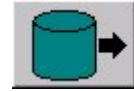




11 OUTPUT



To output processed data to file select *Execute / Output* from the main menu or click on the *Output* button, and select the line from the line list.

SeisPos outputs the coordinate data in UKOOA P1/90 or Shell Processing Support (SPS) format. Each record is followed by a carriage return and line feed character.

The default location of the output file is that shown in the Project details. The default file name is the line name as shown in the Project details.



11.1 Options

Output 08DAL-0580-005

File

Run Exit

Options Records Receivers Bathymetry Header SPS

Format

P1/90 SPS v1 Source SPS v2.1 Source

Output File: d:\Data\P190\08DAL-0580-005.P190 Browse

Append to file File name suffix:

First SP: 1537 Use P2 file name

Last SP: 1160

Output obs: NONE Use rightmost characters from line name

Interpolate missing shots Replace with

Interpolate source fired Polynomial Streamer Shape

Grid units in metres

Grid coordinates as integer

Parameter set: hires

Figure 11.1

- Format:** Select UKOOA P1/90 or SPS format revision 1 or revision 2.1 source records.
- Output file:** The full path and name of the output file.
- Append to file:** If checked, the output file will be appended to. If not checked the output file will be overwritten. Default is off.
- File name suffix:** Inserts a suffix in the file name immediately before the ".P190".
- Use P2 file name:** When checked, the output file root name will be the same as the P2 file root name.
- First/Last SP:** The shotpoint range for which the output file is to be written. The default range is that of the first and last good shotpoint shown in the project details for the line..
- Output obs:** Select an observation from the dropdown list. The observation name and data will be written to an "F"



record. See below for description of F record. Default is NONE.

- Interpolate missing shots:* If checked, single or blocks of missing shots will be linearly interpolated and output. Warnings will be logged and the number of interpolations will be written to the log. Default is off. This option will not interpolate source records.
- Interpolate source fired:* If checked, when missing shots are interpolated a source record will be interpolated. Warnings will be logged. Default is off. This option will not force output of a source record for a misfire i.e. the source ID for the shot does not correspond to an actual source ID e.g: valid source Ids are 301, 302 and shot source ID is 300.
- Grid units in metres:* If checked, grid coordinates and depths will be output in metres, otherwise grid coordinates and depths will be output in the units defined by the metric conversion factor in the projection parameters.
- Grid coords as integer:* If checked, the grid coordinate output format for P1/90 is I9 and for SPS I9 and I10 for Easting and Northing respectively, otherwise the output format conforms to the format description. (where I9 = 9 digit integer etc.)
- Use chars from linename:* Uses the specified number of non-blank characters from the right of the line name as appears in the general parameters in the database. A maximum of 12 characters will be used. If blank or 0 then up to 12 of the rightmost non-blank characters will be used.
- Replace ... with ...:* Optionally used to replace characters in the line name.
- Polynomial Streamer:* Forces polynomial streamer shaping instead of circular arc when both a full acoustic lattice and streamer compasses are defined.

11.1.1 F Record

If an observation is selected for output it will be written to an F record of the following format:

Description	Columns	Format
"F"	01-01	A1
Line name (left justified)	02-13	A12
Blank	14-19	A6
Shotpoint number (right justified)	20-25	A6
Blank	26-26	A1
Observation name (left justified)	27-43	A17
Blank	44-46	A3
Observation value	47-56	F10.2
Blank	57-70	A14
Julian Day of year	71-73	I3
Time (hhmmss)	74-79	3I3
Blank	80-80	A1



