



Computation

Processing of field observations is essential before any computations could begin. It sorts the data set into a suitable order to allow provisional calculations, error detection and analysis. However, it is important to ensure before hand that all relevant information, such as control details, is available.

Control Update

The control file is a centralised data base for all control stations likely to be of use in the entire duration of a project. It does not matter if some of these stations are not part of the scheme eventually. What is important to note is that for any survey project, this data base provides information to identify the datum or control stations in the network.

To update the control file, the steps are as follows:

- Select the job.
-  Click icon or pick Controls/Update, options menu, to install data base, fig 4.1

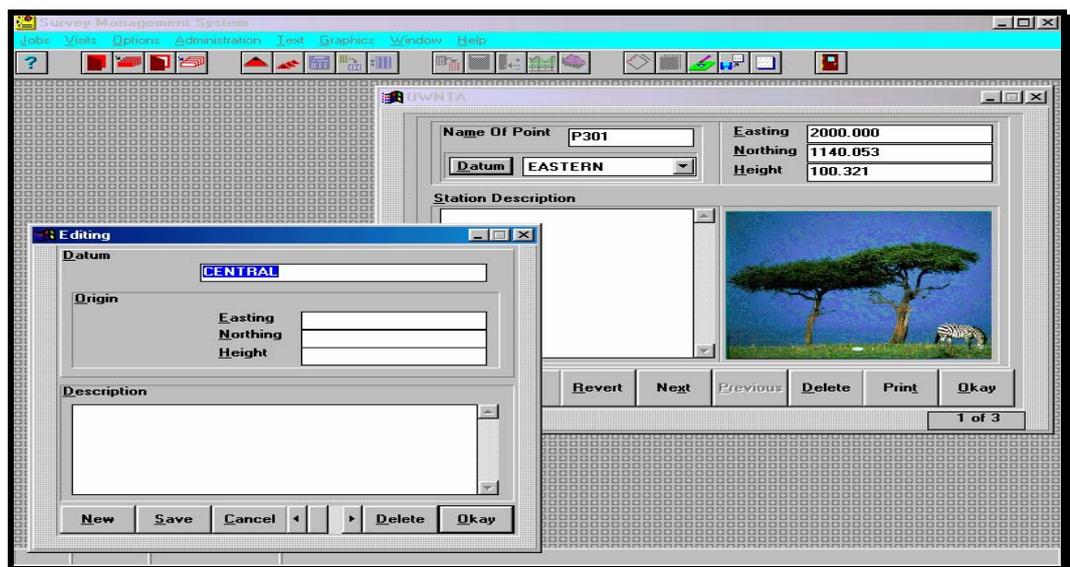


Fig 4.1

- Fill and save records.

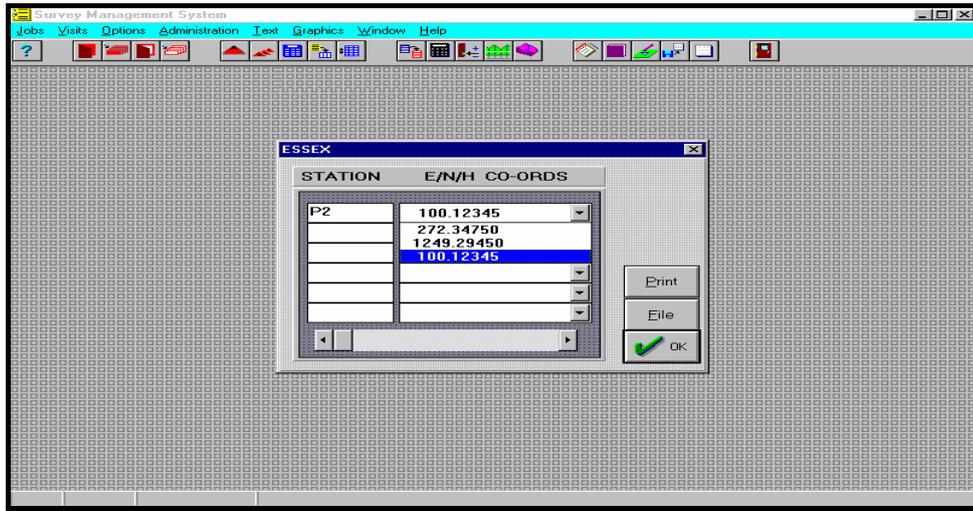


Fig 4.2

- Close window to save data base and exit.
- Use List command or icon , to review the data base, Fig 4.2.

