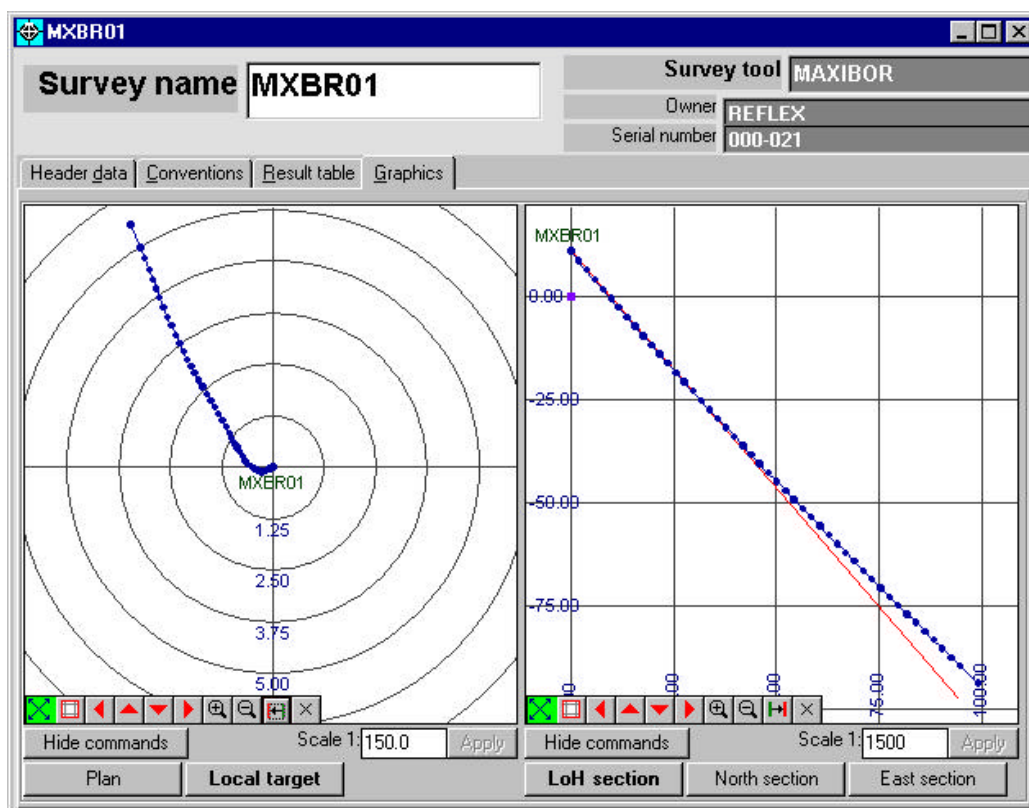


SProcess – Version 1.6

July 2005

Users Manual



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About SProcess v1.6

SProcess (Survey Processor) is the Windows survey processing software for ALL REFLEX INSTRUMENT survey tools. It works with **MAXIBOR**, **EMS**, **EZ-Shot** and **AQS** (AQ Tool) generated survey data to provide a single integrated environment for viewing, printing and exporting these survey data.

It encompasses most of the operations performed by the DOS PC-based applications MAXI.EXE and EMSPC.EXE and extends functionality in several ways.

SProcess is not an upgrade to the DOS systems – it is a completely new and separate application. SProcess can be used in parallel with, or in place of, the DOS programs.

What SProcess v1.6 does

- Works with all your existing MAXIBOR 1 and EMS survey files.
- Allows input of EZ-Shot angle data to create new EZ-Shot survey files (not possible in the DOS applications).
- Works with Single Shot survey files generated from the AQS application for the AQ tool.
- Works with MAXIBOR 2 survey files.
- Allows editing of header information and changing of conventions for the survey file whilst retaining compatibility with the DOS version file formats.
- Displays, prints and exports survey data in tabular and graphical formats.
- Displays all survey types at the same time allowing you to “mix and match” surveys in one project area.
- Opens and displays surveys from different drives and folders at the same time.
- Maintains file compatibility with DOS applications
- Allows the automatic creation of Calibration Corrected EMS survey files from the original DOS EMS survey files. This means that the survey files do NOT need to have the DOS EMS calibration files present when they are worked with.
- Includes extended set up parameters. Specify exactly which data item you want to display, print and export. Specify decimal places for each data item individually.
- Uses comma and full stop decimal place symbols without problems, no matter what your computer system is set to use.

What SProcess v1.6 does not do

- Alter the survey file formats (retains full compatibility with DOS applications) UNLESS you have asked for automatic creation of calibration corrected EMS survey files (in this case the originals are ALWAYS kept).
- Allow editing or statistical analysis of the raw data files **
- Produce 3D or multi-hole graphics **
- Allow extrapolation of the surveys **
- Support all the file export options available in the DOS applications (many of which are now obsolete). New formats will be added in the next version.
- Set-up, run and control surveys on the MAXIBOR and EMS tools
- Work with very early or non-English survey files

** = these items planned for version 2 of SProcess

New features in version 1.6 (released July 2005)

- 1) **Major change** to allow easier installation and less support calls to REFLEX suppliers. Entire licensing system has been removed. All license restrictions have been removed so that there is only ONE version of the software which is supplied with any REFLEX system.

New features and fixes in version 1.5 (released March 2005)

- 1) **Major change** to allow operation with **MAXIBOR 2** survey files produced by the Palm system. However, apart from a few small apparent differences on-screen, these are

treated like any other survey data file in SProcess. (Maxibor 2 allows use of 4 Dip conventions rather than 2, and has fields to input the accuracy of the Start Azimuth and what measurement method was used.

- 2) **Fixed:** Table size error when printing more than one survey. Now tables use full length of available page.
- 3) **Fixed:** Dip and elevation conventions overprinting problem on header page.
- 4) **Fixed:** Incorrect start-up of Export to ASCII parameters to **Individual** files (this was an annoyance rather than a critical error). Now correctly defaults to **Single** file.
- 5) General improvements to code where other changes were made.

New features and fixes in version 1.3 (released March 2004)

SProcess Version 1.3 has a number of new features and improvements compared with the previous release version.

- 1) Addition of an on-line user guide (on-line help). Information about the programs operation is just a mouse click or key press away.
- 2) Automatically creates **calibration corrected** EMS survey files from existing "DOS" EMS survey files. This means that you do NOT have to supply the calibration files to other SProcess users to calculate EMS surveys. See page 8.
- 3) Automatically checks for and copies new "DOS" EMS calibration files from the DOS EMS system to SProcess so you don't have to worry about keeping these up to date manually. See page 8.
- 4) SProcess now has a Rental License version. This allows the use of the software as a fully operational system for a given rental period. **(Removed in v1.6)**
- 5) Evaluation period now limited to 14 days. Also cannot export survey data. **(Removed in v1.6)**
- 6) EZ-Shot data input now has a Magnetic Azimuth input column. The True Azimuth is calculated using the Magnetic Azimuth and Magnetic Variation every time the EZ Shot data is updated OR the Magnetic Variation value is changed.
- 7) Link to AQS application (if available) - to run surveys on the AQ tool.
- 8) Fixes to invalid file path errors which caused the application to "crash". These errors could occur if you had worked with files on a removable disk or had removed a folder that was used in the previous SProcess session.
- 9) Minor cosmetic and other improvements and minor bug fixes. Includes some icon changes on tool bar.

Installation

If your software is on CD:

Insert the installation CD into your CD drive. The installation program should start automatically. If it doesn't then run **SP_Setup.exe** using the Windows **Start | Run** commands.

If you downloaded from a web site:

Run **SP_Setup.exe** from the folder in which you placed this file when you downloaded.

After Installation

You do not need to do anything special to work with your existing survey files **UNLESS you have EMS files**.

EMS files: If you are working with EMS survey files produced by the DOS EMS system (EMSPC.EXE and EMS.EXE) these require their calibration files. SProcess automatically copies these files from the EMSPC folder into the SProcess folder so they are there when you want to work with the EMS survey files. You just need to set up the link first - see **Setup / Preferences** (page 8).

Operation

Starting SProcess for the first time

Select **SProcess** from the **Start | Programs | Reflex SProcess** menu.

Initial SProcess Window appearance

The initial window is blank with minimum menu and tool bar options displayed.

MULTIPLE DOCUMENTS = MULTIPLE SURVEYS

The application uses a multiple document interface (MDI) – this just means that you can open and view several survey “documents” at one time.

Several menu and toolbar options do not become available until one or more Survey files have been opened and displayed.

A fully registered copy does not have any text after the version number.

Menu options by function:

File

New EZ-shot – creates a new EZ-shot survey file - page 14

Open - opens one or more survey files: MAXIBOR (I & II), EMS (including AQS multishot); EZ-shot (including AQS single shot) – page 13

Save – saves the current survey file – does not close the survey window

Save As – saves the current survey file as “new name”

Close “Survey name” – Closes the current survey window.

Close All – Closes all open survey windows

Export – exports one or all surveys to ASCII(text) or Atlas Copco RML files – page 20

Print – Prints one or all surveys. Allows selection of any combination of Header, Result table and Graphics. Includes printer set-up – page 23

Printer Setup – Setup /or select current printer.

1 – 9 – List of recently used survey files.

Exit – Exits SProcess. Will ask if you want to save any changed and unsaved surveys (even in evaluation mode).

Tools

Setup/Preferences – General, Results table and Graphics display preferences – page 8.

Register or Transfer License – Register (in Evaluation mode) or Transfer (in registered mode) a software licence – page **Error! Bookmark not defined..**

Run AQ Surveys (AQS) - Only shown if you have a copy of the PC AQS software for running multi-shot and single shot surveys with the REFLEX AQ tool.

Window

Tile – Tiles all open survey windows from top left of main window.

Restore all – Restores all open survey windows to start up size.

Minimise all – minimises all open survey windows.

Maximise all – maximises all open survey windows.

1 – 9 – Numbered list of open survey windows (maximum 9)

List – displays a select list of all open survey windows.

Help

Contents - Contents of on-line user guide

Specific - Information about a specific action or window

About – About SProcess.

