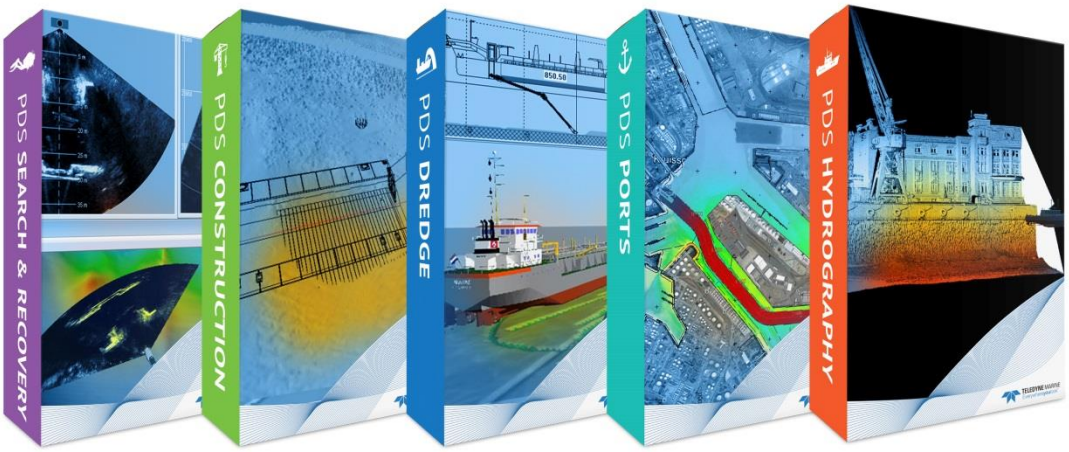
Frequently Asked Questions

Teledyne PDS

Version 1.0.14

April 2020



TELEDYNE PDS

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Amendment Record Sheet

Rev.	Date	Reason for Modifications
1.0.14	10/02/2020	Acquisition: Item added: Error message 'Failed to connect to Control Center' when starting Acquisition. Add chapter Backscatter Processing. Cutter dredge – Item visualize spud added. Grid Model editor: Add item editor doesn't open anymore. Add chapter: Installation. Acquisition: Add item VCOMP140.DLL error message. Editing: Add item Import post-process GPS data. Performance: – Item network overload between the RESON SeaBat processor and the PDS computer. – Item open right click menu on touch screen Export control disclosure added.
1.0.13	15/08/2018	Wire Crane – Item Multi-turn sensor added. Excavator – Item Tool fields required to define a bucket added. – Item Tool field used to scale standard bucket shape added. – Item support Excavator with extendable stick Cutter dredge: – Item Runlines added. Acquisition: – Item Disable alerts pop up added. Configuration: – Item Units added. – Item setup PDS for a single beam survey added. – Item setup PDS for a multibeam survey added. Charts: – Item how to create a GeoTIFF from an image added.
1.0.12	25/05/2018	Project – Item Corrupt Project.prj file added.
1.0.11	02/01/2018	Grid Model – Item depth annotation added. Geoid Model – Item geographic geoid model added.
1.0.10	15/05/2017	Multibeam – Item Kongsberg EM2040 added. Logging – Item s7k file added. Logging – Item multiple SVP's added. Performance – Item PDS Control Center added. Sound velocity – Item multiple sound velocity profiles added. Multibeam – Item 'How handles PDS the RESON dual intgrated head' added. Projects item added.
1.0.9	24/02/2017	Minor textual changes.
1.0.8	23/09/2016	Clock Synchronization – Add several items.
1.0.7	14/09/2016	Configuration – Item 'chainage' added. Configuration – Item 'Display cursor location KP and offtrack' added. Performance – Item 'Not possible to start Realtime due to empty ACF file' added. Timestamps – Item 'Values timestamps' added. Performance – Item 'data rate POSMV driver' added.
1.0.6	22/09/2015	Item added Logging. Item added Configuration.
1.0.5	26/08/2015	Item added: Multibeam reports. Item added PDS night colors.
1.0.4	07/07/2015	Item added: Replay.
1.0.3	14/06/2015	Updated the manual with new items.
1.0.2	11/04/2015	Logging added.
1.0.1	01/10/2014	Modified text S-57 as it is now available in PDS2000. Introduction: Link to instruction movies added.
1.0.0	18/02/2013	First version of the FAQ Manual.

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1 Introduction

1.1 Frequently Asked Questions

The Frequently Asked Questions are from clients that have questions about matters related to Teledyne PDS or sensors interfaced with Teledyne PDS.

In this document the questions are divided into different chapters.

This manual is also available as a HTML Help file. Press F1 or select *Help* > *Help Topics* to open the Teledyne PDS help files.

Teledyne PDS Instruction movies are available on the Teledyne PDS YouTube channel. Watch Teledyne PDS instruction movies.

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2 Frequently Asked Questions

2.1 Installation

2.1.1 The installation wizard does not continue after pressing the Next button.

Check in the taskbar there isn't a dialog activated which is hidden behind the shown dialog.

In the next example we see another dialog is activated. Click on this dialog and continue the installation.

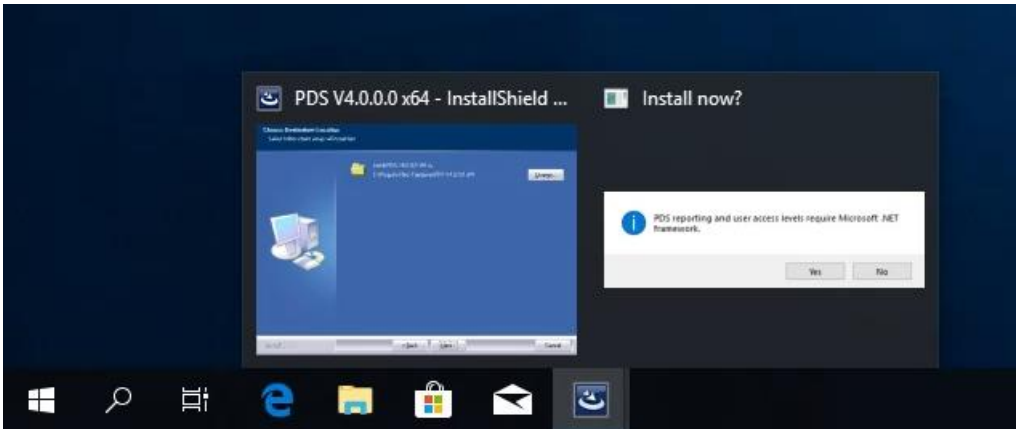

Figure 2-1 Taskbar

2.2 Acquisition

2.2.1 How can I see in the Plan View – Survey Coverage the surveyed area in colors?

In the real time mode the multibeam data has to be logged to a grid model. Before that can be done, select in the Logging page as file format 'PDS Grid Model', select or create in the section below the grid model in which should be logged and add the multibeam data to the 'Data for grid model logging' section. All three steps are indicated in the picture below. Make sure that the file format 'PDS Grid Model' is checked!!

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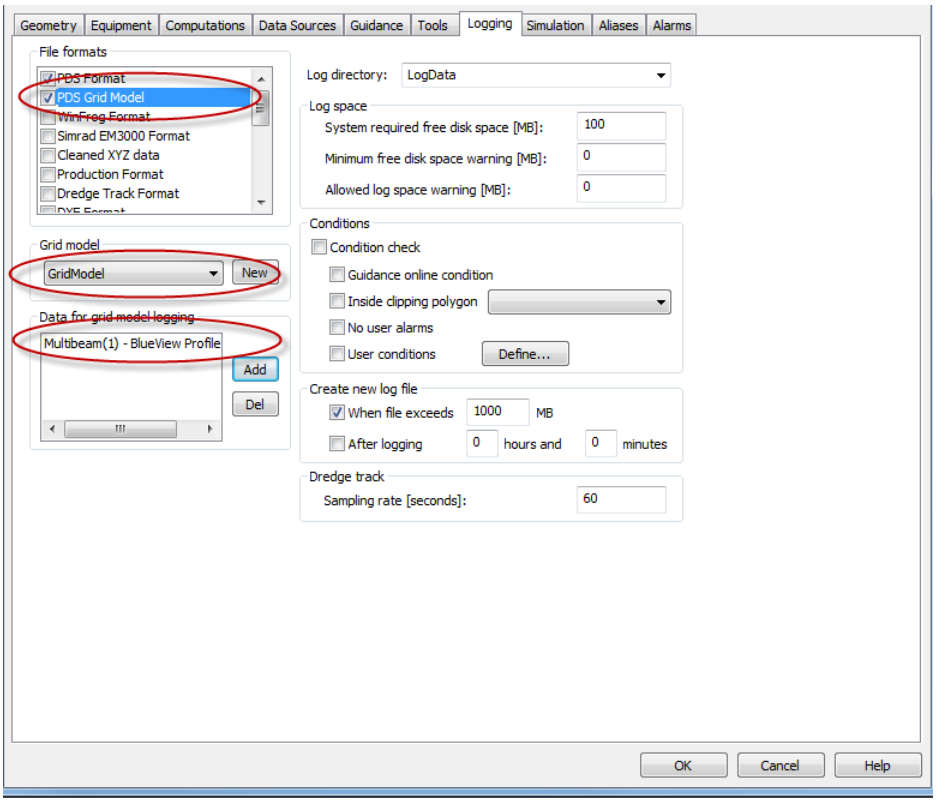

Figure 2-2 Logging page

In the Acquisition, select in the Toolbar of the Plan View – Survey Coverage the Coverage Settings ( ) to open the coverage settings for the view. Check in the Coverage Settings the Grid Model to display the grid model in the view and select a color table for the Z values in the grid model. The hitcount and standard deviation will have their own color table.

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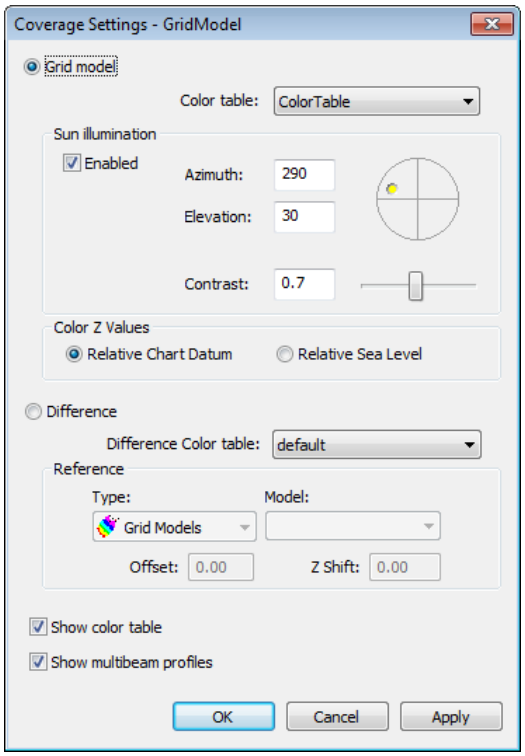

Figure 2-3 Coverage Settings

The different available color modes for the grid model can be selected in the toolbar of the Plan View – Survey Coverage with the option Grid Model Color Mode ( ).

2.2.2 How can we see a speed and heading vector in the plan view?

In a plan view it is possible to show the speed and the heading as a vector.

Open from the layer control the vessel layer properties. Change the outline value into *'Heading and speed vector'.* See Figure 2-4.

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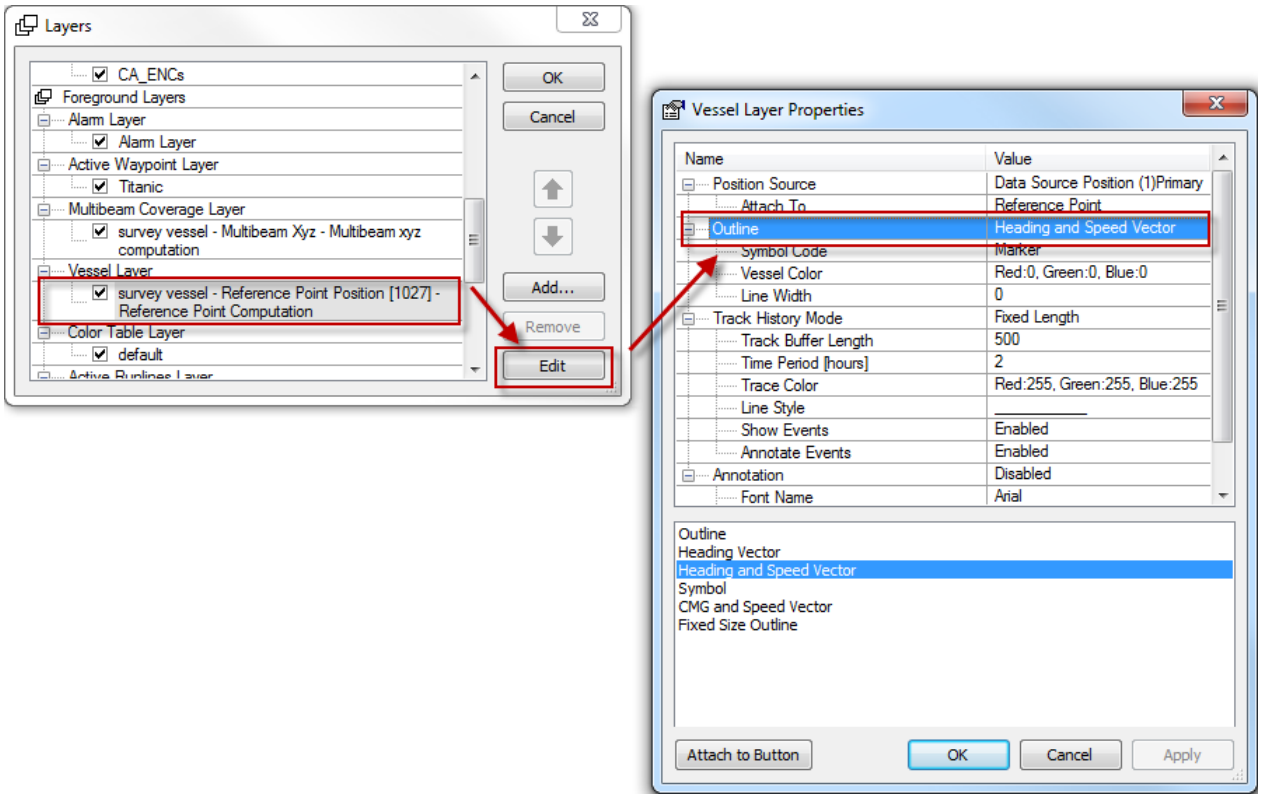

Figure 2-4 Outline

It is also possible to add an additional vessel layer with the outline set to *Heading and speed vector*. On this way it is possible to show both the vessel shape and the Heading and speed vector.

