



KONGSBERG

Kongsberg SIS Seafloor Information System

Release note

Release 3.7.6

Document history

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Rev. AF	May 2010	Release note for SIS 3.7 build 91, build date 27.05.2010. Changes since last revision: Bug fix as described in Item 28 in section Software changes since SIS 3.6→Other
Rev AG	June 2010	Release note for SIS 3.7 build 92, build date 17.06.2010. Changes since last revision: Bug fix as described in Item 29 and item 30 in section Software changes since SIS 3.6→Other
Rev. AH	July 2010	Release note for SIS 3.7.6 build 93, build date 30.06.2010. Changes since last revision: Added buttons for Multi Path Suppression and Soft Sediments for EM 3002. NMEA APB and DPT may contain user defined id. See Item 31 and item 32 in section Software changes since SIS 3.6→Other for more information.
Rev. AI	August 2010	Release note for SIS 3.7.6 build 94, build date 18.08.2010. Changes since last revision: SRV datagrams now contain ping duration for EM 120, EM 300, EM 1002, EM 2000, EM 3000 and EM 3002. Fixed a bug where Tomcat would sometimes not start.

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Introduction

This document presents the software release documentation for the Seafloor Information System, SIS version 3.7 build 92.

It is released for the following platforms:

- Operator station:
 - HWS
- Operating systems:
 - Windows XP Professional with Service Pack 3 and all relevant patches installed.
On a few HWS11 units problems has occurred with Service Pack 3. HWS11 units with all Windows updates installed works fine.
- Database server:
 - SIS works with PostgreSQL version 8.3 and 8.2 on XP. Installations using PostgreSQL 8.2 are not updated to PostgreSQL 8.3.

Note

THIS RELEASE DELETES THE ODBC CONNECTION TO THE DATABASE SERVER USED BY SIS 3.5 AND EARLIER VERSIONS. A NEW ODBC CONNECTION TO THE NEW PostgreSQL DATABASE SERVER IS CREATED. THE CONTENT OF THE OLD DATABASE IS THUS INACCESSIBLE BY SIS 3.6 AND LATER VERSIONS.

After installing SIS 3.7 and if you want to revert back to SIS 3.5 or earlier, please follow the instruction in the SIS installation procedure on how to remove SIS and uninstall PostgreSQL.

The installation of Operator software should be done in accordance with the updated SIS Software installation procedure, reg. number 851-164891, Rev. N.

The Operator manual, reg. number: 850-164709, has been updated for the SIS 3.7 release.

Note

Note that some SIS features will require a hardware licence dongle.

Note

If the system is operated continuously with unattended hardware errors, SIS may experience a gradual degradation of responsiveness due to an increased error handling load.

(Hardware errors are normally indicated by orange or red status lamps in the SIS main menu bar as well as detailed error messages in the Message service frame.)

Documentation

Note

All documents have been updated for the SIS 3.7 release.

- Online help is implemented in English only.
- SIS Software installation procedure Document registration number: 851-164891, Rev N.
- SIS Operator manual Document registration number: 850-164709, Rev. H.
- SIS Reference manual for EM 120, Document registration number: 337678, Rev. B
- SIS Reference manual for EM 122, Document registration number: 337679, Rev. B
- SIS Reference manual for EM 300, Document registration number: 337696, Rev. B
- SIS Reference manual for EM 302, Document registration number: 337734, Rev. B
- SIS Reference manual for EM 710, Document registration number: 337660, Rev. B
- SIS Reference manual for EM 1002, Document registration number: 337745, Rev. B
- SIS Reference manual for EM 2000, Document registration number: 337751, Rev. B
- SIS Reference manual for EM 2040, Document registration number: 342682, Rev. A
- SIS Reference manual for EM 3000, Document registration number: 337759, Rev. B
- SIS Reference manual for EM 3002, Document registration number: 337815, Rev. B
- SIS Reference manual for ME 70, Document registration number: 337821, Rev. B
- EM Series datagram formats, Document registration number: 160692, Rev M

Note

The SIS operator manual is an excerpt of the SIS Reference manual. System parameter options and technical references are not described in the operator manual, whereas the SIS Reference Manual contains full documentation of SIS and parameters for mentioned system.

Software installation

Java

SIS 3.7 require Java version 1.6. Any earlier version of JAVA has to be manually removed before SIS is installed. Java installation is started automatically at installation.

Windows

Remote Helmsman running on an external PC requires that the Windows firewall is turned off.

If autorun is not started, start setup.bat.

Please see the Installation Procedure for details.

The install procedure displays SIS version and compilation time. The release date is shown when choosing **About SIS** from inside SIS.

SVP Manager

The MDM SVP Manager, a tool for transferring SVP Profiles from various sensor types to different receivers such as echo sounders and acoustic position systems, is included on the distribution CD. See the folder `SVPMan` on the CD for documentation in the file `SVP Manager.pdf`. Installation is started by double-click the `SVP Manager.msi` file.

SIS software release 3.7

Overview

This SIS version can be used in combination with the echo sounders with which it was released.

In addition the Single Beam interface using NMEA datagrams has been verified.

This version is released for Windows XP only.

Software changes since SIS 3.6

Database

SIS 3.7 is released with PostgreSQL version 8.3 on the Windows XP platform. Old databases predating SIS 3.6 will not be used or converted to PostgreSQL. Remember to save the PU parameters before earlier versions of SIS is uninstalled.

All settings in the **SetParameters** and **External sensors** menu is now retained when the database is updated.

Support for new EM 2040

The set of supported echo sounder types has been extended with the new EM 2040 type. This echo sounder has one TX transceiver and one or two RX transivers (RX1 and RX2). In a three headed configuration RX1 is the port head and RX2 is the starboard head.

The handling of the EM 2040 echo sounder is similar to the existing echo sounders, i.e. the configuration and control is performed by using the **Installation and Test**, the **Runtime parameters** and the **Runtime param. Mini** frames.

Compared to the existing echo sounders the following new configuration and status elements have been added:

- Configuration of one additional head (in a three head configuration), i.e. location and angles in the **Installation and Test** and **Runtime parameters** frames.
- **Pulse type** selection (CW or FM) in **Runtime parameters**→**Sounder Main**

- Absorption coefficients for new frequencies (200kHz, 250kHz, 350kHz, 400kHz in addition to the existing) in **Runtime parameters→Filter and Gains**
- A new status element **Head used** in the **Numerical display** frame
- The receive heads (RX1 and RX2 in a three head configuration) may be turned on and off independently in the **Runtime parameters→Sounder Main** and in the **Runtime param. Mini** frames. (This is the same as for the EM 3002 echo sounder).

The File menu

- 1 A user comment can be added to an exported PU parameter file.

When exporting PU parameters (**File→Export PU parameters...**) a pop-up will be displayed containing a text entry field. The user may in principle enter an unlimited amount of text using the contained editor commands. Note that no graphical information or pictures may be added or included.

The **OK** button is used to complete and accept the entered text. The text is stored on file together with the PU parameters.

If the user opt to save the PU parameters without any comments or discard any entered text the **Cancel** button must be used.

The user comment will be saved in the heading of the PU parameter file enclosed in 'User comment' brackets. This will enable easy reading of the user comments as well as use of standard retrieval functions when importing the PU parameter file.

The latest saved or latest imported text will be shown as default in the text entry field on the next subsequent 'Export PU parameters' operation.

The following editor commands are available in the text entry field (Windows compatible):

- Enter: Insert line.
- **ctl+C**: Copy the marked text.
- **ctl+V**: Paste copied or cut text.
- **ctl+X**: Cut marked text
- Backspace: Delete character to the left.
- Del: Delete character to the right.
- Insert: Toggle insert on/off
- Drag mouse cursor to mark text or alternatively: Shift+arrow buttons to mark/un-mark text.
- Home and End: Move cursor to the start and end of line, respectively
- **ctl+Home** and **ctl+End**: Move cursor to the start and end of buffer, respectively
- PageUp and PageDown: Move cursor one page up and down.

Note that no undo, redo or search commands are currently available

- 2 The PU parameters can be set to factory default values.

The currently selected echo sounder (PU) can be reset/restored to its original factory default parameter settings by selecting **File→Set PU factory settings...** The

PU parameters included in this operation comprise the installation and runtime parameters.

When this feature is selected a pop-up is displayed asking the operator to confirm the operation due to the possible extensive parameter changes. If the operator cancels at this stage no further action is taken. If the operator selects to continue another pop-up is displayed where the operator can change the serial number (i.e. same procedure as when importing previously exported PU parameters). The operator may also opt to cancel the whole operation at this stage by selecting the **Cancel** button.

The factory default parameter values are defined independently for each type of multi beam echo sounder. The parameters are stored in a file of the same format as used by the **Export PU parameters...** and **Import PU parameters** functions. However, it is not the intention that these files should be changed by the operator implying that no export facility has been provided for these parameter settings.

WARNING

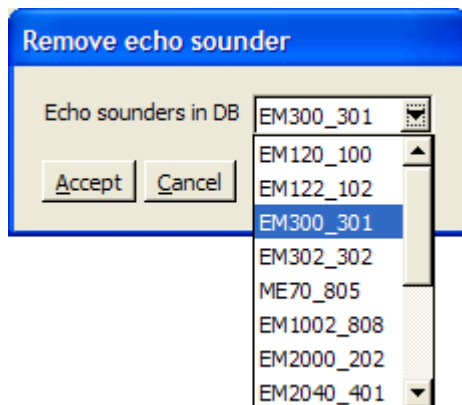
When the reset/restore operation has been completed successfully the factory default parameters for the selected echo sounder have been stored in the SIS database, but the parameters have not yet been transferred to the PU. The parameters are transferred to the PU only when the echo sounder is started or when the OK button is pressed in the Installation and Test window.

3 Remove echo sounder from the SIS database.

All echo sounders on the network, detected by SIS during SIS start-up or **Rescan**, will be instantiated and permanently registered in the SIS database. This mechanism has been additive only, meaning that it has not been possible to remove or delete any obsolete or unwanted echo sounders. Usually this has not been a problem as only the currently detected echo sounders (i.e. 'live' echo sounders) are displayed at start-up or after a **Rescan**. However, there have been some exceptions to this rule. E.g. in the datagram distribution function, see **Tools→Custom...→Datagram distribution**, all registered echo sounders in the database are displayed, i.e. both currently and previously detected.

To be able to clean up and remove any obsolete or unwanted echo sounders from the system a new user selection has been added to the **File** drop-down component in the GUI Main Menu, i.e. **File→Remove Sounder from Database**.

When selecting this item a new list is displayed containing all registered echo sounders that are eligible for deletion:



Note that it is not allowed to remove the currently displayed (active) echo sounder or any started echo sounders so these will not be included in the list. When the operator makes a selection in the list a confirmation is required before the removal of the echo sounder will proceed.

Surveys, logged data or any stored PU parameter files etc. belonging to the removed echo sounder will not be deleted.

The View menu

Tear Off Menu. The Manage Windows menu has been replaced by a Tear Off menu. The Tear Off menu provides a list of frames that can be opened in a 'tear-off' window. Select one of the frames to open the selected frame in a new 'tear-off' window. This functionality replaces the functionality provided by the 'New' button in the old 'Manage Windows' dialog. The remaining functionality from the 'Manage Windows' dialog is no longer supported.

Numerical display frame

- 1 The list of available items is now sorted alphabetically in the current language.
- 2 Monitoring of PU motion sensor input frequency.

The PU must receive motion sensor input with a sufficiently high update rate to be able to produce depth information etc. of an acceptable quality. If the movement of the ship is not properly compensated for when a ping is processed the generated data will be of poor quality or rendered useless.