Processing

To start processing, go through the steps to select a job and scheme. Then continue:

-  Click icon to start Processing or use program menu.
- Note the options under processing in the new window (Fig 4.3).

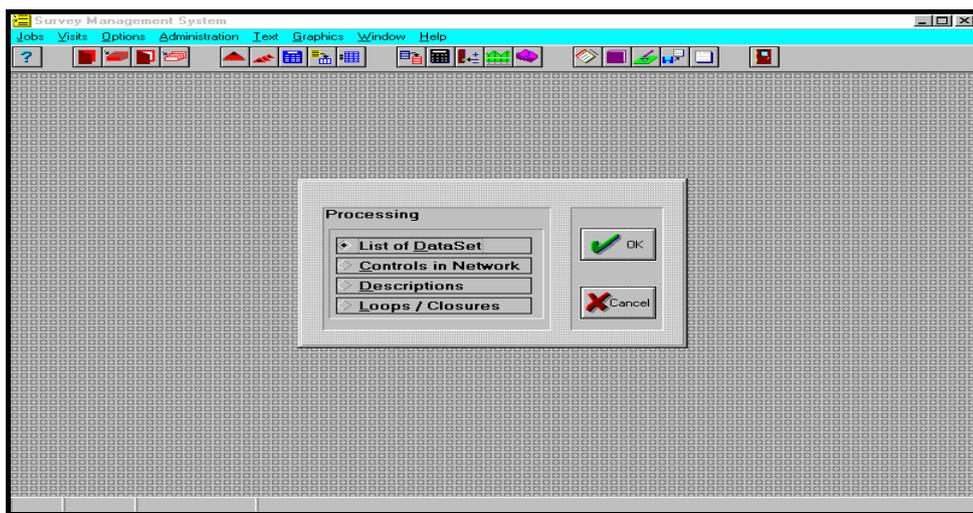


Fig 4.3

- Take each of the options in turn:

List of Data Set

This option combines all the observations in each of the three field books into one data set comprising of stations and observed height differences. It takes into account any instance of double levelling and identifies any controls points in the data set. The list window is shown in Fig 4.4 and includes print and file buttons.

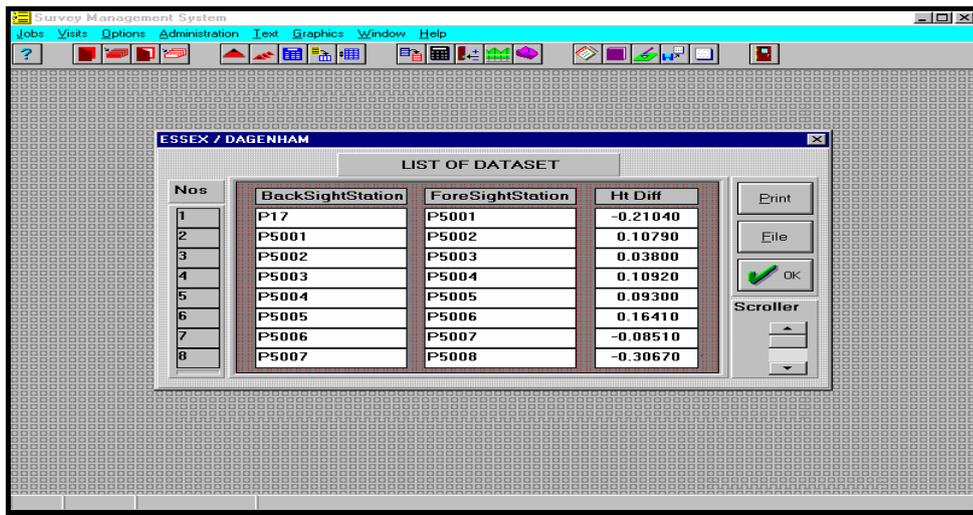


Fig 4.4

Controls in Data Set

This process provides a list of fixed points in the data set for verification (Fig 4.5). It is necessary to perform the above process before selecting this option.