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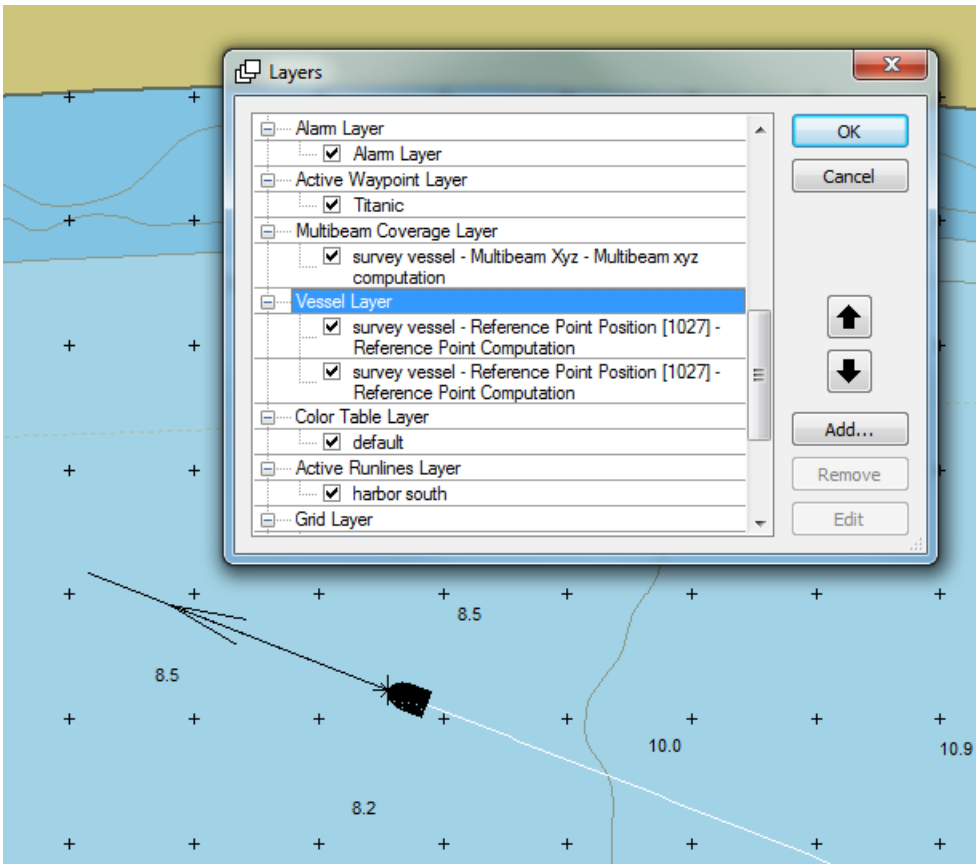

Figure 2-5 Two vessel layers.

2.2.3 We have to wait a long time before the color table editor or any other dialog box opens when in Realtime mode.

The computer gives priority to data collection and recording applications. Depending of the computer performance this can cause other applications as dialog boxes does not open or only open after a certain time.

Press the <ALT> button to give priority to the called dialog box.

2.2.4 The PDS night colors do not function correctly.

In order to have correct night colors the Windows 7 theme must set to windows classic. Right click at the desktop and select Personalize from the opened context menu.

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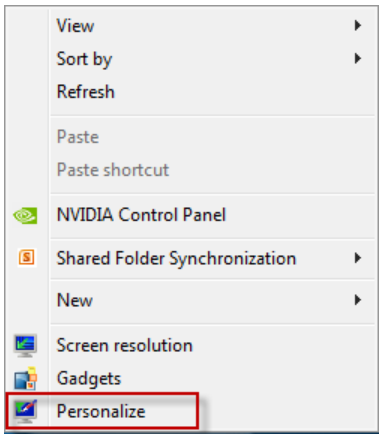

Figure 2-6 Personalize

Select as theme windows Classic.

Figure 2-7 Windows classic

The PDS night colors are correct.

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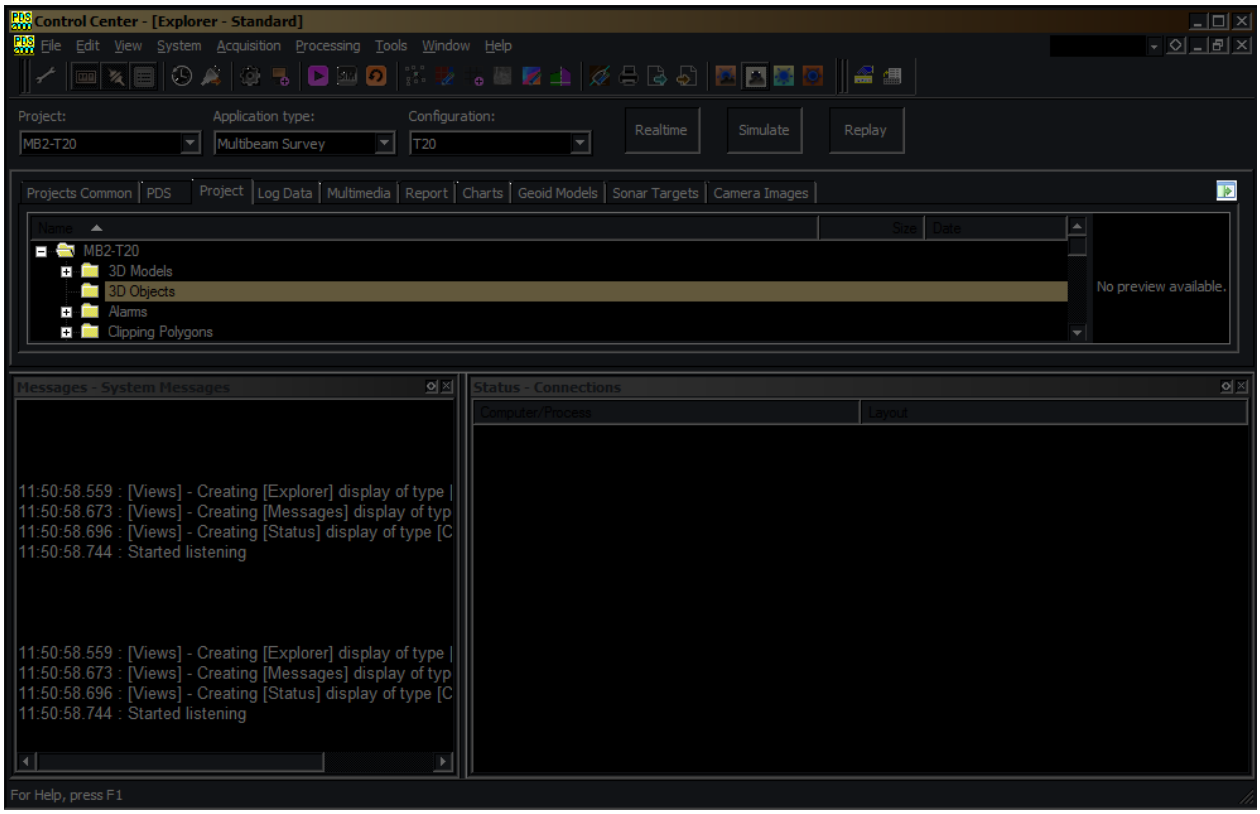

Figure 2-8 Night colors

2.2.5 How can we display the KP and offtrack of the location of the cursor?

1. Open the properties of the plan view.

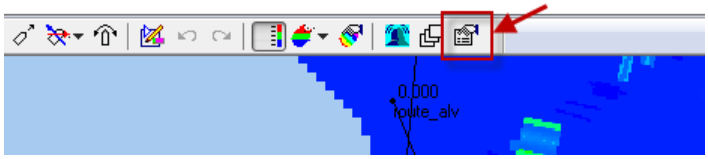

Figure 2-9 Plan view properties

2. Enable the ‘Show route coordinates in frame’ attribute.

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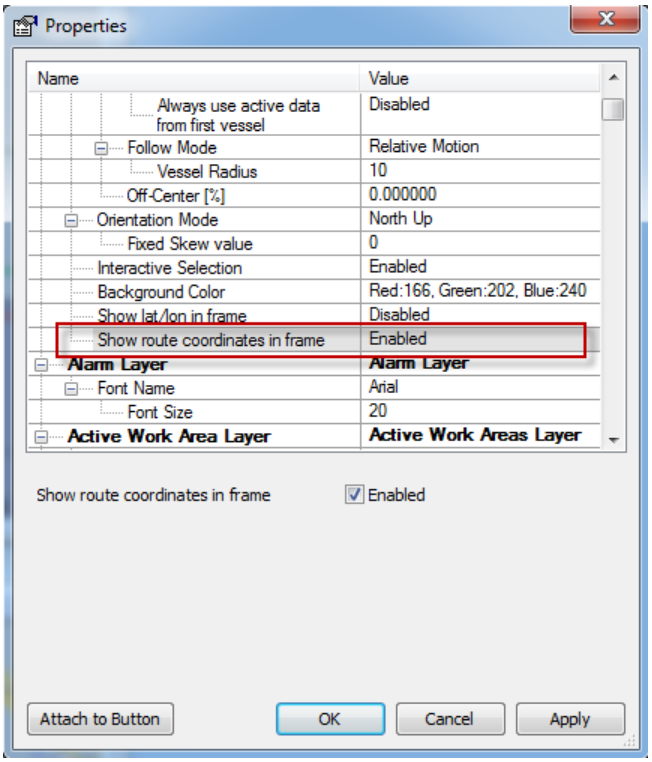

Figure 2-10 'Show coordinates in frame' attribute

3. The KP and offtrack position of the cursor is displayed in the lower left corner of the Acquisition.

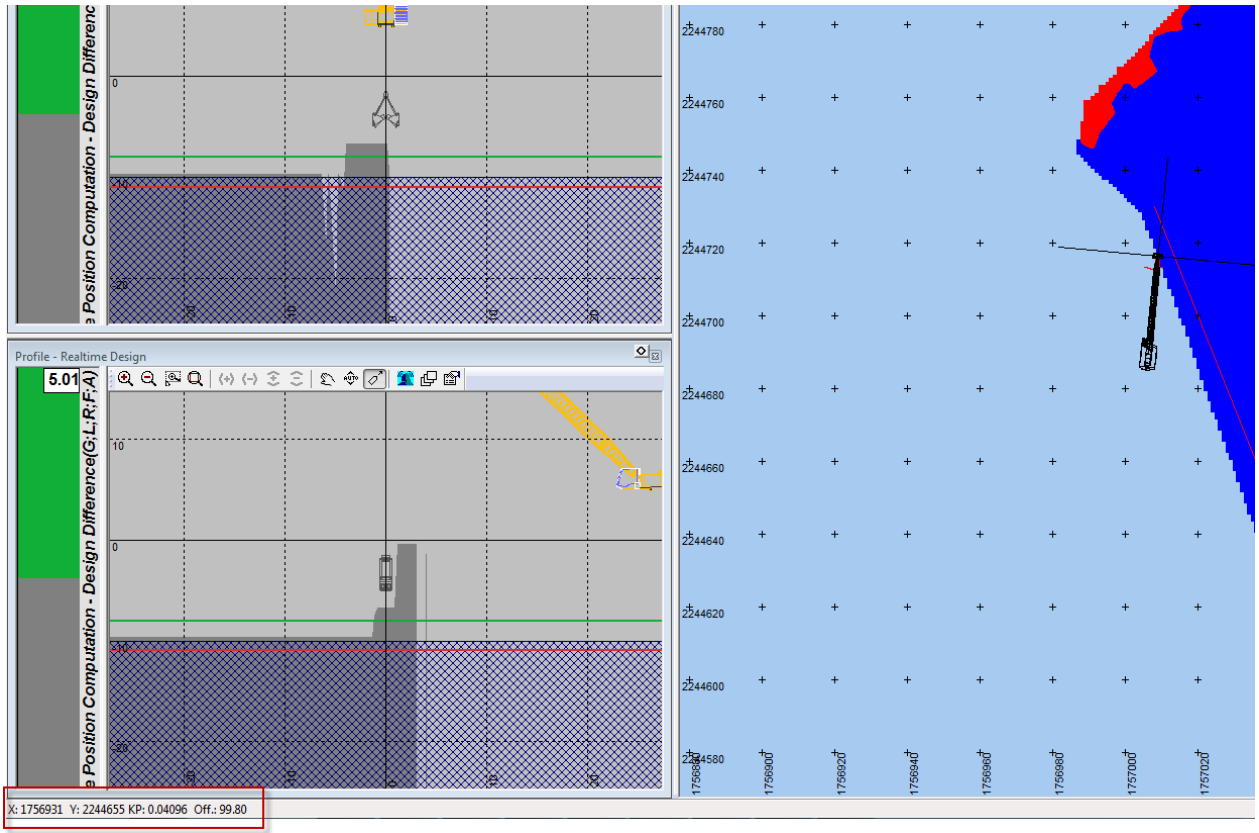

Figure 2-11 KP and offtrack position cursor

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2.2.6 How can we turn off the Alert pop-ups?

