will move the pen to that point on the plat and then prompt for the ending point of the curve.

:2ND PT?

You may either enter a second point number, or press the $\boxed{R/S}$ key. If you press the $\boxed{R/S}$ key you will be asked for other information to describe the curve.

Delta angle of the curve to be drawn.

Radius of the curve to be drawn.

Tangent azimuth of the curve to be drawn.

R?

T AZ?

The CO-OP 41 will then put up a scroll menu, allowing the selection if the curve is to be drawn clockwise, or counter clockwise.

TURN	RIGHT	*
TURN	LEFT	*

If the 2ND PT? prompt is answered then the CO-OP 41 will prompt for the radius of the curve.

Key in a positive radius for a clockwise curve, negative radius for a counter-clockwise curve. If you press \mathbb{R}/\mathbb{S} without keying in the radius the CO-OP 41 will prompt for a third pt on the curve.

3RD	PT?

Once all the information has been entered the CO-OP 41 will draw the specified curve on the plat.

Example: You want to draw a curve on the plat from point 3 to point number 4. The curve is a small arc and is to have a radius of 145 feet.

SHIFT CURVE

SMALL ARC 🛛

(ENTER)	1ST PT?
3 (R/S)	2ND PT?
4 (R/S)	R?
145 (R/S)	

DEGC

Name: Degree Character

Purpose: Allows you to change the symbol used as the degree sign when plotting. This function is used if your plotter does not print the standard degree sign correctly.

Keystrokes: [XEQ] [ALPHA] DEGC [ALPHA]

Entry Conditions: Enter with the ASCII character code for the new degree sign in the X-Reg.

Operation: There are no prompts or displays for this function. When executed the CO-OP 41 will simply assign the new character code, given in the X-Reg, to the degree sign for use when plotting.

Remarks: Some HP plotters will draw the degree sign, but will not move to the next character so the degree sign in over-written. On such plotters you can change the degree sign to a space (Enter with 32 in the X-Reg)

DELETE JOB

Name: Delete Job

Purpose: This function allows you to delete a job file.

Keystrokes: [SHIFT] [DELETE JOB]

Entry Conditions: None

Operation: When executed the CO-OP 41 will prompt for the job filename to delete.

DELETE FILE?

When this is keyed in the CO-OP 41 will display the name of the file again with DELETED if it was deleted, otherwise a FL NOT FOUND error will occur.

DIGITIZE

Name: Digitize

Purpose: Creates and stores a point at the current plotter pen position.

Keystrokes: SHIFT DIGITIZE

Entry Conditions: The plotter pen must be moved to the desired place on the plat that you want a new point number at.

Operation: When executed the CO-OP 41 will prompt for the point number to use for the point.

After this is keyed in the CO-OP 41 will display the following.

R/S POINT

If you press [R/S] the CO-OP 41 will plot a point at the current pen position. It will then display the following.

R/S PT NO.

If you press [R/S] at this prompt then the CO-OP 41 will print the point number next to the point just plotted. The point number will be the one you gave it at the first prompt.

Remarks: Due to the limitations of the plotter, the pen cannot be moved an exact distance and direction using the plotter functions, and then accurately digitize a point. For example, You use the draw function and send the pen from a point on a 90 azimuth, a distance of 100 feet. You then digitized a point, and then inversed between the two points, your azimuth might be 89.5955 and the distance might be 99.98 feet. You should therefore only use digitize for storing a point to move the pen to (this would be useful if you want to position a title block on your plat)

DRAW

Name: Draw

Purpose: Allows the drawing of lines at user defined angles and distances on the plat.

Keystrokes: SHIFT DRAW

Operation: When executed the CO-OP 41 will bring up a scroll menu for the selection of whether you want the pen in the up, or down position when it is moving (this will determine if the plotter draws a line or simply moves to the point without drawing a line).

PEN UP	*
PEN DOWN	*

PEN DOWN The plotter will move to the specified point drawing a line from the current pen position to the specified point.

When one of these is selected the CO-OP 41 will bring up scrolling prompts for the entry of information to define the direction and in which to move the pen.

:PT?	
:PP PT1?	
:BRG?	
:AZ?	
:DEF∠?	

PT? If you want to go to a know point then key in the point number and the pen will move to that point.

PP PT1? This is prompting for the first of two points that will define a line parallel to the one that you want the plotter pen to move along. If you key in a point number the CO-OP 41 will prompt for the second known point that defines the parallel line.

The CO-OP 41 will then prompt for the distance to move along the specified line.

DIST?

AZ? If you want the plotter pen to move along a certain azimuth then key in the azimuth. The CO-OP 41 will then prompt for the distance (in current scale feet) to move the pen along this azimuth.

DIST?

DEF \angle ? If you want to move the pen at a deflection angle to a previously drawn line then you can key in the deflection angle, the CO-OP 41 will then prompt for the distance (in current scale feet) to move the pen along the line defined by the deflection angle.

DIST?

Remarks: To use the deflection angle $DEF \angle$, you must have just prior to this used the draw function to draw a line to take the deflection angle from. If you have not done this then you can specify a line to take the deflection from by setting up the back sight (BACKS function) along the line that you want to take the deflection angle from.

E

Name: Pen East

Purpose: Moves the plotter pen to the east on the plat.

Keystrokes: SHIFT E

Entry Conditions: None

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Operation: When executed the plotter pen will begin to move to the east. This is used to quickly position the pen on the plat. When the plotter pen has reached the desired destination press the $\boxed{R/S}$ key and the pen will stop moving.

Remarks: The speed at which the pen moves to the east can be controlled by the PEN SPEED function.

See Also: PEN SPEED

EXIT

Name: Exit plotting

Purpose: Exit the plotting functions and return the keyboard to the CO-OP Survey Module layout.

Keystrokes: SHIFT EXIT

Entry Conditions: None

Operation: When executed the CO-OP 41 un-assigns the top row of keys assigned to the plotting functions, returning the CO-OP 41 to a state of operation as if the plotter function (HP or HI) had never been run.

FAST P

Name: Fast Points

Purpose: Do a fast plot of all the points in the current job file.

Keystrokes: SHIFT FAST P

Operation: When executed the CO-OP 41 prompt for the letter size to use when plotting the point numbers (and elevation and/or note depending on the system used).

LETTER SIZE?

You can either key in a letter size or press $\boxed{R/S}$ for the default letter size of 12. After this is keyed in the CO-OP 41 prompts for the scale factor to use on the drawing.

SCALE?