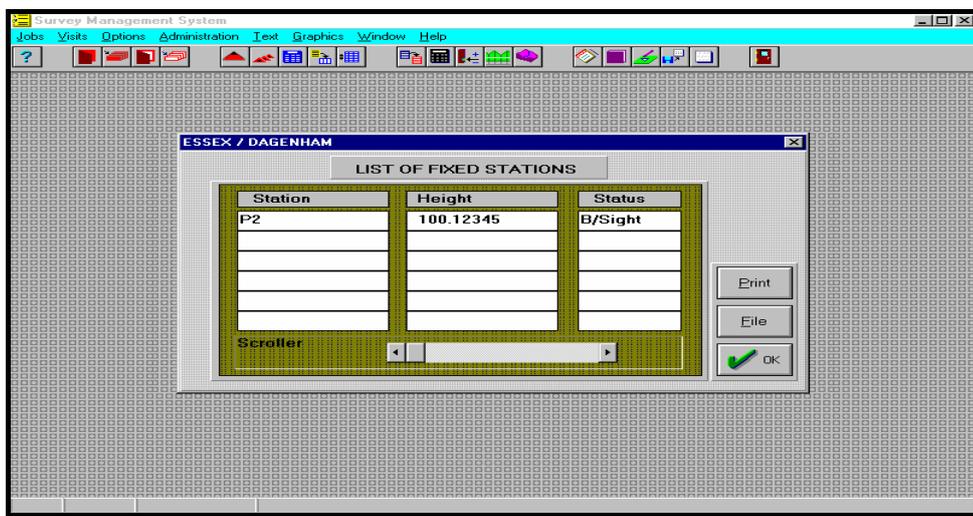


Fig 4.5

Nodes in Data Set

Using the list of data set generated in the first option, this process classifies nodes in the data set. It also computes the provisional heights. In this respect, control information must be available and no gaps should exist in the network.

The result consists of two list windows, Fig 4.6, one for nodes and another for node height differences. It is a description of the network that should agree with surveyor's diagram.