11.2 Records

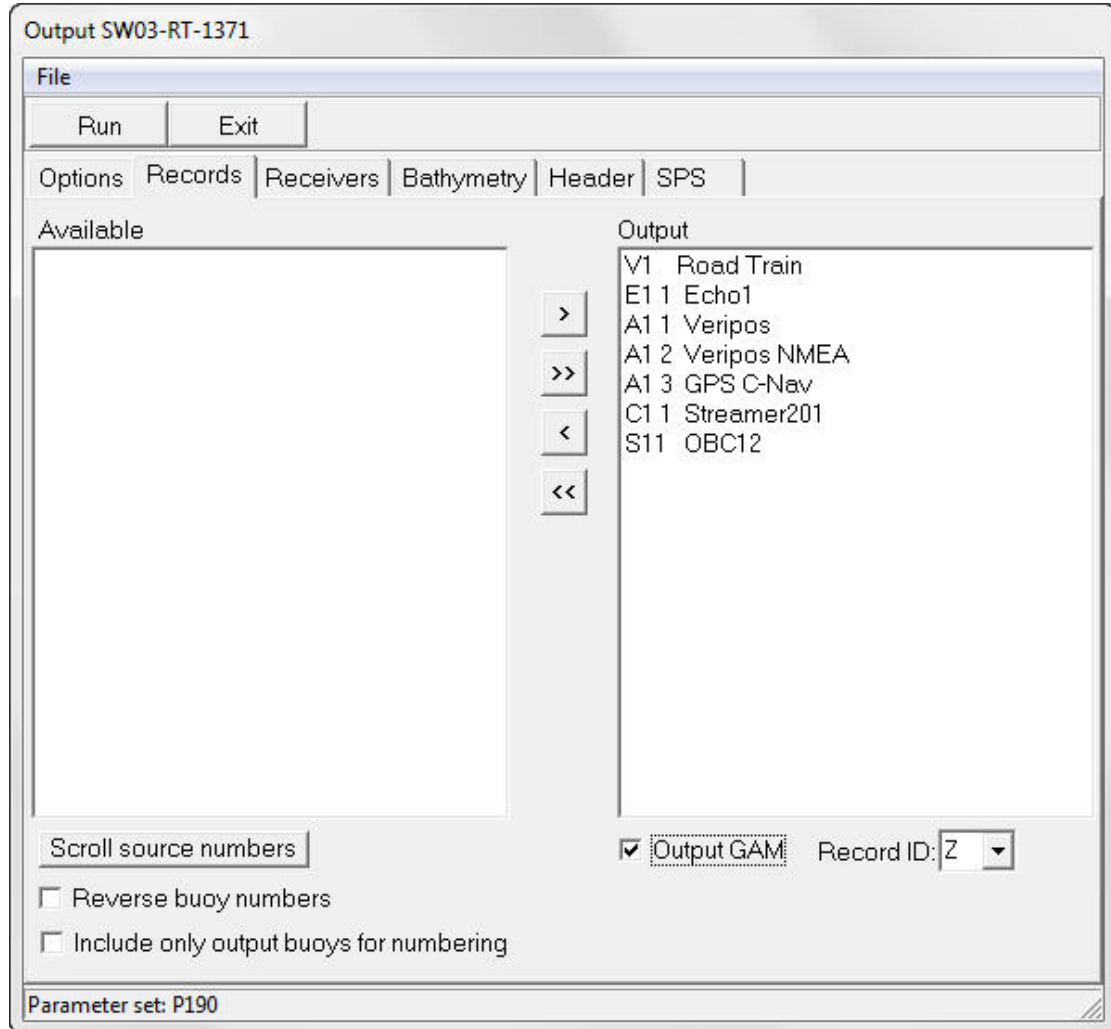


Figure 11.2

The following records are available for output and automatically assigned internally:

Record Identifier	SeisPos Node Type/Description
V	<i>VESSEL</i>
E	<i>ECHO</i>
A	<i>SATELLITE</i>
S	<i>GUN</i> – source fired only
Z	<i>GUN</i>
C	Midpoint between <i>GUN</i> and near receiver group
T	<i>TAILBUOY and BUOY</i>

Each item in the list comprises, in the order indicated:

Record identifier as above



Vessel number
Source number
Unit number
Node name

By default all available records appear in the *Output* list. To change the output configuration use the appropriate arrow buttons.

11.2.1 Source Numbering

Clicking the *Scroll source numbers* button will increment each S or Z record number by 1, with the highest numbered record becoming 1. This results in the record numbers changing accordingly in the P1/90 but does not affect the coordinates of the source fired. E.g. with three sources S11 becomes S12, S12 becomes S13 and S13 becomes S11.

11.2.2 Buoy Numbering

By default all buoys and tailbuoys are numbered according to the UKOOA P1/90 convention:

“From Starboard, Top, Back through Front, Bottom, Port”

This numbering can be modified in two ways:

Reverse buoy numbers:

When checked the numbering will be reversed.