You can either key in a new scale factor or press $\boxed{R/S}$ to use the default of 1" to 100'. Once you key in both of these values the CO-OP 41 will plot each of the points and put the point number (and depending on the system used the elevation and/or note) beside each point.

Remark: This function will undo the effects of the move job and rotate job function.

FPL

Name: Fast Points and Lines

Purpose: Do a fast plot of the points and lines.

Keystrokes: SHIFT FPL

Entry Conditions: All the points will be plotted. Lines will be drawn between the points stored in the random point file.

Operation: When executed the CO-OP 41 prompt for the letter size to use when plotting the point numbers (and elevation and/or note depending on the system used).

LETTER SIZE?

You can either key in a letter size or press **R/S** for the default letter size of 12. After this is keyed in the CO-OP 41 prompts for the scale factor to use on the drawing.

SCALE?

You can either key in a new scale factor or press $\boxed{R/S}$ to use the default of 1" to 100'. Once you key in both of these values the CO-OP 41 will plot each of the points and put the point number (and depending on the system used the elevation and/or note) beside each point. The CO-OP 41 will then sequentially draw lines between the points.

Remarks: This will undo the effects of the rotate job and move job functions.

FPLC

Name: Fast Points Lines and Calls

Purpose: Do a fast plot of the points, lines and calls.

Keystrokes: SHIFT FPLC

Entry Conditions: All the points will be plotted. Lines will be drawn between the points stored in the random point file.

Operation: When executed the CO-OP 41 prompt for the letter size to use when plotting the point numbers (and elevation and/or note depending on the system used).

LETTER SIZE?

You can either key in a letter size or press [R/S] for the default letter size of 12. After this is keyed in the CO-OP 41 prompts for the scale factor to use on the drawing.

SCALE?

You can either key in a new scale factor or press $\boxed{H/S}$ to use the default of 1" to 100'. Once you key in both of these values the CO-OP 41 will plot each of the points and put the point number (and depending on the system used the elevation and/or note) beside each point. The CO-OP 41 will then sequentially draw lines between the points. After it has drawn the lines the CO-OP 41 will put the calls on the lines with the bearing being printed on the outside of the line, and the distance printed on the inside.

Remarks: This will undo the effects of the rotate job and move job functions.

HI

Name: Houston Instrument

Purpose: Sets up the CO-OP 41 to talk to a Houston Instrument's plotter, and initializes the plotter. Also assigns the plotter keys on the CO-OP 41.

Keystrokes: [XEQ] [ALPHA] HI (ALPHA]

Entry Conditions: A Houston Instrument's plotter must be attached to the CO-OP 41 via the serial port.

Operation: When this function is executed the CO-OP 41 will assign the top row of keys on the HP-41 to the plotting keys, and will enable all of the plotting shift functions. This function will also set up the CO-OP 41 so that it will talk to the Houston Instruments line of plotters. After

assigning the keys the CO-OP 41 will prompt for the pen to use during plotting.

PEN NO.?

If you have a single pen plotter then ignore this prompt and press [R/S], otherwise key in the pen number that you want to use for this plotting session. Next, the CO-OP 41 will bring up a scroll menu allowing for the selection of whether letters are to be printed at a slant, or with no slant.

Print text at a slant

Don't print text at a slant

Next the CO-OP 41 will prompt for the letter size to use when plotting the point numbers (and elevation and/or note depending on the system used).

LETTER SIZE?

SCALE?

You can either key in a letter size or press [R/S] for the default letter size of 12. After this is keyed in the CO-OP 41 prompts for the scale factor to use on the drawing.

You can either key in a new scale factor or press [R/S] to use the default of 1" to 100'. Once you key in both of these values the CO-OP 41 will prompt for the type of point marker to be used.

Uses a closed point.

Uses an open point.

58

Next the CO-OP 41 will prompt for the lowest north coordinate that will position your job on the plotting sheet.

TEXT SLANT

NO SLANT

Л

х

DOT MARKER

CIR MARKER

LOW NORTH?

You may either key in the lowest north coordinate (the north coordinate for the southwest corner of your plot. If you have a small plot, you can key in the low north and east that are lower then the lowest coordinate in your job, so it would move your job to the center of the paper), or you may press $\boxed{R/S}$ and have the CO-OP 41 automatically do a search and find the low north, and low east coordinates. If you answer the LOW NORTH prompt, the CO-OP 41 will prompt for the lowest east coordinate.

LOW EAST?

When the low north and east coordinates have been found the CO-OP 41 will drop into the PTS function (see PTS for more details).

Remarks: This sets up the serial port on the CO-OP 41 to:

9600 baud 8 Data bits No parity 1 Stop bit

HP

Name: Hewlett Packard

Purpose: Sets up the CO-OP 41 to talk to a Hewlett Packard plotter, and initializes the plotter. Also assigns the plotter keys on the CO-OP 41.

Keystrokes: (XEQ) (ALPHA) HP (ALPHA)

Entry Conditions: A Hewlett Packard plotter must be connected to the CO-OP 41 via the serial port. Expects the plotter to be set up as follows:

9600 Baud

No Parity

8 Data bits

1 Stop bit

Operation: When this function is executed the CO-OP 41 will assign the top row of keys on the HP-41 to the plotting keys, and will enable all of the plotting shift functions. This function will also set up the CO-OP 41 so that it will talk to the Hewlett Packard line of plotters. After this the function operates exactly like the HI function (see the HI function for more details).

Remarks: The following are the steps to do if you wish to use an HP HPIB plotter.

- 1) First you will need an HP82169A HPIL to HPIB converter.
- 2) Connect the converter to the CO-OP 41 by the HPIL port on the CO-OP 41.
- 3) Connect the converter to the plotter by the HPIB.
- 4) Set the converter box to "Translator" mode this is set by the dip switches on the converter box (see the converter box owner's manual for more information).
- 5) Set the HPIB address of the plotter to 5 (see the plotters owner's manual for more information).

6) Execute the HP function and proceed as normal.

LINE TYPE

Name: Line Type

Purpose: Change the line type that the plotter draws lines with.

Keystrokes: [SHIFT] [LINE TYPE]

Entry Conditions: Enter with the new line type in the X-Reg.

Operation: When executed the CO-OP 41 will change the type of line that is used for plotting. It will take the line type specified in the X-Reg. The different line types vary from plotter to plotter so check your plotter manual to find what the different line types are.

LINES

Name: Lines

Purpose: Draws lines between either specified points, or points stored in the Random Point file.

Keystrokes: [SHIFT] [LINES]

Entry Conditions: None

Operation: When executed the CO-OP 41 will bring up a scrolling menu allowing you to select what line you want to be plotted.