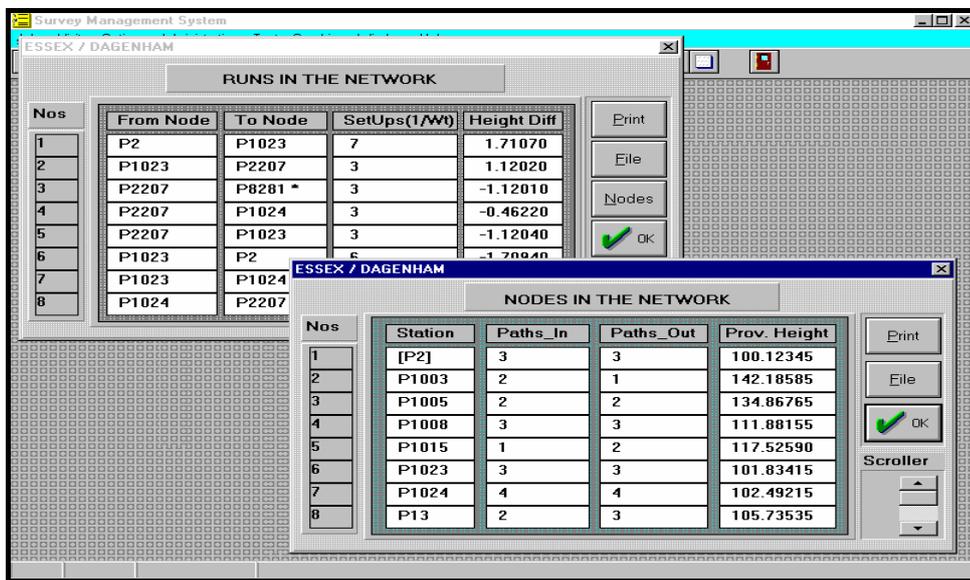


Fig 4.6

Loops in Data Set

Selecting this option allows formation of loops out of the data set. It requires the above information on nodes and should follow next in the sequence.

Results are in three windows. The main window contains a list of loops, as numbered from 0, and corresponding closures. Error Analysis, histograms and Assessment, Fig 4.7a, is available from command button. There is also an input field for loop number and list command to further examine the elements of a selected loop and node-to-node height differences, Fig 4.7b. Print buttons are available in all windows to obtain hardcopy output.