Include only output buoys for numbering:

When checked the numbering will be calculated based only on the buoys selected for output in the right hand list.

11.2.3 GAM (Gun Array Mean)

When *Output GAM* is checked then an additional record corresponding to the mean of the firing and non-firing gun-arrays, with identifier as specified by *Record ID*, will be output. This feature is used usually in OBC operations to support situations when the mean of the two gun-arrays is required in order to assess offline comparison with the preplot.



11.3 Receivers

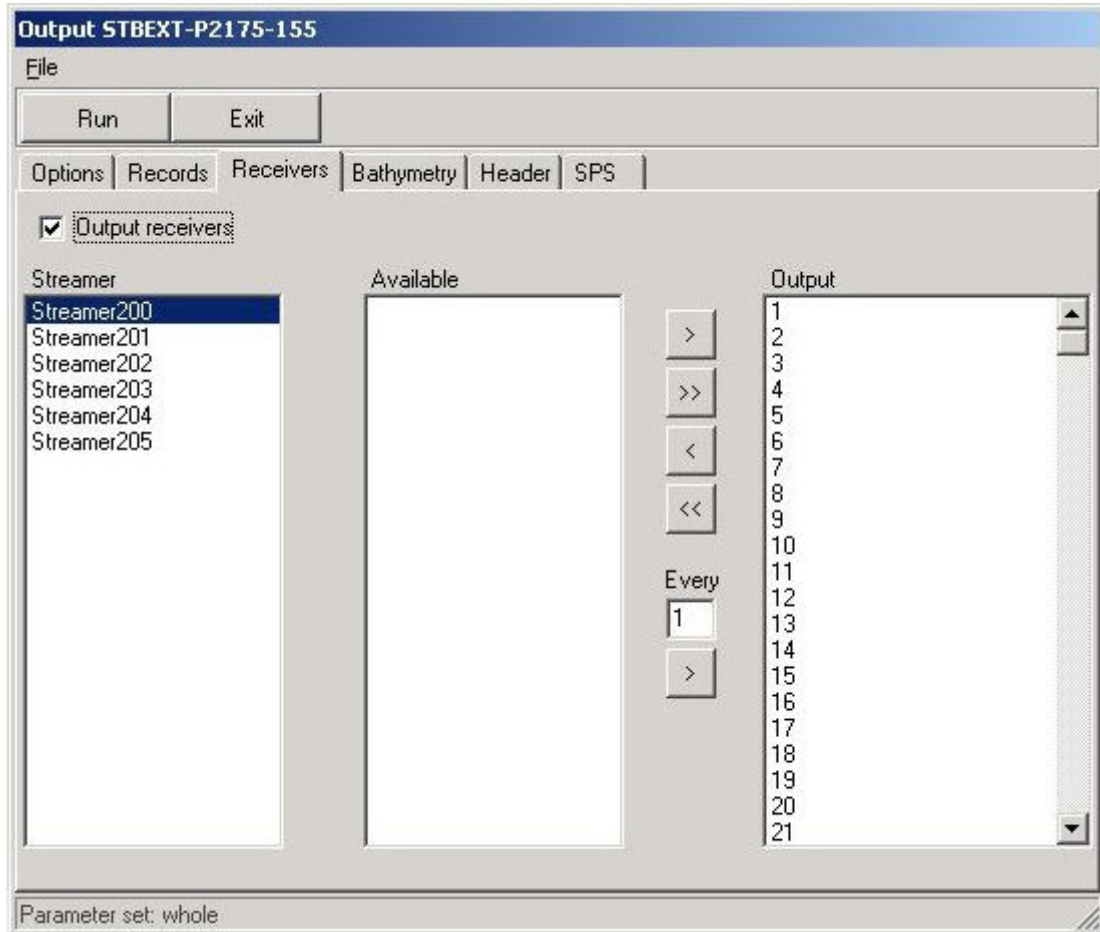


Figure 11.3

To enable or disable the output of receiver records check or uncheck, respectively, the *Output receivers* checkbox.

For each streamer all receivers as defined in the database are available for output and by default appear in the *Output* list. The receivers appearing in the *Available* and *Output* lists are those belonging only to the streamer highlighted in the *Streamer* list. The receiver numbering is also defined in the database so any changes required must be made in the database prior to output.