SIS will therefore monitor the received motion sensor input rate and generate warning information if it is below a preset frequency. The warning will be in the form of a yellow background in the motion related display items (Roll, Pitch and Heave) in the **Numerical display** frame:

Numerical display ▼	
N 58.99627	North DD.DD
E 9.99879	East DD.DD
208.98	Heading
1.49	Pitch
0.31	Roll
0.08	Heave
1.94	Speed kn
2009 10 5	Date

The PU Status Lamp in the Toolbar will also be yellow. In addition a warning will be generated in the message system to the same effect (see the **Message service** frame). Note that no pop-up is displayed for this problem.

This frequency monitoring is only performed for the active motion sensor.

The predefined minimum motion sensor input frequency can be changed by using **Tools→Custom...→Set Parameters →Sensor options**

The minimum motion sensor input frequency is set to 90Hz by default.

3 FM mode in Numerical display.

The FM transmit mode can now be displayed in the Numerical display. This mode information is valid for the following echo sounders only:

- EM 122
- EM 302
- EM 710
- EM 2040

The status information may have one of the following values:

- CW (Continuous Wave)
- Mix (using both CW and FM)
- FM

Geographical window

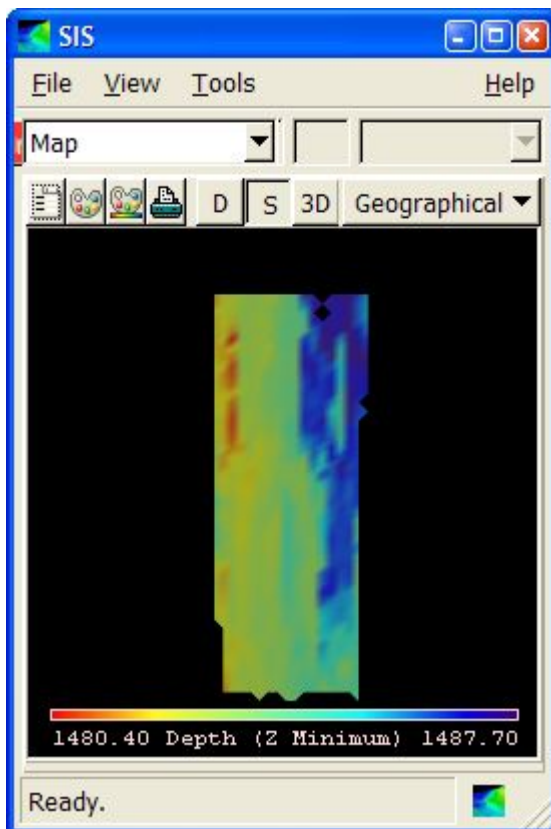
- 1 Point Data. Display of Point data is corrected and now the point data is displayed with the same depth variable as the grid.
- 2 Grid Color value, Points per Cell in the Geographical options menu. If the user has set SIS to store all depth in the grid the correct value is now returned. Before a maximum of 25 was reported.

When the user zooms out the number of points per cell increases as the display grid changes level of detail.

- 3 Update of the real time depth tail for echo sounders operating in dual swath mode. The real time depth tail is updated at a maximum rate of 2 Hz. Now both swaths are included when the echo sounders is operating in dual swath mode.

- 4 Renaming in the Geographical Option, Sonar Display Grid menu. A more clarifying text is used in the Grid Size field, Maximum Number of Cells is now denoted Maximum number of processing grids. The actual size of a processing grid is set in the Grid Engine Parameters menu in either New Survey, import of raw data and survey templates where Number of cells in processing grid and the cell size is given.
- 5 Plotting sound speed at transducer in the geographical window

Figure 1 Displaying the sound speed at the transducer head in GeoView



The command line program `makeSoundSpeedAtHeadFile.bat` can be run from a command window like this:

```
makeSoundSpeedAtHeadFile.bat c:\sisdata\raw\surveyname
```

The program has one command line parameter, which is the complete path to the raw data folder where the `.all`-files are located.

`makeSoundSpeedAtHeadFile.bat` will search for all files of type `.all` from the given directory and output the file `soundspeed.txt` to the current directory.

Then open **Tools**→**Custom...**→**Create grid from ascii-files** and select `soundspeed.txt` as the ascii file to create grid from. Note that the grid cell size should be much larger than for a “normal” survey.

SIS will not understand that the contents is sound speed, so SIS will display Depth in the legend.

It may still be difficult to see a terrain model of these data because there are only one measurement at the ship's position, so it may be better to display the grid as points rather than grid to see the values.

- 6 *Grid Transparency.* A different type of transparency is now used for the survey grid in the Geographical View. The display of areas where transparent grids overlap and areas where grids overlap a background image has been improved.
- 7 *COG Vector for Ship.* It is now possible to display a Course Over Ground (COG) vector for the ship symbol in the Geographical View. The length of the vector can be set in minutes (i.e. the end of the vector will be a specified number of minutes away, based on current COG and SOG).
- 8 *Restricted Region.* If the displayed region of the survey grid has been restricted by the region restriction feature, a rectangle will be displayed in the GeoView showing the region within which the grid has been restricted. This is especially useful in cases where the restricted region does not contain any gridded data.
- 9 *GeoTIFF File Output.* It is now possible to output the gridded survey data shown in the geoview to a GeoTiff file. A toolbar button has been added to the GeoView toolbar. When the toolbar button is pressed, a GeoTiff file is created (by default, in the sisdata/common/background directory) showing the displayed gridded data. Real-time depths, shipstrack, coverage, the ship symbol, the graticule, and the color scale are not included in the GeoTiff file.

Three files are created; a geotiff file named gvosr.tif, a normal tiff file named gvosr_tmp.tif, and a tiff world file with georeferencing information for the tiff file named gvosr_tmp.tfw.

A batch file named geotifcp.bat is used to create these files. This allows some possibility for minor user customization such as moving or copying the files after they are created.
- 10 *Transparency on White Background.* A transparent grid will now be displayed correctly on a white background (and on background images with white portions).
- 11 *Auto 'True Point'/'Center Point' Selection.* When selecting the draw style for the grid, triangulation is automatically set to 'True Point' when Points or Lines is selected, and automatically set to 'Center Point' for all other draw styles. The 'Advanced Options' menu has been eliminated.
- 12 *Auto 'Zoom to World'.* 'Zoom to World' is automatically executed each time a new survey is imported..
- 13 *Sonar Display Grid Intensity in dB.* Intensity max and min values for the dynamic range of the Sonar Display Grid are now entered in dB.
- 14 *Sonar Display Grid Enable.* A single check button now both shows/hides the Sonar Display Grid and enables/disables the feature.
- 15 *Range/Bearing to Object.* It is now possible to output the range and bearing to an object to the network. Use **Tools**→**Custom...**→**Set Parameters**, and then select **Display** to set the IP-address and UDP port to send these messages to, and see the Manual for additional information about datagram formats. This output is sent as long as there is a valid network address set.

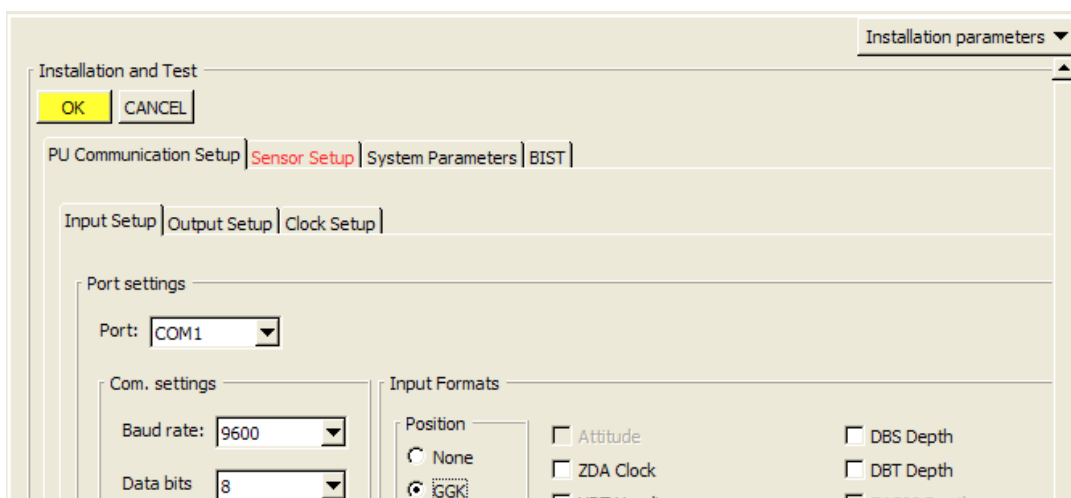
Installation parameters frame

1 Reminder of changed installation parameters.

The operator will now be reminded of any unsaved installation parameter changes in any of the **Installation and Test** frames or sub-frames.

Whenever the installation parameters are edited or changed the **OK** button will now turn yellow and remain yellow until the parameters are saved or the changes cancelled.

(Note that the **OK** will turn yellow only in the moment the text cursor is removed from the entry field of when a button is clicked or a selection is made.)



A pop-up window will be displayed if unsaved parameters remain and if the operator, for any reason, still tries to close the **Installation and Test** frame or select another echo sounder as active.

The operator must then decide to save the parameters or abandon the changes, by pressing the **Save** or **Quit** button respectively, before being able to continue.

Note

This feature is combined with the installation parameters password handling if the latter is enabled, see entry on 'Improved installation parameters password handling' below.

2 Automatic backup when storing PU installation parameters.

A backup file of the PU Installation and Runtime parameters are generated every time the **OK** button is pressed in the **Installation and Test** frame.

The format of the backup data is the same as for the **File** → **Export PU parameters...** function.

This implies that the backup file can be read by the **File** → **Import PU parameters...** function and used to set the parameters of a sounder.

The backup files are stored in the folder `\sisdata\common\backup_settings`. The naming convention of the backup files are as follows:

Backup_<echo sounder name>_<serial number>_<YearMonthDay>_<HourMinSec>.txt

e.g. Backup_EM2040_402_20090430_105852.txt

Note that the backup files are never deleted or moved by SIS. This must be organized and handled outside SIS.

3 Improved installation parameters password handling

When the password handling is enabled for installation parameters (see **Tools**→**Custom** →**Set parameters**→ **Password**) it is now no longer necessary to press the **OK** button twice to store the changed parameters.

When the password handling is enabled and the parameter editing is completed by pressing the **OK** button a password pop-up window is displayed. If the entered password is correct the parameters will now be saved immediately without the need to press the **OK** button a second time.

Note

*The text in the **OK** button will no longer be red when a password is required. I.e. no visible indications are provided for passwords except the password entry box.*

4 External ZDA setup improvement

The External ZDA clock setup has been improved by securing that the Clock source setting now is dependent on the PU input setting.

The improvement implies that it is not possible to select **External ZDA Clock** as clock source from the **Installation and Test**→**PU Communication Setup**→**Clock Setup** frame before the **ZDA Clock** has been selected (i.e. ticked) as PU input in the **Installation and Test**→**Input Setup**→**Input Formats** frame.

I.e. if the **ZDA Clock** input to the PU is not selected it is not possible to use this input as a clock source.

When the **ZDA Clock** selection is changed both the **PU Communication Setup** and the **Clock Setup** tabulators are changed to red to indicate that the operator needs to check the current clock setup.

Note that in the case that the **ZDA Clock** input is turned off and the previous clock source setting was **External ZDA Clock** the new (fall back) clock source is automatically set to **Active pos. system**.

The red tabulator setting is removed when the **OK** or the **CANCEL** button is pressed.