Open from the PDS Control Center the **Project Configuration**. Open the **Options** and Disable the Auto-show alerts item.

The Status bar Alert icon will continue to provide alerts but without the pop-ups.

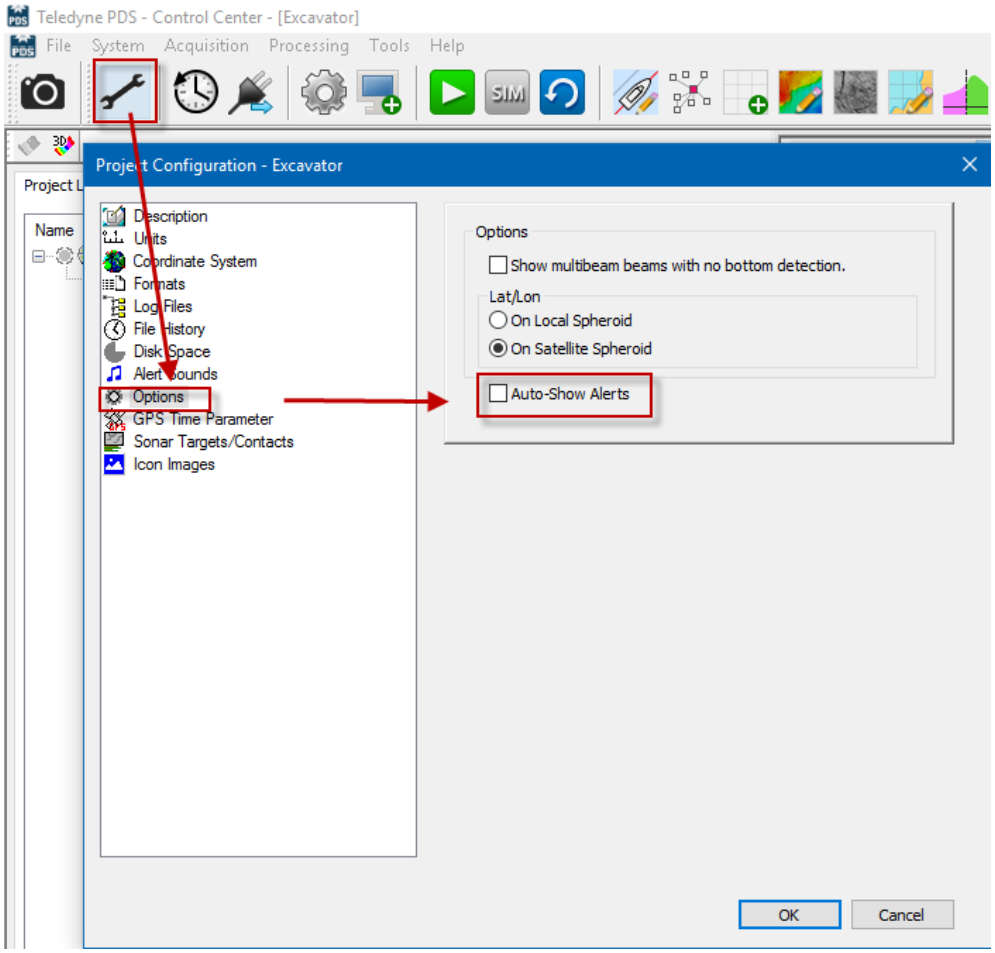

Figure 2-12 Auto Show Alerts

2.2.7 VCOMP140.DLL error message when starting Acquisition

When the following message appears when starting Acquisition:

"VcqComp.exe system error, VCOMP140.DLL not found, code execution cannot continue. Reinstalling the program may fix this problem." then:

Reinstalling does not solve the problem. It seems that the vc_redist.x64 is not complete installed on the target computer.

The installer checks if the vc_redist.x64 is installed, but when it is only partly installed it does not see this.

To overcome the issue go to the folder: ISSetupPrerequisites\{D093EE4D-527D-4CC7-AB3C-DCE3219FA508} of the PDS distribution and start the **vc_redist.x64.exe**, this will install the missing files.

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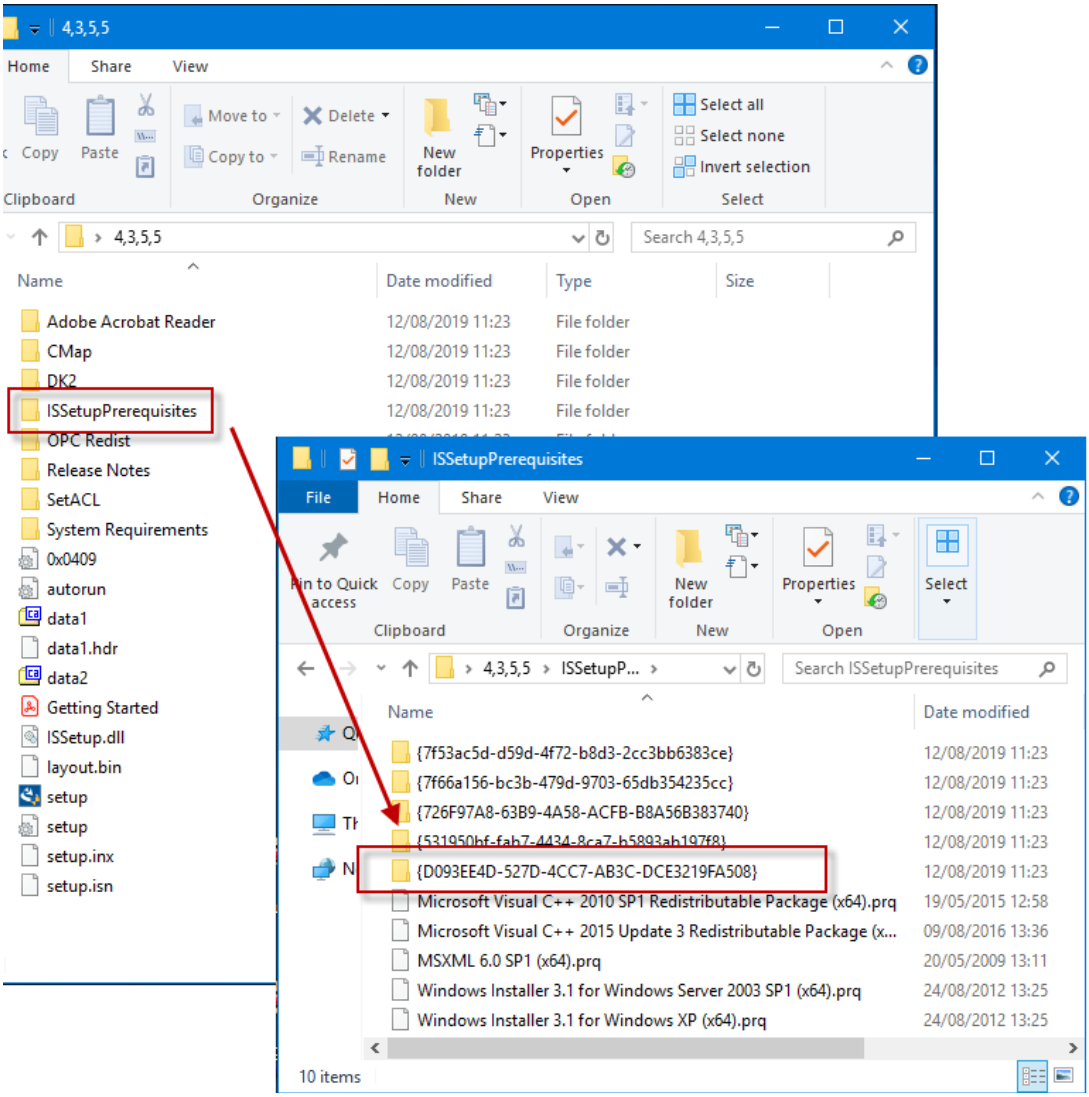

Figure 2-13 SetupPrerequisites folder

2.2.8 Error message 'Failed to connect to Control Center' when starting Acquisition

Failed to connect to Control Center occurs when localhost TCP/IP port 700 is in use by another process.

You can run "netstat -b" to from the command prompt to see the process using the port.

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2.3 Configuration

2.3.1 Can we use the same serial port for a device and clock synchronization?

No, when a serial port is used for the clock synchronization (time message) it is not possible to use the same port in the device setup. It is possible to use the same network socket for the clock synchronization and device setup.

2.3.2 When running RTK fixed GPS what height source should we use and should we disable heave from VRU in the reference point computation properties?

The height source should be set to *GPS height (RTZ).* It is not necessary to disable *heave from VRU* because it will not have much influence as GPS Z is leading. The heave will be used to interpolate between two GPS positions, so it can be enabled.

2.3.3 Our sensor output UDP messages on a socket port. How should we configure the PDS I/O?

See the next picture of the socket I/O Interfacing dialog box.

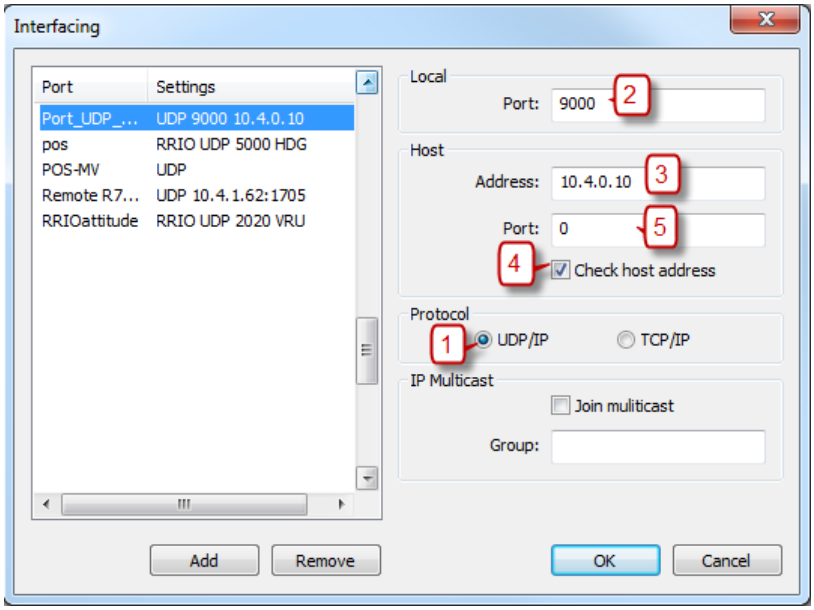

Figure 2-14 I/O interfacing dialog

1. Set the radio button to UDP/IP.
2. Set the port number. This is the data socket output port of the sensor or the sensor software generating the messages. Refer to the sensor documentation to find the specific port number.
3. Set the address. This is the IP address of the sensor or the sensor software generating the messages. When the sensor software

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generate the messages and it is installed on the same computer as PDS than use local IP address 127.0.0.1

4. Select the Check host address checkbox. Only the messages from IP address as set in step 2 are now accepted.
5. Only the host port number is set when commands from PDS are sent to the device. Set in this case the port number of the device on which the commands are received otherwise leave it to 0.

2.3.4 How can we show chainage/station in PDS?

1. Open the Project configuration settings.

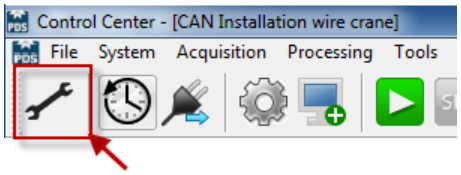


Figure 2-15 Project configuration

2. Set the KP units as 'Station'.

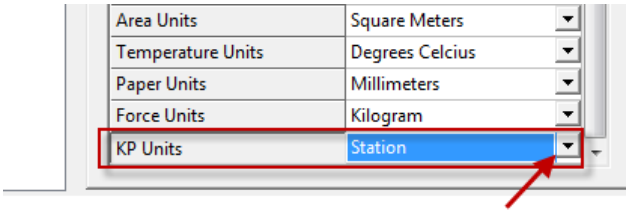
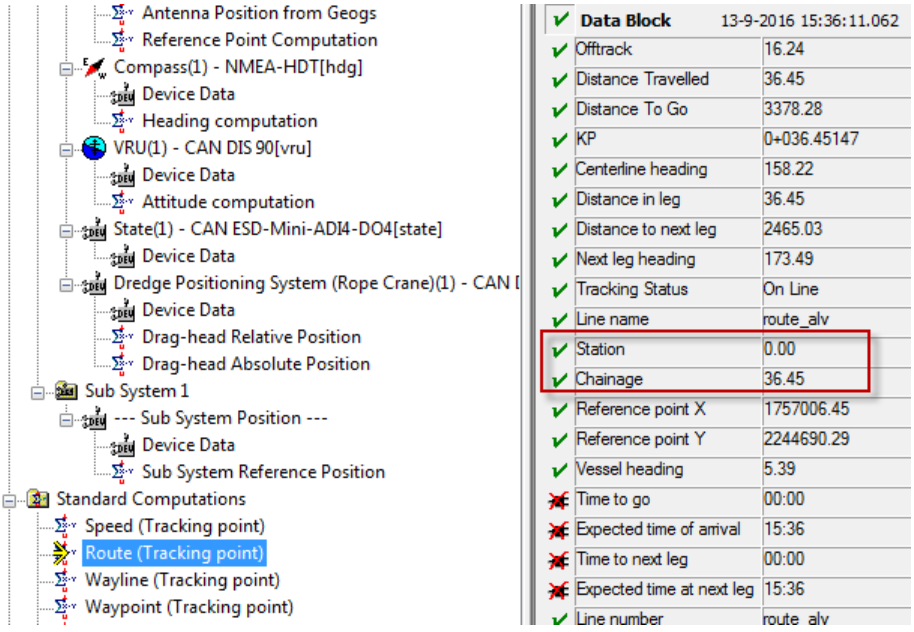


Figure 2-16 KP units 'Station'.