To change the output configuration select the required items and use the appropriate arrow buttons.

To suppress output of a streamer highlight the required streamer in the *Streamer* list and click on the << button.

11.3.1 Decimation

To output a decimated P1/90, for each streamer for which decimation is required



highlight the streamer in the *Streamer* list, enter the required receiver group interval in the *Every* box and click on the > button at the bottom.

11.3.2 *Streamer Shaping*

The method of streamer shaping used depends on flags which are automatically set the last time a network adjustment was carried out on all or part of the line.

If streamer compasses were used in the most recent adjustment then receiver positions are computed using the concatenated circular arc method from compass chord data which has been computed in the Network Adjustment.

If streamer compass nodes were not included in the most recent adjustment then receiver positions are computed using the unique polynomial which fits through all computed node positions on the streamer. In this case the *Polynomial Streamer Shape* checkbox in the *Options* tab should be checked.



11.4 Bathymetry

Output STBEXT-P2175-155

File

Run Exit

Options Records Receivers **Bathymetry** Header SPS

Depth Reference

Transducer

Sea Level

Origin: Echosounder

Apply calibrated speed of sound

Apply tidal reductions from file

Apply transducer depth corrections

Transducer Depth Corrections

Additional Absolute

	Correction	Date (dd/mm/yyyy)
1.	1.0	01/01/2002
2.	0.5	31/01/2002

Tidal Reductions

Tidal reduction data

Datum: LAT

Conversion from reduction data units to echosounder data units: 1

Tidal Datum Correction: 0.0

Parameter set: whole

Figure 11.4

The bathymetric data output are the average of the *good* data from all echosounders located on the vessel. Prior to calculating this average all necessary echosounder-specific corrections are made e.g. for speed of sound and transducer depth.

If it is required to reject data from one echosounder then the corresponding observation should be rejected. This can be done either in the Precondition module or the Network Adjustment module.

11.4.1 Depth Reference

Transducer: The depth data output is referenced to the echosounder transducer.

Sea Level: The depth data output is referenced to sea level.

The correct depth will only be output if the parameters in the P2 H14 records are correct. These can be verified in the *Database | Header | Echosounders* table.



11.4.2 Origin

Select from the dropdown list the node to whose horizontal position the depth data refers. Five options are provided:

- Echosounder:* Depth is at the echosounder position. This is the default setting.
Vessel: Depth is nearest the vessel position.
Centre of Source: Depth is nearest the centre of the active source position.
Near CMP: Depth is nearest the average common mid point position between the active source and all streamer near receiver groups.
Record Position: Each record has the depth nearest to its own position.

In all cases when the origin is not the echosounder the software will use the depth value obtained nearest to the position corresponding to the origin.

Note: If the origin is not set to *Echosounder* and there are insufficient shotpoint coordinates computed for the echosounder node prior to the first good shotpoint then the depth value for the first shotpoint for which the echosounder coordinates have been computed will be used.

11.4.3 Transducer Depth Corrections

This option is only available when the Depth Reference is set to *Sea Level*. Check the *Apply transducer depth corrections* checkbox to enable the application of transducer depth corrections.

The values entered represent heights and should be in the same units as the echosounder data. E.g. if the transducer is 0.5m deeper than indicated by the echosounder Z coordinate then a value of -0.5 should be entered.

At least the first correction must be specified. If two corrections and corresponding dates are specified then the correction used is linearly interpolated from the corrections and dates. This may typically be used when applying corrections for the start and end of survey transducer depth which may vary.

- Additional:* The correction will be subtracted from the data.
Absolute: The depth data are corrected to transducer depth, if necessary, before the correction is subtracted from the depth data. I.e. the correction *replaces* the echosounder Z coordinate.

11.4.4 Speed of Sound

Check the *Apply calibrated speed of sound* checkbox to correct for the difference between the speed of sound set in the instrument and the speed of sound actually observed, e.g. by TS dip. These two values correspond in the P2 H14 record to the "Propagation velocity used" and the "Calibrated propagation velocity" respectively.



11.4.5 Tidal Reductions

Check the *Apply tidal reductions from file* checkbox to enable the use of tidal reductions from an external source. These reductions will be subtracted from the water depth in the case of P1/90 format output, or added to the surface elevation in the case of SPS format output.