5 Log all heights.

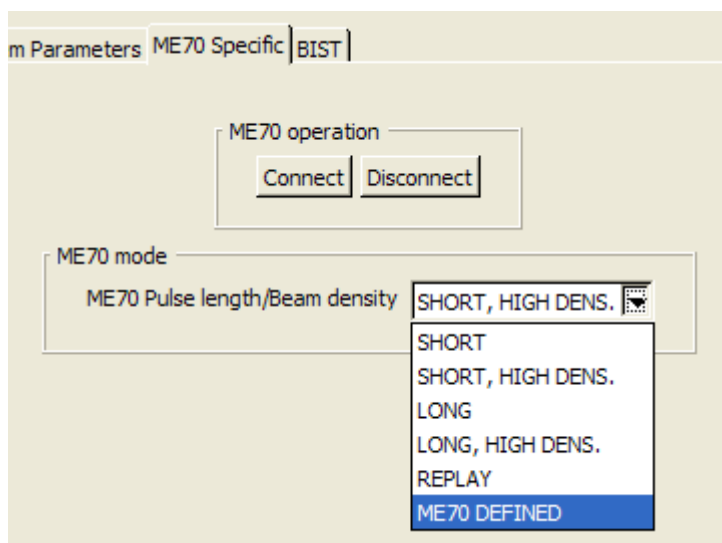
The **Log all heights** feature can now be configured independently for the three possible positioning systems handled by SIS. The additional quality factors for which the heights are approved must be defined in a comma separated list and the list can be different for all three positioning systems, if used.

It is now possible to define extra quality factors for GGA and GGK for which the heights are approved. When this feature is enabled, height datagrams ('h'-datagrams) will always be sent from the PU. This feature is implemented for all multi beam sounders (EM range, except EM 121A).

This feature can be configured from **Installation and Test**→**Sensor setup**→**Settings**→**Positioning System Settings and Log all heights**.

6 New ME70 operation mode.

A new operational mode called **ME70 DEFINED** has been added for the **ME70 Pulse length/Beam density** selection in the **Installation and Test**→**ME70 Specific** frame. The new selection implies that the mode is defined by ME70 and not by the SIS operator (ME70 has an alternative non-SIS control interface called *Bathymetric Operator Station*).



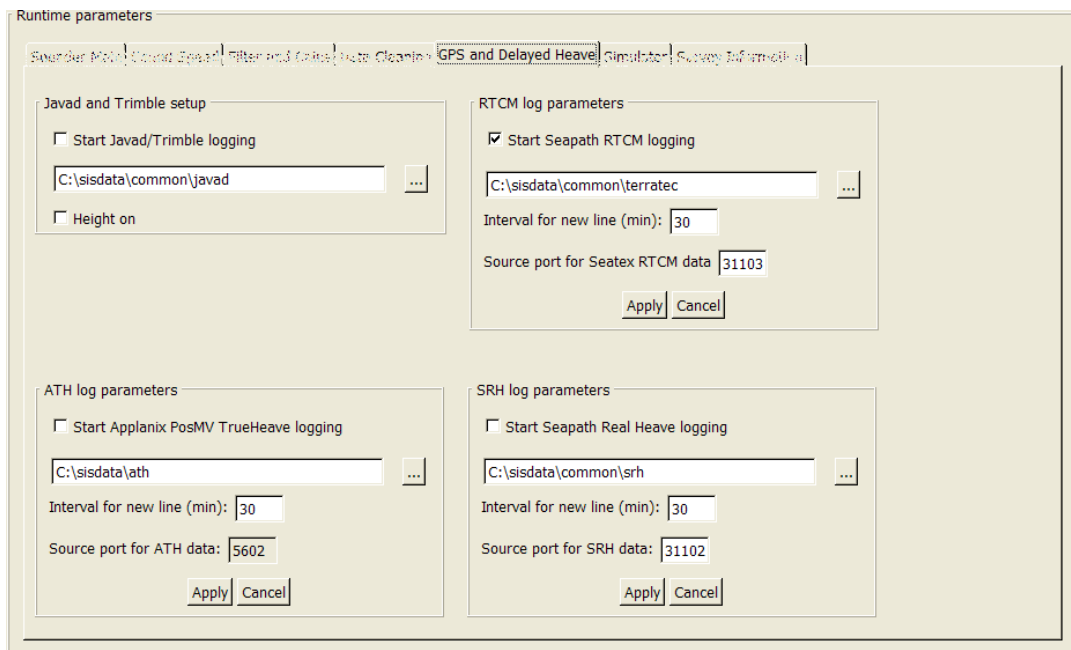
7 Corrected PU Ethernet 2 default address information.

The default Ethernet 2 IP address information used for the Attitude Velocity settings in **Installation and Test**→**PU Communication setup**→**Input Setup** for **Port UDP5** has been corrected. The new default address is 192.168.1.1 with netmask 255.255.0.0 and port 3000.

Runtime parameters frame

1 GPS and Delayed Heave

A number of existing and new GUI interfaces have been collected in a common tabulator display in the **Runtime parameters** frame. The new tabulator is called **GPS and Delayed Heave** in accordance with the basic functionality contained. See image below.



The existing interfaces that have been moved from their previous separate tabulator locations are the **Javad and Trimble setup** interface and the **ATH log parameters** interface. In addition to these two existing interfaces two new interfaces are also included: The **RTCM log parameters** and the **SRH log parameters** interfaces. These two latter interfaces are separately described in the Logging of delayed sensor data chapter.

Note that the **Javad and Trimble setup** interface is somewhat different from the others. The deviation is that it has no **Apply** or **Cancel** buttons. This implies that when the individual Javad and Trimble settings are changed this is communicated immediately to the affected external Javad and Trimble processes.

The three other interfaces can however be completely configured before the **Apply** is pressed whereby the setup is communicated to the relevant external process.

- 2 The External trigger setting is moved for some echo sounder types.

The aim is to be able to control and check the trigger setting while pinging/logging is active in connection with use of external synchronisation systems.

The external trigger setting is moved from **Installation and Test**→**Input Setup**→**Misc.** to the **Runtime parameters**→**Sounder Main**→**Transmit Control** frame.

The following echo sounders are affected by this move:

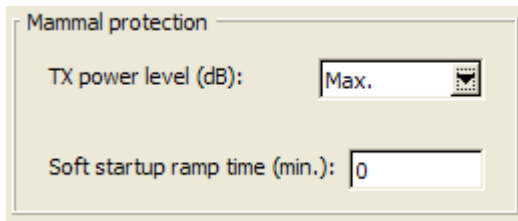
- EM 122
- EM 302
- EM 710
- EM 2040
- EM 3002

The legacy echo sounders (i.e. EM 120, EM 300, EM 1002, EM 2000, EM 3000) retain the External trigger setting in the **Installation and Test** frame as before.

- 3 Mammal protection for EM 710.

The mammal protection feature, previously available for the EM 122 and EM 302 echo sounders, has now also been included for the EM 710 echo sounder.

The feature is located in the **Runtime parameters**→**Filter and Gains** frame:



4 Max. Ping Freq. moved to Transmit Control.

In connection with the previous change the **Max. Ping Freq. (Hz)** setting is moved from **Runtime parameters**→**Sounder Main** →**Depth Settings** to **Runtime parameters**→**Sounder Main**→ **Transmit Control** where it naturally belong.

The following echo sounders are affected by this change:

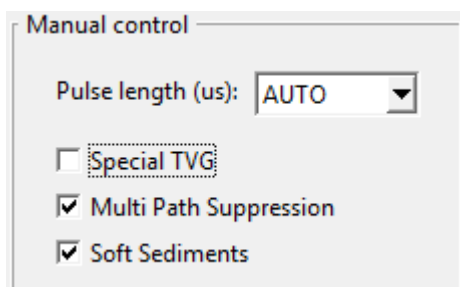
- EM 710
- EM 2040

5 Changed parameter ranges

- EM 3002: **Runtime parameters**→**Advanced param.**→**TVG ramp level**. Valid range for the ramp level is changed from old range –8—8 to the new range –8—15.
- ME 70: **Runtime parameters**→**Simulator**→**Parameters for Scope display**. Valid range for the beam number is corrected from old range 0—432 to the new range 0—200.

6 EM 3002 Multi Path Suppression and Soft Sediment

Two new check buttons, **Multi Path Suppression** and **Soft Sediments**, have been added in the **Advanced param.** frame for EM 3002. See the **Manual Control** group in the **Runtime parameters**→**Advanced param.** frame:



The check buttons are used to turn the functions on or off. The PU parameters associated with the functions are **MPS** for Multi Path Suppression and **SOF** for Soft Sediments.

- **Multi Path Suppression**

Hard reflectors on the shore, distant from the vessel, may cause multi path detections. These multi path detections may appear as detections on a greater range or as holes.

Using Multi Path Suppression may cause the bottom detector to be slightly more sensible to weaker objects in the water column. Not applicable in detector mode "normal"

- **Soft sediments**

In an EM 3002 dual configuration small downward spikes may appear on soft sediments. The downward spikes are seen on both sides of the vertical, and can be from 10-50 cm long. Turning Soft Sediment on will eliminate these false downward spikes.

Water Column frame

1 New functions in the Water Column display window.

Two new convenience functions are available from within the **Water Column** display window:

- Force depth
- Set beam number

These functions are enabled/disabled using the **Show/Hide** menu in the **Water Column** display and ticking/un-ticking the **Enable Force Depth** and **Enable Scope Beam** selections respectively.

The depth or beam number used by these functions is set by moving the cursor to the appropriate point within the **Water Column** display before activating the functions using the following mouse and key button combinations:

- Force depth: `Ctrl+LeftClick`
- Set beam number: `Shift+LeftClick`

When these button combinations are used the echo sounder will be updated in the same manner as if the standard **Runtime parameters**→**Sounder Main**→**Force depth (m)** button was pressed or the **Runtime parameters**→**Simulator**→**Beam no.** field was changed.

Note again that these convenience functions must have been enabled in the **Show/Hide** menu before the button combinations are recognized

- ### 2 Transparency now works on a white background. This resulted in the former blending modes A and B to be replaced by a single blending mode.
- ### 3 The water column display now uses about half as much memory as it did before. Additionally, the way the water column swath is rendered was changed, reducing the number of triangles rendered to about half of what it was before. The end result is half as much memory used and twice the rendering speed.

Stave Display frame

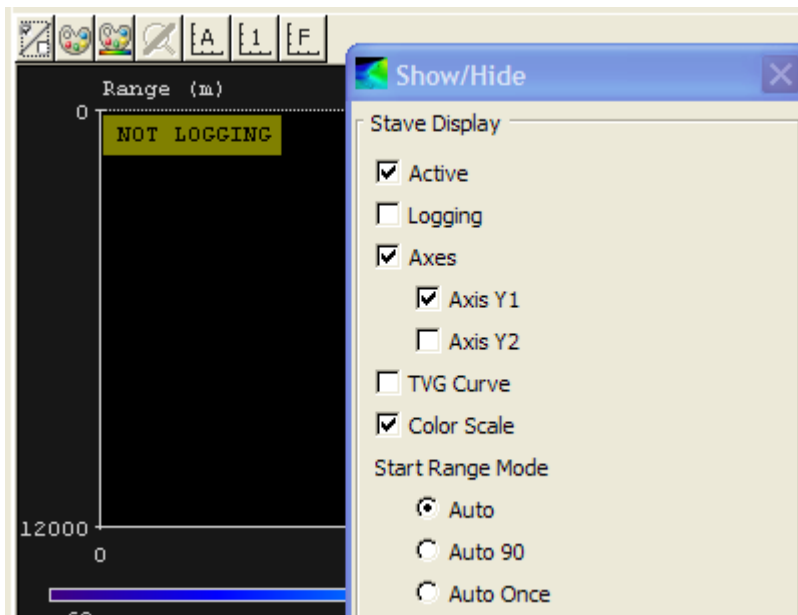
1 Logging of stave data to `.all` files.