CONSECUTIVE	*
RDMPTS FILE	×
RESUME	×

CONSECUTIVE This allows you to select a sequential range of lines to plot. When selected the CO-OP 41 will prompt with the starting point number of the first line to plot.

FROM PT?

When this is keyed in the CO-OP 41 will prompt for the ending point number of the last line to plot.

TO PT?

After you key this in the CO-OP 41 will sequentially plot the lines in-between the range of points you just specified.

RDMPTS FILE This selection instructs the CO-OP 41 to plot lines in-between the points stored in the random point file.

RESUME If for some reason you have interrupted the CO-OP 41 in the middle of plotting lines in between points stored in the random point file, you may select this option and begin plotting lines from where you left off. When selected the CO-OP 41 will prompt for the point number to resume printing at.

RESUME PT?

Key in the ending point number of the last line that was plotted, and the CO-OP 41 will continue plotting lines from that point.

MOVE JOB

Name: Move Job (Plotter ROM)

Purpose: Allows you to move the job on the plat before plotting it.

Keystrokes: [SHIFT] [MOVE JOB]

Entry Conditions: None

Operation: When you execute this function the CO-OP 41 will bring up a scroll menu allowing the selection of how you want to specify where to move the job.

BY PEN POS	*
BY INCHES	×

BY PEN POS ➤ Before you select this the plotting pen must be moved to where you want to one of the points of the job to be plotted. When selected the CO-OP 41 will prompt for which point is to be located at the pen position.

MOVE PT?

When the point number is keyed in the CO-OP 41 will move all the other points of the job with respect to the new location of the point that you specified.

BY INCHES ~ This lets you move the job a certain number of inches to the north and east on the plotting sheet. When selected the CO-OP 41 will prompt for the number of inches to move the job north, and then the number of inches to move the job east.

INCHES N?

INCHES E?

Remarks: The effects of this function can be canceled (restored to the original position), by either:

- 1) Moving the job back to it's original position.
- 2) Execute the OPT function, and go through the LOW NORTH computation.

Ν

Name: Pen North

Purpose: Moves the plotter pen to the north on the plat.

Keystrokes: SHIFT N

Entry Conditions: None

Operation: When executed the plotter pen will begin to move to the north. This is used to quickly position the pen on the plat. When the plotter pen has reached the desired destination press the $\boxed{R/S}$ key and the pen will stop moving.

Remarks: The speed at which the pen moves to the north can be controlled by the PEN SPEED function.

See Also: PEN SPEED

NEW TEXT

Name: New Text

Purpose: Allows the creation of a new text file.
Keystrokes: [SHIFT] [NEW TEXT]

Entry Conditions: None

Operation: This function moves you into the 41's text editor. When executed the CO-OP 41 will prompt for the name of the file to store the text to.

NAME?

After you have entered the file name, the CO-OP 41 will prompt for the approximate number of words that will be contained in the file (6 characters per word).

WORDS?

You are now in the editor. Key in your text, pressing $\overline{R/S}$ to declare a new line of text (everything you type before pressing the $\overline{R/S}$ key will appear on one line when plotted. There is no limit to how long you make your lines. When you are finished do not press the $\overline{R/S}$ key, instead press the \overline{ON} key and your text file will be saved (see the HP-41CX manual page 117 for more details).

Remarks: To print the file that you created with this function then use the PRINT TEXT or VARY TEXT function.

Note: The NEW TEXT function creates a file in the HP-41's extended memory, and leaves the extended memory selected. In order to plot any points after this function has been run, you need to run the FILE program to recall the job.

See Also: FILE, OLDJOB

NORTH ARROW

Name: North Arrow

Purpose: Draws a north arrow at the current pen position.

Keystrokes: (SHIFT) (NORTH ARROW)

Entry Conditions: None

Operation: When executed the CO-OP 41 will prompt if you really want to plot the north arrow.

R/S N ARROW

Press the **R/S** key if you want the north arrow drawn, if you hit the key accidently then ignore the prompt and execute another function.

OPT

Name: Options

Purpose: Allows you to change various plotting options.

Keystrokes: OPT

Entry Conditions: None

Operation: When this function is executed the CO-OP 41 will prompt for the pen to use during plotting.

PEN NO.?

If you have a single pen plotter then ignore this prompt and press $\boxed{R/S}$, otherwise key in the pen number that you want to use for this plotting session. Next, the CO-OP 41 will bring up a scroll menu allowing for the selection of whether letters are to be printed at a slant, or with no slant.

Print text at a slant

Don't print text at a slant

TEXT SLANTNO SLANT

DOT MARKER

CIR MARKER

After this the CO-OP 41 will prompt for the letter size to use when plotting the point numbers (and elevation and/or note depending on the system used).

LETTER SIZE?

You can either key in a letter size or press [R/S] for the default letter size of 12. After this is keyed in the CO-OP 41 prompts for the scale factor to use on the drawing.

SCALE?

You can either key in a new scale factor or press \mathbb{R}/\mathbb{S} to use the default of 1" to 100'. Once you key in both of these values the CO-OP 41 will prompt for the type of point marker to be used.

Uses a closed point.

Uses an open point.

Next the CO-OP 41 will prompt for the lowest north coordinate that will position your job on the plotting sheet.

LOW NORTH?

You may either key in a the lowest north coordinate (the north coordinate for the southwest corner of your plat), or you may press [R/S] and have the CO-OP 41 automatically do a search and find the low north, and low east coordinates. If you answer the LOW NORTH prompt, the CO-OP 41 will prompt for the lowest east coordinate.

LOW EAST?

When the low north and east coordinates have been found the CO-OP 41 will drop into the PTS function (see PTS for more details).

Remarks: The LOW NORTH, and LOW EAST may be used to position your job on the plat. The best way to show this is by presenting an example:

Example: Your job is a box made up of the following points.

POINT #	NORTH	EAST
1	5,000	5,000
2	5,100	5,000
3	5,100	5,100
4	5,000	5,100

The lowest north-east point for this job is 5,000 5,000. To position the plot of this job closer to the center of the plat then we give the following answers:

LOW NORTH?

4,500 R/S

LOW EAST?

4,500 [R/S]

We have given a low north-east 500 feet less then the actual points. If our scale is the default (100' = 1") then our plot would be moved 5 inches to the north, and 5 inches to the south on the plat.

PEN DOWN

Name: Pen Down

Purpose: Puts the pen on the plat.