- Tidal Reduction Data:* Invokes a dialog where the source file and format of the tidal reduction data is specified.
- Datum:* Select *LAT* or *MSL* from the dropdown list. This information is used only in the P1/90 header H2600 record.
- Conversion from...* Enter the value required to convert the tidal reduction data to the same units as the echosounder data. If both are in the same units then a value of 1.0 should be specified.
- Tidal Datum Correction:* The value entered will be subtracted from the water depth in the case of P1/90 format output, or added to the surface elevation in the case of SPS format output.

11.4.5.1 Tidal Reduction Data

Tidal reductions computed externally and supplied in a file can be used to reduce the depth data in the output file. For P1/90 format output the values in the file are **subtracted** from depth data before being written to the output file. For SPS format output the values are added to the surface elevation.

The data synchronisation can be based on time or SP number. Time based synchronisation is the more typical format, whereby usually a single file covering the entire survey period can be used for all lines.

The external data must conform to the following:

- The file must be in ASCII.
- The data field must be present.
- When synchronised on time, the hours, minutes and seconds fields must be present.
- When synchronised on SP number the SP number field must be present.
- Fields must be either of consistent fixed width or delimited with a character or string of less than 256 characters.
- Each record must end in a carriage return/ line feed.
- The data must be in the units specified in the observation definition.

To use this data check the *Apply tidal reductions from file* checkbox, then click on the *Tidal reduction data* button to specify the data file and format.



11.4.5.2 Format Strings

The format string allows the following format specifiers:

y = year
d = julian day
h = hour
m = minute
s = second
p = shotpoint number
x = data value
Any other character = do not import

Delimited:

Each data field, regardless of length, is represented by a single format specifier. Refer to Figure 11.5 below for an example. In this example year and Julian Day are not present in the records.

The field delimiter used to separate the data fields must be specified.

To suppress import of a field use any character not listed above e.g:

```
DATA RECORD:      100,2001,49,12,02,20.9,$XYZ,4.56
FORMAT STRING:    #ydhms#x
```

In this example the 1st and 7th fields, 100 and \$XYZ, will be ignored.



Tidal Reductions

File: D:\Data\Tidal Reductions\HEIGHT.csv

Data:

59,17:00,60,1,0,0,1.88
59,17:15,60,2,0,15,1.93
59,17:30,60,3,0,30,1.97
59,17:45,60,4,0,45,2
59,18:00,60,5,1,0,2.04
59,18:15,60,6,1,15,2.06
59,18:30,60,7,1,30,2.08
59,18:45,60,8,1,45,2.1
59,19:00,60,9,2,0,2.11
59,19:15,60,10,2,15,2.12

Format: #d#hmx

Fixed Width Delimited

Figure 11.5



Fixed Width:

Each data field is represented by a group of the same format specifiers representing the exact position and width of the field. The field delimiter is not used. Refer to Figure 11.6 below for an example. In this example space characters have been used to indicate the positions in the data records to be ignored.