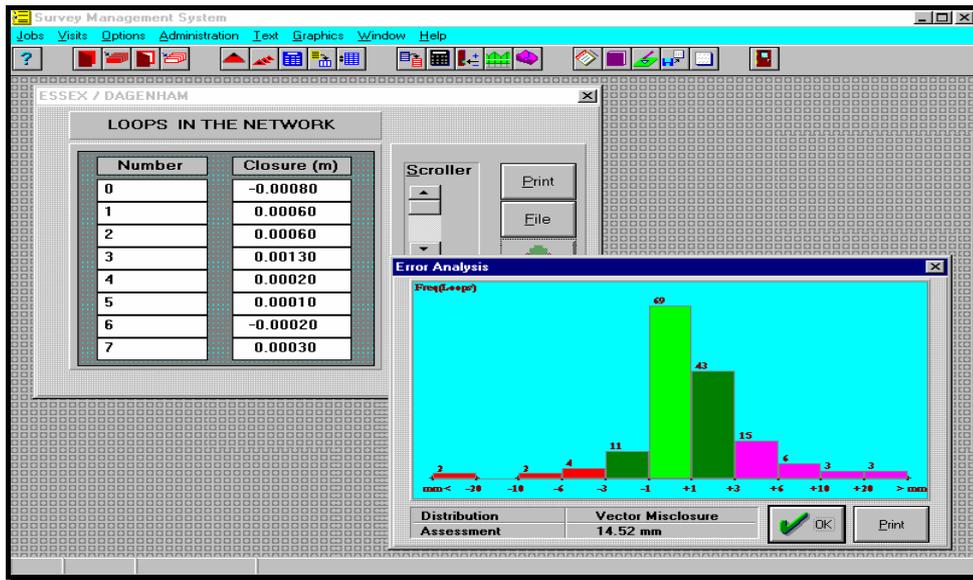


Fig 4.7a

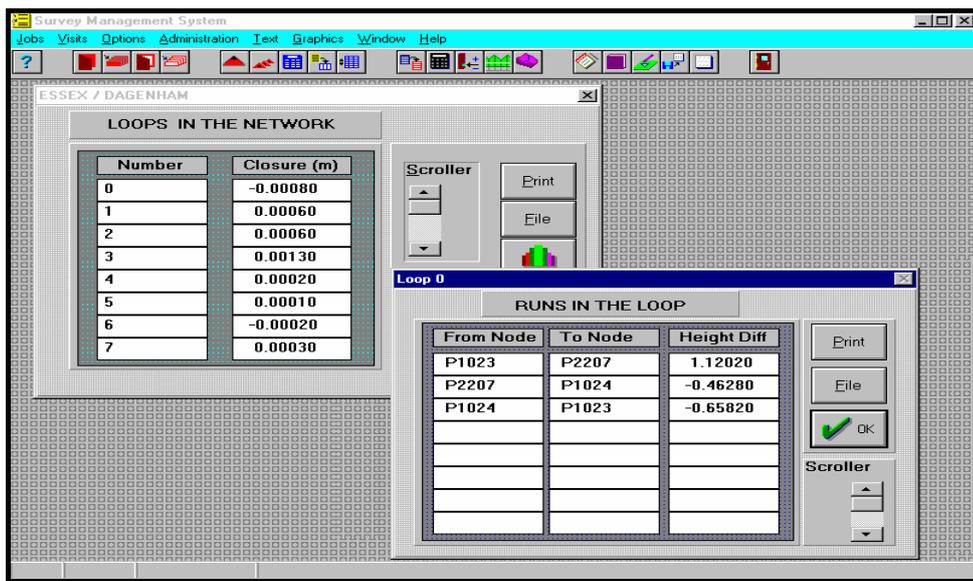


Fig 4.7b

Notes

It is not always necessary to select the above menu options in order of sequence. The sorting process generates temporary records that remain in memory until after computations. It may, if necessary, recommend processing another menu before the current one. As a guide, repeat each processing routine if there are any changes in either the data set or control file.

Computing

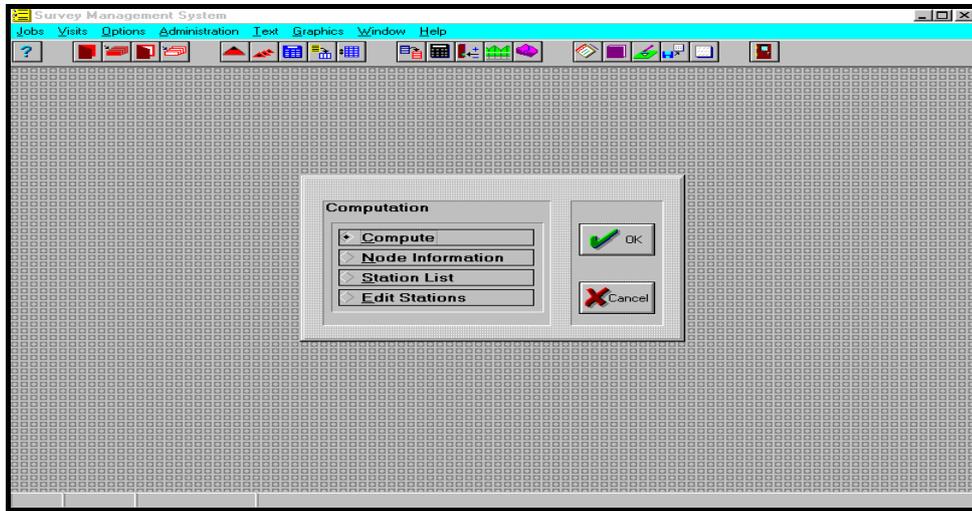


Fig 4.8

This menu option becomes available after node or loop processing. To compute, follow the steps below:

-  Click icon or select Computation from Options menu.
- Inspect the options, Fig 4.8. Select Compute.

