

## SURVEY71

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This subprogram is the greatest part of the HP Surveying Pac. It has been copied and modified. Please note that except for a few changes, this is Hewlett-Packard's subprogram. The HP-71 was discontinued in 1988. The five year support life has since expired on both the HP-71 and the Surveying Pac.

Copy this into the main memory, and it will take priority over the one in the ROM module. It occupies about 17K bytes. If that memory is needed for extra large data files, SURVEY71 can be purged, and you will still be able to use the old version which is in the ROM card.

This is not a stand-alone program. It must be supported by other programs that are in the Surveying Pac, so do not remove the ROM card.

New features:

The print and display formats have been altered. Field angles are no longer displayed as angles left, only angles right. The display is a little more spread out, so four-digit point numbers are no longer truncated. This may not work out if you are using a narrow column printer, but the ThinkJet seems to be the printer of choice for Super Surveyor users.

Point protection is now available. It is controlled by flag #1, the same flag used by Super Surveyor. To toggle the flag while in cogo, press the minus (-) key while one of the main COGO or FILE menus is displayed. The point protection screens any points being overwritten in any Surveying Pac routine except "Clear." If you attempt to overwrite a point while flag #1 is on, the computer will print or display the new coordinates, then beep and give you a chance to back out. You will not have the option of entering a different point number.

An absolute/field toggle has been installed in COGO. Previously it was necessary to execute "Start" to change the angle display. Now you need only get into one of the main COGO menus and press the asterisk (\*) key. This will toggle between field angles and absolute angles.

"Rotate" has been completely rewritten. It is accessed from the FILE menu, like before, but the new version allows you to rotate and translate simultaneously, and it uses point numbers instead of coordinate entry. The old translation can still be called from the main FILE menu, but the old rotation is gone. You will not miss it.

The first rotation prompt will ask for a point to rotate about. It also gives the option of entering a second point for line. In this first example you will rotate about #99 without using a line point.

Example 1:

Pivot # [;Line Pt#] > 99

MOVE Pt# 99 TO Pt# > 101

This moves the rotation point #99 to the coordinates of #101. If you wanted to perform the rotation without translating, you could have pressed ENDLINE, with no entry at the second prompt. The next prompt will ask for the rotation angle.

Input Rotation > -23.1149

This gives you a rotation of 23°11'49" left. If you wish to perform a translation without rotating, press ENDLINE, with no entry. At this point no coordinates have been altered, not even the pivot point, #99. The next prompt will ask for the points to be rotated.

Rotate # [;Thru #] > 38

You have now rotated #38 only. Now the same prompt reappears.

Rotate # [;Thru #] > 45;60

You have rotated #45 through #60, inclusive. Note that the numbers are separated by a semicolon (;), a comma will not work.

Rotate # [Thru #] > 99

Rotate # [Thru #] > 20;23

You can answer this prompt with any range of valid points. Be careful not to rotate the same point twice. To quit, press ENDLINE, with no entry.

Example 2:

In this example, you are using a line point at the first prompt.

Pivot # [Line Pt #] > 99;98

You are rotating about #99, using #98 as a reference line point. Again, the numbers are separated by a semicolon (;), not a comma. The next prompt asks where to move #99.

Move Pt# 99 TO Pt# > 101

You are moving #99 to #101. You could rotate without translating by pressing ENDLINE, with no entry. Next you are asked to enter the new direction for the reference line.

Rot Line 99-98 To Brg > NW12.4409

This response rotates the line #99-#98 to a bearing of N 12°44'09" W. You could have answered with any of the options available in COGO — bearing, azimuth, angle right (+angle), angle left (-angle), or bearing recall (Pt#\*Pt#). You could have entered no rotation by pressing ENDLINE, with no entry.

The next prompt asks for a point or range of points.

Rotate # [Thru #] >

This was explained in example 1.

## WALLA

This program puts the heading onto the print file after "New Set Up" is executed. Probably because of an oversight, Super Surveyor will print the heading if the printer is attached while "New Set Up" is executed, but it will not be recorded on the print file. If WALLA is executed immediately after "New Set Up", the heading will be recorded. This program should be used only when starting a new print file. If the file is already two pages long, the heading would be placed on the second page, near the end. If it is a very long file, it could take a long time for the program to run, maybe more than a minute. If this happens, do not try to interrupt it. You could lose part of the print file.

If you measure the vertical index in "New Set Up", it adds a couple of extra lines and fouls up the alignment. WALLA was designed to work without this function. It is better to adjust your instrument than to adjust your data anyway.

By assigning WALLA to the "i" key (which requires a shift key) you can avoid running the program accidentally. Use this command to assign the key:

```
DEF KEY 'i',"CALL'WALLA'@ GOSUB 'CMD':
```

## DELI

DELI is a file manager for Autostake figures. The figures can be stored, deleted, or retrieved. When coordinate files are expanded, the Autostake figures are destroyed, but DELI allows you to store them to a separate file while the coordinate file is being expanded. After the expansion process is finished, the figures can be reattached to the end of the file.

The opening prompt is a menu:

```
Store,Load,Delete,Ex >
```

"Store" copies all of the plan and profile figures to a separate new file.

"Load" copies one of the above described figure files onto the current coordinate file. Any plan or profile figures that already exist in the coordinate file will be overwritten.

"Delete" erases all plan and profile figures from the current file.

"Ex" returns to the "Select Function" prompt.