Keystrokes: [SHIFT] [PEN DOWN]

Entry Conditions: None

Operation: When executed the CO-OP 41 will put the plotter pen in the down position (against the plat). Any instructions that are issued after this will cause the pen to mark on the plat.

PEN HOME

Name: Pen Home

Purpose: Moves the pen to the home position.

Keystrokes: [SHIFT] [PEN HOME]

Entry Conditions: None

Operation: When executed the plotter pen will move the lowest south west corner of the paper.

PEN SPEED

Name: Pen Speed Select

Purpose: Allows you to change the speed at which the plotter drawing pen moves.

Keystrokes: [SHIFT] [PEN SPEED]

Entry Conditions: Enter this function with the new pen speed in the X-Reg.

Operation: This function will allow you to change the speed at which the plotter pen moves across the plat for such function as NORTH, EAST, and SOUTH. Pen speed is a number from 1 to 100, 1 being the slowest while 100 is the fastest (the default is 60). There are no prompts or displays to this function, when executed it simply assigns the new pen speed and ends.

Remarks: On HI model 40 series plotters the maximum pen speed used should be 70 instead of 100, so as not to overrun the buffer in the plotter (this will cause the pen to continue moving even after you press [R/S]).

Example: You want to be able to more accurately position the pen on the plat so decide to reduce the pen speed (say down to a speed of 25).

25 (SHIFT) (PEN SPEED)

PEN SPEED:25.0000

PEN UP

Name: Pen Up

Purpose: Moves the pen to the up position (raises the pen off the paper).

Keystrokes: SHIFT PEN UP

Entry Conditions: None

Operation: When executed the CO-OP 41 will put the plotter pen in the up position (above the plat). Any plotter pen movement instructions after this will not mark on the plat.

Remarks: This function only applies to such functions as NORTH, SOUTH, etc.. Functions such as LINES and ALC control the pen being in the up and down position, and will always draw on the plat.

PRINT CALLS

Name: Print Calls

Purpose: Print out the calls of the points in the Random Point file, in a tabular format at the current pen position.

Keystrokes: SHIFT PRINT CALLS

Entry Conditions: Must have the points to print the calls on in the Random Point file.

Operation: When executed the CO-OP 41 will prompt for what size of letters to print the calls with.

LETTER SIZE?

When you enter this the CO-OP 41 will print out the calls of the points in the Random Point file at the current pen position. The will be in the following format

1-2 N 0 00' 00" E 100.00

Where 1-2 means that the call is for the line going from point 1 to point 2. N 0 00' 00" E means that the line lies in the N-E quadrant at an angle of 0 degrees 00 minutes 00 seconds. 100.00 is the distance between points 1 and 2 (in this case 100.00 feet). If more then one call is to be printed they will be printed one below the other.

Remarks: If the text direction has been changes (by TEXT DIRECTION function) then the calls will be printed at the

text direction angle specified. You can restore horizontal text by executing RESET or SET TEXT to 90 degrees.

PRINT COOR

Name: Print Coordinates

Purpose: Print out the coordinates of specified points in a tabular format on the plotter, at the current pen position.

Keystrokes: [SHIFT] [PRINT COOR]

Entry Conditions: None

Operation: When executed the CO-OP 41 will prompt for the size of lettering to use when printing out the coordinates.

LETTER SIZE?

After this is keyed in, the CO-OP 41 will prompt for the beginning point to print the coordinates of.

FROM PT?

Next the CO-OP 41 will prompt for the ending point to print the coordinates of.

TO PT?

When this is keyed in the CO-OP 41 will print out the points and coordinates as follows.

1. 5,000.0000 5,100.0000

Where 1. is the point number, 5,000.0000 is the north coordinate, and 5,100.0000 is the east coordinate. If more then one point is to be printed then they will be printed one below the other.

Remarks: If the text direction has been changes (by TEXT DIRECTION function) then the points and coordinates will be printed at the text direction angle specified. Also elevation and note will be printed if applicable.

PRINT NOTE

Name: Print Note

Purpose: This allows the entry and printing of lines of text, and/or the printing of the acreage and square footage contained in the job.

Keystrokes: [SHIFT] (PRINT NOTE]

Entry Conditions: To print the acreage and square footage they must be computed first (see the ACRES function).

Operation: When this function is executed the CO-OP 41 will prompt for the letter size to use when printing.

LETTER SIZE?

Next the CO-OP 41 will bring up a scroll menu allowing the selection of what you want to be printed.

PRINT NOTE	×
TEXT DIR	×
PRT ACRES	×
PRT SQ FT	×

PRINT NOTE - Selecting this will allow you to print out multiple lines of text. The CO-OP 41 will prompt for the actual text that you want printed.

NOTE?

Key in the text (R/S) to print the text). After the text has been printed the CO-OP 41 will bring up another scroll menu.

NEXT LINE?	*
SAME LINE?	*
END NOTES	*

NEXT LINE *r* This will output a carriage return to the plotter, so that the next note will start at the beginning of the next line.

SAME LINE *I* this will print the next note at the end of the current line.

END NOTES *r* This will leave the function. Be sure to select this function after printing the last note - this will take the plotter out of text mode.

TEXT DIR This allows you to specify the direction in which the note, acreage, or square feet is to be printed at. When selected the CO-OP 41 will prompt for the azimuth along which the text is to be printed.

:AZ?	*
:PP PT 1?	×

The CO-OP 41 will then go back to the beginning of the program.

PRT ACRES Selecting this will cause the plotter to print out the current acreage at the current pen position. The acreage will be printed at the azimuth defined for printing text and in the current letter size (you would need to have executed the AUTO function prior to printing out the acreage).

#.#### ACRES

PRT SQ FT ~ Selecting this will cause the plotter to print out the current square footage at the current pen position. The square footage will be printed at the azimuth defined for printing text and in the current letter size.

#.#### SQ FT

PRINT TEXT

Name: Print Text

Purpose: Prints a text file on the plotter.

Keystrokes: [SHIFT] [PRINT TEXT]

Entry Conditions: A text file must have previously been created using the NEW TEXT function.

Operation: When executed the CO-OP 41 will prompt for the size of lettering to use when printing the text.

LETTER SIZE?

When this is keyed in the CO-OP 41 will prompt for the file name of the text file.

TEXT NAME?

Key in the file name that you saved the text to when you created it with the NEW TEXT function. After the file name is keyed in the CO-OP 41 will print the text at the current pen position.

PTS

Name: Plot Points

Purpose: This allows you to plot points, and to change the way the points are plotted.