It is now possible to log stave data to the currently opened `.all` file. To enable this logging the following conditions must be fulfilled:

- The Stave display frame must be open and remain open.

- The **Logging** selection in the **Stave display**→**Show/Hide** window must be selected (i.e. ticked).
- Standard logging must be started/active (i.e. the **Logging** button in the SIS main toolbar must be green).

Notice that when no stave data logging is selected an informational message to this effect is displayed in the top left corner of the **Stave display** window.



To stop an ongoing stave data logging session the **Logging** selection in the **Show/Hide** window must be deselected or the **Stave display** frame closed.

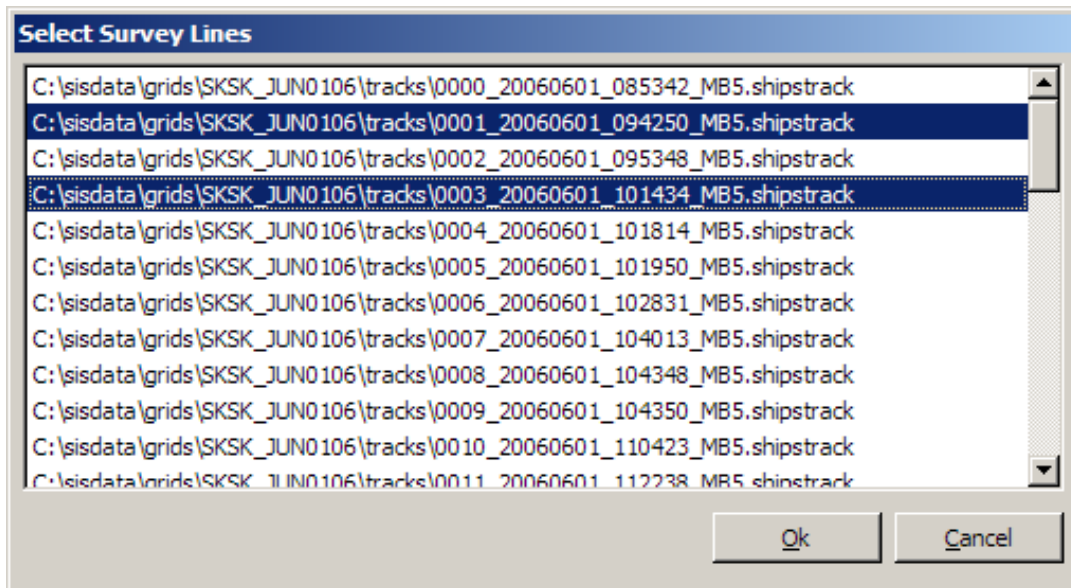
When standard logging is turned off stave data logging will also be off.

When the **Stave display** frame is opened the **Logging** selection will always be turned off as default.

Calibration Frame

- 1 *Improved Zoom.* Zoom operations using the mouse wheel are now retained such that these operations are not lost when the apply button is pressed (previously, only *mouse button* pan and zoom operations were retained).
- 2 *Improved Pan.* It is now possible to pan the display even when it is not in a "zoomed" state (which will then place the display in a "zoomed" state which can then be undone using a toolbar button).
- 3 *Select Lines Dialog Box.* A dialog box has been created from which the user can select lines for calibration.

Select Survey Lines dialog box.



- 4 *Calibration Line Draw Style.* It is now possible to choose between three different draw styles for drawing the calibration data in the calibration frame; LINE, POINTS, LINE and POINTS. It is possible to set the line width and point size.
- 5 *Corridor Width.* The corridor width is now a floating point value (rather than an integer) and can be set with a precision of 0.1m.
- 6 *View Region* When entering Calibration mode (by pressing the 'C' button), if the current view region is within the region of the calibration survey (with a small margin around the survey), the current view region will be retained.

Cross Track Frame

A new scaling mode (named Fixed Delta) has been created that allows the user to specify two fixed values (i.e. delta values) relative to the center beam depth (an upper value and a lower value). When this option is specified, the scale will automatically be adjusted such that the upper and lower depth scale values remain the specified "fixed" distances away from the center beam depth, as the depth changes.

- It is possible to specify this mode and the two fixed delta value via the Options menu.
- It is also possible to specify this mode and the two fixed delta values by using the mouse to drag a rectangle in the cross track display.
- The scaling mode can be reset to the previous mode (auto, fixed, etc.) by clicking the "Reset Zoom" toolbar button.

Sensor Layout Frame

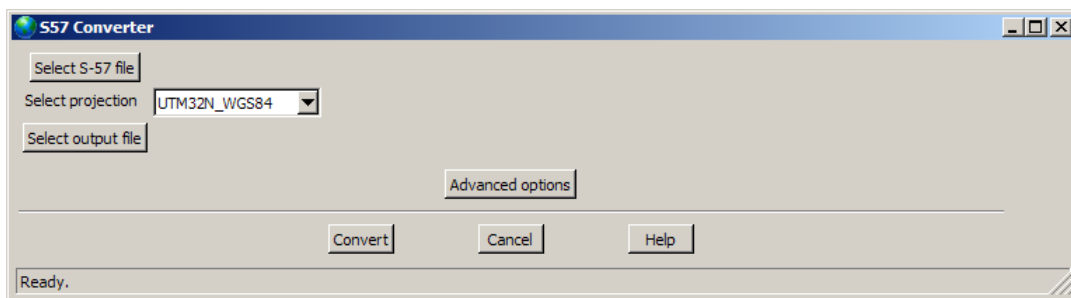
Transparency now works on a white background.

Input of S-57 formatted chart files

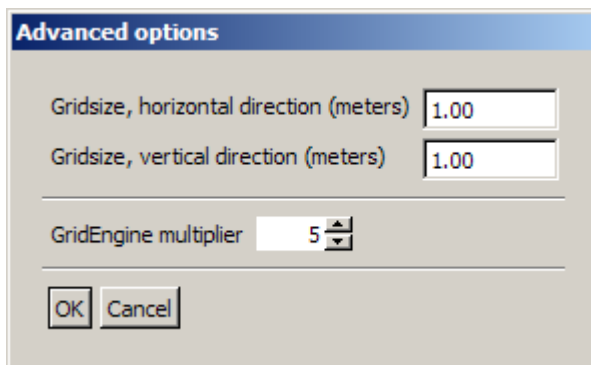
It is now possible to use some of the data in an S-57 chart file as background data in SIS directly. Coastlines and dryfall (a depthcontour with depth 0.0 meters) are extracted into KSGPL-formatted files which can be displayed in SIS, and the depthcontours are also used to construct a 3D terrain model.

How to convert S-57 chart files to SIS input data

- 1 Select **Tools** → **Custom** → **S-57 converter** and a new window opens up:



- 2 Press **Select s-57 file** and select the S-57 file in the file selection dialog window.
- 3 Choose the map projection from the pulldown menu. The projections listed are the projections registered in SIS.
- 4 Press **Select output file** and choose the output file name.
- 5 You may want to press **Advanced options** if you are not happy with the results from the first run:



Here you can set the parameters defining how the terrain model shall be constructed. **GridEngine multiplier** is a factor used to define the grid cell size in the GridEngine. It should normally be 2 or higher.

- 6 Press **Convert** and wait. Note that this procedure may take several hours depending on the parameters. The output is two files, one .ksgpl and one .s57. To use this data in SIS, follow the procedure below.

How to use the output from S57ToSIS

- 1 Open **File** → **Import/Export** and select KSGPL as the data type. Then simply open the ksgpl-file generated above and press **OK**.

- 2 Open **Tools** → **Custom** → **Create grid from ASCII files**. Then simply select the .s57-file as input and create a terrain model.
- 3 Open **File** → **Import/Export** and select Surveys as the data type. Then select the terrain model created above.

The first procedure must be run only once. The output is one ksgpl-file and one ascii-file and these files need not be regenerated unless the S-57 file is changed. This means that this procedure can be run once in the office and the output can be sent anywhere. Also the generation of grid from ascii-files needs to be done only once. When the terrain model is created, it can be reused forever. It is thus possible to do this in the office, too, and simply send the complete terrain model to other users. Note that the projection is locked once the terrain model is created so everyone who uses this terrain model, must have the same projection defined.

Logging of delayed sensor data

1 RTCM logging

The SeaPath 300 series from Seatex gives the possibility to log additional GPS information.

Radio Technical Commission for Maritime Services (RTCM) data can be logged and subsequently used during post processing to augment and improve the GPS positioning data. The RTCM logging facility consists of two components: the RTCM logger process and the SIS RTCM logger interface. RTCM logging can be performed independent of SIS and the SIS RTCM logger interface.

RTCM logging operation

The following two options for starting RTCM logging are available:

- RTCM logging can be started from the Windows **Start** → **All Program** → **SIS** button. A RTCM logger process is created and the logging is started immediately.
- When SIS is started an RTCM logger process is also started. The actual logging operation is started or not depending on the last logger setting used.

Note the following:

- In both the above cases, if an RTCM logging process is already active/running, no new process is started.
- If the RTCM logging has been stopped by SIS and SIS is terminated, the logging can be started again, without starting SIS, simply by using the Windows **Start** → **All Program** → **SIS** button.
- The RTCM logger process is not terminated when SIS is stopped. The RTCM logger process can be stopped manually from the Windows **Start** → **All Program** → **SIS** button.

The SIS RTCM logger interface

When SIS is running the RTCM logger parameters can be configured using the **Runtime parameters**→**GPS and Delayed Heave** interface. The following parameters can be changed:

- Logging on or off.
- Path to the directory where the logged files are stored.
- Interval (minutes) between consecutive stored files (i.e. file length).
- Port number for the source of data to be logged (according to Seapath configuration).

Parameters changed by the operator are indicated by a yellow background colour. The parameters are applied and used by pressing the **Apply** button whereby the parameters are transferred to the RTCM logging process. The yellow background colour is removed.

When applying any parameter changes the current logged file is completed. The file interval timer is reset. If logging is set to continue a new logged file is started according to the set parameters.

The **Cancel** button is used to revert any changes before using the **Apply** button

When SIS is running the **Numerical display** frame can display the current RTCM logging status by selecting the **RTCM Log.** item. The status is updated when a new file is created or as a result of changed RTCM logger parameter settings. When turning logging on for the first time the "ON" indication will not be displayed until the first RTCM signal is received from the Seapath.

A warning (pop-up) is now issued if no logging input is received by the RTCM logger within a defined interval, currently set to 20 sec.

RTCM file format.

The name of the logged RTCM file has the following format:

RTCMYYYYMMDD_HHMMSS.rtc

where the date and time is the current UTC time at the time of file creation.

The format of the information stored in the file is the length of the received signal (unsigned short, 2 bytes) and then the signal itself.

Note

Each logged .rtc file is automatically converted to a RINEX (ASCII coded satellite position data) .08o file as soon as it is completed. This converted file will be used in the post processing. The original .rtc file is retained. The naming format of the RINEX file is YYYYMMDD_HHMMSS.08o where the date and time is fetched from the first datagram in the file.

2 Seapath Real Heave (SRH) logging

Seapath from Seatex and PosMV from Applanix both allow logging of delayed (true) heave. Please check with Seatex and Applanix which versions support this feature.

Seapath Real Heave data is delayed by a few minutes coming from the Seapath due to internal processing. It can be logged by SIS and subsequently used in post

processing. The SRH logging facility consists of two components: the SRH logger process and the SIS SRH logger interface. SRH logging must be started and controlled from the SIS SRH logger interface.