3. The KP value is displayed in Station + chainage mode.

   The Station value is the integer station value and the chainage part is in the chainage value.



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2.3.5 What about units in PDS?

On three places you set units. It is important to set them correctly!

1. In the Coordinate System is the System Unit set. The system unit determines the units used for your offsets, coordinates and others.
2. In the Project Configuration – Units page are the units set used in the views. For example, if you like to show in your display the speed in knots then select knots as the speed units.
3. In the Vessel Configuration – Equipment page. Set the Units for each device the same as output by the device. For example, if your echosounder outputs meters, you should select as units for this echosounder also meters.

See also the Technical Note – Units in PDS. Technical notes are accessible from the PDS Help menu – Manuals item.

2.3.6 How to setup PDS for a single beam survey?

See the single beam manual. Open from the PDS Control Center the Help menu to open the Manuals folder. Application manuals are stored in the Product Manuals.

2.3.7 How to setup PDS for a multibeam survey?

See the Multibeam and Profiler manual. Open from the PDS Control Center the Help menu to open the Manuals folder. Application manuals are stored in the Product Manuals.

2.4 Charts

2.4.1 What type of background charts can be used in Teledyne PDS?

In PDS different types of background charts can be used. Some of them are only supported with an extra dongle or software license.

- **C-Map charts**
  Works only with a C-Map dongle.
  For more information, see ‘Installing and Using C-Map’ in the chapter ‘Installation’ of the PDS User Manual.
- **Tresco charts**
  Works only with a Tresco dongle.
  For more information, see ‘Installing and Using Tresco’ in the chapter ‘Installation’ of the Teledyne PDS User Manual. This format is not supported in the 64bit Teledyne PDS version.
- **S-57 charts**
  Are directly used in PDS; the S-57 charts. Refer to the Teledyne PDS User Manual.
- **GeoTIFF files**

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- **BSB charts**
  Are indirect used in Teledyne PDS; the BSB charts (with extension KAP) can converted to GeoTIFF files in the Explorer.
- **DXF files**
- **Electronic Charts**
  These are charts generated in the old PDS1000 format. This format is not supported in the 64bit Teledyne PDS version.
- **Web map service**
  Web map service such as OpenStreetMap and OpenSeaMap

2.4.2 Can PDS create a GeoTIFF from an image file (e.g. JPG)?

Yes, use the Raster Editor. See the Quick Reference Card – Create a GeoTIFF from an image file. Open from the PDS Control Center the Help menu to open the Quick Reference Cards stored in the Manuals folder.

2.5 Clock Synchronization

2.5.1 Is it possible to use a port in acquisition if also used for the clock synchronization?

If a serial port is used for the clock synchronization then it is not possible to use this port in the Acquisition or any other program.

A network port can be used for the clock synchronization and Acquisition or any other program.

2.5.2 How to setup the clock synchronization? Do you have a description?

See the technical note Clock synchronization with all information. Technical notes are included in the PDS installation – manuals folder. The manuals folder could also be opened from the Control Center Help menu.

2.5.3 Does the RESON 7kIO module synchronize the computer clock?

Yes, this is correct. Use the Sonar User Interface (SUI) to setup the 7kIO module. Use PPS for accurate time synchronization.

2.5.4 Do we need to synchronize the PDS computer when the 7kIO module is setup to synchronize the clock?

No. See the technical note: Clock synchronization. Technical notes are included in the PDS Manuals folder.

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2.6 Doppler

2.6.1 Is it possible to increase the screen update rate with the use of Doppler integration?

The Teledyne PDS Reference Point Computation supports a Doppler integration. This computation can be opened in the Equipment page or in the Raw Data view.

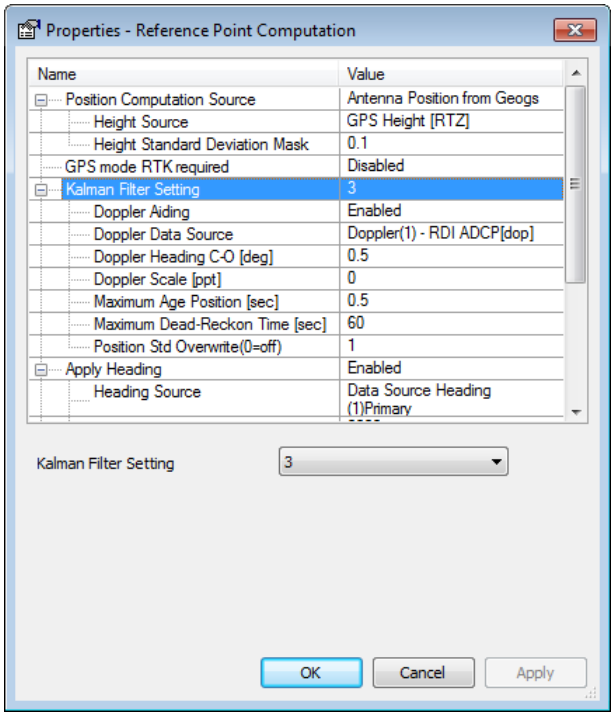

Figure 2-17 Properties of the Reference Point Computation with Kalman Filter settings

The Doppler update starts after the time is passed as set in *Maximum Age Position [sec]*, which is set by default on 2 seconds. When the time is lowered the Reference Point Computation will be updated faster after the position update. This will also depend on the update of the Doppler.
For the Doppler integration the Kalman Filter has to be switched on, select a value for *Kalman Filter Setting*.
Also the standard deviation of the position has to be replaced. This can be done with *Position Std Overwrite(0=off)*. Enter here a standard deviation in m/sec to give it a good weight in the Kalman filter.
In the Plan View and extra Vessel Layer can be added to display the calculated Doppler track. This track can assist in getting the right values for the Doppler scale and heading which can be entered in the Reference Point Computation.

2.7 Echo Sounders

2.7.1 Is it possible to generate events in NCC (Navisound Control Center) that can be logged

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with the data, so that these annotations can be seen in the graphs?

From Teledyne PDS it is possible to send an event marker to NCC that also will be logged in the NCC logfile.
To make this possible an output port has to be switched on in the NCC component. Select in NCC the option Settings to open the settings view of the NCC.

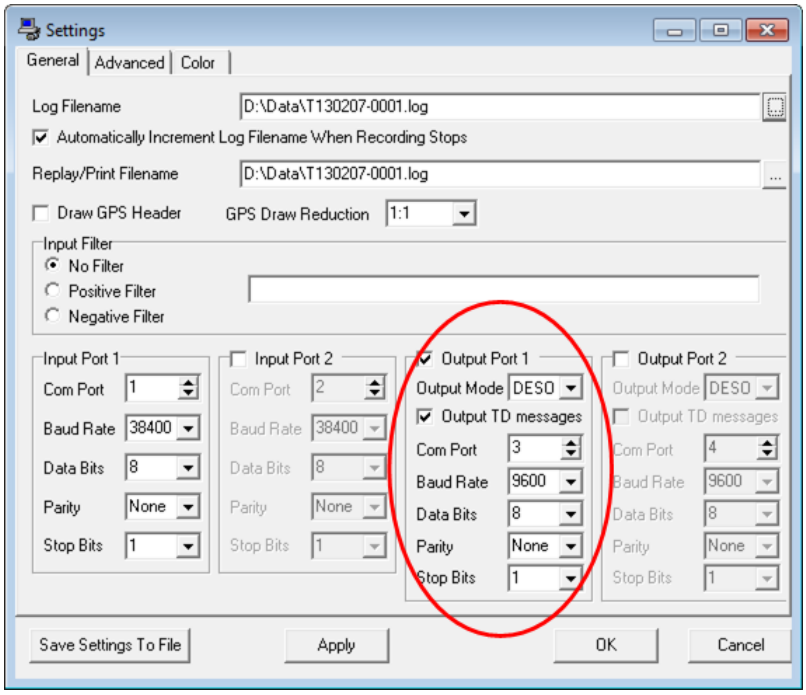

Figure 2-18 Settings view of the NCC

In the example above the Output Port 1 is switched on and check also the Output TD Message.
Add in the Equipment page of Teledyne PDS an Output device with a DESO 25 event output to the port as selected in the Settings view (here Com 3). The results is that the event info is printed on the screen just like it will be on paper.

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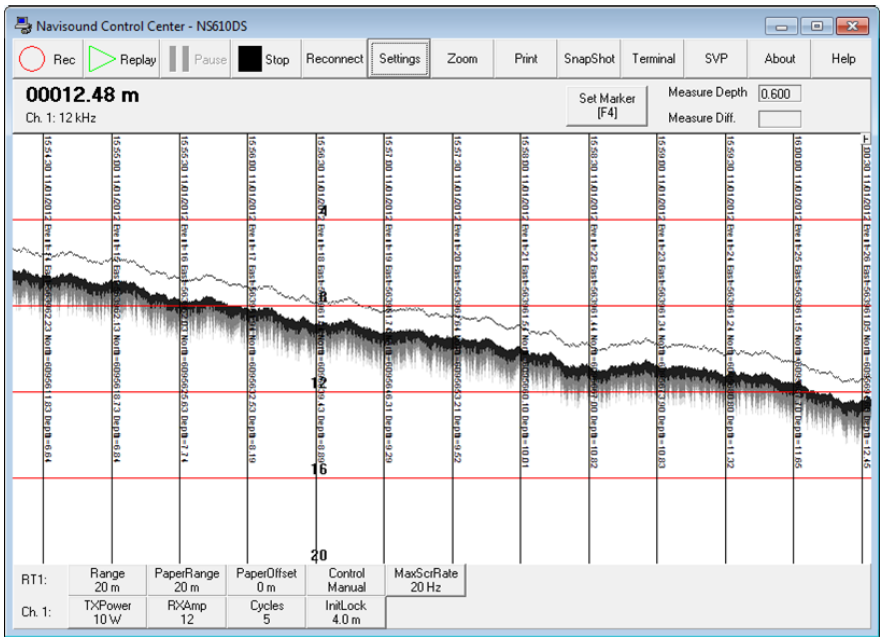

Figure 2-19 NCC with data and event markers

2.8 Editing

2.8.1 The lasso function in the Multibeam Area Editing view does not work properly when in this view the '*Connect beams with lines'* tool bar button is selected.

Check the specifications of the used viedeo card. See the system requirment documentation of Teledyne PDS.

Check the 3D settings of the video card. See page 48.

2.8.2 Can we import post-processed GPS data?

Yes, PDS is able to import:

1. POSPAC data;
2. TempaPOS data;
3. User defined ASCII data;
4. User defined ASCII height correction data.

In the Teledyne PDS Processing utility, open the Tools menu then the Import Post-Processed GPS Data menu item.

Be aware the files contain UTC time.

See the Teledyne PDS User manual for more information.

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2.9 Files Names

2.9.1 What are the limitations of a file name for PDS?

The file name may not contain : \ / : * ? “ < > |

2.10 Geoid Model

2.10.1 How to create a geographic geoid model?

See the Quick Reference Card - Geoid Model with Geographic Coordinates.

Quick reference cards are included in the PDS installer manuals folder.

Open in the PDS Control Center the Help menu and select the ‘Open Manuals folder’ menu item.

2.11 GPS

2.11.1 How do I get a good Reference Z computed in Teledyne PDS?

In Teledyne PDS the only way to get a good Reference Z computed is when in the Reference Point Computation of the Positioning System Geogs device the *Height Source* is set on GPS Height [RTZ]. This computation can be opened in the Equipment page or in the Raw Data view.

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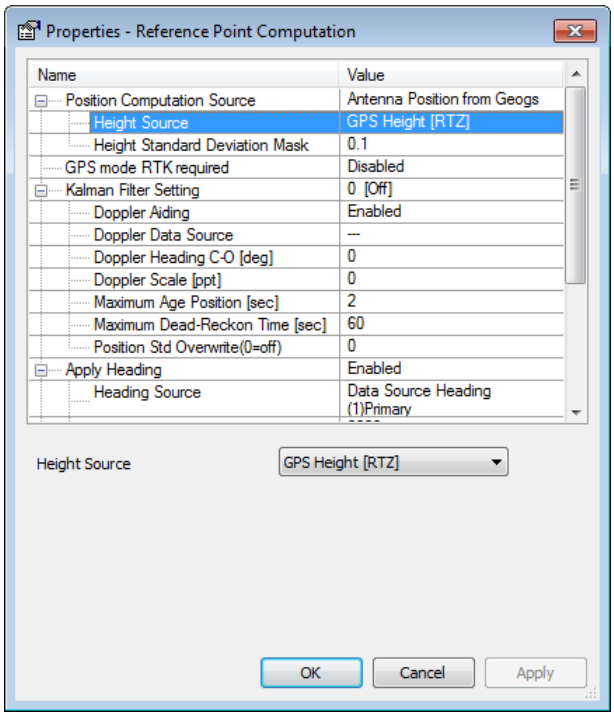

Figure 2-20 Properties of the Reference Point Computation with the Height Source

When in the coordinate system a geoid model is present, then with the *Height Source* on GPS Height the geoid model is also taken into account. If GPS Height is not valid the sea level will be used as level to compute the Reference Z. Select as *Height Source* None or Tide (when tidal data is available) and set in the Geometry page the sea level offset.