Keystrokes: PTS

Entry Conditions: None

Operation: When this function is executed the CO-OP 41 will bring up a scroll menu from which you may select to have the points plotted, or you can change other plotting options.

PLOT PTS	*
OPTIONS	×

OPTIONS This will bring up a scroll menu allowing the selection of what is to be plotted when points are plotted.

Only put a dot for each point	DOT ONLY	*
Put a dot and print the point number	DOT/NUMBER	Я
Put a dot, point number and elevation	DOT/NUM/EL	ж

Put a dot and elevation	DOT/ELEV	*
Put a dot and a note	DOT/NOTE	*
Put a dot, point number, and note	DOT/NUM/NT	*
Put a dot, elevation, and note	DOT/EL/NOTE	*

Once one of these options has been selected (the default is to print all of the information) then the CO-OP 41 will automatically do the PLOT PTS selection for you.

PLOT PTS *r* Selecting this brings up a scroll menu allowing you to select what points you want to plot.

CONSECUTIVE	~
RDMPTS FILE	~
RESUME	~

CONSECUTIVE This allows you to select a sequential range of points to print. When selected the CO-OP 41 will prompt with the starting point number to print.

FROM PT?

When this is keyed in the CO-OP 41 will prompt for the ending point number to print.

TO PT?

After you key this in the CO-OP 41 will sequentially print the range of points you just specified.

RDMPTS FILE This selection instructs the CO-OP 41 to print the points stored in the random point file.

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RESUME If for some reason you have interrupted the CO-OP 41 in the middle of printing points from the random point file, you may select this option and begin printing points from where you left off. When selected the CO-OP 41 will prompt for the point number to resume printing at.

RESUME PT?

RESET

Name: Reset Plotter

Purpose: Resets the plotter

Keystrokes: SHIFT (RESET)

Operation: RESET can be used to reset the plotter, this is useful if you ever abort in the middle of another plotting function and the plotter then does strange things whenever you execute any of the other plotting functions. When executed, RESET does the following.

- 1) Puts the pen in the up position
- 2) Sets display to FIX 4 (display 4 decimal places)
- 3) Puts text to horizontal orientation
- 4) Sets the line type to zero
- 5) Sets the character size to 12
- 6) Puts the plotter in the command mode (out of text mode)

ROTATE

Name: Rotate Job

Purpose: Allows the job file to be rotated about a point for plotting.

Keystrokes: SHIFT (ROTATE)

Entry Conditions: None

Operation: When executed the CO-OP 41 will prompt for the point about which to rotate the job file.

ROTATION PT?

When this is entered the CO-OP 41 will prompt for the angle by which you want to rotate the drawing.

ROTATION ∠?

This angle is entered as an azimuth (IE. north being 0 degrees). To get rid of a previous rotation simply enter the new rotation angle (for no rotation enter a 0 for the rotation angle).

Remarks: All rotations are exclusive of one another, if you rotate about one point, then execute the function and rotate about a second point the CO-OP 41 will clear out the first rotation and rotate about the second point as if no previous rotation had been entered.

The effects of the rotation function can be cleared by either:

1) Setting the rotation angle back to zero.

2) Executing the OPT function, and going through the LOW NORTH computation.

RPC

Name: Random Point Contour

Purpose: This allows the entry of elevation points into the random point file for topography work during plotting.

Keystrokes: SHIFT (RPC)

Entry Conditions: None

Operation: When executed the CO-OP 41 will prompt for contour point pairs that you wish to interpolate between when you are working with topography.

1ST POINT?	
2ND POINT?	

After you key in both of these values the CO-OP 41 will prompt for the second pair of points. Continue with this until you have stored all your elevation lines.

To close this file respond with zero (0) for each of the two final point prompts. To actually plot the contour tick marks see the CONTOUR function.

Note



This function destroys the random point file to store the contour information in it. Any data in the random point file will be lost. S

Name: Pen South

Purpose: Moves the plotter pen to the south on the plat.

Keystrokes: SHIFT S

Entry Conditions: None

Operation: When executed the plotter pen will begin to move to the south. This is used to quickly position the pen on the plat. When the plotter pen has reached the desired destination press the $\boxed{R/S}$ key and the pen will stop moving.

Remarks: The speed at which the pen moves to the south can be controlled by the PEN SPEED function.

See Also: PEN SPEED

SHIFT

Name: Plotter Shift

Purpose: Is a synthetic shift key used to get access to the plotter functions.

Keystrokes: <u>SHIFT</u> (Not the yellow shift key, but the ALPHA E key - the SHIFT key on the plotter overlay)

Entry Conditions: Must have executed one of the plotter initialization functions (either HI or HP).

Operation: This key acts as a like the shift key does for the Survey functions, but is used to access the plotter

functions. When this key is pressed you will have about a 10 seconds to press another key and select a plotting function. Any function that is above a key and appears in black on the plotting overlay can only be accessed by pressing this key first, then the key with the function on it.

SPUR

Name: Spur Azimuth

Purpose: Turns the printing of spur azimuths on and off.

Keystrokes: SHIFT SPUR

Entry Conditions: None

Operation: When executed the CO-OP 41 will bring up a scroll menu allowing you to turn on and off the printing of spur azimuths.

Print spur azimuths	SPUR ON	×
Don't print spur azimuths	SPUR OFF	*
Change spur azimuth; (see CSA)	CHNG SPUR	*

Remarks: The default for this is ON, and every time the HP-41 is turned on spur azimuth's will also be turned on. If you turn the printing of spur azimuths off, and the HP-41 turns off, then when you turn on the HP-41 again, you will have to turn spur azimuth off again.

TEXT DIRECTION

Name: Text Direction

Purpose: Allows the selection of what azimuth the text is to be printed at on the plotter.

Keystrokes: SHIFT (TEXT DIRECTION)

Entry Conditions: None

Operation: When executed the CO-OP 41 will prompt for the line (or angle) along which to print text (see defining a line). Once this is entered any text printed out on the plotter will be printed along the specified angle.

Remarks: Text direction can be restored to normal by either:

- 1) Re-setting the text direction back to 90 degrees.
- 2) Executing the RESET function.

TO POINT

Name: To Point

Purpose: Moves the plotter pen to the point number given in the X-Reg.

Keystrokes: [SHIFT] [TO POINT]

Entry Conditions: Enter with the point number to move to in the X-Reg.

Operation: When executed the CO-OP 41 will move the plotter pen to the point number that was entered in the X-Reg. It will then prompt if you want to plot the point number.

R/S FOR NUM

Pressing the [R/S] key will print the point number out besides the point.