SRH logging operation

When SIS is started an SRH logger process is also started. The actual logging operation is started or not depending on the last logger setting used.

When SIS is stopped the SRH logger process is also stopped.

The SIS SRH logger interface

When SIS is running the SRH logger parameters can be configured using the **Runtime parameters**→**GPS and Delayed Heave** interface. The following parameters can be changed:

- Logging on or off.
- Path to the directory where the logged files are stored.
- Interval (minutes) between consecutive stored files (i.e. file length).
- Port number for the source of data to be logged (according to Seapath configuration).

Parameters changed by the operator are indicated by a yellow background colour. The parameters are applied and used by pressing the **Apply** button whereby the parameters are transferred to the SRH logging process. The yellow background colour is removed.

When applying any parameter changes the current logged file is completed. The file interval timer is reset. If logging is set to continue a new logged file is started according to the set parameters.

The **Cancel** button is used to revert any changes before using the **Apply** button

When SIS is running the **Numerical display** frame can display the current SRH logging status by selecting the **SRH Log.** item. The status is updated when a new file is created or as a result of changed SRH logger parameter settings. When turning logging on for the first time the "ON" indication will not be displayed until the first SRH signal is received from the Seapath.

A warning (pop-up) is now issued if no logging input is received by the SRH logger within a defined interval, currently set to 20 sec.

Note that there is no initial 200 sec. wait for the SRH data to arrive, it is assumed that the Seapath system is up and running before logging starts (if not the 20 sec. warning will be issued, one or several times).

SRH file format

The name of the logged SRH file has the following format:

SRH_YYYYMMDD_EPOCSEC.srh

where the date and time is the current UTC time at the time of file creation and EPOCSEC is the number of seconds since the epoch, 1970-01-01, fetched from the first signal logged in the file.

The format of the information stored in the file is the length of the received signal (unsigned short, i.e. 2 bytes) and then the signal itself.

New logging utilities

These utilities have been added to improve error checking in the EM systems, i.e. to verify that input from various sensors are correct.

1 Logging of input on SIS sockets.

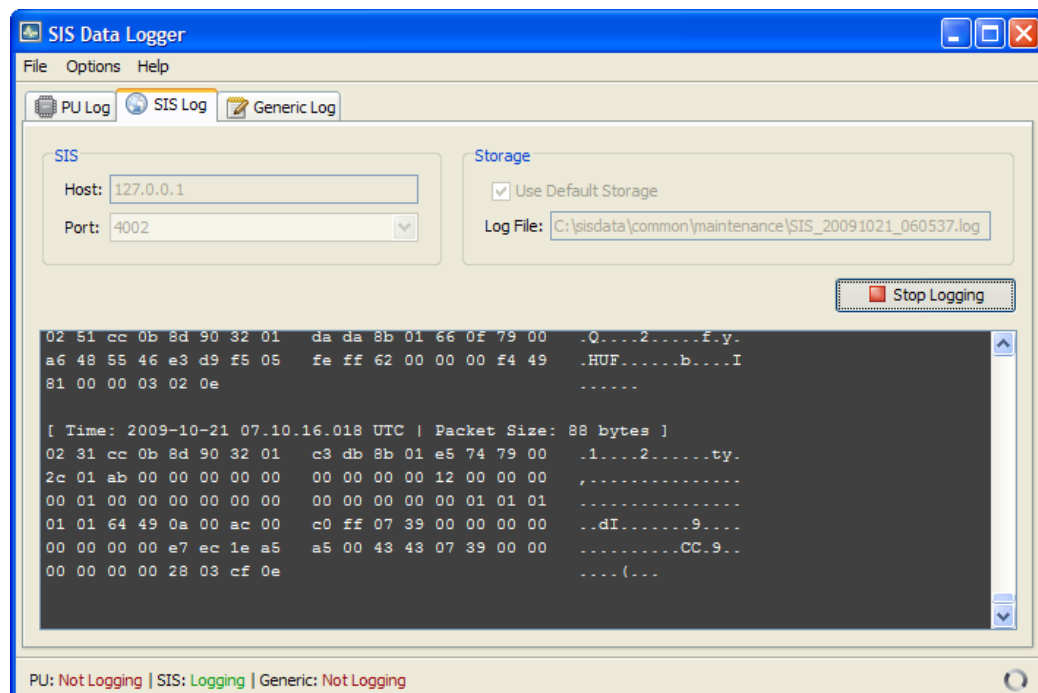
It is now possible to log data received on some specific SIS sockets.

This feature is primarily intended for support and maintenance activities e.g. to verify reception of input on sockets and further to validate the received data content.

The logged input data is presented in an hexadecimal format with an additional ASCII representation where all unprintable characters are represented by a dot.

- Logging alternative 1

This alternative for logging of incoming data on a SIS socket is based on the use of an separate program — the *SIS Data Logger*:



The program is started from **Tools**→**Custom...**→**SIS Data Logger**.

The program will send a command to the relevant socket for starting and stopping logging. When logging is active the data received on the SIS socket will be re-transmitted out on another socket and received by the logger program. The logger program is responsible for decoding, displaying and storing the data.

In contrast to alternative 2 below the operator may now get a running update of the received data in the display while the data is being logged.

The following input parameters and controls are available:

- **Host:** This is the IP address of the HWS where SIS is residing. Currently this should always be the 127.0.0, i.e. the *SIS Data Logger* program must always run on the same computer as SIS.

- **Port:** This is a drop down list of some fixed SIS sockets. In addition the user may manually enter a SIS socket, however see the 'Some remarks on SIS sockets' paragraph below before using this possibility.
- **Use default storage:**

When selected (ticked) a predefined set of storage options are used:

 - The default directory is:
`...sisdata/common/maintenance.`
 - The default file name is:
`SIS_yyyymmdd_hhmmss.log`
where the date and time is the UTC time when logging is started.

When the operator un-ticks this selection a pop-up is displayed allowing the user to select an alternative storage location and a file name. Note that if the file already exists the new logged information will be appended to the existing file.
- **Log File:** This element contains the currently selected storage folder and is used for display only.
- **Log button.** The logging operation is turned on and off on the set socket using the log button.

When logging is active all user selections are inactive (i.e. gray coloured). To change the host and port settings as well as the storage settings the logging must be turned off.
- **Options**→**Show Datagram Prefix** is used to turn the info. line printed at the head of each datagram packet on or off.

The info. line contains packet size and a time tag.
- Logging alternative 2

This alternative is a low level solution based on internal SIS functionality for decoding and storing of received data. No running update of logged data is available. This is in contrast to alternative 1 which uses an external program for this purpose.

```

LoggedInput.txt - WordPad
File Edit View Insert Format Help
[Icons]
Packet size: 52
02 52 b8 0b eb 8e 32 01 de 4e 30 01 1f 00 79 00 .R÷.%Z2.èNO...y.
00 00 00 00 01 0e 01 00 03 00 00 19 96 00 0f 00 .....-...
00 0f a0 1e 0a 02 2c 01 00 41 80 41 2c 01 00 00 ..ÿ.....A.A,...
ff 03 bb 08 ~.

Packet size: 27
24 4b 53 53 49 53 2c 36 33 2c 33 30 30 30 2c 31 $KSSIS,63,3000,1
32 31 2c 31 2c 31 2c 31 0a 0d 00 21,1,1,1...

Packet size: 116
02 50 b8 0b eb 8e 32 01 b6 4f 30 01 08 00 79 00 .P÷.%Z2.ô00...y.
6f 60 53 46 3d 86 f5 05 7b 01 ff ff ff ff f3 4e o`SF=Ää.{.~~~~cN
81 4e 48 55 47 47 41 2c 30 35 33 32 30 31 2e 35 .NHUGGA,053201.5
35 2c 35 38 35 39 2e 36 30 37 38 38 36 39 2c 4e 5,5859.6078869,N
2c 30 30 39 35 39 2e 38 36 30 35 39 30 34 2c 45 ,00959.8605904,E
2c 33 2c 30 38 2c 31 2e 39 2c 30 2e 30 2c 4d 2c ,3,08,1.9,0.0,M,
30 2e 30 2c 4d 2c 30 2e 30 2c 30 30 30 0d 0a 0.0,M,0.0,0000..
00 03 c5 1d ..□.
For Help, press F1

```

The logging activity is started or stopped by sending the relevant socket a command message.

A perl script, *portlog.pl*, has been implemented to assist the operator in sending these commands. The *portlog.pl* script is found in the SIS installation `...bin` directory.

To run the *portlog.pl* script open a command window and start the script using the following syntax:

```
portlog <port no> <ON or OFF> <dir name> <file name>
```

Where:

- `<port no>` is the SIS port to log
- `<ON or OFF>` turns logging on or off respectively.
- `<dir name>` is optional. This is the directory used to store the logged file.
- `<file name>` is optional. This is the name of the logged file.

e.g.: `portlog 4001 ON`

If the directory and/or file names are omitted the following default values will be used:

- The default directory is:
`...sisdata/common/maintenance.`
- The default file name is:
`SIS_Input_YYYYMMDD_hhmmss.log`
where the date and time is the UTC time when logging is started.

Some remarks on SIS sockets:

Note that the sockets used by SIS are of two types: Fixed sockets used by invariant SIS modules (like SIS main GUI, CCU etc.) and sockets allocated dynamically when new echo sounders are detected for the first time. In some cases the operators may also specify ports dynamically for e.g. logging purposes.

The former (fixed) type may use permanently allocated port numbers whereas the latter type uses port numbers allocated sequentially from a set start point (e.g. 16000 currently).

The following are some standard fixed and explicitly defined port numbers:

- Port 4001 is used by the SIS module called CCU for receiving messages from other SIS modules and in addition the following external input:
 - SSP datagrams (i.e. S00 – S53 currently) containing sound velocity and CTD profiles.
 - \$KSSIS,80 with sound velocity at transducer
 - \$ATIDE datagrams with tide
 - R20 remote datagram.
- Port 4002 is used by SIS main GUI for receiving messages from other SIS modules and in addition the following external input:
 - R00, R10, R12 remote datagrams for controlling SIS pinging and logging.
- Port 5602 is used for Applanix PosMV TrueHeave logging. See **Runtime parameters**→**GPS and Delayed Heave**.
- Port explicitly defined by user for Seapath Real Heave logging. See **Runtime parameters**→**GPS and Delayed Heave**.
- Port explicitly defined by user for Seapath RTCM logging. See **Runtime parameters**→**GPS and Delayed Heave**.

Note

Dynamically allocated port numbers associated with specific echo sounders are defined in the SIS database and requires specialist knowledge to be found. They are therefore as a consequence omitted in this description.

2 Logging of sensor input on PU sockets.

It is now possible to log data received on the sensor input sockets in the PU.

This feature is primarily intended for support and maintenance activities e.g. to verify reception of input on PU sockets and further to validate the received data content.

The logged input data is presented in an hexadecimal format with an additional ASCII representation where all unprintable characters are represented by a dot.