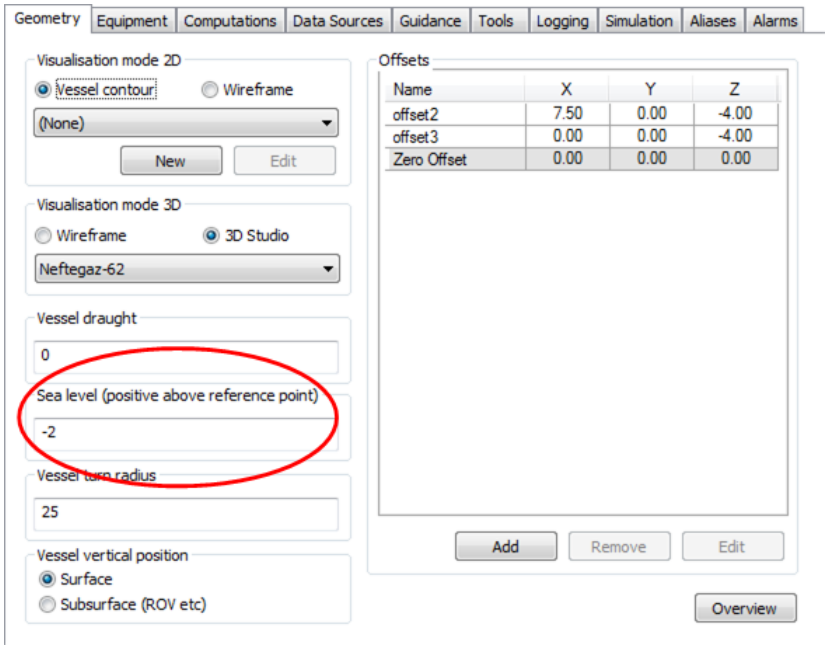

Figure 2-21 Geometry page with the sea level offset set

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2.11.2 For the position input to Teledyne PDS we use a GGA telegram from a differential GPS/Glonass receiver. Sometimes the differential corrections will fall out and the status figure in the GGA telegram will go from 2 to 1. What we need in Teledyne PDS is a sound alarm when this happens. How can we set up an alarm for lost differential correction data?

In Teledyne PDS an alarm can be setup. In the Acquisition with the menu item *Edit* > *Alarms* or from the toolbar with the Alarms dialog can be opened. In this dialog alarms can be defined.

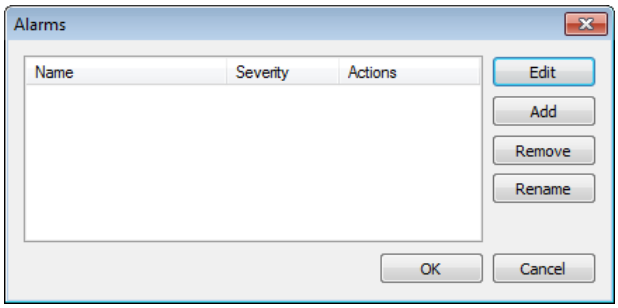

Figure 2-22 Alarms dialog

Add an alarm for the GPS and make an alarm condition on the GPS mode that when the GPS mode is not RTK FIXED anymore an alarm will go off.

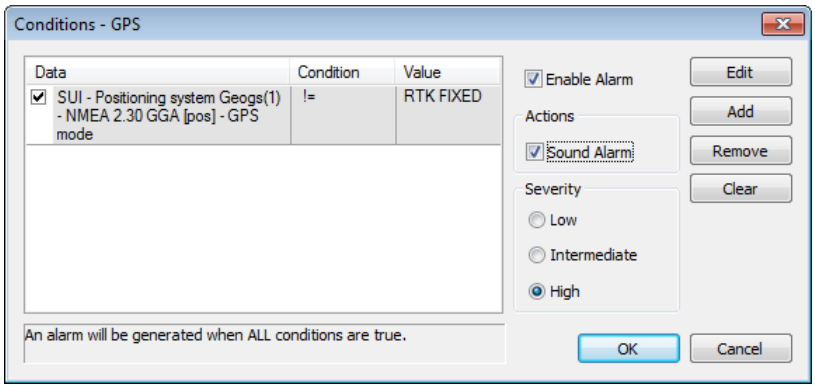

Figure 2-23 Alarm condition on the GPS mode

When you want a sound alarm for the GPS mode alarm, check the option *Sound Alarm*.

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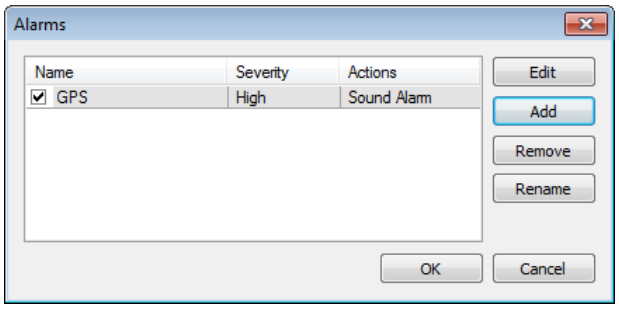

Figure 2-24 Alarms dialog with the GPS alarm

2.12 Grid Model

2.12.1 When I open the Grid Model Editor it takes a long time before the grid model is displayed.

When it takes a long time it means that a lot of data has to be loaded in the editor, this can be background data (C-Map, DXF files, etc.) or a very big grid model with small cell size.
The reason that background charts are loaded when a grid model is opened is because the context menu option *Save as defaults* is used before. With this option all the layers that are opened will be saved, so when a new grid model is opened all layers with their files that are saved will be opened in the editor. This is nice for the user because he don't have to select the layers for the background, runline, polygons, etc. each time he opens a grid model.
When a lot of layers are added and saved with *Save as default* it becomes slower. The only way is to remove all the obsolete layers or remove/rename the filename 'EditorView.upd' in the Teledyne PDS project folder.
If the file is removed/renamed then when a grid model is opened the layers have to be added one by one to get all information in the editor again. Use *Save as default* to save the layout again.

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2.12.2 How can I add Depth annotation in the grid model

1. Open the Layer Properties.
2. Open Grid Model Edit layer properties.
3. Set the annotation type from None to one of the options: Z average, min, max, etc. The available options depends of the data included in the grid model.

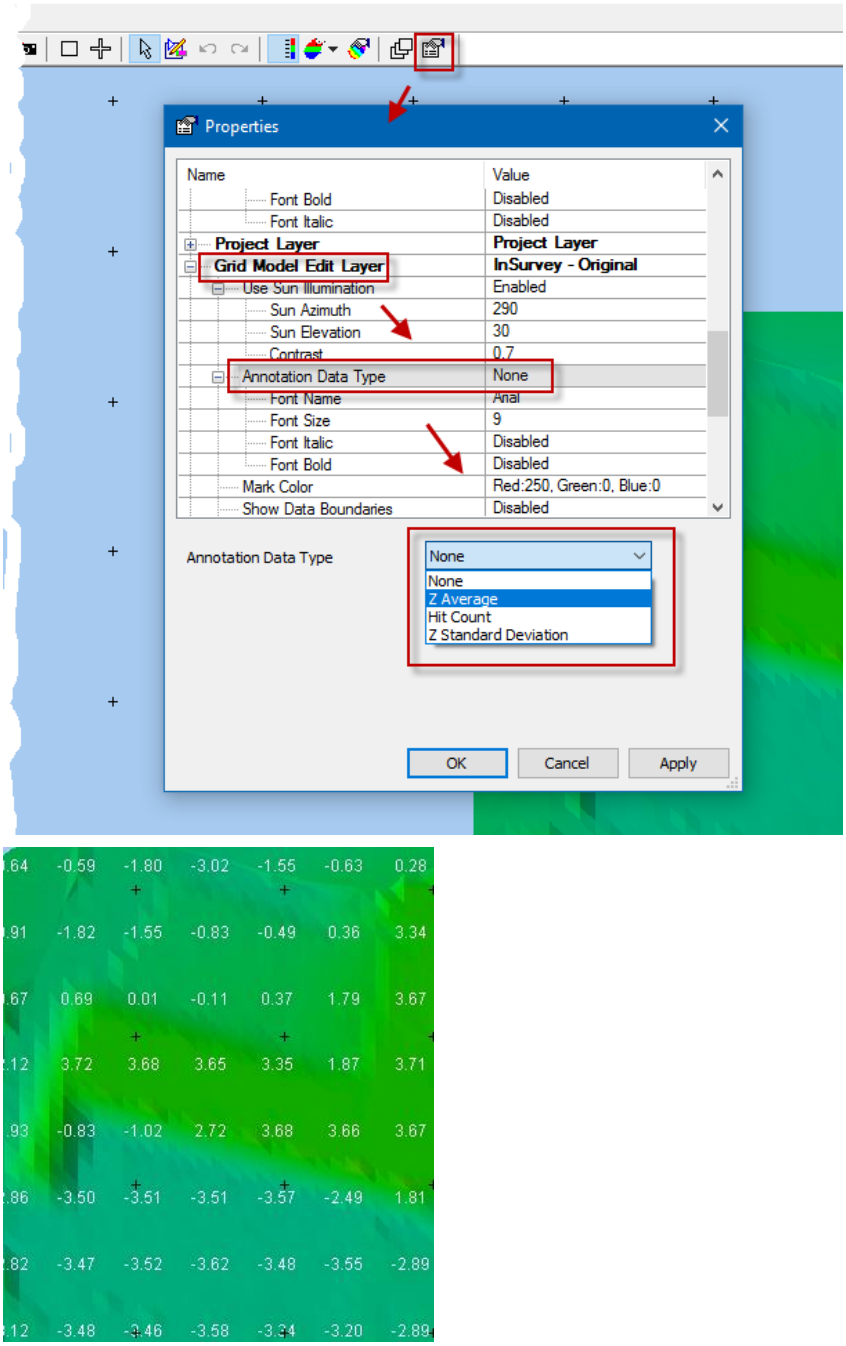

Figure 2-25 Depth annotation

Back to the overview of the Frequently Asked Questions.

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2.12.3 The grid model editor doesn't open anymore

Remove from your PDS Project folder the file 'EditorView.upd' and try again.

2.13 Heave

2.13.1 Where can you see if heave is delayed heave?

In the Device Data of the heave in the Raw Data view it is only visible with the value (in msec) of the Dynamic Delay.
The time of the heave data is the same time as for the other sensors. This time is already corrected for the delay. So there is no problem the interpolate the delayed heave with other sensor data, because is in the same range.
With a delayed heave a closed logfile will still log data for the time of the delay. This is necessary to process the data in that logfile with the right heave.

2.13.2 Is there a driver for the Octans Smart Heave?

This should be a delayed heave driver. The sensor has two different possible output formats, one of them is the PosMV GRP111. This format is identical with the PosMV Ethernet 111 in Teledyne PDS.

2.13.3 How to setup Novatel SPAN roll/pitch/heave driver?

In Teledyne PDS there will be two drivers needed, one for the roll and pitch and one for the heave, because the roll/pitch and heave are outputted on two different ports. Because Teledyne PDS needs roll, pitch and heave from one source, a dependency has to be selected in the heave driver.
First select the vru driver and then the heave driver. Select in the attitude computation for the Roll/Pitch Data Source the Device Data of the Novatel SPAN[vru].

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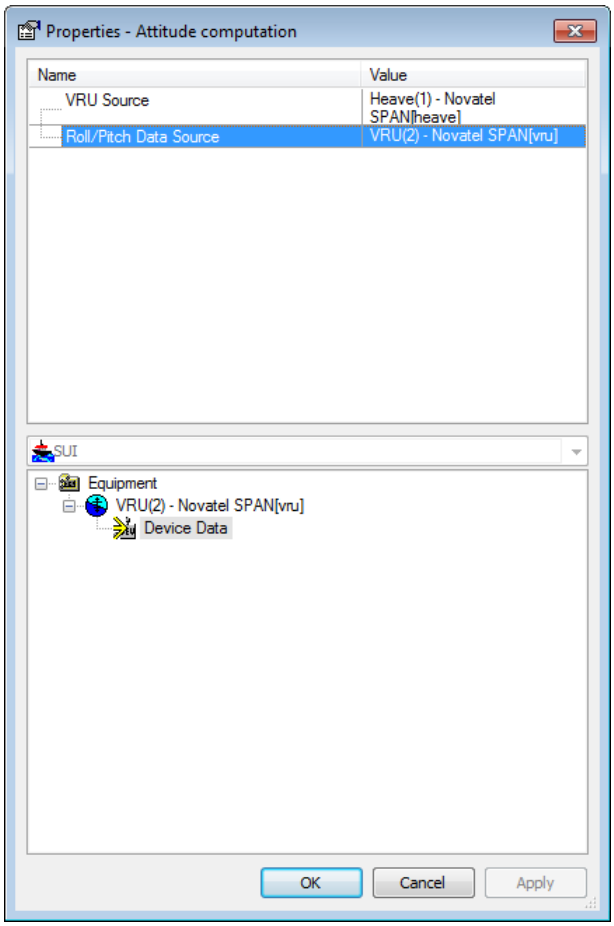

Figure 2-26 Attitude Computation of the Novatel SPAN[heave]

To get everything working make sure that the Novatel SPAN[heave] driver is the primary data source for the Roll+Pitch+Heave.