Remarks: If the pen is in the down position then a line will be drawn to the point as the pen moves there. Generally you will want to make certain that the pen is in the up position before executing this function.

VARY TEXT

Name: Vary Text

Purpose: Allows the printing of text on the plotter, from a text file. Each line printed can be a different size.

Keystrokes: SHIFT VARY TEXT

Entry Conditions: A text file must have previously been created using the NEW TEXT function. Also the random point file must contain the size to print each line of text (I.E. if the first number in the random point file is a 6 then the first line of text will be printed in letter size 6, the second number in the random point file will determine the lettering size used on the second line of text, etc..)

Operation: When executed the CO-OP 41 will prompt for the text file name to print from.

Key in the file name that you saved the text to when you created it with the NEW TEXT function. After the file name is keyed in the CO-OP 41 will print the text at the current pen position.

Remarks: Don't forget that this uses the random point file.

W

Name: Pen West

Purpose: Moves the plotter pen to the west on the plat.

Keystrokes: SHIFT W

Entry Conditions: None

Operation: When executed the plotter pen will begin to move to the west. This is used to quickly position the pen on the plat. When the plotter pen has reached the desired destination press the $\boxed{R/S}$ key and the pen will stop moving.

Remarks: The speed at which the plotter pen moves to the west can be controlled by the PEN SPEED function.

See Also: PEN SPEED

XSEC

Name: Plot cross section

Purpose: Creates a cross section plot at the current pen position.

Keystrokes: [XEQ] (ALPHA) XSEC (ALPHA)

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Entry Conditions: Your job file must contain elevation. You must position the plotter pen to the position that you want the cross section plot before executing this function. Your control line should go North-South so that your base line will go East-West (The base line of the cross section should have an azimuth of 90 to make the cross section plot come out right). Enter the break points into the random point file, the first point should be the station point of the base line.

Operation: When the function is executed the CO-OP 41 will prompt for the horizontal scale to be used when plotting.

H SCALE?

After you key this in the CO-OP 41 will prompt for the vertical scale to be used.

V SCALE?

When you key this value in the CO-OP 41 will start to plot the cross section at the current pen position. When the plotting is finished the CO-OP 41 will put up the following scroll menu.

PLOT SQ FT	~
VIEW SQ FT	×

PLOT SQ FT *r* will cause the square footage of the cross section to be printed under the cross section plot.

VIEW SQ FT ↗ will display the square footage, but will not print it.

Example: You want to plot the cross section of a small berm, as shown below.



This is done very simply by using the XSEC function. The first thing to do is to set up a new job file.

[] [JOBS]	NEW JOB	*
(ENTER)	JOB NAME?	
XSECT (R/S)	N/E ONLY	*
(R/S) (R/S)	ELEV ON	*
(ENTER)	PTS?	
10 (R/S)	RAWDAT OFF	*

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(ENTER)	N=E=5000
(ENTER)	1.0000
Next we need to enter the traverse	points into the job file.
BACK-S	:BACK PT 🛛
(R/S) (R/S)	:BACK AZ?
0 (R/S)	N 0 00'00"E

SIDE-SHI?5 R/SH ROD?5 R/S: $\angle RT$?

Since the control line is not flush with the berm, the first break point will have no elevation (thus a zenith angle of 90 degrees).

90 (R/S)	:ZENITH∠?
90 (R/S)	SLOPE D?
5 (R/S)	:∠RT?
90 (R/S)	:ZENITH∠?
69.0360 (R/S)	SLOPE D?

12.82 (R/S)	:∠RT?
90 (R/S)	:ZENITH∠?
78.2821 (R/S)	SLOPE D?
25.5 (R/S)	:RT?
90 (R/S)	:ZENITH∠?
90 (R/S)	SLOPE D?

30 (R/S)

Now that the job is entered into the CO-OP 41, we can use the XSEC function to plot it out (remember to hook the CO-OP 41 to the plotter for this).

H SCALE?
V SCALE?

10 R/S

Next, the CO-OP 41 will prompt if you want to plot the square footage, or view it. In this case select the plotting of the square footage.

PLOT SQ FT 🛛

(ENTER)



91.70 SQ FT

Appendix A

The FIRST Job

Following is a briefly annotated summary of the keystrokes needed to key in the FIRST job that was presented in the User's Manual (see the User's Manual for more detailed description).

Start the Job:

[] [JOBS]	NEW JOB
(ENTER)	JOB NAME?
FIRST (R/S)	N/E ONLY
(ENTER)	PTS?
75 (R/S)	RAWDAT OFF 🛛
(ENTER)	N=E=5000
(ENTER)	1.0000

Enter the first traverse into the CO-OP 41.

TRAVERS	:AZIMUTH?
(R/S)	:∠RT?
(R/S)	:BRG?

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3.1727 R/S

1 (R/S)

711.41 (R/S)

QUAD?

:H DIST?

2.0000

TRAVRS

:BRG?

Enter the traverse from point 2 to point 3.

86.1215 [R/S] QUAD? 1 [R/S] :H DIST? 457.75 [R/S] 3.0000 [TRAVRS] :BRG?

Enter the traverse from point 3 to point 4.

64.5055 R/S

2 (R/S)

201.29 R/S

QUAD?

:H DIST?

4.0000

TRAVERS

:BRG?

Enter the traverse from point 4 to point 5.

2.2602 R/S	QUAD?	
3 (R/S)	:H DIST?	
497.03 (R/S)	5.0000	
	TRAVRS	
	:BRG?	
Enter the traverse from point 5 to j	point 6.	
79.4523 R/S	QUAD?	
4 (R/S)	:H DIST?	
223.97 R/S	6.0000	
	TRAVRS	
	:BRG?	
Enter the traverse from point 6 to point 7.		
12.5605 (R/S)	QUAD?	
3 [R/S]	:H DIST?	
233.87 (R/S)	7.0000	

TRAVRS

:BRG?

Enter the traverse from point 7 to point 8.

85.3559 R/S

4 (R/S)

387.07 R/S

QUAD?

:H DIST?

8.0000

TRAVRS

:BRG?

Calculate point 9 using the intersection functions.

(XEQ) (ALPHA) BB(ALPHA)	1ST PT?
1 (R/S)	:BRG?
(R/S)	:AZIMUTH?
(R/S)	:POL?
2 (R/S)	2ND PT?
6 (R/S)	:BRG?
(R/S)	:AZIMUTH?
(R/S)	POL?:
(R/S)	(1) (2000
6 (R/S) (R/S) (R/S)	BRG? AZIMUTH? POL?: PP PT1?