Logging of PU sensor input is only available on the new generation of echo sounders:

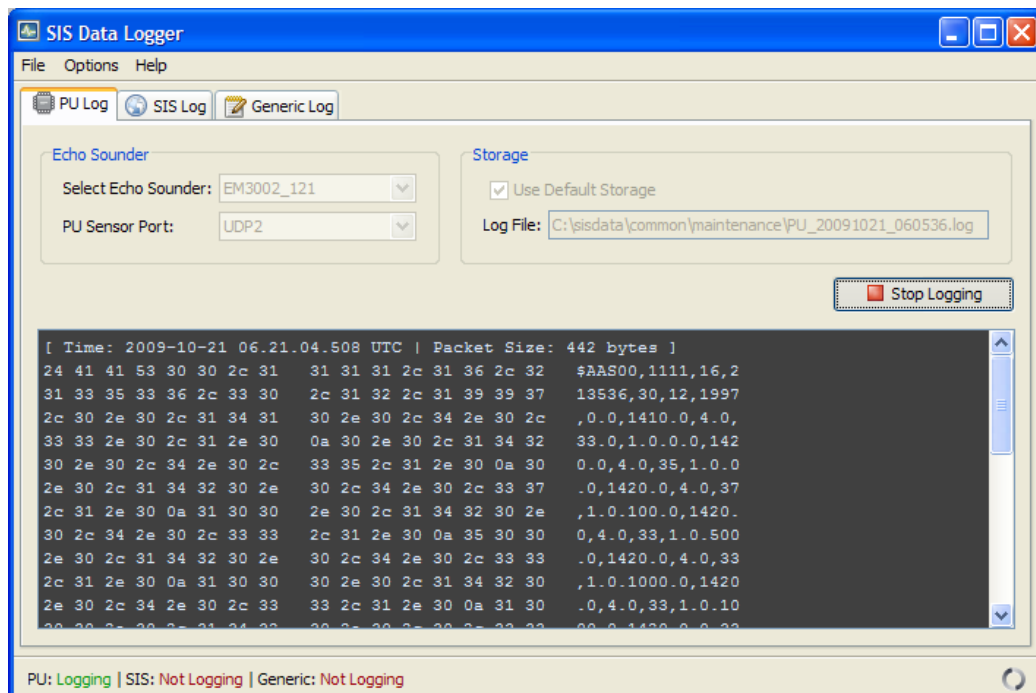
- EM 122
- EM 302
- EM 710
- EM 2040
- EM 3002

Note

Always remember to turn logging off when finished. No automatic shut off is provided. Neglecting to terminate logging will increase the load on the PU and HWS system and the disk capacity for storage of logged data will suffer.

- Logging alternative 1

This alternative for logging of PU sensor input is based on the use of an external program — the *SIS Data Logger*:



The program is started from inside SIS using **Tools**→**Custom...**→**SIS Data Logger**.

The program will send a command to the relevant PU for starting and stopping logging. When logging is active the PU will transmit the data from the sensor input out on a port received by the external program. The external program will be responsible for decoding, displaying and logging the data.

In contrast to alternative 2 the operator may now get a running update of the received data in the display while the data is being logged.

The following input parameters and controls are available:

- **Select Echo Sounder:** This drop down list will contain the currently started echo sounder(s) only. (It is only possible to log on echo sounders that have been started by SIS).
- **PU Sensor Port:** The PU sensor input port to log from. The possible port selections are normally the same as listed in the top row in **PU sensor status**→**PU sensor input status** frame.

- **Use default storage:**

When selected (ticked) a predefined set of storage options are used:

 - The default directory is:
`...sisdata/common/maintenance.`
 - The default file name is:
`PU_yyyymmdd_hhmmss.log`
where the date and time is the UTC time when logging is started.

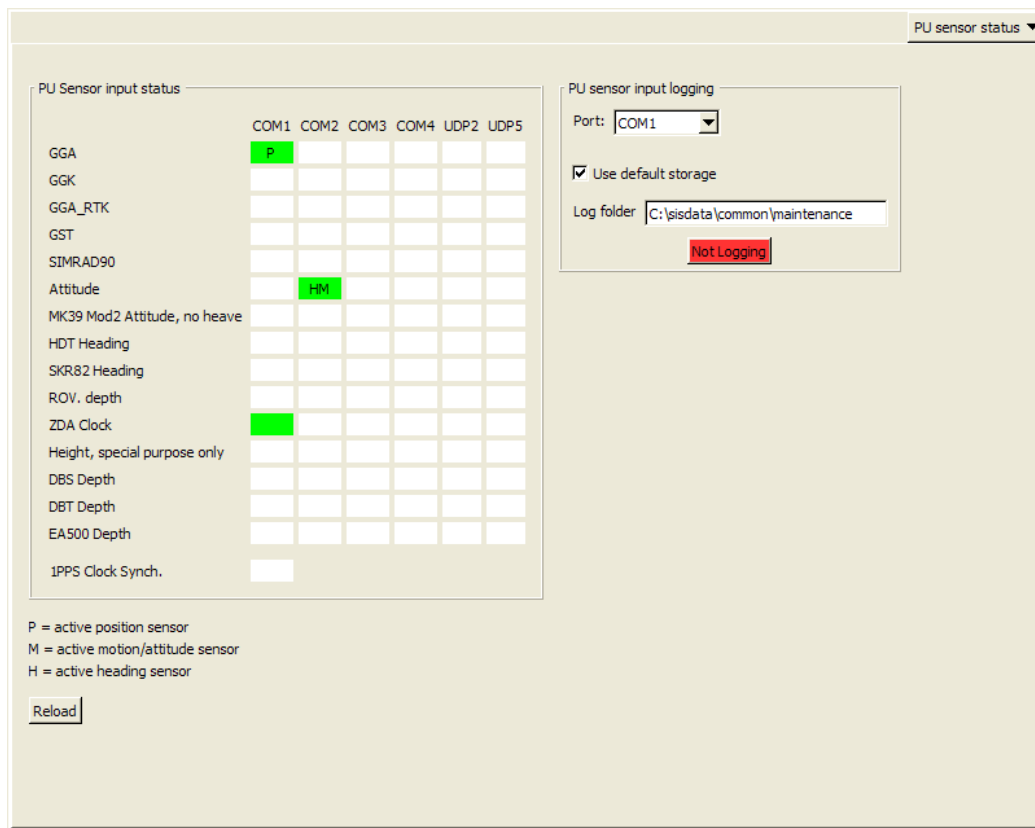
When the operator un-ticks this selection a pop-up is displayed allowing the user to select an alternative storage location and a file name. Note that if the file already exists the new logged information will be appended to the existing file.
- **Log File:** This element contains the currently selected storage folder and is used for display only.
- **Log button.** The logging operation is turned on and off using the log button whereby all necessary logging information is sent to the currently selected PU.

When logging is active the all user selections are inactive (i.e. gray coloured). To change the PU sensor port setting and the storage settings logging must be off.
- **Options**→**Show Datagram Prefix** is used to turn the info. line printed at the head of each datagram packet on or off.

The info. line contains packet size and a time tag.
- Logging alternative 2

This alternative is a low level solution based on internal SIS functionality for decoding and storing of decoded data. No visual update of the decoded stored data is provided. This is in contrast to alternative 1 where a separate program is used giving a running update when logging.

The operator interface for controlling this alternative 2 is located in the **PU sensor status** →**PU sensor input logging** frame:



The **PU sensor input logging** interface is enabled and displayed using the following key combination for the above listed type of echo sounders:
 Shift+Ctrl+Alt+RightMouseButtonRelease:

The following input parameters and controls are available:

- **Port:** The PU sensor input port to log from. The possible port selections are normally the same as listed in the top row in **PU sensor input status** interface.
- **Use default storage:**

When selected (ticked) a predefined set of storage options are used:

- The default directory is:
`...sisdata/common/maintenance.`
- The default file name is:
`PU_Input_YYYYMMDD_hhmmss.log`
 where the date and time is the UTC time when logging is started.

When the operator un-ticks this selection a pop-up is displayed allowing the user to select an alternative storage location and a file name. Note that if the file already exists the new logged information will be appended to the existing file.

- **Log folder:** This element contains the currently selected storage folder and is used for display only.

- **Log button.** The logging operation is turned on and off using the log button whereby all necessary logging information is sent to the currently active PU. The button colour and text reflects the current logging status:
 - Red: Not logging.
 - Green: Logging.When logging is active the **Port** selection and **Use default storage** tick button is inactive (i.e. gray coloured). To change the PU sensor port setting and the storage settings logging must be off.

Note _____

The maximum log file storage size is 2Gb. If this limit is reached logging to file stops.

Tools Menu

- 1 Native support for AML Micro SV, Micro SV&P, Micro SV&P and Valeport Mini SVS has been added
These probes can now be used directly by SIS without changing any settings in “SetParameters”.
- 2 DBMaintenance. It is now possible to recreate the SIS Database from the DBMaintenance application
Select “Reinit DB” from the File menu to recreate the database. **Note that all settings will be lost.**

Other

- 1 The online help in SIS now displays the latest operator manual in Windows help-file format.
- 2 Test of correct checksum in R-datagram when starting new lines.
It has been noticed that some PU’s (e.g. EM 300) in some instances may send an R-datagram with a faulty checksum. Any such datagrams are now disregarded when starting a new line and the PU is asked to re-send the necessary information (i.e. the I, U and R datagrams are always included at the start of a new logged line).
- 3 Pop up messages. The internal message number is shown in brackets at the end of messages displayed in pop up messages.
- 4 A pop-up message is displayed when the Grid Engine is running low on memory. The user is asked to create a new survey and remove the current survey. Creating a survey with larger grid cell size may help on the problem.
- 5 New survey frame. A check has been added for projection when selecting a new survey template.
- 6 EA single beam position.
When using EA singlebeam echo sounders with SIS the received position information was not displayed in the SIS **Helmsman** frame or in the *Helmsman* application (started via the Windows start button).

This has now been corrected.

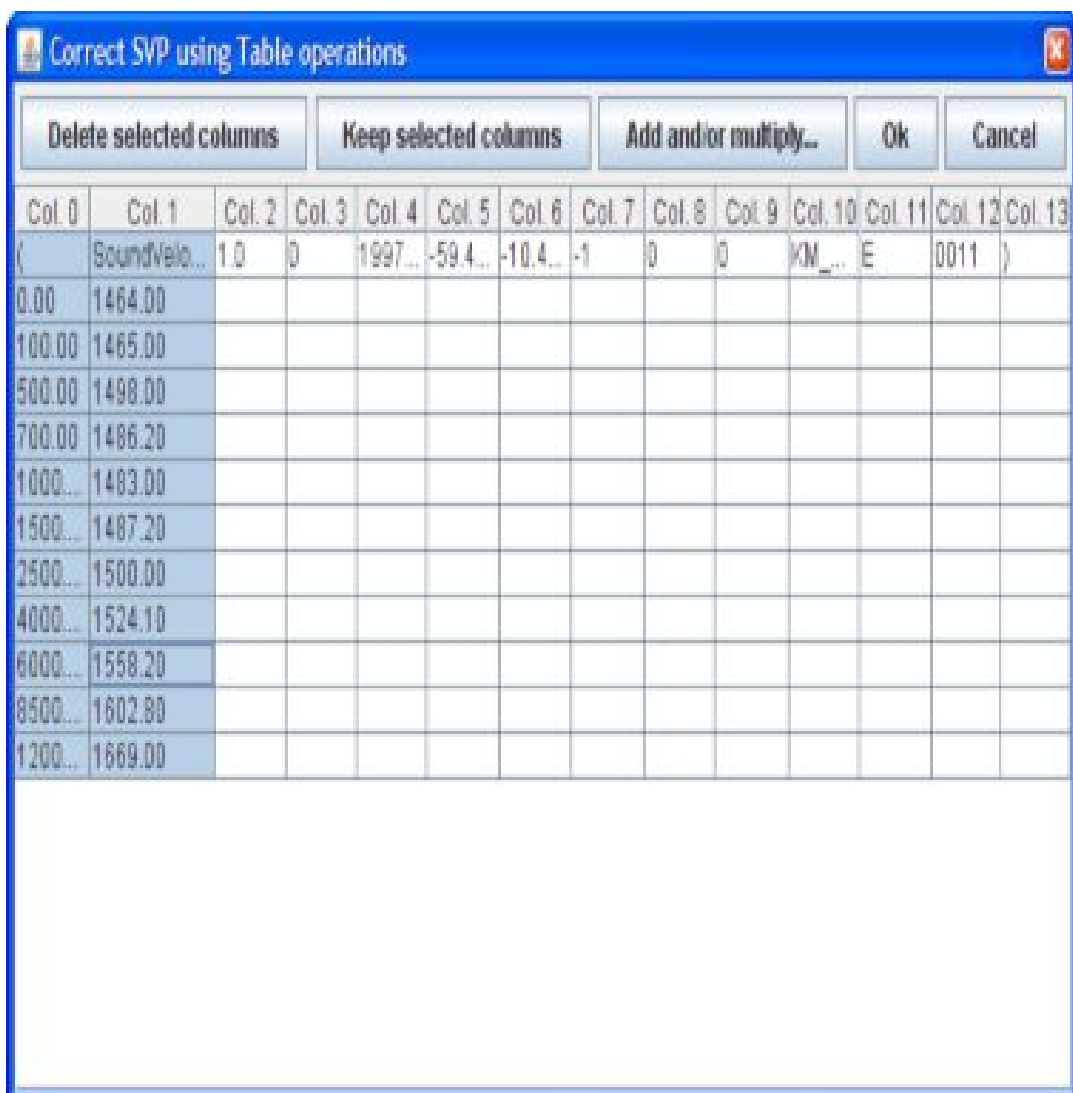
7 Improved SIS dusk and night display.