Toolbar icons / commands:



Creates a new EZ-shot survey file (= **File | New EZ-shot**)



Opens one or more survey files (MAXIBOR, EMS and/or EZ-shot) (= **File | Open**)



Closes the current survey window (= **File | Close "Survey name"**)



Prints one or all surveys (= **File | Print**)



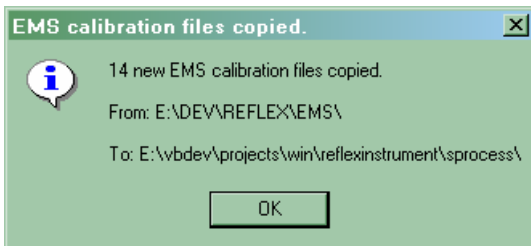
Setup /or select current printer (= **File | Printer Setup**)



Exports one or all surveys (= **File | Export**)

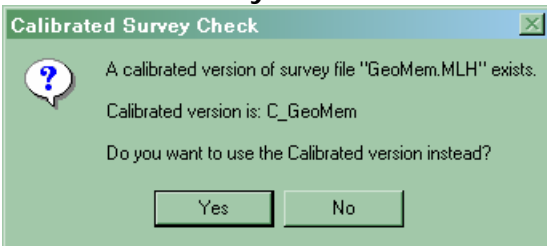
Messages that may be shown when SProcess starts:

EMS Calibration files copied:



If you have switched on "Check for and copy new EMS calibration files from DOS EMS folder (EMSPC.EXE)" in Setup/Preferences (see next page) and there are new EMS calibration files SProcess will show you how many calibration files it has copied.

Calibrated Survey Check:



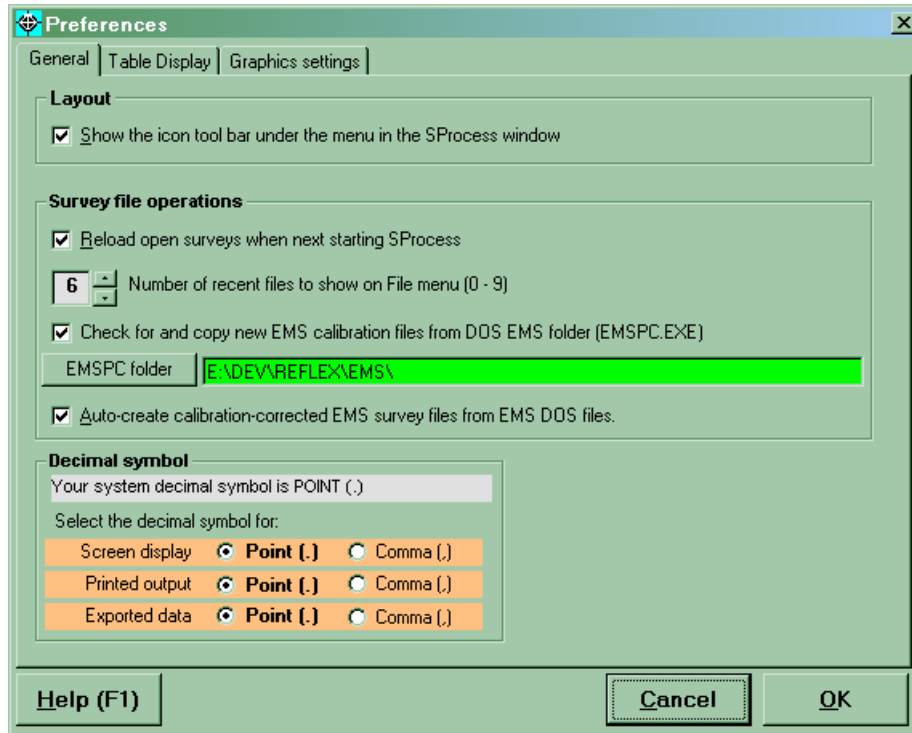
This message is displayed if one of your "Open" EMS surveys from the previous session is an uncorrected (DOS) version and a corrected version of that survey exists. To open the corrected version click **Yes**. To use the uncorrected version click **No**.

Setup / Preferences

These parameters control most areas of the operation and display characteristics in SProcess and it's survey files.

Select: **Tools | Setup / Preferences**

General settings tab:



Layout:

Show the icon tool bar under the menu in the SProcess window

Tick to show the button toolbar at the top of the window under the text menu. Untick to hide the icon toolbar.

Survey file operations:

Reload open surveys when next starting SProcess.

Tick if you want SProcess to “remember” the survey files you were working with and open them automatically when you run it again. Untick if you want to start with a “clean” screen each time (no surveys loaded).

Number of recent files to show on the file menu (0 – 9)

Select the number of recent files to show on the recent file menu (numbered **1 – 9** under **File**). Setting 0 (zero) switches off recent file list.

Check for and copy new EMS calibration files from DOS EMS folder (EMSPC.EXE)

Tick on to get SProcess to check for new EMS calibration files in your EMSPC folder every time you start SProcess. This ensures SProcess always has the calibration files it needs to calculate EMS (DOS) survey files. If you switch this on you must also make sure that you have selected the **EMSPC folder** (this contains the EMSPC.EXE program AND the EMS Calibration files). Click the **EMSPC Folder** button and find the folder. The path background is shown **GREEN** when you have found the correct folder.

Auto-create calibration-corrected EMS survey files from EMS DOS files.

Tick ON to automatically create CALIBRATION CORRECTED EMS survey files from original DOS EMS surveys. If this is switched on then every time you open a DOS EMS survey file a copy is created which has Calibration corrected raw data and no longer needs a calibration file to process the survey.

Advantages: You do not need the calibration file for that survey file.

You can send the survey file to anyone else who has SProcess without finding and sending the associated calibration files.

Disadvantage: You cannot work with the calibration corrected survey file in the DOS EMSPC or EMS programs. However, the original data files are still available if required.

The calibration corrected survey files have a **C_** prefix to the file names.

For example: A survey file with the two files: **DH099E.MLH** (Header data) and **DH099E.MLR** (Raw data) becomes: **C_DH099E.MLH** and **C_DH099E.MLR**. The Survey NAME (in the Header) remains the same as the original.

Note: After a calibration corrected version has been created - if you open the uncorrected version then SProcess advises you that a corrected version is available and allows you to open it instead. See **Opening one or more survey files** on page 13.

Decimal symbol:

SProcess works with both Point (.) and Comma (,) decimal symbols. Your computer insists on one only (set under Regional or Locale Settings in the Control panel). The SProcess settings allow you to control exactly what type of decimal you want for on-screen display, printed output and exported data files. You can mix them quite safely. Simply click on the radio button option that you want for each output type.

These settings **ONLY** affect the display of data – they do not affect the way it is stored in the data files.

Table Display tab:

Preferences

General | **Table display** | Graphics settings

Section	Show	Dec.Pl.	Result name
Common results	<input checked="" type="checkbox"/>	1	Station
	<input checked="" type="checkbox"/>	2	East
	<input checked="" type="checkbox"/>	2	North
	<input checked="" type="checkbox"/>	2	Elevation
	<input checked="" type="checkbox"/>	2	Dip
	<input checked="" type="checkbox"/>	2	Azimuth
	<input checked="" type="checkbox"/>	2	LocalA
	<input checked="" type="checkbox"/>	2	LocalB
	<input checked="" type="checkbox"/>	2	LocalC
	<input checked="" type="checkbox"/>	2	Status
Show temperature as <input checked="" type="radio"/> Centigrade <input type="radio"/> Fahrenheit			
MAXIBOR 1 specific results	<input checked="" type="checkbox"/>	2	CCD*
	<input checked="" type="checkbox"/>	2	Tool*
MAXIBOR 2 specific results	<input checked="" type="checkbox"/>	2	Tool*
	<input checked="" type="checkbox"/>	6	Gravity
	<input checked="" type="checkbox"/>	2	Roll Angle
	<input checked="" type="checkbox"/>	3	DLS
EZ-Shot specific results	<input checked="" type="checkbox"/>	1	Mag.Azi
	<input type="checkbox"/>	1	Tool*
	<input type="checkbox"/>	0	Mag.Str.
	<input type="checkbox"/>	1	Roll Angle
	<input type="checkbox"/>	1	Mag.T/face
	<input type="checkbox"/>	1	DLS
EMS specific results	<input type="checkbox"/>	1	Tool*
	<input type="checkbox"/>	1	Trax*
	<input type="checkbox"/>	0	Mag.Str.
	<input type="checkbox"/>	1	Mag.Dip
	<input type="checkbox"/>	0	Mag.X
	<input type="checkbox"/>	0	Mag.Y
	<input type="checkbox"/>	0	Mag.Z
	<input type="checkbox"/>	1	Roll Angle
	<input type="checkbox"/>	1	DLS

Help (F1) | Cancel | OK

This controls the types of data displayed on the result tables and the decimal places for each individual data field. The decimal places are also used during data export.

Use the tick box to select / de-select the item for display on the result table (both to screen and printer).

Station is always ticked on as this is always displayed in the first column of the result table.

The data items are divided into five blocks:

1. Common results – contained in MAXIBOR 1, MAXIBOR 2, EMS and EZ-Shot results tables.
2. MAXIBOR 1 specific results.
3. MAXIBOR 2 specific results.
4. EZ-Shot specific results. Also apply to AQS Single Shot data.
5. EMS specific results. Also apply to AQS Single Multi-shot data.

Each survey type only displays the data items that the source survey file contains.

The MAXIBOR (1 & 2)/EMS/AQS Multi-shot result tables are VIEW ONLY - you cannot edit any of the data fields.

The **EZ-Shot**/AQS Single Shot data tables have some data columns that are editable. These are essential to allow the input of data from the EZ-Shot (and similar) survey tools. This allows you to build up a "Multi-shot" survey from a number of Single Shot measurements (or surveys).

The editable fields are: **Station, Dip, Mag.Azi**, Tool°, Mag.Str., Roll Angle, and Mag. T/face. Those marked in bold are essential for data input to calculate a survey.

The recommended minimum fields for input and calculation of EZ-Shot (or similar surveys) are: Station, East, North, Elevation, Dip, Azimuth and Mag.Azi.