7 (R/S)	PT 2?
1 (R/S)	1ST D=231.3237
(R/S)	2ND D=426.2594
(R/S)	PT NO?
9 (R/S)	9.0000

Now set up the random point file so that we can use the pre-determined area function to compute a new line.

() (RDM-PTS)	PT?
1 (R/S)	PT?
7 (R/S)	PT?
6 (R/S)	PT?
1 (R/S)	PT?
0 (R/S)	0.0000
(R/S)	PT?
9 (R/S)	PT?

Use the pre-determined area program on the random point file just created, and store the end point of the new line to point 10.

(XEQ) (ALPHA) PREA (ALPHA)	:ACRES?
2 (R/S)	DIST=198.7838
(R/S)	NEW COR?
10 (R/S)	10.0000

Move the instrument to take side shots of the house and use the distance-distance intersection program to find the instrument's position.

(XEQ) (ALPHA)DD(ALPHA)	1ST PT?
1 (R/S)	DIST?
635.28 (R/S)	2ND PT?
6 (R/S)	DIST?
183.65 (R/S)	N 76 00'25"E
(R/S)	S 75 56'14"E
(R/S)	:PT NO?
(R/S)	N 55 19'05"E
(R/S)	N 27 15'44''E
(R/S)	:PT NO?
11 (R/S)	11.0000

Record your instrument's back sight and take side shots at the house.

BACK-S	PACK DT2
	DACK P1?
6 (R/S)	207.1544
SIDE-S	:BRG?
(R/S)	:AZIMUTH?
(R/S)	:∠RT?
155.25 (<u>R/S</u>)	:H DIST?
150.35 (R/S)	12.0000
	SIDE SHOT
	:∠RT?
162.0538 (R/S)	:H DIST?
173.71 (R/S)	13.0000
	SIDE SHOT
	:∠RT?
144.0325 (<u>R/S</u>)	:H DIST?
187.69 (R/S)	14.0000

SIDE SHOT

:∠RT?

Use the point of direction function to define point 16.

PT-DIR	FROM PT?
12 (R/S)	:POL?
14 (R/S)	DIST?
65 (R/S)	NEW PT?
15 (R/S)	DIST?
15 (R/S)	NEW PT?
16 (R/S)	

Use the point of direction function again to define the center line of the road.

PT-DIR	FROM PT?
1 (R/S)	:POL?
2 (R/S)	DIST?
450 (R/S)	NEW PT?
17 (R/S)	DIST?

Figure out the azimuth of the line perpendicular to the front of the house.

[] [Р-ТО-Р]	FROM PT?
12 (R/S)	TO PT?
16 (R/S)	AZ=314.5957
90 -	224.5957

Use the bearing-bearing intersection function to find the center of the arc in the driveway.

(XEQ) (ALPHA) BB(ALPHA)	1ST PT?
17 (R/S)	:BRG?
(R/S)	:AZIMUTH?
93.1727 (R/S)	2ND PT?
15 (R/S)	:BRG?
(R/S)	:AZIMUTH?
224.5957 R/S	1ST D=330.8195
(R/S)	2ND D=180.1221
(R/S)	PT NO?
18 (R/S)	18.0000

Define the center line of the road.

(STAKE)	OCPD PT?
18 (R/S)	BS PT?
17 (R/S)	FS PT?
15 (R/S)	∠RT=131.4230
(CHS)	-131.4230
180 🗍 (HMS+)	48.1730
	DELTA∠?
48.1730 <u>R/S</u>	RADIUS?
150 (<u>R/S</u>)	TURN RIGHT
(ENTER)	FTAN?#.####
(R/S)	VIEW DATA
(ENTER)	I=48.1730
(R/S)	R=150.0000
(R/S)	T=67.2423
PT-DIR	FROM PT?
18 (R/S)	:POL?
17 (R/S)	DIST?
-------------	----------
67.2423 R/S	NEW PT?
19 (R/S)	DIST?
PT-DIR	FROM PT?
18 (R/S)	:POL?
15 (R/S)	DIST?
67.2423 R/S	NEW PT?
20 (R/S)	DIST?

Define the northern boundary of the road.

Define the southern boundary of the road.

PT-DIR	FROM PT?
17 (R/S)	:POL?

1 (R/S)	DIST?
15 (R/S)	NEW PT?
22 (R/S) () (RDM-PTS)	PT?
17 [R/S]	PT?
19 (R/S)	PT?
18 (R/S)	PT?
20 (R/S)	PT?
15 (R/S)	PT?
0 [R/S]	0.0000

Define the beginning and end points of the curve on the road's southern boundary.

(XEQ) (ALPHA)OFFSET (ALPHA)	OFFSET DIST?
15 (R/S)	BEG PT STO?
23 (R/S)	22.0000
	23.0000
	24.0000
	25.0000

<BEEP>

Define the beginning and end points of the curve on the road's northern boundary.

(XEQ) (ALPHA) OFFSET (ALPHA)	OFFSET DIST?
15 (CHS) (R/S)	BEG PT STO?
26 (R/S)	26.0000
	27.0000
	28.0000

<BEEP>

Do the initial set-up to define stake points for the boundary of the two acre parcel.

	10.0000
BACK-S	:BACK PT?
6 R/S	S 89 58'15"E
	:BEARING?
(R/S) (R/S)	:∠RT?
0 R/S	:VERT∠?
(R/S) (R/S)	:H DIST?

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50 (R/S)	PT USED
	OVERWRT 🗾
R/S	NEW PT NO 📕
ENTER	PT?
29 (R/S)	29.0000
	TRAVRS
	:∠RT?
180 (R/S) 50 (R/S)	30.0000
	TRAVRS

:∠RT?

Use the repeat function to create the stake points for the two acre parcel.

(XEQ) (ALPHA) REP(ALPHA)	STO PT:31.0000
(R/S)	STO PT:32.0000
(R/S)	STO PT:33.0000
(R/S)	STO PT:34.0000
R/S	STO PT:35.0000

R/S

STP PT:36.0000

Do the initial set-up to define stake points for the road.

	22.0000
BACK-S	:BACK PT?
23 (R/S)	S 86 42'33"E
TRAVRS)	:∠RT?
0 (R/S)	:H DIST?
50 (R/S)	PT USED
	OVERWRT 🗾
(R/S)	NEW PT NO 🛛
(ENTER)	PT?
37 (R/S)	37.0000
	TRAVRS
	:∠RT?
180 R/S	:H DIST?
50 (A/S)	38.0000

TRAVRS

:∠RT?