All icons in the SIS frames are now displayed with the correct dusk or night settings. This will avoid any glaring screen points in low light conditions.

Note that some Windows controlled GUI elements, like the cursor hourglass or cross, still is outside SIS control. See relevant entry in chapter *Limitations* on page 42 for more information.

8 SVP editor

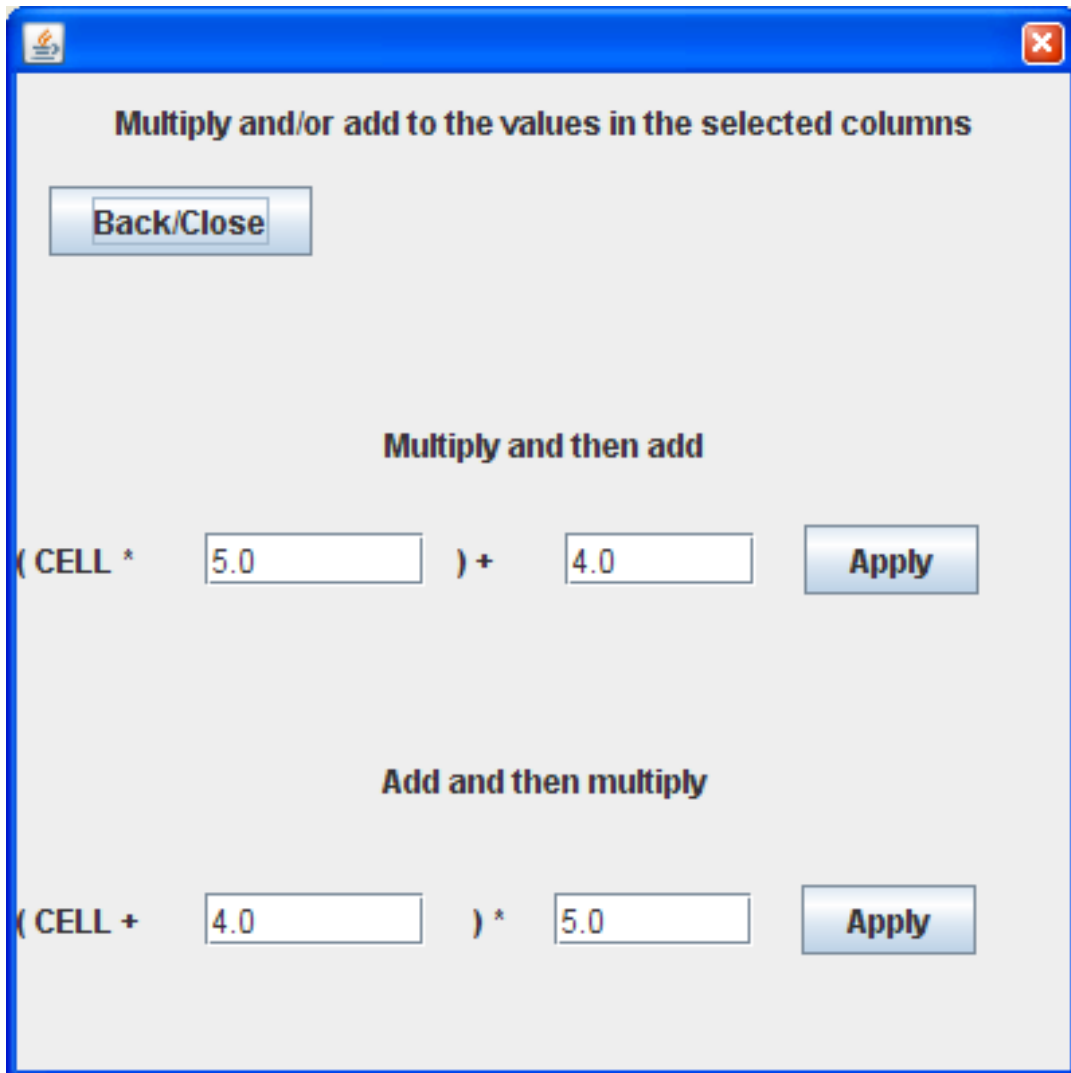
In the raw file editor it is now possible to add and/or multiply the values in selected columns.



Add and/or multiply the values in selected rows.

First select the rows you want to change, then press **Add and/or multiply...**

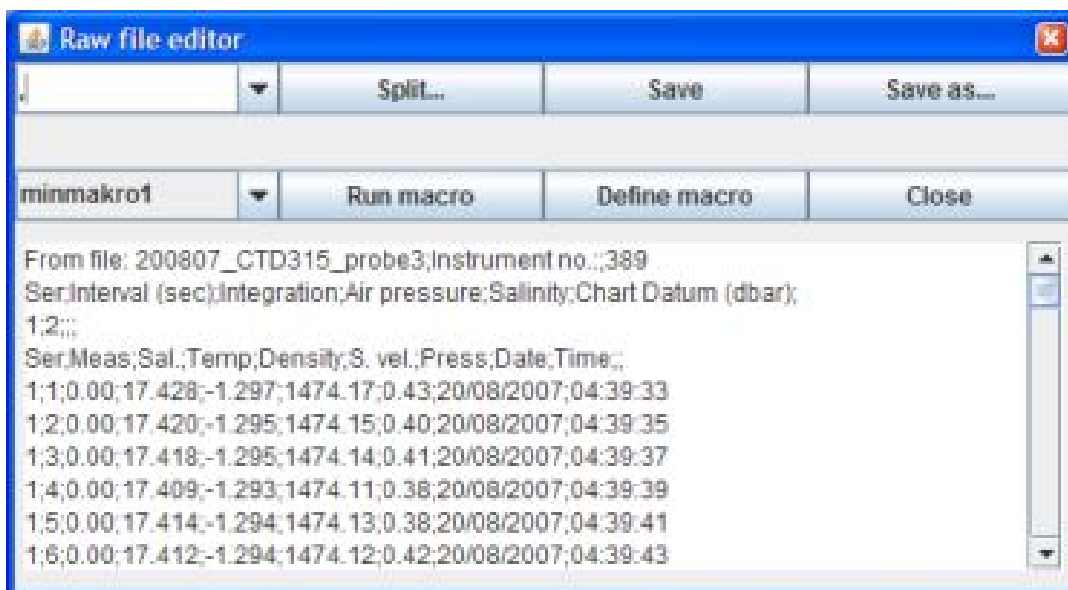
This window appears:



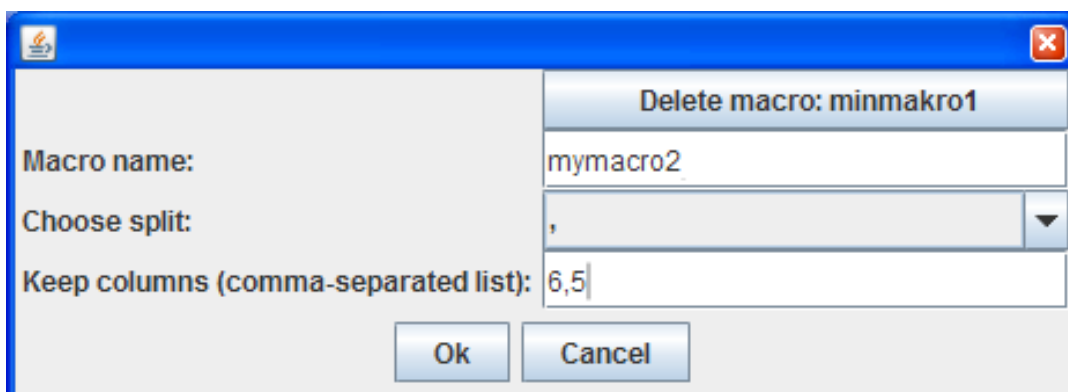
Change the values in the selected rows.

There are two algorithms to choose from: either multiply the value in the cell and then add a value, or add the value first and then multiply the result. You choose which one by pressing the button **Apply** behind the algorithm. Press **Back/Close** when finished.

In the raw file editor a new line of buttons have been added.



The operator can define a macro by pressing the button **Define macro**. Then the operator may delete the current macro, selected in the menu to the left, or he may define a new macro. It must be given a unique name, then choose the split-character and then define the list of columns to use. The list is the columns to keep, in correct order.



Pressing **Run macro** will execute the selected macro on the current file, and the result will be displayed in a list. When using macros, there is a check that all items in the list are floating point numbers, which means that cells containing text will be removed automatically.

- 9 The version compatibility check is removed for the legacy EM echo sounders. The compatibility check between PU and SIS software has been removed for the following echo sounders:

- EM 120
- EM 300
- EM 1002
- EM 2000
- EM 3000

The PU software for these echo sounders will not change.

10 Version compatibility test report.

A compatibility test between the SIS and PU software is performed at the start-up of an echo sounder. The legal version combinations (i.e. version sets) of the SIS and PU software are listed for each echo sounder type in a file called `version.txt` supplied with every SIS installation and PU upgrade.

The report from this compatibility test will now be with reference to the version set in the `version.txt` file with the least number of divergences and not to the most recent version set.

11 *Bug Fix:* Corrected SIS crash when SIS is controlled remotely (e.g. by EIVA).

This problem was due to a un-handled case in the software where the operator is in the process of setting a new survey line count value and a remote Rxx (e.g. R10) datagram is received before the operator has completed the operation. A conflict occurred when the same text field (i.e. **Line cnt.**) was updated. This is now corrected.

12 *Bug Fix:* Corrected SIS crash when disk is missing or non-existing storage location.

There has been a problem with SIS crashing when a disk containing e.g. grids has been removed for backup etc. and not being replaced. Also, when a new survey was specified a non-existing storage location could be entered resulting in a crash.

These problems have been corrected by checking file accessibility before using a storage location and only allowing survey paths etc. to be defined using a browse button working on existing file hierarchies.

13 *Bug Fix:* Corrected problem using more than two decimals in the sound speed profile.

The PU uses only two decimals for the depth parameter in the sound speed profile. This implies that the depth resolution must be 1 cm or coarser. If the sound speed profile contains more than two decimals a situation may occur where two or more depths are equal when the depths are reduced to two decimals in the PU. To avoid this problem SIS does a check of the sound speed profile before it is used. An error message of the following content is displayed if this problem is detected:

Depth values less than 1 cm apart are found in the selected sound speed profile. The profile will not be used

The operator must then correct the reported problem in the sound speed profile before the profile may be re-applied.