Why are there two Azimuth fields?

Mag.Azi is the Magnetic Azimuth which is supplied by the EZ-Shot. That is, it is the azimuth relative to Magnetic North. This must be input into the EZ-Shot worksheet.

Azimuth is the True Azimuth after Magnetic Azimuth has been corrected for Magnetic Variation (also known as Magnetic Declination) and is the azimuth relative to True or Grid North. This is the azimuth that is used to calculate the survey.

The **Dec.PI** (decimal place) settings are changed using the up/down arrows beside each number. The minimum and maximum permitted vary depending on the data item as follows:

Item	Dec.PI. range.
Station:	0 to 2.
Other linear items:	0 to 4.
Angular items:	0 to 3.
Temperatures:	0 to 2.
Magnetics:	0 to 1.

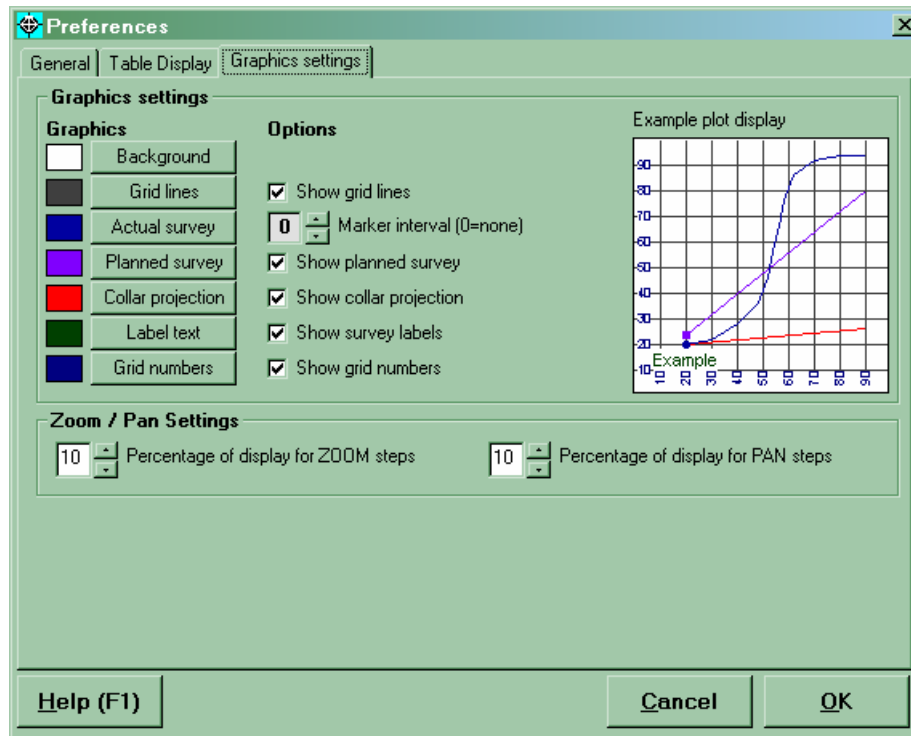
Show Temperature as:

You can show any temperature data in **Centigrade** and **Fahrenheit**. This applies to screen and printed output and export data. The temperature values are always stored in the data files as degrees Centigrade.

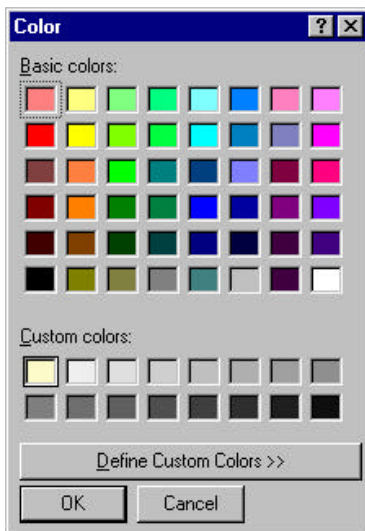
IMPORTANT: All changes take immediate effect on open survey files when you click the **OK** button.

Graphics settings tab:

This controls the items to display in the survey graphics windows and the colours used for each item. It features an example plot so you can immediately see the results of any changes that you make.

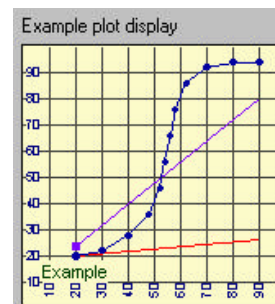


Click the relevant button to change the colour of a drawing item.
For example: Click **Background** to change the background colour.

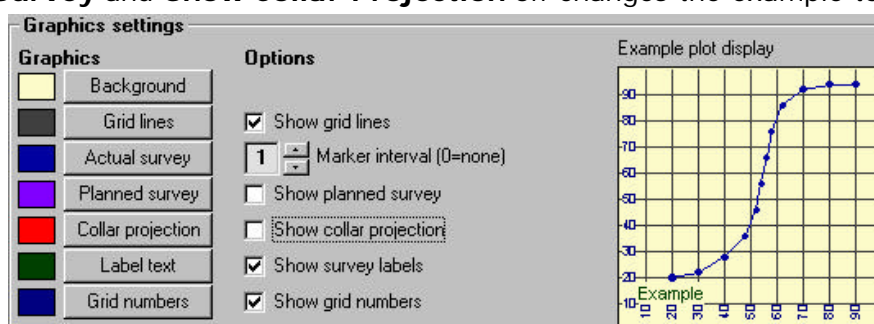


The standard Windows colour selection box appears. Simply select the required colour or define your own under **Define Custom Colors**. *Note: This will appear in your computers Local Language.*

As soon as you click OK the example plot is updated to show the colour change:



The tick boxes beside the named buttons switch the item on or off. For example ticking **Show Planned Survey** and **Show Collar Projection** off changes the example to:



The **Marker interval** determines the spacing for the station symbols.

0 = off (no markers)

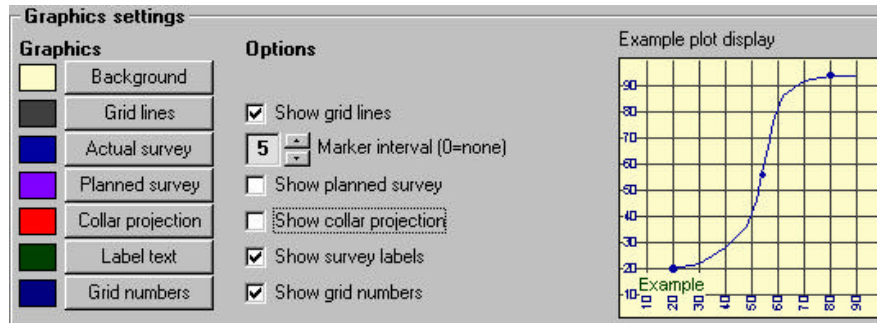
1 = show markers at every station.

2 = show markers at every second station

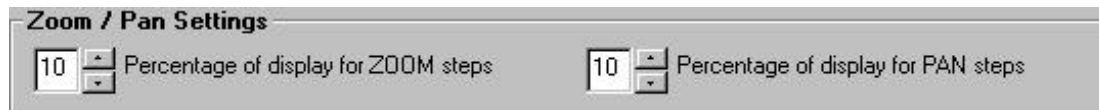
3 = show markers at every third station

and so on, up to a maximum of **10**.

All markers start at the first (usually the collar) station.



Zoom and Pan settings



These allow you to set the percentage of the graphics window to use for Zoom and Pan operations. The range allowed is from 10% to 50%.

IMPORTANT: All changes take immediate effect on open survey files when you click the **OK** button.

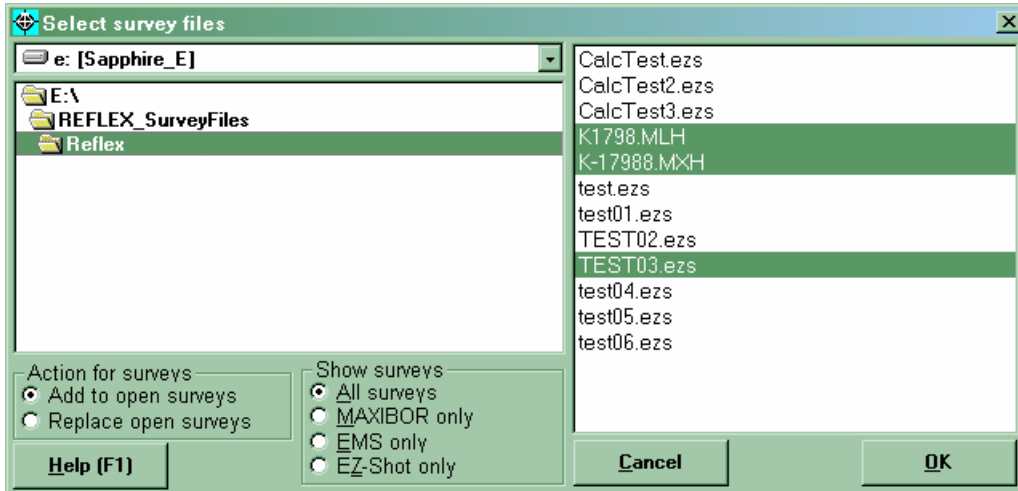
Survey File operations

Opening one or more survey files

Select **File | Open** from the main menu or click



The survey file selection window is shown:



The usual drive and folder selectors are on the left hand side with the file selector box on the right.

If you already have open survey files from the current drive and folder these are highlighted initially (just for your information), as shown above. De-selecting them in this box does NOT close them in the main application.

You select one or more survey files by highlighting them. **Click** (select single file), **Ctrl+Click** (select individual files) and **Shift+Click** (select a block of files) all work as expected.

In addition to the standard boxes there are some other controls:

Action for surveys (two mutually exclusive options):

- 1) **Add to open Surveys** – adds any new survey files to those already open.
- 2) **Replace open surveys** – replaces open surveys with the selected survey files (closes any survey files that are already open – it will prompt to save any surveys that have been changed).

If you don't have any open surveys then it doesn't matter which option you chose.