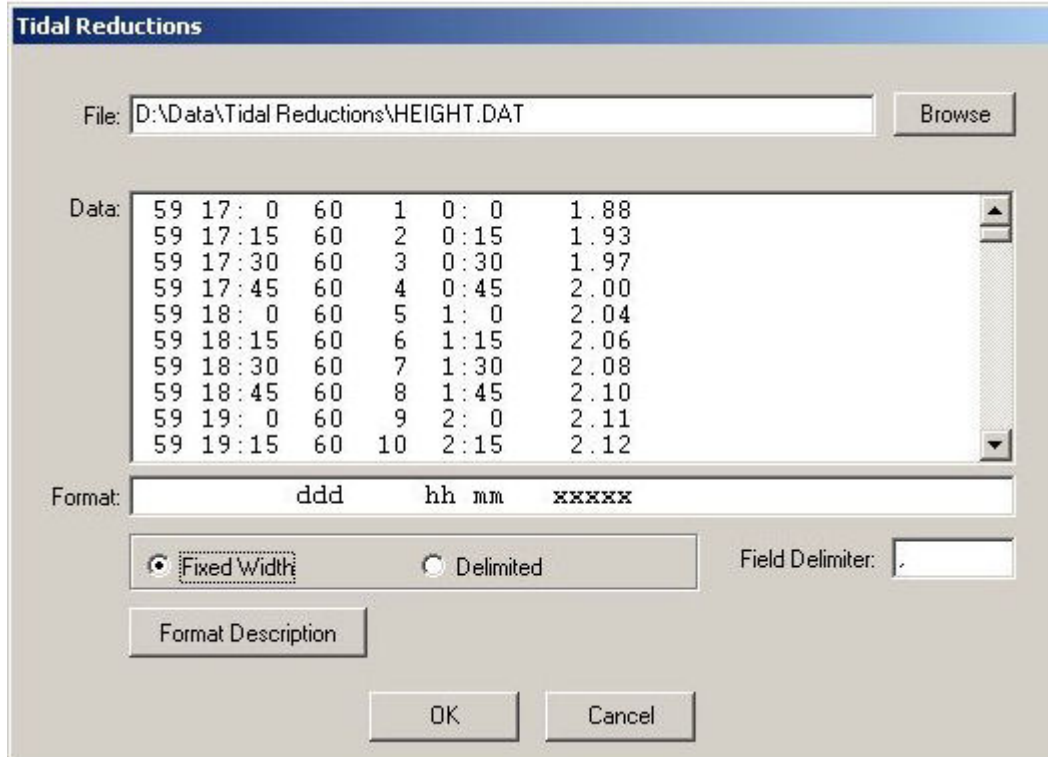


Figure 11.6



11.5 Header

Select *None* to output data records only.

Select *From File* to output a pre-compiled header and enter the name of a pre-compiled header file in the text box.

Select *Generate* to output an internally generated header. Internally generated headers use the information stored in the database along with user supplied information.

Output 08DAL-0580-005_6

File

Run Exit

Options Records Receivers Bathymetry Header SPS

None From File Generate

Header File: Browse

H0100 Survey Area	Survey area
H0101 General Survey Details	General details
H0203 Line Prefix	Prefix
H0700 Positioning Systems	Positioning systems
H1000 Clock offset from GMT	0

H2600 Other Information:

Free text here...

Parameter set: hires

Figure 11.7

If the *Generate* option is selected the header details shown in Figure 11.7 (P1/90 option is shown, these details slightly differ when outputting SPS files) should be supplied. All other information in the header will be automatically generated from the information in the database.



The information shown in Figure 11.7 is saved when the Output parameters are saved (see below).

The information entered under *H2600 Other Information* may be entered without regard to record length as this is handled automatically by the software.

SeisPos writes an H26 record with the grid coordinates in the units defined by the projection metric conversion factor for the defined start of line and each defined waypoint. This information is optionally used in FGPS P1Tools program for calculating the along line and cross line node positions and for displaying the survey line in the replay module.

11.5.1 Line Name Prefix

In the case of the Line Prefix, a user specified prefix will override an automatically generated prefix, if any.

If the line name prefix specified in the H0203 record exists in the first part of the line name then it will be automatically be excluded from the line name in the data records.



11.6 SPS

SeisPos supports the output of Source records to SPS format.

In the *Options* tab sheet select *SPS* as the format.

In the *Records* tab sheet select the source records (S records) which are required to output. All other record types, including receivers, are ignored.

The screenshot shows a dialog box titled "Output AGB090487P10612". It has a menu bar with "File" and buttons for "Run" and "Exit". Below the menu bar are tabs for "Options", "Records", "Receivers", "Bathymetry", "Header", and "SPS". The "Options" tab is active, displaying the following fields and options:

- Line Name: AGB090487P10612 (with a checked "Use line name" checkbox)
- Point Index: 1
- Point Code: A
- Output high res time stamp: checked
- Observation: TIMEBREAK (dropdown menu)
- Use gun depth data: unchecked

At the bottom of the dialog, it says "Parameter set: default".

Figure 11.8

In the *SPS* tab sheet, shown in Figure 11.8, the required parameters are:

Line Name: The line name from the general parameters table in the database. When the output format is specified as *SPS v2.1 Source* the line number by default is output in the format F10.2, taken from the line name in the general parameters



according to the line number columns specified in the project setup.

Use line name: When the output format is specified as *SPS* the automatically generated line name can be overridden by checking this checkbox. When checked the line name written to the file will appear as shown in the *Line Name* field described above.