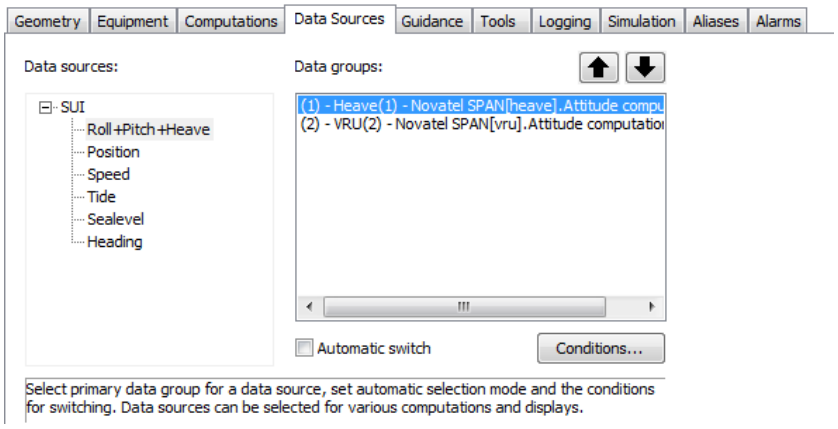

Figure 2-27 Data Sources with Novatel SPAN[heave] as primary source

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2.14 Logging

2.14.1 Why do we have a huge log file size when logging for only 10 seconds multibeam data and using POS MV True Heave?

This is caused due to the use of the POS MV True heave. When Teledyne PDS logging is stopped the system continues to log until all the data for that time is collected. True heave has a delay of 2 minutes (to be exact: 134.9seconds). This means all data is still logged until two minutes after the logging was stopped. This explains a file of 10 seconds still has a huge size.

Example:

Positioning update 1 Hz (every 1 sec)

Heading update 20 Hz (every 0.05 sec)

Multibeam update 15 Hz (every 0.083sec)

R/P update 50 Hz (every 0.002 sec)

See Figure 2-28 in this example the positioning is the latest point, so all data is logged until this point (dark colors)

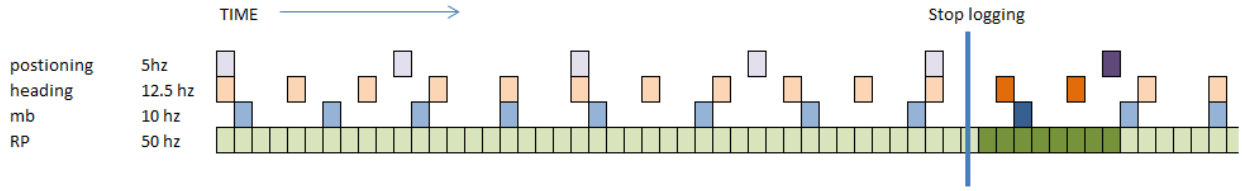

Figure 2-28 Time line when logging stops

True heave is only used during post processing. It is a more accurate heave than Realtime heave. It might be used when RTK is not available and you notice problems with your heave.

Turn it off or remove it from the vessel configuration when not needed. The Teledyne PDS device driver '*POS MV Ethernet 111'* is used to apply True Heave.

From of Teledyne PDS version 3.8.0.0:

- A warning opens when Realtime is closed while delayed heave data is logged.
- Only the Trueheave device data is logged.

2.14.2 Why when logging snippets does the PDS file become double the size as the s7k file and is there a way to reduce the size?

It is possible that a PDS logfile is twice the size of the s7k file because the PDS file contains the processed result of all the observations.

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When you like to have less data: select another beam pattern (Equi-angle instead of Equi-distant) and reduce the ping rate. The final result will be the same, only the oversampling will be less.

.

2.14.3 The LAT/LON position from the s7k file created from the 7k Center and created from PDS are different.

This problem was caused due to a wrong selected UTM zone in the PDS project configuration.

The lat/lon in the s7k file created from PDS are the lat/lon of the vessel reference point and are reverse computed from projection coordinates.

Calculation between the ellipsoid and the projection are only valid within the zone of 6 degrees, outside an error start to develop and when you convert from lat/lon to projection coordinates (PDS internal representation) and then back to lat/lon to make the s7k file the lat/lon will be wrong.

To overcome this problem:

1. Adjust your projection settings in PDS.
2. Open the file in the editor and check that the projection coordinate is right now (due to the projection coordinate change the position will re-cache)
3. Open the export module and export to s7k to create a new s7k file.

.

2.14.4 Is the s7k file logged from the RESON multibeam the same as logged or exported from PDS?

No, there is difference between a s7k file recorded by the RESON multibeam system and a s7k recorded/exported by PDS. The RESON 7k Center is using the sensor data, PDS is using reference point data. See the 7k data format definition document (DFD) and the Teledyne PDS User manual for more information.

.

2.14.5 Does multiple applied sound velocity profiles maintained when the data is also stored in s7k during acquisition or exported?

Yes, the SVP's are maintained in the 7k files with logging and or exporting.

.

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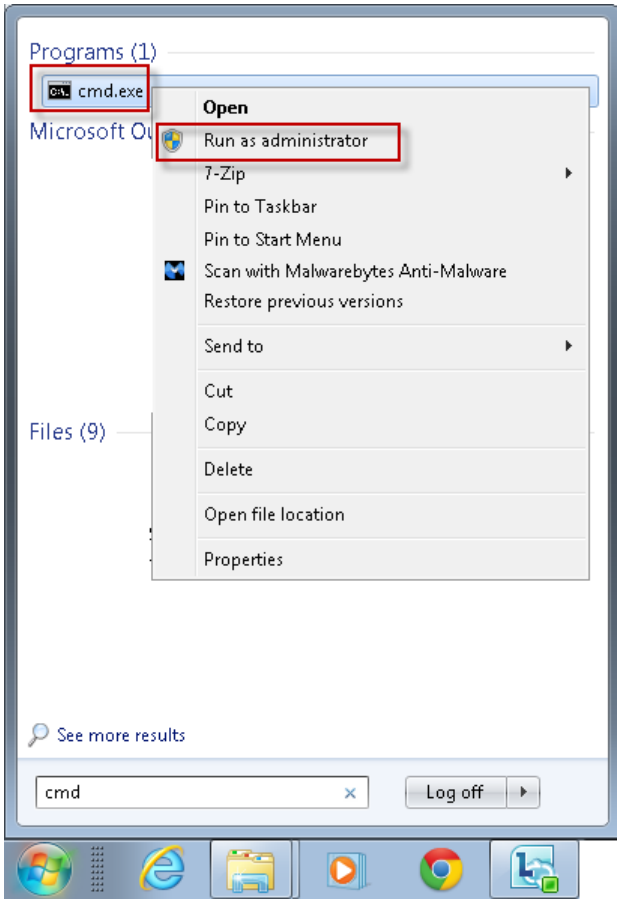
2.15 MotionScan

2.15.1 We are not able to establish communication with the MotionScan, is a other program using the same port?

The MotionScan device use socket 7000 for the communication with PDS. A conflict occurs when another program is also using socket port 7000.

Use the command *netstat –b* to get an overview with used socket ports.

1. Search for the command prompt (CMD.exe).
2. Run the command prompt as administrator.



3. Enter the command: *netstat –b*
4. Check the overview if another program use socket 7000.

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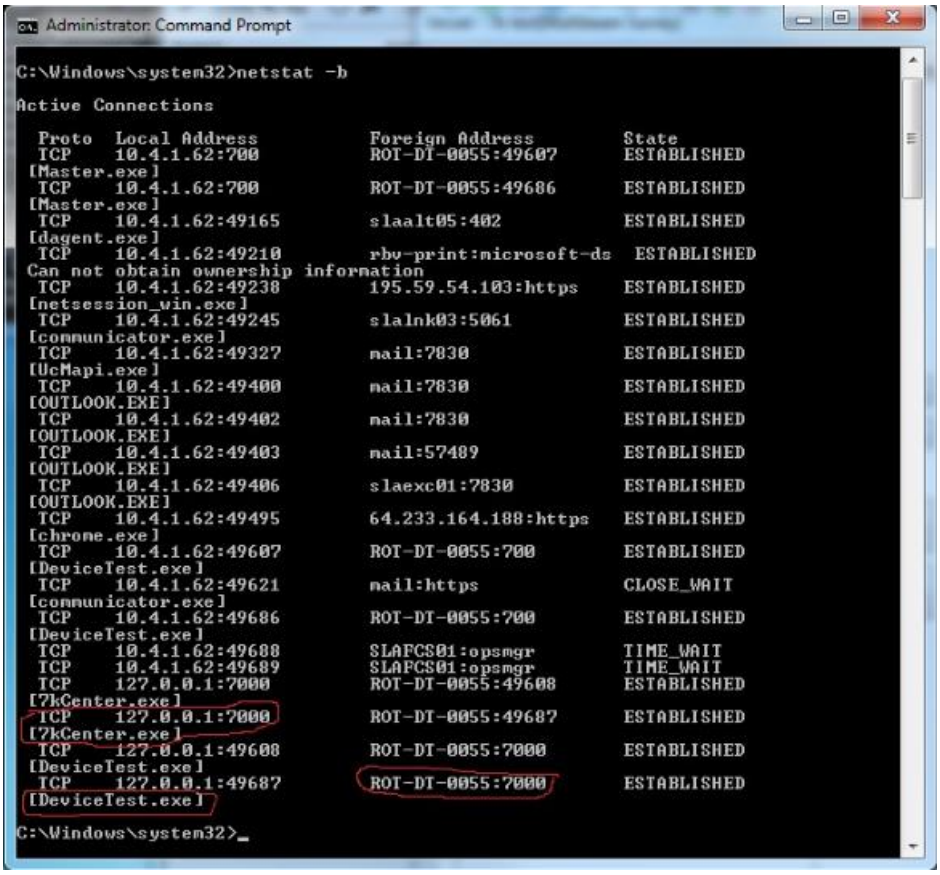

5. Close the program using socket 7000.

2.16 Multibeam

2.16.1 Is there some sort of tool or method in Teledyne PDS to determine the mean bias of the beams?

With the Export in the Grid Model or CUBE tab of the Multibeam Area Editing view a mean bias per beam relative to the Z average is exported. For each beam per ping the difference is calculated with the Z average of the grid model cell. When this is done for all the pings a mean difference per beam is computed. This mean difference per beam is exported in the column SP1 (single ping) of the CSV file. When multiping is available the columns MP1-4 will be filled.

2.16.2 I apply 180 to the yaw angle of the multibeam. How can I apply the 180 degree to the snippets as well?

The snippets is using the mounting angles set in the multibeam device data. This is done in the Snippets Computation by selecting the

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Multibeam Source. When one multibeam is selected in the Equipment list it will automatically be selected in the Snippets Computation.

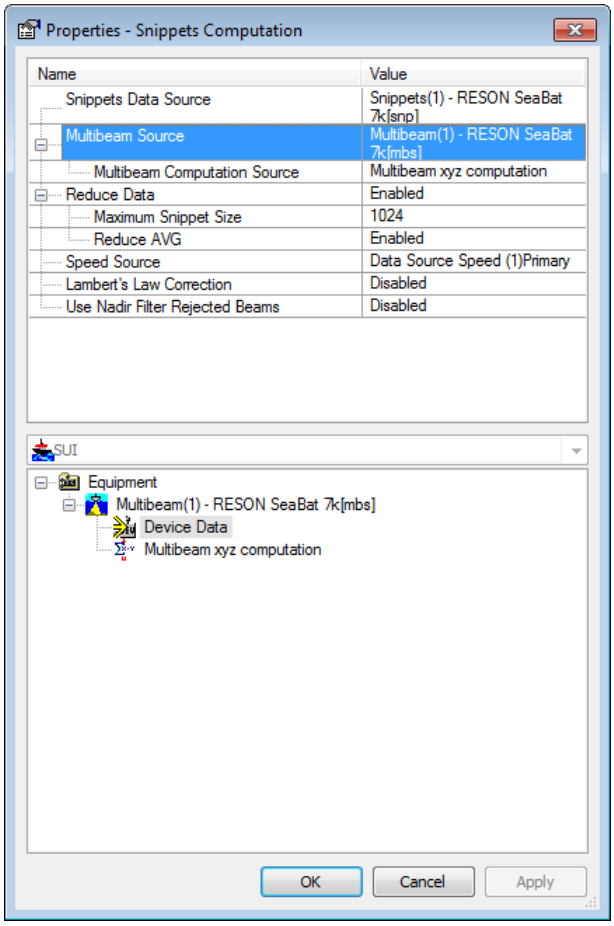

Figure 2-29 Properties of the Snippets Computation with the Multibeam Source

2.16.3 How does Teledyne PDS handle the Tx-Rx offset as set in the 7kCenter for the records 7006 and 7027?

In Teledyne PDS the Multibeam XYZ Computation makes the following decision how to handle the Tx-Rx offset:

- **No correction applied** when Tx-Rx offset is zero and Teledyne PDS receives record 7006 with XYZ compensation On.
- **No correction applied** when Tx-Rx offset is non-zero and Teledyne PDS receives record 7006 with XYZ compensation On.
- **No correction applied** when Tx-Rx offset is zero and Teledyne PDS receives record 7006 with XYZ compensation Off.
- **Correction applied** when Tx-Rx offset is non-zero and Teledyne PDS receives record 7006 with XYZ compensation Off.
- **No correction applied** when Tx-Rx offset is zero and Teledyne PDS receives record 7027.