Show surveys has four options:

- 1) All surveys – shows MAXIBOR, EMS and EZ-Shot and AQS surveys in the files box.
- 2) MAXIBOR only – only shows MAXIBOR survey files (**BOTH** MAXIBOR 1 and MAXIBOR 2).
- 3) EMS only – only shows EMS / AQS multi shot survey files.
- 4) EZ-Shot only – only shows EZ-Shot / AQS single shot survey files.

You can use this to show only a single survey type if you aren't interested in the others.

Opening surveys from different folders (and drives).

You can open surveys from any drive or folder on your system and display them at the same time in SProcess. You need to open them on a folder by folder basis. For example, you could open 5 surveys in **c:\Surveys2000\Project1** (**File | Open**, select then **OK**). Then open a further 6 surveys in **d:\Surveys2002\Project1** (**File | Open**, select then **OK**).

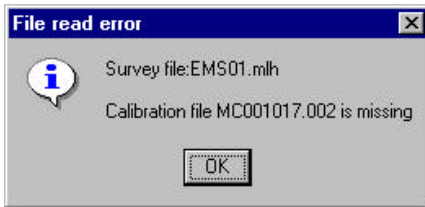
After selection – opening and calculating

When you click **OK** the selected survey file or files are opened and displayed. As in the DOS versions of the software the results are actually calculated from the raw data as the data are

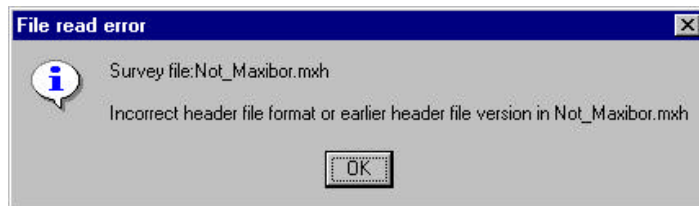
loaded into the program. You may need to wait a few moments on slower computers or with large surveys whilst calculation takes place.

File Read Errors and Information

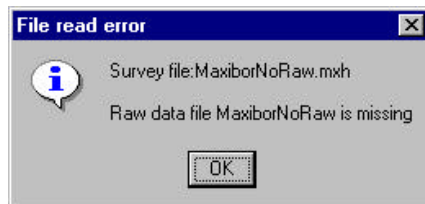
If there is an error when reading a file then a message box is displayed of the following type:



Missing calibration file. This only appears with EMS survey files if the named calibration file does not exist in the SProcess folder – probably not copied it from the DOS EMSPC system. Switch on “*Check for and copy new EMS calibration files from DOS EMS folder (EMSPC.EXE)*” under **Tools | Setup/Preferences** to copy these.



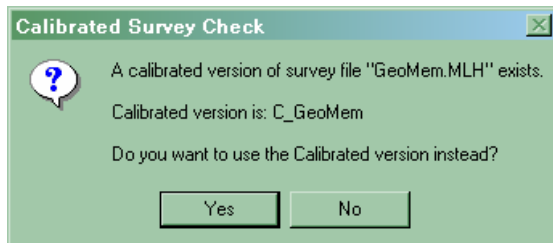
Header file error. The header file is not a valid survey file for the type of survey expected. This could be because it has been corrupted, is an older version or is a completely different file format.



Raw data file missing. The raw data file for a MAXIBOR or EMS survey is missing. File selection is made using the header files, so it is possible to select an “orphaned” header file. The raw data file (either .mxr or .mlr) may have been deleted or moved.

In all cases of **File read error** the survey is NOT opened.

Click OK to continue in any of these cases.



Calibrated Survey Check appears if you are opening an uncorrected EMS file when a corrected one exists. Answer **Yes** to work with the corrected version or **No** to work with the uncorrected version.

Creating an EZ-Shot survey file.

The EZ-Shot file differs from the MAXIBOR and EMS files because it contains only processed data provided by the EZ-Shot tool.

The **ESSENTIAL** data needed for an **EZ-Shot survey** are: **Station depth**, **Dip** (inclination) and **Magnetic Azimuth** (magnetic direction).

You can, of course, add the supplementary data (Tool temperature, Magnetic Strength, Roll Angle and Magnetic Tool Face Angle) if you have logged these from the EZ-Shot. But it is not needed for the calculations.

Not just EZ-Shot...

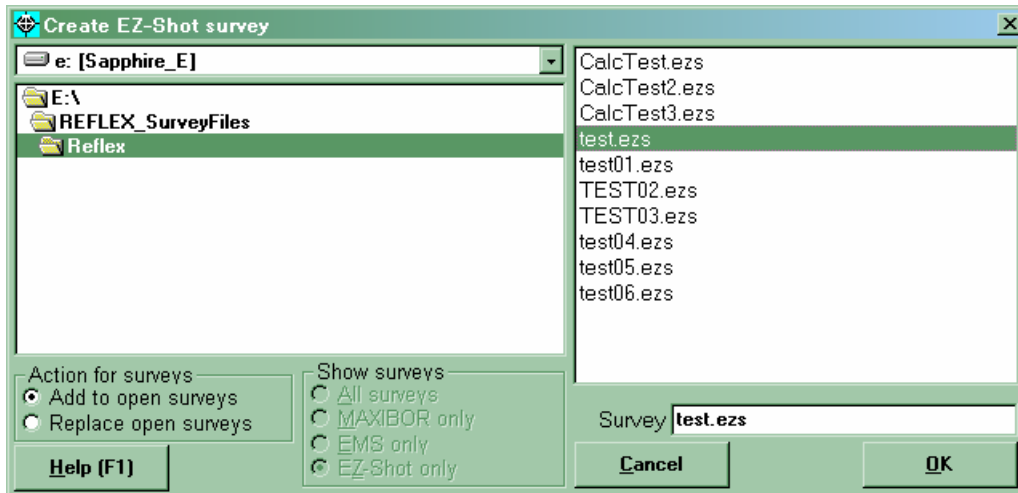
It is also apparent that the essential data can be provided by any other survey method that generates a dip and azimuth value against a known depth. So you can enter surveys from other methods (*hopefully not the outdated Acid Etch method!*).

...and also the AQS Single Shot:

The EZ-Shot file format is also used by AQS (the PC based control software for the REFLEX AQ tool) for it's Single Shot surveys. You should not need to edit the AQS Single Shot data. Important: The AQS Single Shot survey files are generated as multiple measurement surveys by AQS, and SProcess expects these files to contain multiple measurements. **You should never need to work with a single-measurement survey file in SProcess** (it does work but is somewhat pointless!).

New EZ-Shot survey

Select **File | Open** from the main menu or click



The Create EZ-Shot survey window is similar to the File Open window but has an input box for the EZ-Shot survey name and the **Show Surveys** selection greyed out. The files box shows only EZ-Shot surveys.

Note: The OK button is only enabled when you have entered a valid name in the Survey box. It is disabled if the box is empty (blank).

You can overwrite an existing EZ-Shot survey (click and select the survey name) or create a new one by typing the name in the **Survey** box.

WARNING: If you select an existing survey file then any data in the original file is lost.

Click **OK** to continue and create a blank EZ-Shot survey.

Survey File Window

Each survey file opens in it's own "child" window within the SProcess work space. These windows display the survey header information, survey conventions, result table and graphics plots for that survey.

The Survey File windows can be re-sized, maximised and minimised. However they cannot be reduced below a certain size to ensure that all the data remains visible and legible.

They are almost the same for each survey type (MAXIBOR, EMS and EZ-Shot) but do have some differences caused by the different survey types – these are described where they occur.

Survey Header Data

The screenshot shows the Survey Header Data window for survey K1798. The window is titled "K1798" and has a green border. The main content area is divided into several sections:

- Survey name:** K1798
- Survey tool:** EMS
- Raw data file is:** K1798: EMS corrected
- Owner:** [Empty]
- Serial number:** 002-052
- Navigation tabs:** Header data (selected), Conventions, Result table, Graphics
- Location:** Balluna
- Country:** Ixland
- Client name:** Balluan South mine
- Client reference:** BAL/S-087
- Surveyed by:** Mike J
- Survey date:** [Empty]
- Drill diameter:** 46MM
- Magnetic variation:** 6.2 degrees EAST of NORTH
- Survey run on:** Rods Wireline
- First station:**
 - East: 6890.02 metres
 - North: 1485.57 metres
 - Elevation: -311.26 metres
 - Dip/Inclination: -60.31 degrees
 - Direction/Azimuth: 156.34 degrees
- Planned start:**
 - East: 6890.02 metres
 - North: 1485.57 metres
 - Elevation: -311.26 metres
 - Dip/Inclination: -60.00 degrees
 - Direction/Azimuth: 153.00 degrees
- Use above for local co-ordinate calculations:** Use above for local co-ordinate calculations

The above screen shot shows the **Header data** tab for an **EMS** survey, **EZ-Shot** is the same. **MAXIBOR 1** does not have the **Planned start** fields and both **MAXIBOR 1** and **MAXIBOR 2** show **Probe Length** data instead of the **Magnetic variation**.

These differences are purely based on the file structure of the original surveys (from the DOS software). Planned start data was never included in the MAXIBOR file format. It will be included in later versions but has been left out of this version to ensure complete compatibility with the DOS software system.

The **Planned start** can be used for two functions:

- 1) As the base for the local co-ordinates. This produces local co-ordinates which are measured from the *planned* survey start, rather than the *actual* survey start.
- 2) To draw the planned survey path in the survey graphics.

EDITING: You can edit any item of data in a white box. Other input methods work as expected in Windows: For example: EAST/WEST list selector in Magnetic variation. If you change any of the *result-critical data* (such as any item of First Station data) then this forces a re-calculation of the results and re-drawing of the graphics. So changes are shown immediately.

NON-EDITABLE information:


Survey Name: The name of the survey which was provided when the survey was run.

Raw data file is: Shows the true file name of the survey (this may or may not be the same as the Survey name). It also shows if an EMS file is calibration corrected or not.

Survey Tool: The name of the survey tool used.