Use the repeat function to create stake points for the road.

(XEQ) (ALPHA)REP(ALPHA)	STO PT:39.0000
(R/S)	STO PT:40.0000
(R/S)	STO PT:41.0000
23 (PTRA)	23.0000

Use the arc length and radius curve function to define stake points on the road's curve.

(XEQ) (ALPHA) LR (ALPHA)	ARC L?
30 (R/S)	RADIUS?
165 (<u>R/S</u>)	TURN RIGHT
(R/S)	TURN LEFT 🛛
(ENTER)	F TAN?93.1727
(R/S)	VIEW DATA 🛛
(ENTER)	DELTA=10.2503
[X<>Y] 28.1730 [X<>Y] [/]	4.6997

(R/S) (R/S) (R/S) (R/S)	D=34.4329
(R/S) (R/S)	VIEW DATA
(R/S)	STORE PT 🔹
(ENTER)	PT USED
	OVERWRT 🛹
(R/S)	NEW PT NO 🛹
(ENTER)	PT?
42 (R/S)	STO PT:42.0000
	R/S REPEAT
(R/S)	F TAN?82.5224
R/S	VIEW DATA
(R/S)	STORE PT 🛛
ENTER	STO PT:43.0000
	R/S REPEAT
(R/S)	F TAN?71.2722
(R/S)	VIEW DATA
(R/S)	STORE PT 🔹

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(ENTER)	STO PT:44.0000
	R/S REPEAT
(R/S)	F TAN?62.0219
(R/S)	VIEW DATA
(R/S)	STORE PT 🗾
ENTER	STO PT:45.0000
	R/S REPEAT

Appendix B

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Tripod Data Systems, Inc. CORVALLIS, OREGON

Additional functions in the plotter module:

LOADR	Load random points from a mass memory device.	P. 1
LOADT	Load text file from a mass memory device.	P. 1
SAVER	Save random points to a mass memory device.	P. 2
SAVET	Save text file to a mass memory device.	P. 2

Note: These functions are only in plotter module version 2.20 and higher.

LOADR

Purpose: Read random points from a file in the mass memory device (disc/cassette) into HP41's memory (registers).

Keystrokes: [XEQ] [ALPHA] LOADR [ALPHA]

Operation: First connect the HPIL disc or cassette drive to the data collector with a pair of HPIL cables.

When this function is executed, the CO-OP 41 prompts for the file name that contains the random points.

"RDM FILE?"

Enter the file name and press [R/S]. The CO-OP 41 will search the disc or the cassette tape for this file. If the file exist, the CO-OP 41 will load the points into the HP41's memory. They will replace the current random points.

Remark: The random points are not loaded into a file in the data collector's memory nor the 41's extended memory. If you want to copy a random points file from a mass memory device into the data collector's memory, you need to do it in two steps. First you execute the "LOADR" function to load the random points from a mass memory device into the 41's memory, then you execute the "SRDM" function to save them to a file in the data collector's memory.

LOADT

Purpose: Copy a text file from a mass memory device (disc/cassette) into HP41's extended memory.

Keystrokes: [XEQ] [ALPHA] LOADT [ALPHA]

Operation: First connect the HPIL disc or cassette drive to the data collector with a pair of HPIL cables.

When this function is executed, the CO-OP 41 prompts for the name of the text file in the mass memory device.

"TEXT NAME?"

Enter the file name and press [R/S]. The CO-OP 41 will search the disc or the cassette tape for this file. If the file exist, the CO-OP 41 will load it into the HP41's extended memory under the same file name.

Remark: This function would only load the text file into the 41's extended memory. If you want to load a text file from a mass memory device into the data collector's memory, you need to do it in two steps. First you execute the "LOADT" function to load a text file from a disc/cassette into the 41's extended memory, then you execute the "TDC" function to copy this text file into the data collector's memory.

SAVER

Purpose: To save the current random points file into a mass memory device (disc/cassette).

Keystrokes: [XEQ] [ALPHA] SAVER [ALPHA]

Operation: First connect the HPIL disc or cassette drive to the data collector with a pair of HPIL cables.

When this function is executed, the CO-OP 41 prompts for the file name for saving the random points file.

"RDM FILE?"

Enter the file name that you want save the random points into, and prees [R/S]. The CO-OP 41 will try to create a file in the mass memory device and save the current random points into it. If the file already exist, the CO-OP 41 will display:

"OVER WRT ^"

Press the [ENTER] key to over write it, or press the back arrow key to abort the function.

Remark: This function can only be used to save the current set of the random points to a mass memory device. If you need to copy a random points file from the data collector's memory to a mass memory device, you need to do it in two steps. First you execute the "RRDM" function to bring the random points into the 41 from the data collector, then you execute this "SAVER" function to save them into a mass memory device.

SAVET

Purpose: To copy a text file from the 41's extended memory to a mass memory device (disc/cassette).

Keystroks: [XEQ] [ALPHA] SAVET [ALPHA]

Operation: First connect the HPIL disc or cassette drive to the data collector with a pair of HPIL cables.

When this function is executed, ths CO-OP 41 prompts for name of the text file in the extended memory.

"RDM FILE?"

Enter the file name and prees [R/S]. The CO-OP 41 will try to create a file in the mass memory device with the same name. If the file already exist, the CO-OP 41 will display:

"OVER WRT ^"

Press the [ENTER] key to over write it, or press the back arrow key to abort the function.

Remark: This function can only be used to copy a text file from the 41's extended memory to a mass memory device. It will not copy a text file from the data collector's memory to a mass memory device.

Usually, you would create a text file in the 41's extended memory by using the "NEW TEXT" function in the plotter module. You can then execute the "TDC" function to copy the text file to the data collector's memory. If you also want to save your text file to a mass memory device, you need to execute the "SAVET" function while the text file is still in the 41's extended memory.

Switches setting for HP Draft-Pro plotter

The rear-penal switches should be set as follow:

11109876543210DownDownDownDownDownDownDownUpDownUpDownDownDownDownDownUpDown

Switches setting for HP7580 & 7585 plotter

Stand alone ON Parity OFF Full duplex ON Hardwire ON DTR normal ON

The line types, fixed and adaptive, are as follows.

3 _____ _ ____ _ ____ _ ____ _ ____ 2 ____ ___ 1. specifies dots only at plotted points 0. • -1 . . -2 ___ ------_____ ------3 ____ ____ ____ ____ ____ -4 _____. -8 _____ No parameter (Default Value)_____