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- **Correction applied** when Tx-Rx offset is non-zero and Teledyne PDS receives record 7027.

The RESON SeaBat 7111 outputs already corrected data and reports a zero or no Tx-Rx offset.

2.16.4 Do we have to enter the Tx-Rx offset in Teledyne PDS?

Normally Teledyne PDS gets the Tx-Rx offset from the RESON SeaBat 7k and will use this (per frequency another offset). Suppose the offset is entered wrong in the 7k software then Teledyne PDS allows the user to overwrite the offset in the post processing by means of changing the attributes in the Properties of the Multibeam Device Data. So it is better not to enter the Tx-Rx offset in Teledyne PDS unless it is needed.

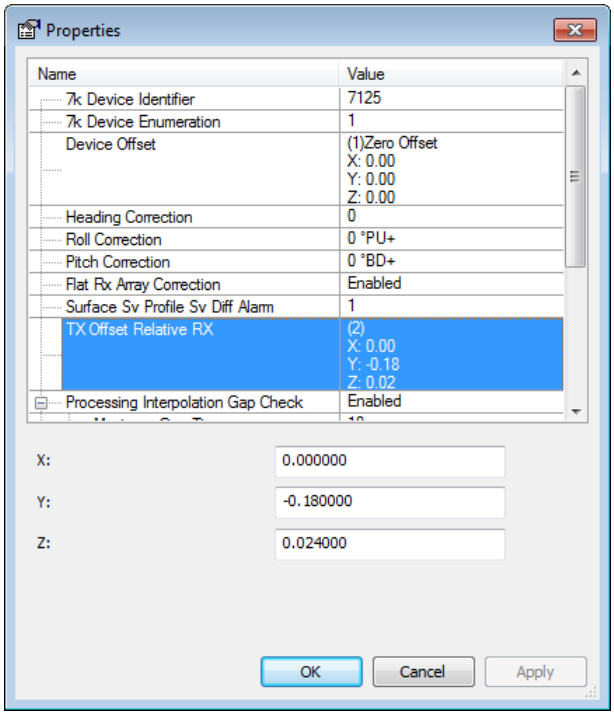

Figure 2-30 Properties of the Multibeam Device Data with the Tx-Rx offset

2.16.5 When the roll stabilization is already used in the RESON SeaBat 7k then what does Teledyne PDS do with the multibeam data?

When in Teledyne PDS for the multibeam the driver RESON SeaBat 7k is used the for the multibeam, data record 7027 will be used. When the driver RESON SeaBat 7k Old 7006 is used, record 7006 will be used in Teledyne PDS.
When Teledyne PDS uses record 7027 it will not check if the roll stabilization is used. Teledyne PDS will use the available raw beam angle data in the record and will apply all corrections needed.
When Teledyne PDS uses a combination of the records 7004 / 7006 with roll stabilization then no roll correction is applied in Teledyne PDS.

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2.16.6 Does Teledyne PDS support the D-datagram for the Simrad EM3000 format?

Teledyne PDS does support the D datagram (44h in Simrad specifications). However there is a limit of the number of beams the datagram can handle (254). With a sonar configuration that produces more than 254 beams the datagram is not supported.
There are newer datagrams which support more beams (for newer sonars). However these have not been implemented in Teledyne PDS at the moment of writing.

2.16.7 Is there a way to start a new log file automatically in the RESON SeaBat 7k software after a limited file size?

In the XML files in the \bin folder in the installation folder of the RESON SeaBat 7k software you can set the maximum file size for 7k files which are recorded in the 7kCenter. By default it is set to 1 GB.

```
<DownLink remote="yes" register="yes">Downlink Commands</DownLink>
<RDR units="Bytes" buffer="10" format="short" maxsize="1024000000" defaultpath="D:\Data\">Raw data recording</RDR>
<StartState swiothrottlems="0" calibrate="yes" udp="on" selected="no" ping="yes" maxpower="0.0">Initial overwrite values</StartState>
<BottomDetection method="G2">BD Method (G1_Simple, G1_BlendFilt, G2)</BottomDetection>
<Warnings IOM="error" PPS="fatal">Warning overrides</Warnings>
```

Figure 2-31 Part of an XML file with the file size of the 7k log file

2.16.8 The travel time from the 7027 record of the RESON Seabat 7101 is that corrected for the radius of the Rx array?

The two way travel time in the 7027 record is from Tx reference point via the reflector to the Rx reference point. This is not the way the real time is travelling through the water but it is a practical value to calculate and it is a measurement between definable points.
In reality the raw travel time to the cylinder cannot be determined because it is different for each Rx element and it will have after beam forming a specific offset. After this a correction is done which can be to each point but a choice is made to do this to a central point, the Rx reference point.

2.16.9 In the Editing I see gaps in my multibeam data while multibeam data is logged.

The gaps can be caused by the fact that in the log data file(s) for that location no valid position; heading or vru data is available.
Another reason can be that the log data file(s) are corrupt. In most cases this can be repair with a tool in the Editing. Select the menu option *Tools > Repair File(s)* and select a repair for the current file or for all the files in the file set. A repair can take a long time especially when the files are big.

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2.16.10 What kind of multibeam reports are available in Teledyne PDS?

1. **Processing Module**:

   a. Menu *Tools* > *Multibeam Statistics report*.

   This creates a report of the file set and the log files as indicated in the next figure.

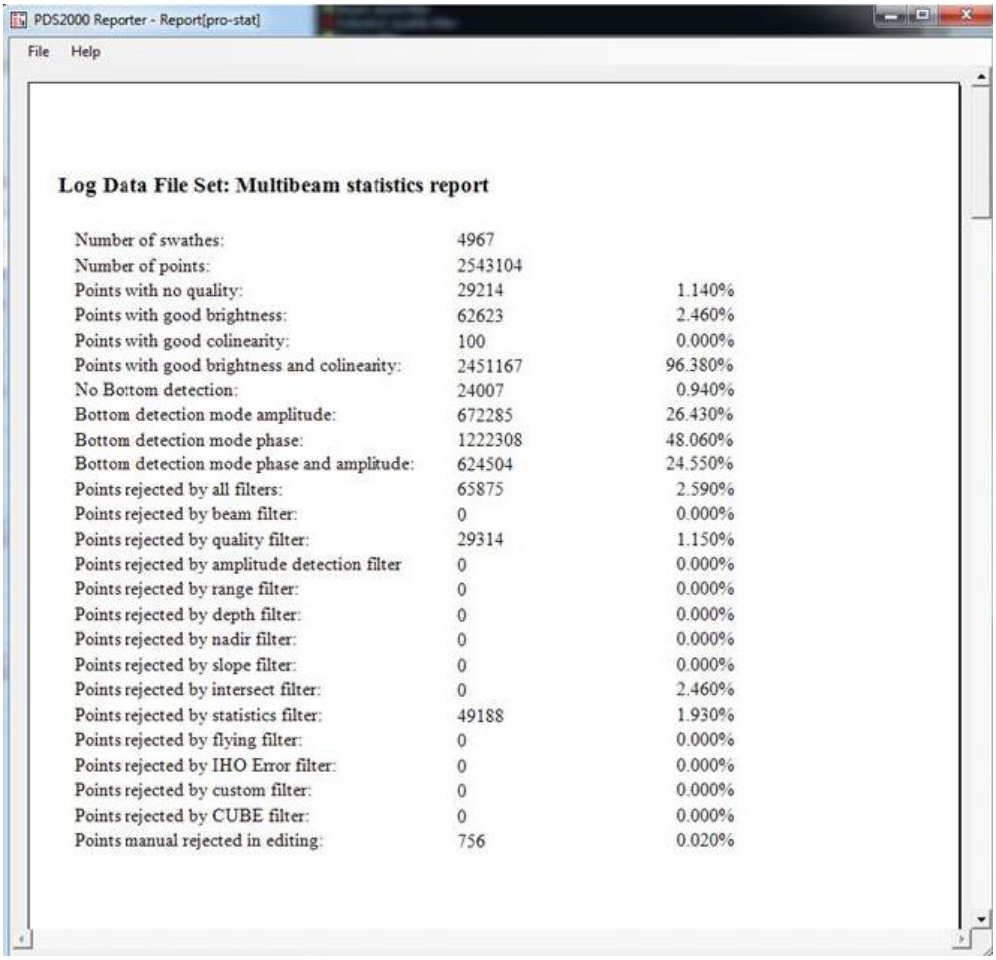

Figure 2-32 Statistics report

   b. Menu Tools > Generate TPE results file.

   This creates a report of the active sway as indicated in the next figure. (See also Teledyne PDS User manual section 16.2.5.12).

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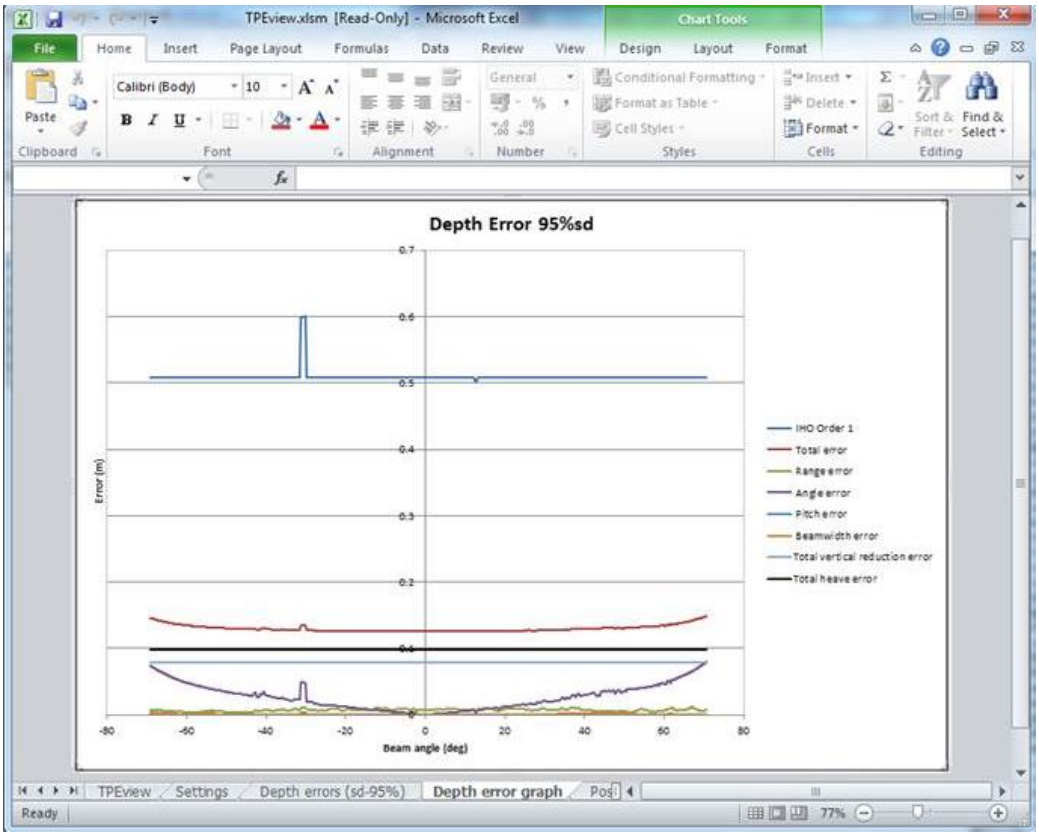

Figure 2-33 TPE results

2. **Control Center**:

Menu *Tools > Sonar Swath*

This creates a report as indicated in the next figure for a selected log data file.

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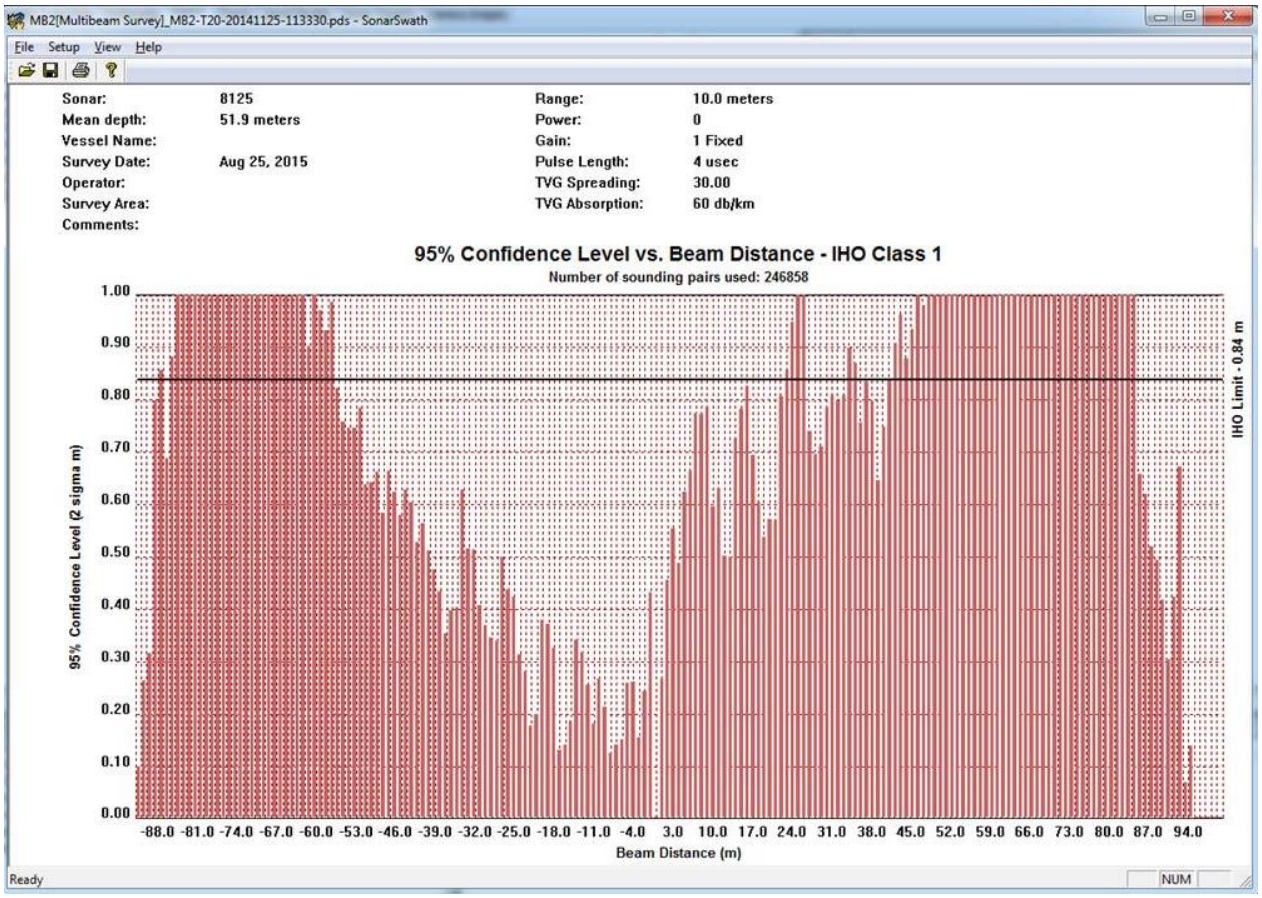

Figure 2-34 Sonar Swath

2.16.11 Does PDS supports the Kongsberg EM2040 multibeam?

Yes. Use the “Simrad-multibeam datadgrams – raw[mbs].dev” driver.