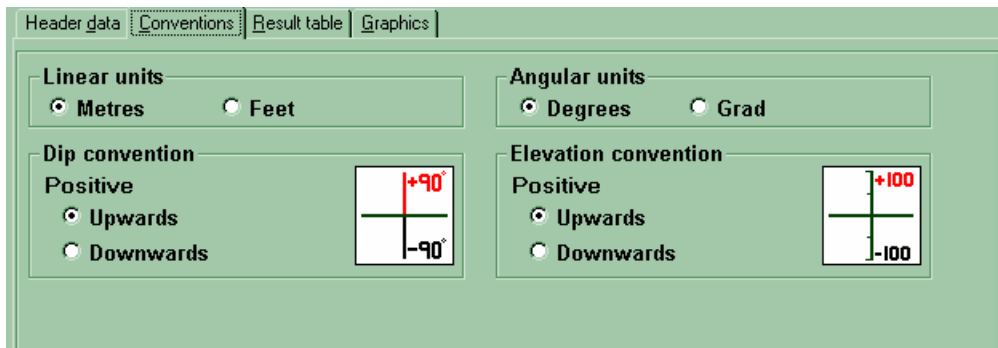
Owner: Name of the owner of the tool. Applies to MAXIBOR and EMS ONLY - otherwise it is blank.

Serial Number: Serial number of the tool. Does not apply to manually entered EZ-Shot results.

To get specific help click the  button or press the **F1** key.

Survey Conventions

The **Conventions** tab allows you to select or change your linear and angular units and your dip and elevation conventions.



You select or change the **Linear** and **Angular** units simply by clicking the required radio button.

Dip and **Elevation** conventions can be changed by clicking a radio button or the graphic indicator. The indicator shows what convention you are using.

IMPORTANT: MAXIBOR 2 allows two other Dip conventions: **0 Vertical Upwards** and **0 Vertical Downwards**.

These are all *result-critical data* and so cause a recalculation of the results and re-drawing of the graphics.

Survey Result Table

The **Result Table** tab shows the result table containing data which you selected under **Tools | Setup / preferences**.

Station	East	North	Elevation	Dip	Azimuth	LocalA	LocalB	LocalC
Metres	Metres	Metres	Metres	Degrees	Degrees	Metres	Metres	Metres
5.0	6890.02	1485.57	-311.26	-60.31	156.34	0.00	0.000	0.000
50.0	6899.40	1465.46	-350.41	-60.59	153.66	22.18	-0.515	-0.117
55.0	6900.49	1463.27	-354.77	-60.84	153.15	24.63	-0.640	-0.155
60.0	6901.52	1461.07	-359.14	-60.92	156.94	27.06	-0.695	-0.206
65.0	6902.53	1458.86	-363.51	-60.87	153.91	29.49	-0.734	-0.258
70.0	6903.55	1456.67	-367.88	-61.27	156.04	31.91	-0.792	-0.325
75.0	6904.60	1454.49	-372.26	-61.10	152.53	34.31	-0.878	-0.404
80.0	6905.69	1452.34	-376.64	-61.17	153.48	36.72	-1.018	-0.479
85.0	6906.78	1450.20	-381.02	-61.23	152.71	39.13	-1.155	-0.560

TIP: You can see more data if you **MAXIMISE** the Survey display window (press  at the right of the title bar).

The MAXIBOR results table is similar to the above – apart from some data items. The pale grey background shows that you cannot edit or change any of the data in the table.

However, the EZ-Shot table needs to be able to input data for the surveys and so columns that allow data input are shown in white.

Header data		Conventions	Result table	Graphics	Magnetic variation = +7.50 Degrees			Update EZShot results	
Station	East	North	Elevation	Dip	Mag.Azi	Azimuth	LocalA	LocalB	
Feet	Feet	Feet	Feet	Degrees	Degrees	Degrees	Feet	Feet	
0.0	100.00	200.00	30.00	-60.00	120.00	127.50	0.00	0.000	
50.0	119.85	184.20	-13.08	-59.00	122.00	129.50	25.37	0.449	
100.0	140.13	166.86	-55.37	-56.50	124.00	131.50	52.01	1.862	
150.0	161.30	147.79	-96.45	-54.00	125.00	132.50	80.42	4.105	
200.0	183.00	126.00	-135.85	-50.00	130.00	137.50	110.90	8.179	
250.0	204.26	102.80	-174.70	-52.00	130.00	137.50	141.89	13.643	
300.0	226.34	82.49	-214.67	-54.00	120.00	127.50	171.77	16.318	
350.0	249.37	64.81	-255.37	-55.00	120.00	127.50	200.80	16.318	
400.0	271.97	47.16	-296.33	-55.00	121.00	128.50	229.48	16.568	
450.0	294.26	29.11	-337.29	-55.00	122.00	129.50	258.15	17.319	
500.0	315.80	10.72	-378.50	-56.00	124.00	131.50	286.43	18.795	
550									

The essential data input fields (Station, Dip, Mag.Azi) are shown in white in this screen shot.

Two extra items are also shown, these are:

Magnetic Variation: Shows the Magnetic Variation Angle that is used to correct **Mag.Azi** to get **Azimuth**.

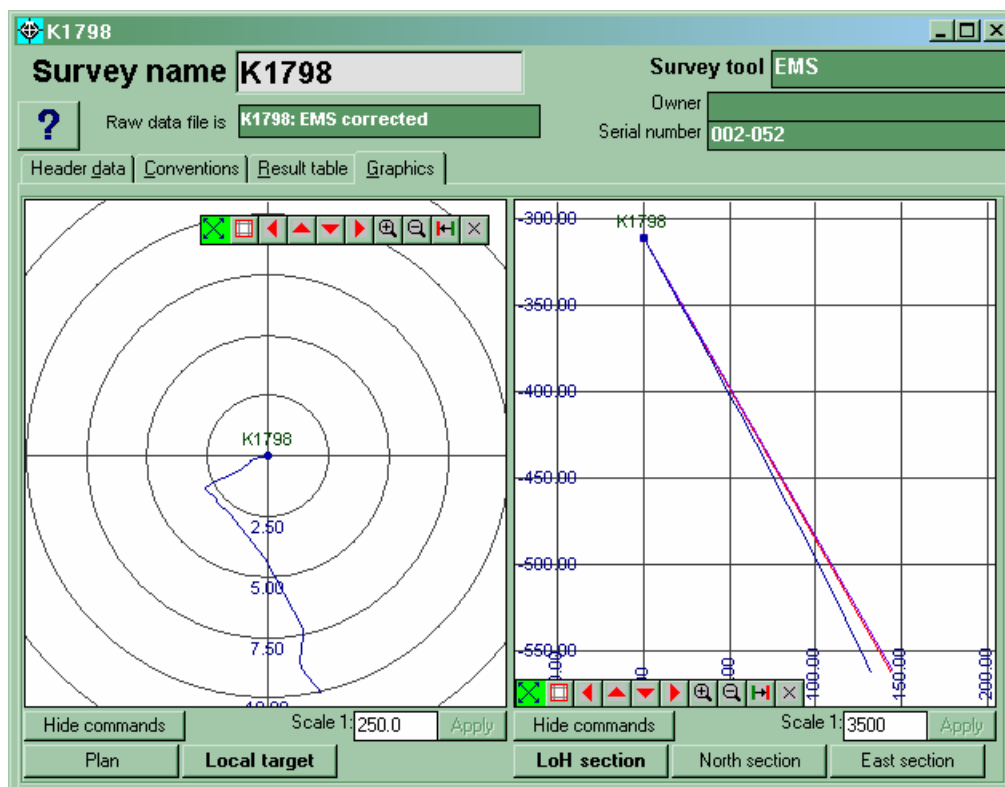
Update EZ-Shot results button: This checks and sorts the EZ-Shot data and calculates the co-ordinates (both regional and local). It also SAVES the EZ-Shot survey file to disk.


This is a security measure to ensure your data is saved when you Update the results. This process is also done if you select any of the other tab items.

For full details see **Editing EZ-Shot surveys** (page 25).

Survey Graphics

The **Graphics** tab displays the survey in graphical form.



IMPORTANT: You can see a better image if you **MAXIMISE** the Survey display window (press  at the right of the title bar).

There are always two views of the survey shown:

On the left you can see either the **Plan view** or **Local (downhole) target**.

On the right are the section views: **LoH (Line of Hole)**, **North** and **East** sections.

Line of Hole is a section that passes through the start and end stations of the survey.

Each graphics window has its own “floating” command bar. Move it by dragging the green pad (with arrows). You can also Hide and Show the command bar by clicking the **Hide Commands** or **Show Commands** button. You can also “hide” it on the right hand side of the window so that only the green pad is visible.

The **command buttons** and their actions are shown below:



Restore view: Restores view to the original (default) settings. Centred on survey with survey scaled to fit view area.



Pan: Pan left, up, down and right by a percentage of graphics window (see Setup / preferences – page 11).



Zoom: Zoom in or out by a percentage of the graphics window (see Setup / preferences – page 11)



Copy Scale and Grid spacing: This applies the scale and grid spacing values in the other graphic window to the present graphic window. Useful if you want to compare *like with like* in Plan and Section view.



Hide Commands: Hides the command bar (same as clicking the **Hide Commands** button).

Changing scale of survey graphic.

The scale displayed below the diagram is the scale for the printed output. You can change it easily by entering a new scale value in the scale box and clicking **Apply**.

Scale 1:

The scale is approximately correct on-screen but is accurate when printed.

IMPORTANT: The screen image is not quite ***What You See Is What You Get!*** When printing the program adjusts the plot to make best use of the paper that you are using.

It will ALWAYS centre the diagram on paper to the centre that is on-screen. Be aware that if you have large images on-screen, printing to smaller areas on paper then the paper images will be cropped. In the same way, small images on screen may result in smaller survey paths on paper.