14 Improved ping mode licence handling for EM 710.

In a situation where the licence settings are changed in an active running SIS system (e.g. by swapping a licence dongle with another) the EM 710 ping mode setting would not be updated unless a **Runtime parameters** frame was already opened.

This problem has now been corrected.

15 More convenient default button selections in pop-ups.

The default button selection in some dialogue pop-ups, e.g. confirmation windows etc., has been set to a more sensible choice.

Note that not all dialogue pop-ups etc. has been evaluated at this stage.

16 Default storage path for saved messages.

The default storage paths for error, warning and information messages logged by the SIS **Message service** system and subsequently stored to disk by the operator or automatically by SIS are:

- .../sisdata/common/message
- .../sisdata/common/message/auto

respectively.

Note that the 'File name' entry field in the **Message service** frame can not be used directly for input of a storage path and file name. The operator has to use the [...] button to set the path and file name.

- 17 The algorithm for calculation of the mean absorption coefficient down to a specific depth has been corrected.

The absorption coefficient values prior to the correction would be somewhat smaller than nominal but, noticeable mainly only for deeper waters and higher frequencies.

- 18 Helmsman Display. An error when calculating SOG and COG in the Helmsman Display frame has been fixed.

SOG and COG are now calculated correctly.

- 19 Grid Engine Restart. It is now possible to restart the HDDS and GridEngine processes in case they malfunction

This makes it possible to restart the gridding process without losing logged data. A small gap in the grid will be noticed, but if importing the raw data, the gap will be gone.

- 20 License Server. The SIS License Server now runs as a Windows Service. This means that the license server is started when the PC is started and not when the user logs in

- 21 *Bug Fix: Geographical Display: Ships Heading.* Ships heading was displayed incorrectly in some (unusual) situations.

- 22 *Bug Fix: Geographical Display: Inspection Mode.* Certain operations caused the inspection mode button to be unset.

- 23 *Bug Fix: Sensor Layout Display.* Colors are now read from the database correctly.

- 24 *Bug Fix: Watercolumn Display.* If greyscale was selected in water column and you opened another module in the same frame and went back to watercolumn you got some strange colors in the water column.

- 25 *Bug Fix: Watercolumn Display.* The Water Column display did not take into account the "Waterline" parameter (WLZ). This caused a mismatch in the depth shown in the Water Column and the Cross track displays.

- 26 *Bug Fix: Watercolumn Display.* When pressing the "Auto once" button, the display should keep the 1:1 axis scaling.

- 27 *Bug Fix: Watercolumn Display.* The Water column display did not take into account the "TVG offset" parameter in the datagram.

- 28 *Bug Fix: Depth indication.* Correction of faulty depth indication in display and distributed messages.

In some situations the depth displayed in the **Numerical display** frame and in the **SIS Depth Status** bar was faulty. This also affected messages containing the depth which was distributed externally e.g. KSSIS_31 and NMEA DPT.

- 29 *Bug Fix:* Closed database connections in the Grid Engine after use to prevent multiple postgres connections that may have caused the PC to run out of resources and preventing new database connections.
- 30 *Bug Fix:* Terrapos_Manager, runTerrapos and RTCMLLogger. Terrapos_Manager : database lookup for terrapos path, assumed the path existed, but it doesn't always. Creates it if it doesn't exist. Also, changed calls to mkdir() to mkdirs(), to be sure that lower lvl folders are also created. runTerrapos : There was in an instance an attempt to read outside memory, in a function to search for a word in a path (fileOperations.cpp — findDir). Fixed this.
- 31 Helmsman Display. It is now possible to change the NMEA talker Identifier for the APB message. In order to change the ID, enter a two letter string in *Set Parameters*, →Autopilot — **NMEA APB Talker Identifier**
- 32 Depth Output. It is now possible to change the NMEA talker Identifier for the DPT message. In order to change the ID, enter a two letter string in *Set Parameters*, →Sensor Options— **NMEA DPT Talker Identifier**
- 33 For sub bottom profiler, when creating SRV datagrams, a field containing ping duration is added (EMD) for EM 120, EM 300, EM 1002, EM 2000, EM 3000 and EM 3002. Earlier this would only work for EM 710, EM 122, EM 302 and EM 2040.
- 34 Fixed a bug where Tomcat would sometimes not start.

Known issues

- 1 Changes that have been made to the show/hide settings in all tear-off windows are lost every time a frame is opened, closed, or switched in the SIS Main Window or when the stored window setup in the SIS Main Window is changed (by select a new window setup from the leftmost combo box on the Main toolbar).
- 2 In some of the pages in the online-help figure and formulas do not show up. Please take a look in the Operator manual in pdf format instead. Can be found from **START→All programs→SIS→SISHelp**
- 3 Request Datagram. SRV and NMEA_MDM can only be set to send to one instance per echo sounder. The rest of the datagram can be send to many instances.
- 4 Calibration and problem finding raw data. If raw data is copied from a DVD the file name may be converted to upper case. If this data is imported to SIS and used for calibration the calibration module has problem to find the raw data files. Renaming the files to an .all extension (lower case) solves the problem.
- 5 Sound velocity Probes. The AML Micro probe has to be configured to disable date and time output for SIS to be able to read it. Before SIS uses the probe the first time. Start HyperTerminal and attach to the probe and do the setup:

Setup of AML Micro Probe

- Command: SET SCAN TIME [SE SC T]
This command enables the displaying of time during a data scan.
- Command: SET SCAN NOTIME [SE SC NOT]

- This command disables the displaying of time during a data scan.
- Command: SET SCAN DATE [SE SC DA]
This command enables the displaying the date during a data scan.
 - Command: SET SCAN NODATE [SE SC NOD]
This command disables the displaying of the date during a data scan
- 6 SVPLogger is a program started from SVPEditor which can log data from Morse and AML probes to construct sound speed profiles. The communication with the probe is rather unreliable over the serial line. If there is no contact with the probe, go to the main toolbar in SIS and open **Tools** → **External sensors**. Then disable and enable the svp probe to restart it. This will bring the probe back on line again.
 - 7 Time Offset. In the **Installation and Test** → **Clock Setup** it is possible to use the Offset to adjust the echo sounder clock to a local time zone. If a local time zone is set, there are restrictions: "Time to use" for active positioning must be set to "System". If not, no data will be displayed in the geographical view. The data it self will be correct disregarded the selected "Time to use". The problem is that SIS will not take the time offset into account when reading position time tags.
 - 8 **Tools** → **External sensors**. If any changes are made to the communication protocol for the serial line connected to the sound speed probe, the sound speed probe should be restarted to make sure the new parameters are in effect.
 - 9 In the Geographical View, if a LOD value is manually chosen be careful not to zoom too far out with a low value, use of LOD auto is recommended. A large area with a low LOD value requires much computer memory.
 - 10 Run defragmentation of the hard disk(s) to achieve a large region of continuous disk space.
 - 11 When generating or editing a sound velocity profile (.asvp files) make sure that no additional empty lines are present after the last profile item.
 - 12 Some information, warning and error messages may refer to echo sounder type 850. This is the same as the ME70 echo sounder.
 - 13 In the SVP Editor the **File** → **Send primary SVP to echo sounder** is not yet operational.
 - 14 If the database has been deleted, an error may occur if the operator tries to load a survey with a user defined projection. Remember to put the user defined projection back into the database and then open the survey.
 - 15 Remote helmsman. A plan or grid must be transferred before activating a line in order to properly display the activated line.
 - 16 Export of data from SIS. The file SIS_Neptune.rules created when exporting Neptune Rule from surveys logged with EM 3002Dual contains severe errors, and should not be imported into Neptune. All beams from head 2 are misplaced.

Limitations

- 1 When exporting data from SIS, the residue is always 0 if no realtime processing has been done. This is because no best-fit plane is calculated if processing is off, and then the residues are not computed either.
- 2 EM 3000 Dual head. SIS can not operate on head 2 only.

- 3 The Auto reload in the Geographical windows should not be set lower than 10 seconds.
- 4 Absorption coefficient files for all frequencies used by the supported echo sounders must always be available, except for EA 400, EA 600 and EM 121 A. These files are made automatically by SIS for all Sxx datagrams received except for S13, S23, S33, S43 and S53. When using these latter datagrams it is the responsibility of the operator to supply data for all frequencies, see the Operator manual for more information.
- 5 Remote datagrams R11 and R13 are not implemented. Also the parameters ROP, SID, PLN, PLL and COM defined in the remote datagram format definition are not used with one exception; PLL is used in R12.
- 6 Running many overlapping lines with high density (EM 3002D, approx. more than five lines at 20 meters depth or shallower) with small grid cell size (less than 50cm), may cause the update of the grid and realtime depth to lag behind the ship symbol.
- 7 A popup box saying that the GridEngine is not running seems to appear even when the GridEngine is working properly. Please verify that no data is coming from the GridEngine (zoom or pan in the Geographical window) before taking action.
- 8 Helmsman's display. If a new survey is created in SIS the operator has to chose transfer grid in the planning module to get the new survey displayed in the Helmsman display.
- 9 When using the program CSV2ASVP to convert SmartTalk csv-files to .asvp sound speed files, note that csv2asvp will fail if the csv-file from SmartTalk is not formatted correctly. The operator may have to edit the csv-file manually to remove invalid lines.
- 10 C-MAP background maps in Geographical Window may cause SIS to crash under these circumstances: If a projection other than Mercator is used, that projection may be defined in a limited geographical area (an UTM projection is such a projection). At startup, SIS may receive a position datagram at the geographical position 0,0 where the projection may not be valid. If C-MAP is in use, SIS may hang and must be restarted. The same can occur if SIS receives an invalid position during logging. To avoid this, enable the spike filter for positions in the Database parameters (**Tools**→**Custom...**→**Set Parameters**), or do not use **Follow ship** in the Geographical window.
- 11 When using GGA_RTK alarms may not occur if RTK reference signals are lost.
- 12 Day/night modes have been improved, but are not finished yet.
Some graphical elements are still not converted, this concerns e.g. icons in the file and directory selection pop up frames and programs/functions started from **Tools** →**Custom** menu etc.

Grid Engine

The Grid Engine and SIS communicate on the network. On Windows the name of the PC running SIS is put into the PC host file to get the communication work well. In order to avoid problem with enabled network cards that are not in use. On Linux any unused network cards must be manually disabled.

The Grid Engine uses two different grids, one called Processing grid and the other is called Display grid. The Processing grid has a user defined resolution of its grid cells, and the user must define how many cells to keep in memory at one time. This is done by specifying the number of grid cells in x and y direction for the Processing grid. A maximum of nine Processing grids are then stored in memory at any time.

The Display grid is what the user actually sees. The Display grid is organized in a hierarchical tree structure called levels. The grid cell size of Level 0 of the Display grid is the same as the grid cell size of the Processing grid, so Level 0 Display grid will display everything from the Processing grid. Level 1 in the Display grid is computed from four grid cells of Level 0, Level 2 is created from four cells of Level 1 and so on. All this is taken care of by the GridEngine.

In the SIS operator manual the advice for the grid engine parameters are: “The parameter Grid Cell Size multiplied with the number of Grid Cells should then be approximately the expected swath width”. For a survey with changing swath width the maximum swath width should be used when covering a large survey area. If surveying a small area with a moderate amount of data a smaller value can be used for the grid cell size and in this way achieve a more detailed grid.

A large survey area can be divided into smaller areas. Copy the files from the previous survey track folder, `\sisdata\grids\"survey name\"\tracks` to the new survey tracks folder. In this way the coverage files shows which areas that are already surveyed.

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