Point Index: Internal default is 1

Point Code: Internal default is A (typically used to denote airguns). 1, 2, 3... will be appended according to the source fired.

High res Time Stamp: Optional – if selected then the time stamp seconds recorded in the selected user defined observation is output to columns 79-87 of the *SPS* file.

Use gun depth data: When checked, the average gun depth from all *good* gun depth sensors on the gun-array will be used instead of the nominal gun depth.

All of these parameters can be changed prior to output. Any changes made will be saved when the output parameters are saved by selecting *File | Save Parameters*, and will be applied to subsequent outputs.

The point depth in the *SPS* file is output as the absolute value of the Z offset of the GUN node.

11.7 Parameters

To save the Output parameters, including the record and receiver configuration, select *File | Save Parameters* from the menu and enter a filename, or select from existing files.

To load a previously saved parameter set select *File | Load Parameters* from the menu and enter a filename, or select from existing files.

The default file location is the *Project Database Folder*. It is advised to not change the location of the parameter file from this folder.

Each time the Output module is started the default parameter set loaded is the last saved or loaded. If no parameters have been previously saved then an internal default set will be applied.

The name of the current parameter set is displayed in the status bar at the bottom of the Output dialog window.

Important: If it is intended to perform Automatic Processing on subsequent lines then the parameter set must be saved. The default set, including the record and receiver configuration will apply to Automatic Processing. If the number of records or receivers has changed a message will be displayed and Automatic Processing will not continue.



11.8 Running

Optionally change the output settings as described in the previous sections, then click on the *Run* button. The output dialogue window closes and the log window opens in the SeisPos main window.

Click on the *Exit* button to exit the Output module without outputting data.

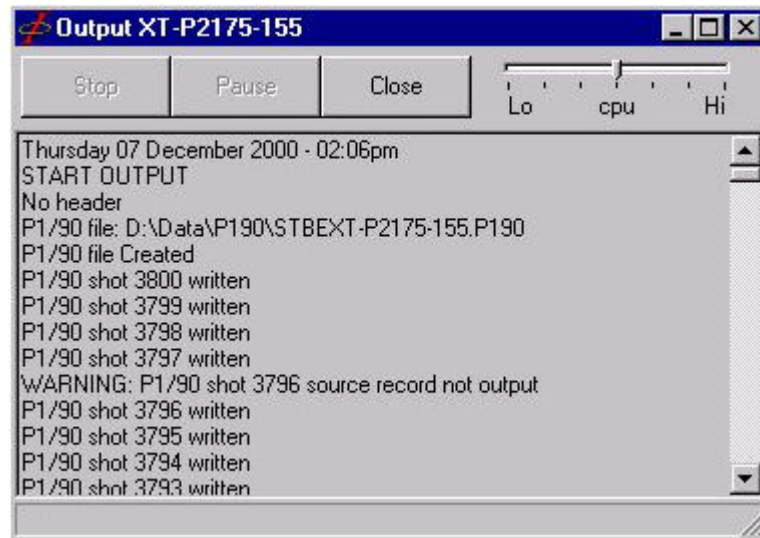


Figure 11.9

The output process runs in the background, with the log updated as shown in Figure 11.9. This same information is appended to the line log. Warnings are given for missing or interpolated shots. If invalid coordinate data is encountered, typically if the adjustment is incomplete, an error message will be written to the log and the output aborted.

Click on the log with the right mouse button to display a popup menu giving file and text processing functions.

Click on *Stop* to abort output. The program will write the current shotpoint data and stop.

Click on the *Pause* button to pause output so that the log may be browsed. The *Pause* button changes to a *Resume* button which when clicked will resume output.

After output has completed the log window will remain visible until the *Close* button is clicked.

If other programs or processes are running, the process priority and therefore speed of execution can be controlled using the *CPU* sliding control.

If the hard disk fills up during output, a message will be displayed. To continue output free up some disk space before clicking on the *OK* button, or click the *Cancel* button to abort output.



11.8.1 Multiple Line Output

To output P190 files for more than one line select the lines required from the *File | Select Lines* menu option. Click on the *Run* button. The selected lines will be output consecutively.

For each line, the same parameters will apply except for the shotpoint range, which will be selected from the default first and last good shotpoint for each line as given in the Project.

A separate file will be output for each line.

An output summary will be displayed after all lines have been processed.