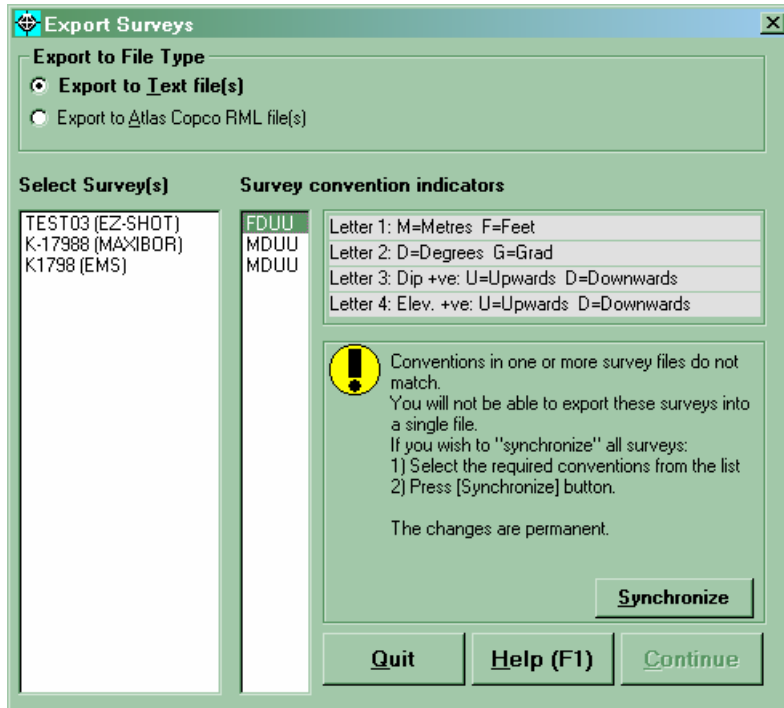
You may need a bit of experimentation to learn the best way to print scaled output.

Export Surveys

Export surveys to an ASCII (text) format or Atlas Copco RML (if you need to ask what Atlas Copco RML is do not use it!).

Select **File | Export** or click 

The Export Survey window appears similar to this.



The warning about Conventions not matching appears ONLY if one or more do not match. In this example the TEST03 survey is in Feet whilst all the rest are in Metres. For obvious reasons you do not export data in feet and metres to the same export file.

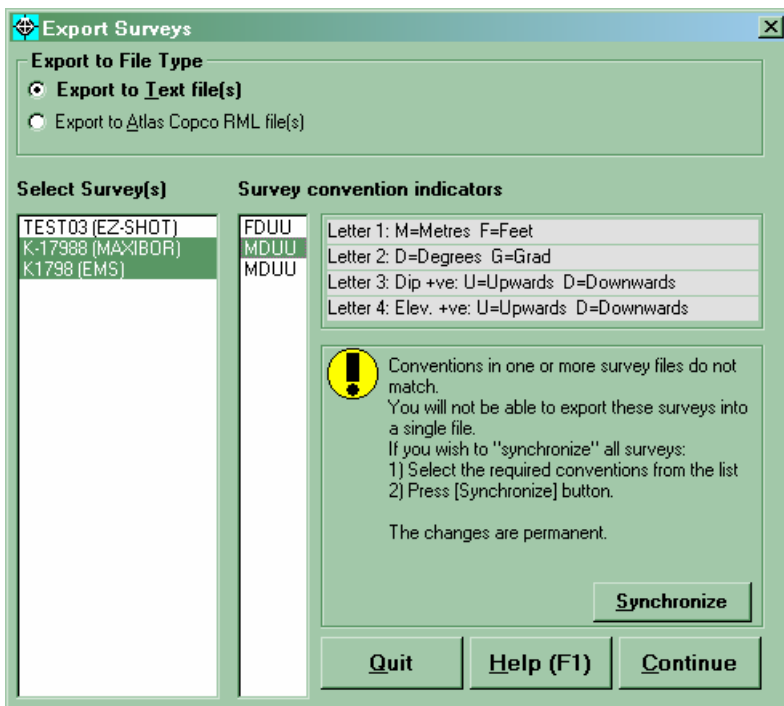
If you wish you can select the set of conventions you want to use in all the surveys (for example MDUU). Then click **Synchronize** to convert all listed files to the selected conventions.

IMPORTANT: This changes the survey files header information "permanently". You can change conventions again using the **Conventions** tab in Survey window.

Notes:

- 1 If you are selecting only surveys with the same survey conventions then you should not use synchronize. Only use synchronization if you want to export surveys with different conventions.
- 2 You CAN export survey with different conventions BUT you can only export these to INDIVIDUAL survey files. This avoids mixing surveys of different conventions in a single file.

To **Export**, first select the export type (**Export to Text file(s)** or **Export to Atlas Copco**



RML file(s)) then select one or more surveys from the open surveys list (under **Select Survey(s)**).

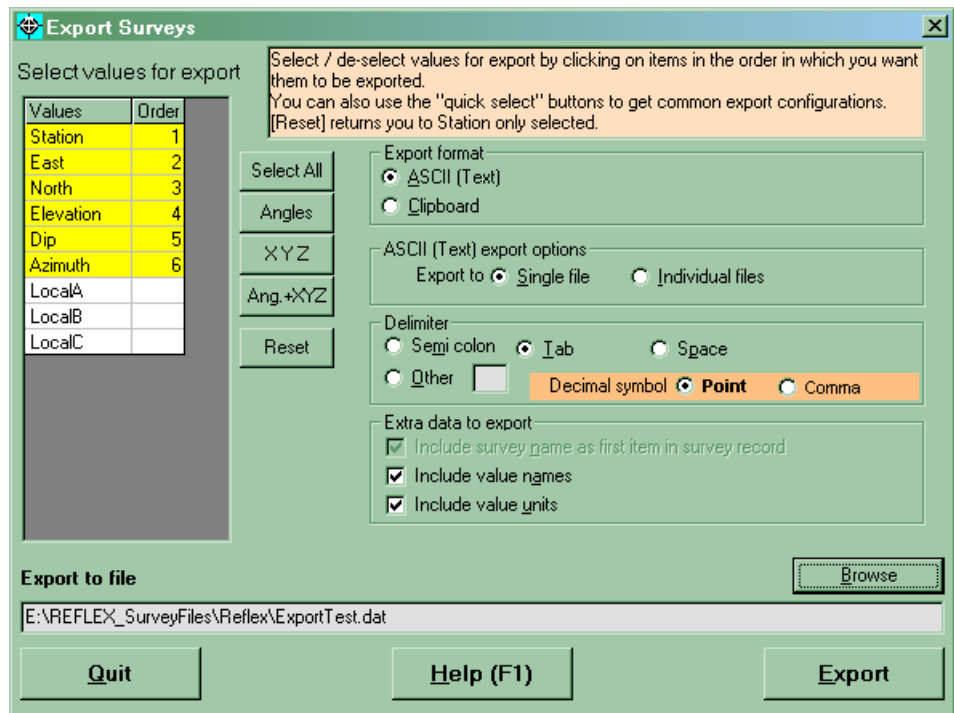
As soon as you select at least one survey the **Continue** button is enabled.

In this example, the two surveys (a MAXIBOR and an EMS) both have the same conventions so there is no need to Synchronize.

Click **Continue** to go to the next stage of export.

The list on the left of the window shows the data items common to the selected surveys. If you select only MAXIBOR or EMS surveys then this list is longer with the other survey specific items included in it.

This list allows you to select the **number** and **order** of items for export. Click on the items you want in the order you want them. You can also use the quick select buttons (**Select All**, **Angles**, **XYZ**, **Ang + XYZ** and **Reset**) to select common data configurations.



The example shows that the exported data and order is: **Station, Azimuth, Dip, East, North, Elevation**.

The other export options are:

Export format:

Export to ASCII (text) file on disk.

NOTE: This will show a "MIXED CONVENTION" indicator if you had selected surveys with different conventions to export. In this case you can only Export to ASCII (Text) as Individual Files (see below).

Export to Clipboard (as text).

Click the required option.

ASCII (Text) export options:

Only enabled if **Export to ASCII (text)** in previous section is ticked.

Export to Single file: Exports ALL selected surveys into a single text file.

Export to individual files: Exports each selected survey into it's own file.

Delimiter (between data fields)

Select the delimiter character between the data items when export. The default value is a **semi-colon**. **Tab** and **Space** are also shown as standard delimiters. You can also enter any delimiter you want by ticking **Other** and entering the delimiter character in the box. Neither **comma** not **full stop** are shown as delimiters as these are the decimal symbols. You are strongly advised NEVER to use them.

Decimal Symbol: This shows the type of decimal symbol you selected under **Setup / preferences**. You can change it here for export as well.

Extra data to export

Select any extra data to export.

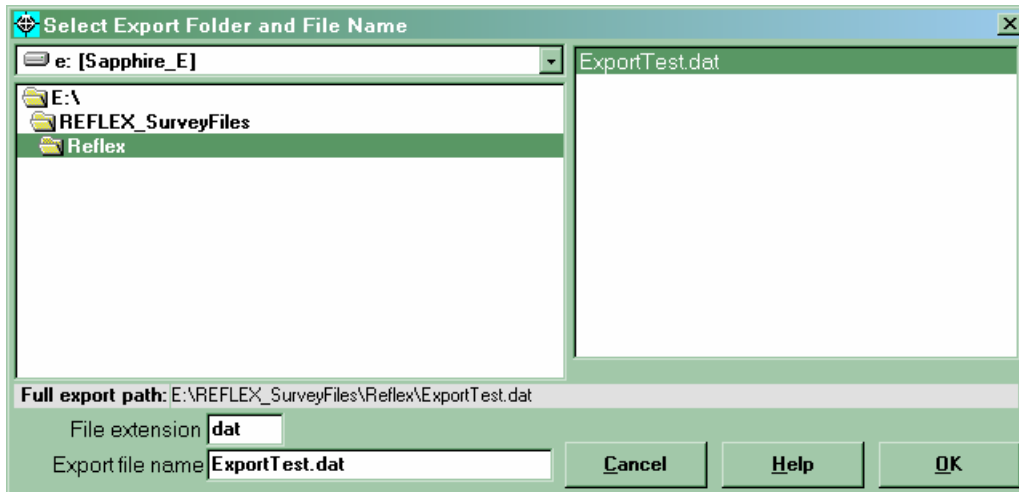
Include survey name as first item in survey record: Does what it says! It is ticked on (but disabled / greyed out) in this example because the survey name must always be exported to a Single text file (to distinguish surveys).