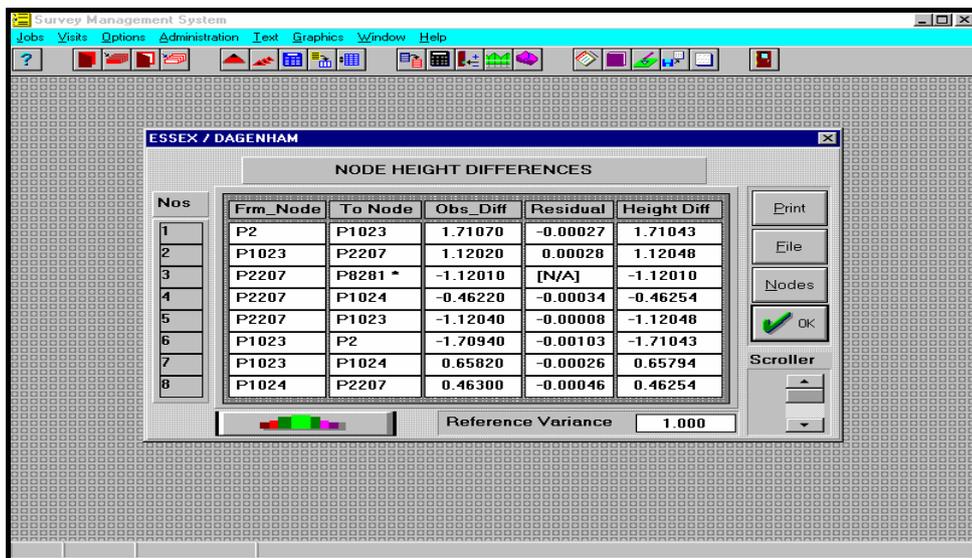


Fig 4.9a

- Select Node Information to list results, Fig 4.9a.

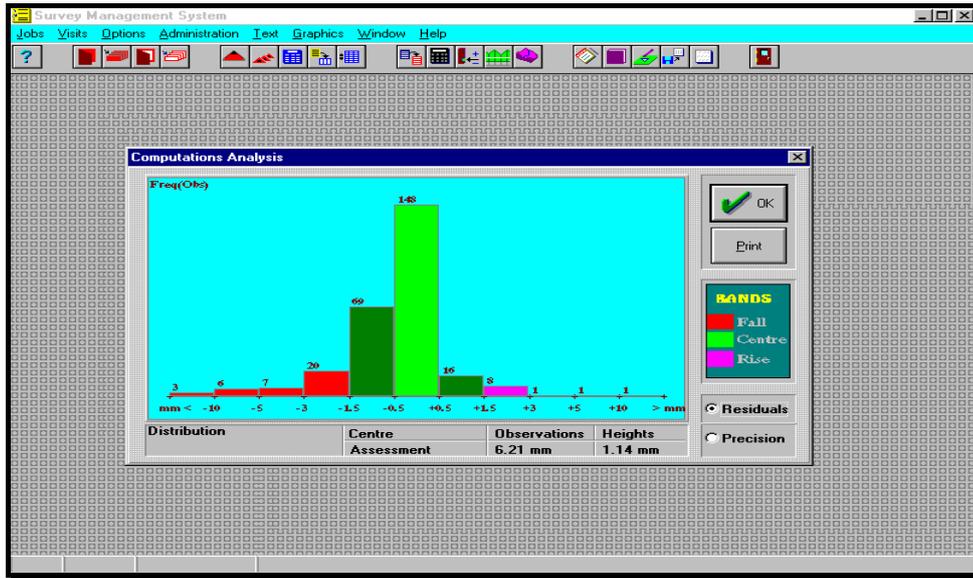


Fig 4.9b

- Select Histogram for Computations Analysis, Fig 4.9b.

NODE HEIGHT DIFFERENCES

Nos	Frm Node	To Node	Obs Diff	Residual	Height Diff
1	P2	P1023	1.71070	-0.00027	1.71043
2	P1023	P2207	1.12020	0.00020	1.12048
3	P2207	P8281 *	-1.12010	[N/A]	-1.12010
4	P2207	P1024	-0.46220	-0.00034	-0.46254
5	P2207	P1023	-1.12040	-0.00008	-1.12048

HEIGHT OF NODES

Nos	Station	Prv. Height	Correction	Adj. Height	S.E ±mm
1	[P2]	100.12345	[N/A]	100.12345	[N/A]
2	P1003	142.18977	-0.00000	142.18977	0.69
3	P1005	134.85905	0.00000	134.85905	0.56
4	P1008	111.86764	0.00000	111.86764	0.42
5	P1015	117.52376	-0.00000	117.52376	0.47
6	P1023	101.83388	-0.00000	101.83388	0.10
7	P1024	102.49181	0.00000	102.49181	0.14
8	P13	105.72250	0.00000	105.72250	0.37

Fig 4.9c

- Select Node button to list node heights and corresponding standard errors, Fig 4.9c.