This is a subprogram, so it must be called from Super Surveyor. Use this command to assign it to the "K" key:

```
DEF KEY 'K',"CALL DELI(#1) @ GOSUB 'CMD':
```

## COMM

This is a subprogram for inserting a comment onto the Super Surveyor print file.

There is only one prompt:

ENTER COMMENTS >

Simply type your comment. If you get to the end of the line the HP-71 will beep and allow no more characters to be entered. After entering a line, you will be prompted for another. When you finish, press ENDLINE, with no entry. To skip a line, press the space key, then ENDLINE.

To assign COMM to the "c" key:

```
DEF KEY 'c', "CALL COMM(#3) @ GOSUB 'CMD':
```

## BENCH

This allows the instrument operator to establish the H. I. from a benchmark. It can be used in those situations where the horizontal control points have no elevations assigned to them, but there is a benchmark nearby.

First it is necessary to have the benchmark in the coordinate file. Give it an arbitrary northing and easting, something other than 0 or -999999. The benchmarks will be easy to spot in the listings if you use the coordinates 1,1.

When the program is called, the first prompt will ask for the benchmark point number. Next it will ask for the shot. If a prism pole is being used, it must be set to the height that is set in the Super Surveyor program. Using the instrument, measure the difference in elevation. Enter that number by hand. Be sure to include the minus sign if the prism is lower than the instrument.

If a level rod is being used, set the staff height to zero in Super Surveyor before invoking this program. Set the instrument to a zenith angle of 90°, and read the rod. Hand enter the rod reading. Use a minus sign unless the rod is inverted.

After WALLA has run, it will restart Super Surveyor. It will not be necessary to run "New Set Up" again. Running "Instrument On Point" or "Instrument Off Point" will negate the H. I. that was established in BENCH.

To assign BENCH to the "B" key, use this command:

```
DEF KEY 'B',"CALL 'BENCH':
```

## FILEFIX

FILEFIX is a subprogram which was included in the later releases of Super Surveyor, and assigned to the "x" key. This version has one alteration. The decimals on the coordinates can now be set to as high as nine. There is only one reason for doing this. If the coordinate display is set to two places, the coordinates will be rounded to two places when they are transferred to the PC using the "Data Out" function. That can throw a lot of unnecessary rounding error into the computed points.

Before using "Data Out", change the coordinate decimal places to nine. Remember to change it back when you finish. The HP Surveying Pac will not work with nine places.

It is not necessary to go through this exercise if you are using PCX for coordinate transfers. PCX transfers every digit, no matter what the display setting is.

## LIST

This is another Super Surveyor routine that has been altered. It was assigned to the "j" key, but not in all versions. The alterations have enabled it to search for a descriptor with a given sequence of characters.

The first prompt asks for the first and last point to list:

1st,last Pt >

To search, answer this prompt with the letter "S"

search word >

Enter a few characters from the descriptor you seek.

1st,last Pt >

Enter the range of points to search. The printer will list any and all points in that range whose descriptors contain the character sequence you specified.

Now disconnect the printer and restart the HP-71, as though you were at the instrument with it. Try the search routine again. The matching descriptors and corresponding point numbers are displayed one at a time. Press ENDLINE to view the next one. When you find the one you want, enter "Q" and you will exit without having to view the rest.

## CPY

This program will catalogue all files on a floppy disk (except itself), and give the user the option of copying each of them to the main memory.

The first prompt asks for a device specifier. Enter the disk drive address (e. g. ":2") or the disk volume label (e. g. ".PRO"). You will then be prompted for each file before it is copied.

Keep your "keys" file and all of your programs on one disk. When you have a "Memory Lost" situation, you can quickly reload the programs and key assignments.

Copying "keys" can be tricky. Usually it can be called by the disk drive address, but not by the disk volume label. It is case sensitive, so it is possible to have both a "KEYS" file and a "keys" file at the same time. Sometimes it cannot even be purged from the main memory without executing "PURGE ALL" and erasing everything. If you have "Memory Lost", first copy "keys" from your backup disk before rebooting SUPERSURV, and before copying any other files into the main memory.

## KELEV

This program will delete the elevation from a given range of points.

Super Surveyor will not collect two-dimensional points, and it will assign an elevation of zero to any two-dimensional point that it stakes or uses for control. That can render some misleading bogus elevations, especially for surveyors working near sea level. It also makes trouble for automatic contouring packages. A high plateau surveyor may find a few 5000 foot sink holes in his drawing, although he will not recall seeing them in the field.

KELEV is a very simple program. Just enter the file name and a range of points. Only those points with elevations less than or equal to zero will have their elevation killed. When conducting data collection, there may be occasions when you want to collect points without elevations. Assign a staff height that is much higher than the control elevation. It could be several thousand feet. This way the point will have a negative elevation that can be killed using KELEV.

## **MIRROR**

MIRROR was written at a construction site in about two minutes. It is not a subprogram. It operates independently from the Super Surveyor program. This was originally used to coordinate parking islands that were mirror images of each other.

First coordinate one set of points. Next duplicate them to another point range. Now run MIRROR. Enter the cogo file name and the point number range for the second set of points. The eastings for all of those points will be multiplied by -1, effectively mirroring the points on the y axis. Now they can be translated and rotated into place.

## **PRINTER**

This program is used to change some of the configurations on the ThinkJet printer. Any changes will be superseded by Super Surveyor when "New Set Up" is executed, so it is not very useful for printing Super Surveyor print files. It can be used for other text printing though, such as program listings.