Include value names: Include the value or field names as the first line in the file.

Include value units: Include the value or field units as the second line in the file.

Export to file (Browse)

Depending on your export options you can browse for an export folder, filename and extension (**Single file**) or export folder and extension (**Individual files**).



The above shows the selection of a folder, filename and extension for a Single file export.

The file list box on the right is empty because no files with extension .txt exist in the folder.

Note: You can change the extension to anything you want. However, be careful that you don't use extensions that may cause confusion in other applications (for example: avoid extensions such as .doc, .xls, .mdb, .mxh, .mxr, .mlh, .mlr, .ini and so on!!). Extension **.txt** is usually safe!

Individual files:

When you are exporting to individual files SProcess only needs the name of the export folder and an extension. It then exports to files of the same name as the original with the extension you have entered here. For obvious reasons **.mxh**, **.mxr**, **.mlh**, **.mlr** and **.ezs** are not permitted.

When you have selected your export folder, file and extension information click OK to return to the Export window.

To do the export:

When you are ready click the **Export** button.

A message box appears when export is complete. If you are using the EVALUATION version then no data is actually exported.

Print Surveys

Print current or all open surveys.

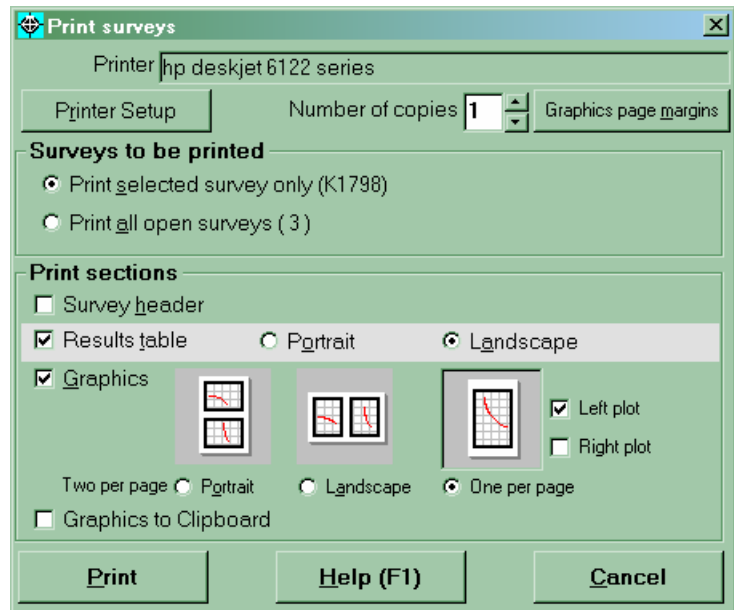
Select **File | Print** or click 

The **Print Surveys** window lets you set up the printer as well as selecting what sections you want to print.

The **Printer Setup** button displays the standard Windows Printer set-up dialogue box (you can select another printer and set paper size and orientation). **Because this is a standard Windows item it displays in the regional language used on your computer.**

Number of copies: Number of copies to be printed. Range of 1 to 99.

Graphics page margins button (this is only enabled if the Graphics print section is selected). This sets the page margins for the graphics output only.



Surveys to be printed:

You can choose to print the **selected survey only** or **all open surveys**. The Selected survey name is shown in brackets and is the one that has the focus on the main window. The number of open surveys is shown in brackets and is all the surveys you have open in the main Window.

Print sections:

You can print any combination of **Survey header**, **Results table** and **Graphics**.

Survey Header: Prints a header page to portrait orientation only – must be to **A4** or **US Letter** size paper only.

Results table: Prints the results table. Includes only those items/fields which are shown on the screen result table and which are selected via the **Setup/preferences** option. This means that different results tables can be printed for the different survey types. You can specify whether you want to print to **Portrait** or **Landscape** orientation.

Note: When tables are wider than one page they are continued onto a second (or third) page.

Graphics: Prints the survey graphics which are displayed in the graphics window for the survey. There are one of three formats:

- 1) **Two per page portrait** - Prints both graphic images one above the other on portrait oriented paper. Suitable if you want to print both graphics on one sheet of paper and the individual graphics are "landscape" type.
- 2) **Two per page landscape** - - Prints both graphic images beside each other on landscape oriented paper. Suitable if you want to print both graphics on one sheet of paper and the individual graphics are "portrait" type.
- 3) **One per page**, with the ability to select either one or both of the left and right graphics. This allow you to print larger graphics with each graphic on it's own page. The **One per page** method automatically selects the page orientation depending on the dimensions of the screen graphics. If they are wider than high then the page is Landscape, otherwise it is Portrait.

Tip: Make your Graphics window of the survey show the paper orientation that you want for the printed output. For example: If your survey graphic is best shown in a portrait view then make the on-screen window a portrait BEFORE you select the Print option.

The **Graphics to Clipboard** tick box is only shown if the **Graphics** print section is selected. It allows you to copy the graphics plot to the clipboard rather than printing it. You can then paste the image into another program. For example: into a Word document.

Important: Only the last page is copied to clipboard in the **One per page** option – so if you have selected both graphics only the Right plot will be copied. To copy both you must first copy (print) and paste one page then the other.

Graphics page margins option (only enabled if **Graphics** print section is selected)

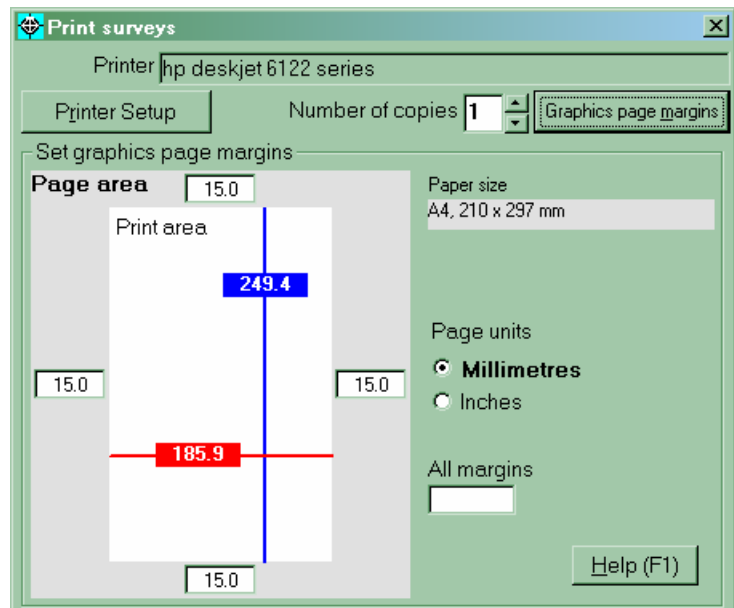
Click this button to set up the margins around the graphics plots.

Here you can select the page units and adjust the four margins as required. This acts correctly on both Portrait and Landscape paper orientations.

Page units can be either **Millimetres** or **Inches**.

You can enter one value in **All Margins** to set all margins to a single value (for example **20** mm).

Click the **Graphics page margins** button again to return to the main print control window.



Printing:

When you are ready to print just click the **Print** button on the main print control window.

After printing is complete the Print windows closes.

Evaluation license: All printed pages are overprinted with **EVALUATION ONLY** messages.

Editing EZ-Shot result tables

EZ-Shot tables are the only survey data tables that allow data to be input. The basic information that they need for each station is: **Station depth**, **Dip** and **Magnetic Azimuth / Azimuth**.

However, before entering data make sure that you have entered all necessary Header Data:

Start co-ordinates (**East**, **North**, **Elevation**) and the **Magnetic Variation** are the essential items of data to allow SProcess to correctly calculate your EZ-Shot survey. You do not enter the Dip or Azimuth data because that is supplied from the data table.

Starting a new table.

When you create an EZ-Shot survey the Result table is empty:

Header data	Conventions	Result table	Graphics	Magnetic variation = +7.50 Degrees			Update EZShot results			
Station	East	North	Elevation	Dip	Mag.Azi	Azimuth	LocalA	LocalB	LocalC	
Feet	Feet	Feet	Feet	Degrees	Degrees	Degrees	Feet	Feet	Feet	

Start the data table by clicking in the first **Station** box (You MUST use the mouse to do this) – it turns pale yellow to indicate that it is ready for data input.

Station	East	North
Feet	Feet	Feet
0		

Enter your first station depth then [Tab] to, or click in the **Dip** box (input the dip value) then [Tab] to, or click in, the **Mag.Azi** box (input the azimuth reading from the EZ-Shot - this is always Magnetic Azimuth). If you are using data from another source (not EZ-Shot) then you must make sure that the azimuth is Magnetic.

The true azimuth is immediately calculated and displayed in the Azimuth column.

You can tab to the other EZ-Shot data input columns (**Tool°**, **Mag.Str.**, **Tool Angle** and **Mag.T/Face**) and input these data if you want. You can leave them blank as they are not used in the survey calculation.

All other data columns are grey. These represent calculated survey values that you cannot input.

Header data	Conventions	Result table	Graphics	Magnetic variation = +7.50 Degrees			Update EZShot results			
Station	East	North	Elevation	Dip	Mag.Azi	Azimuth	LocalA	LocalB	LocalC	
Feet	Feet	Feet	Feet	Degrees	Degrees	Degrees	Feet	Feet	Feet	
0.0				-56.40	302.50	310.00				
15.0				-56.10	303.10	310.60				
30				-55.70	303.60	311.10				
45				-55.50	303.9					

To start another data row click on the next Station box – it automatically shows an increased station depth (the default station interval is 10). You can change this value just by entering your next station depth. For example: If you enter 15 as your second station the station

increments become 15 – as shown above. This screen shot also shows the input of a magnetic value that is then corrected for Magnetic Variation.

Updating and Calculating the EZ-Shot Survey

At any time during data input you can click the **Update EZ-Shot results** button. This performs the following actions:

- 1) Removes any records that do not have all three essential items of data (Station depth, Dip and Magnetic Azimuth).
- 2) Sorts survey into order by station depth. – This means that you can add earlier stations to the end of a survey and they are correctly sorted before calculation.
- 3) Calculates the remaining survey records and displays the results.
- 4) Saves the EZ-Shot survey file to disk.