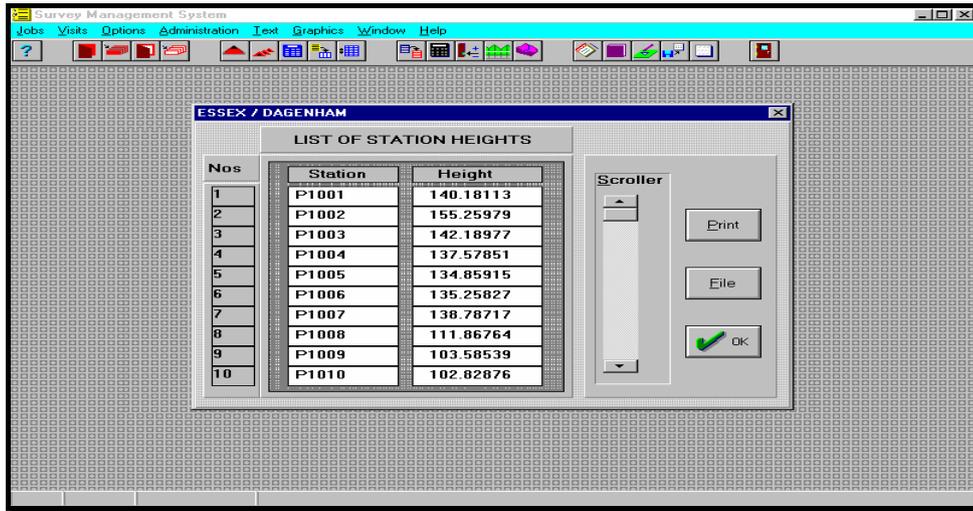


Fig 4.10

- Select Stations to list all station results, Fig 4.10.
- Select Edit Stations to delete change points, rename points to station names and add plan information, eastings and northings, Fig 4.11. List command button installs a dialog list box with print and file commands.

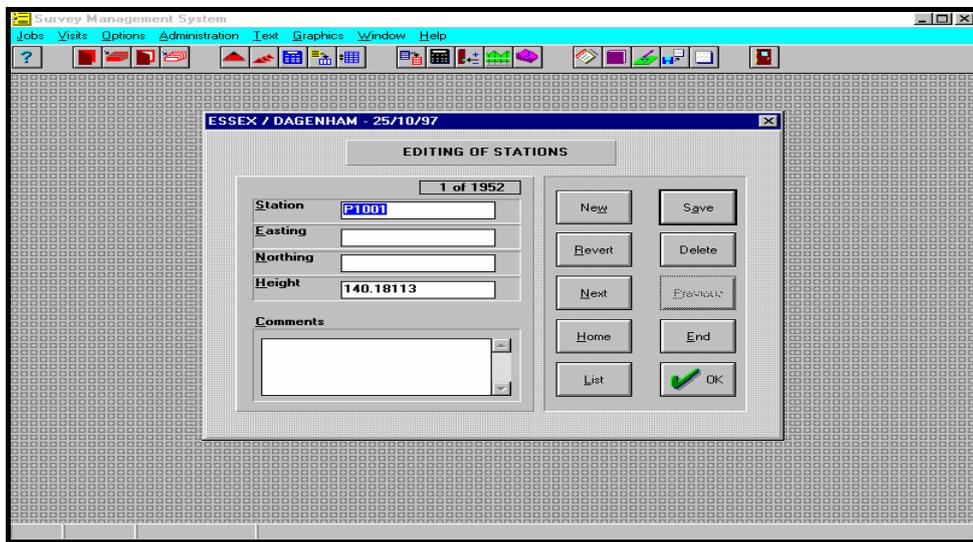


Fig 4.11

Conclusion

At the end of computations, there will be results for all stations in the network. It includes open runs and intermediate observations, if any. Henceforth, editing and management can begin as in the next section.