These actions also happen when you move to a different tab in the Survey window – for this reason **ALWAYS MAKE SURE THAT YOU COMPLETE EACH STATION RECORD BEFORE YOU LOOK AT ANOTHER “TAB” IN THE SURVEY WINDOW.**

The results are displayed for each complete and valid survey record:

Header data		Conventions	Result table	Graphics	Magnetic variation = +7.50 Degrees				Update EZShot results	
Station	East	North	Elevation	Dip	Mag.Azi	Azimuth	LocalA	LocalB	L	
Feet	Feet	Feet	Feet	Degrees	Degrees	Degrees	Feet	Feet	F	
0.0	100.00	200.00	30.00	-56.40	302.50	310.00	0.00	0.000		
15.0	93.64	205.39	17.53	-56.10	303.10	310.60	8.33	0.044		
30.0	87.28	210.89	5.11	-55.70	303.60	311.10	16.74	0.169		
45.0	80.91	216.48	-7.27	-55.50	303.90	311.40	25.21	0.354		

Simply add further survey information to complete your survey data.

Inserting stations:

As mentioned above, just add any earlier stations (in any order) at the end of any existing survey records. When you click **Update EZ-Shot results** these survey records are placed in the correct position in the survey.

Deleting stations:

Clear the station depth value (so that it is a blank field) for the record or records that you want to delete. When you click **Update EZ-Shot results** these records are removed.

Before **Update**, showing records out of order and one record for deletion (blank station depth):

Header data		Conventions	Result table	Graphics	Magnetic variation = +7.50 Degrees				Update EZShot results	
Station	East	North	Elevation	Dip	Mag.Azi	Azimuth	LocalA	LocalB	L	
Feet	Feet	Feet	Feet	Degrees	Degrees	Degrees	Feet	Feet	F	
0.0	100.00	200.00	30.00	-56.40	302.50	310.00	0.00	0.000		
15.0	93.64	205.39	17.53	-56.10	303.10	310.60	8.33	0.044		
30.0	87.28	210.89	5.11	-55.70	303.60	311.10	16.74	0.169		
45.0	80.91	216.48	-7.27	-55.50	303.90	311.40	25.21	0.354		
90.0				-53.60	306.20	313.70				
60.0				-55.10	304.50	312.00				
				-55.20	305.00	312.50				
75.0				-54.20	305.10	312.60				

After **Update**, showing re-ordered records and record deleted:

Header data		Conventions	Result table	Graphics	Magnetic variation = +7.50 Degrees				Update EZShot results	
Station	East	North	Elevation	Dip	Mag.Azi	Azimuth	LocalA	LocalB	L	
Feet	Feet	Feet	Feet	Degrees	Degrees	Degrees	Feet	Feet	F	
0.0	100.00	200.00	30.00	-56.40	302.50	310.00	0.00	0.000		
15.0	93.64	205.39	17.53	-56.10	303.10	310.60	8.33	0.044		
30.0	87.28	210.89	5.11	-55.70	303.60	311.10	16.74	0.169		
45.0	80.91	216.48	-7.27	-55.50	303.90	311.40	25.21	0.354		
60.0	74.54	222.16	-19.60	-55.10	304.50	312.00	33.75	0.607		
75.0	68.12	228.00	-31.84	-54.20	305.10	312.60	42.42	0.956		
90.0	61.67	234.04	-43.96	-53.60	306.20	313.70	51.25	1.442		

The Sample Surveys

There are a number of sample surveys in the Sample Surveys folder in SProcess:
They appear in the file list box similar to:

EMS01 to **EMS03** are various EMS examples.

EZShot is an EZ-Shot survey with several stations.

MaxiborNoRaw is an "orphaned" MAXIBOR 1 survey header (this generates a Read Error).

MXBR01 and **MXBR02** are two MAXIBOR 1 survey examples. **MXBRFt** is a MAXIBOR 1 survey with units in Feet.

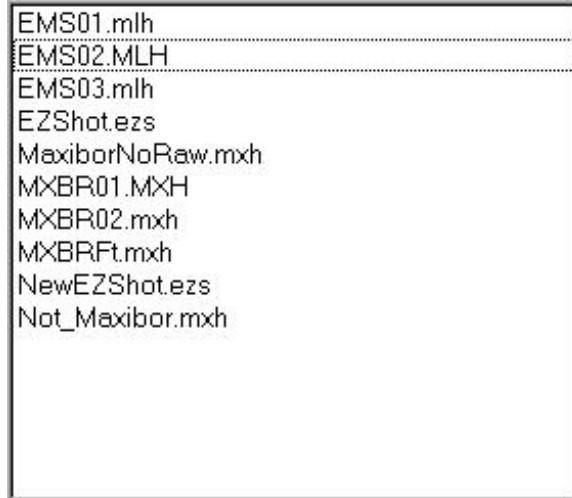
NewEZShot is a newly created EZ-Shot file with no data.

Not_Maxibor is a corrupted "early" version MAXIBOR 1 survey header (this generates a Read Error).

MX2_Example.mx2 (not shown in the list above) is a MAXIBOR 2 survey.

If you are evaluating **SProcess** then these surveys should provide a good idea of the capabilities of the system.

You can also use your own survey files but you will not be able to save changes to them.



SProcess and AQS survey files

SProcess works with survey files produced from the AQS application (for PC windows).

AQS produces two survey file formats:

Multi-shot surveys: The format used for AQS multi-shot surveys is the Calibration corrected format EMS file. This means that AQS multi-shot surveys are treated exactly the same as EMS surveys. These consist of two file per survey: <survey>.mlh (header file) and <survey>.mlr (calibration corrected raw data file).

Single Shot surveys: The EZ-Shot format is used for AQS single shot surveys. This is a single file: <survey>.ezs. This file consists of several single shot readings that AQS has combined to create a multi-shot style data file (similar to the way that an EZ-Shot file is made up). See AQS documentation for more information. SProcess cannot combine single shot data files produced by AQS nor can it add a series of single measurements into an EZ-Shot file. At present this is the task of the AQS software.

FILE REFERENCE & TROUBLESHOOTING

Survey data file naming:

Each survey consists of one or more survey data files, depending on the survey tool you are using. These are described below:

MAXIBOR 1: Each survey consists of two data files with different extensions: **<survey>.mxh** and **<survey>.mxr**. The **mxh** file contains the survey header information and is in text format. It can be **viewed** and edited in Windows NotePad. Editing is **not recommended** unless you know exactly what you are doing. The **mxr** file contains the raw data records for the survey. It is in binary form so cannot be viewed or edited.

MAXIBOR 2: All the survey data is contained in one data file: **<survey>.mx2**. The **mx2** file is in text format. It can be **viewed** and edited in Windows NotePad. Editing is **not recommended** unless you know exactly what you are doing.

REFLEX EMS and EZ-AQ (Multishot): Each survey consists of two data files with different extensions: **<survey>.mlh** and **<survey>.mlr**. The **mlh** file contains the survey header information and is in text format. It can be **viewed** and edited in Windows NotePad. Editing is **not recommended** unless you know exactly what you are doing. The **mlr** file contains the raw data records for the survey. It is in binary form so cannot be viewed or edited.

REFLEX EZ-SHOT and EZ-AQ (Single shot): All the survey data is contained in one data file: **<survey>.ezs**. The **ezs** file is in text format. It can be **viewed** and edited in Windows NotePad. Editing is **not recommended** unless you know exactly what you are doing.

Troubleshooting data files:

If you have problems with your survey data files you may be asked to send them to REFLEX or its support agents. Please make sure that you send all required files. Both **.mxh/.mxr** and **.mlh/.mlr** are essential for the Maxibor 1 and EMS / EZ-AQ surveys respectively.

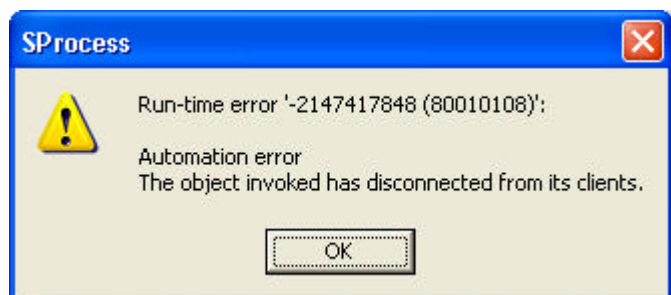
Run Time Errors (Software crashes):

Even with the best software design it is not always possible to avoid errors that stop the program in its tracks. We hope that these are few and far between in SProcess. However if they do occur please let REFLEX know providing the information requested over page. By doing this you can help us find out what is going wrong and fix it.

The **80010108** Run-time error.

This has appeared in summer 2005 (usually when users are exporting data). It appears after weeks or months of no problems with the software. This is a **WINDOWS failure** (not SProcess) as Windows has lost track of a vital Windows component that SProcess uses. It seems to happen after installation of **XP Professional Service Pack 2**.

Sometimes installing the software on another machine can "avoid" the problem. However: Please report in the same way as any other Run Time Errors (see overpage).



Essential support/troubleshooting information:

This information is the minimum essential information to start remote troubleshooting of a problem. By providing these details (using a photocopy and faxed or in an email) you will enable REFLEX Support to provide you with the fastest and best troubleshooting and support.

Information required	Information provided
Your name	
Company name, address, phone, email contact details	
Software name	SPROCESS
Software version and build(revision) number	
Windows version (98, 2000, XP etc)	
Latest windows service pack (eg SP2)	
Run time error number (if shown)	
Any other error messages	
Place in program that error happened and what you were doing.	
Did you try again? (Yes/No)	
If Yes, did the same error occur?	
Have you sent any data files? (Yes/No)	
If Yes what are they? IMPORTANT: Always send (by email) the SProcess_LOG.txt file (contained in the same folder as the SProcess program) or the relevant archived version (in the Logfile Archive folder). These are stored in date and time named files: e.g. Log_YYMMDD_HHmm.txt	
Other relevant information:	