(There is currently no driver for the “seabed image msg 89” and for the water column “msg k” messages.)

The phase reference point of the sonar is in PDS X,Z of the Receiver and the Y of the transmitter.

On a dual head system you need to select 2 drivers and set the sonar head serial number in the device attributes to select the proper head per device.

2.16.12 How handles PDS the data of the RESON dual integrated head?

PDS handles the data of the dual integrated head as two sonars.

Back to the overview of the Frequently Asked Questions

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2.17 Multibeam Calibration

2.17.1 Why do we see differences in our pitch multibeam calibration values, while the error parabola indicates a 'very strong solution'?

In this case the automatic calibration method is used for the multibeam calibration.

After the calibration, the error parabola indicates a very strong solution

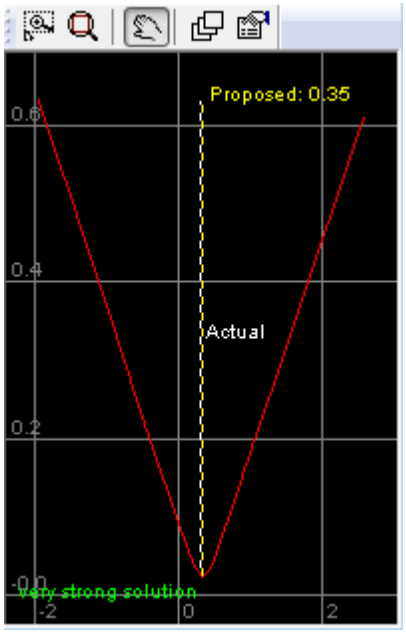

Figure 2-35 Error parabola

It was concluded by the customer when the error parabola gives a very strong solution the automatic calculated calibration value is correct.

This is a **WRONG** conclusion. It **only** applies when:

1. Data as used in the profiles does not contain spikes. (jump in height)
2. The data of the profiles have the same height for the same point.

In this case when analyzing the profiles, a difference in height between the two profiles was seen.

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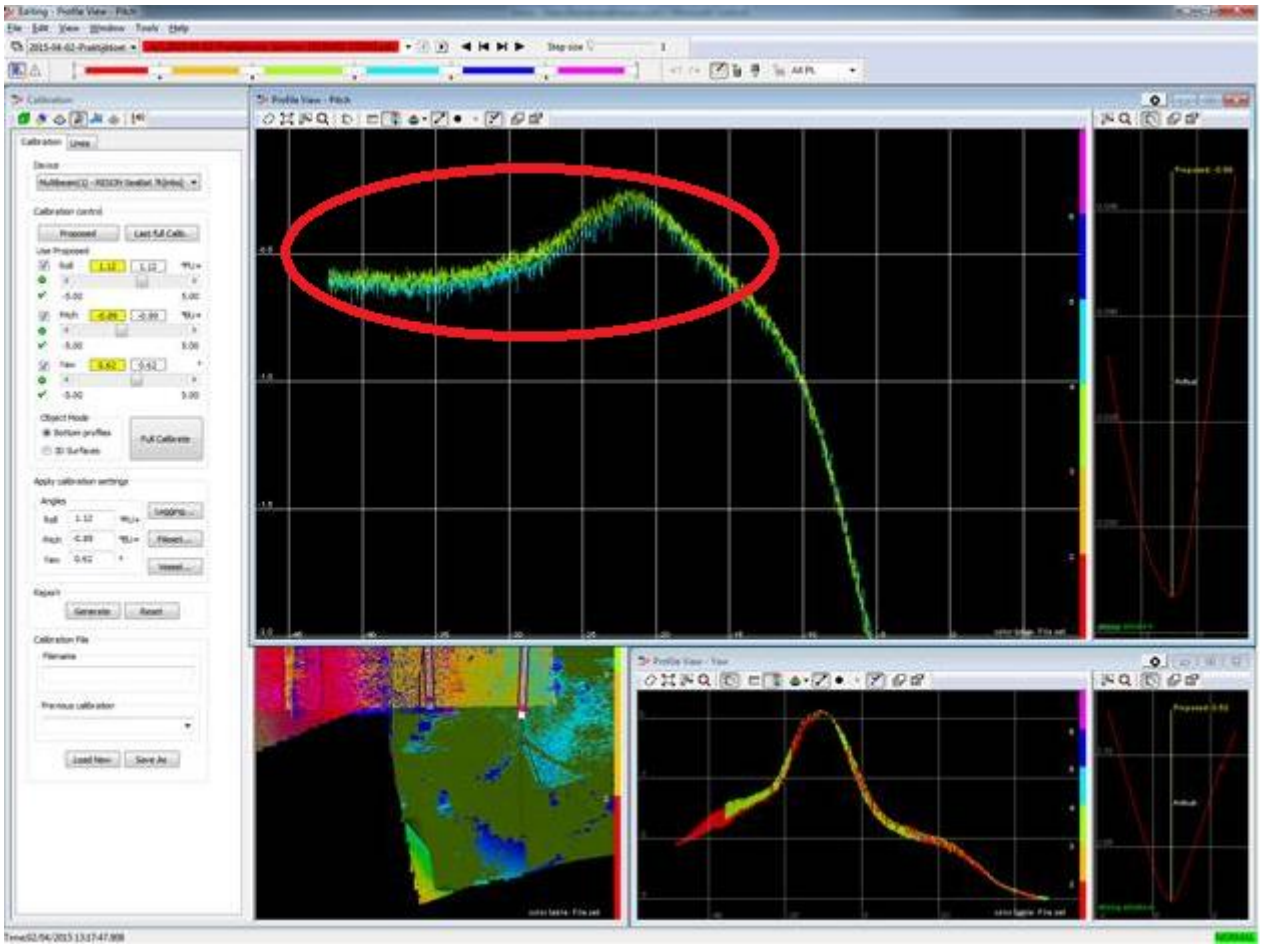

Figure 2-36 Profiles do not match

This means the calibration values must be changed manually in a value resulting in matching profiles (falling on each other). This value is the correct calibration value.

Conclusion: always take a critical look to the profiles as used for the calibration.

2.18 Output

2.18.1 To control the flying of a tow-fish the nadir depth of the mounted sonar can be used. Is there a possibility to output the nadir depth as a single record?

In Teledyne PDS the nadir depth is computed. With the output driver NMEA-DBT the nadir depth can be outputted. After the output driver is added to the Equipment list use Outputs to open the Output Message window to attach the right computation to the depth below transducer. For a multibeam this should be the Multibeam xyz computation.

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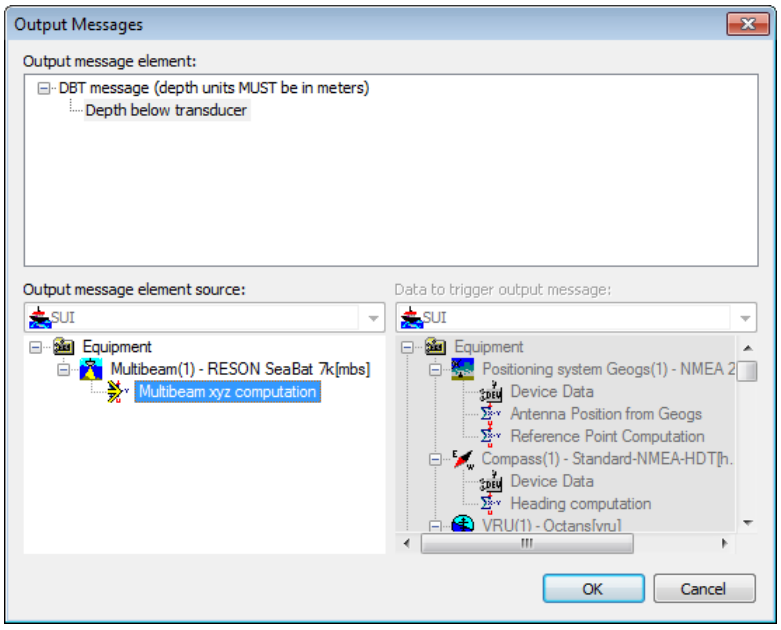

Figure 2-37 Output Messages window with Multibeam xyz computation attached to 'Depth below transducer'

The frequency of the output depends on the update rate of the multibeam system. In principal the output follows the ping rate.

2.18.2 How do I get a high speed output?

The output rate is depending on the input rate of the data related to the output. An example of the settings of an input driver is:

```
[General]
SyncMode=0                  //Sync on terminator
SyncCount=1                 //Sync length
SyncString=10               //Sync character is linefeed
DataRate=20                 //Maximum expected data rate is 20 Hz
TimeOut=5.0                 //Maximum time out is 5 seconds
NumberOfMessages=1          //Number of messages defined in this file
AlwaysNotify=1
```

When only de data rate is set high Teledyne PDS accepts all the message up to this rate but internally the system is notified 5 times per second. For the calculation Teledyne PDS uses all the values but since Teledyne PDS notifies 5 times per second the output will be updated max. 5 time per second.
To overcome this problem for a high speed output set/add *AlwaysNotify=1* to the dependent input driver(s).

2.19 Performance

2.19.1 Teledyne PDS don't start up anymore. I get a message 'Failed to open project'. What can I do?

When this happens most of the times the file 'project.prj' is corrupted. There is no possibility to repair this file.

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It is possible to get the project running again when a log data file is available that is made in the project. Select in the Control Center the menu option *Create Project from Log Data...*, select the log data file and a new project is created based on the information in the log data file.
Copy the file 'project.prj' from the new project to the broken project. The file can be found in the project folder. Now the broken project can be opened again.

2.19.2 When I do a survey with RESON SeaBat 7k and Applanix POSMV, I see that the system stops after a while. It seems that there is not enough memory available. What can I do?

See the system specifications in the Teledyne PDS User Manual on how much memory is needed for this kind of surveys.
Another issue can be that a delayed heave driver is used with a delay buffer that is too big for the system. Some delayed heave drivers have a delay of 180 seconds. When there is not enough memory available to keep these 180 seconds of data in memory the system crashes.

2.19.3 Is it possible to autostart Teledyne PDS in the Acquisition mode?

When you add "-A" behind the Master.exe (Control Center shortcut target) we will automatically enter the Realtime Acquisition.
When a clock synchronization is used, PDS will wait until the clock sync is established.

2.19.4 We have briefly the computer freezes resulting in data loss. Any ideas about what could be causing the freezes?

Not often they are structural or persistent, and normally how the issue is created can be deduced by the Teledyne PDS support.
One thing that the user can try to solve the problem is changing the way the computations are running in Teledyne PDS.
Select in the Acquisition the menu option *Edit > Use Single Thread For All Comps*. This will force Teledyne PDS to run all computations in one single thread instead of each sensor computation in its own thread.

2.19.5 Not possible to start Realtime Acquisition due to empty ACF file

To start Realtime Acquistion fails. An error message opens: 'The system could not find the environment option that was entered. Check if ACF file is not empty.'

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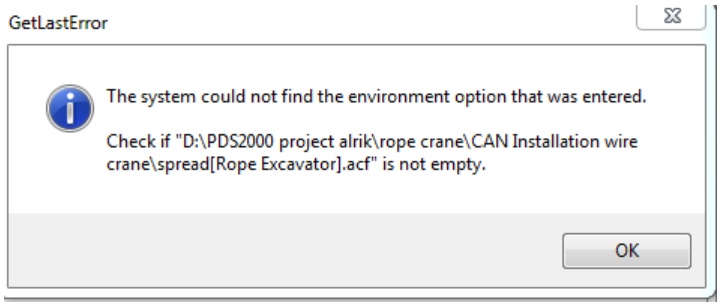

Figure 2-38 Error message

This error can be caused by shutting down the computer while PDS isn't shut down.

Follow the next steps to recover the ACF file.

1. Open the Configuration.

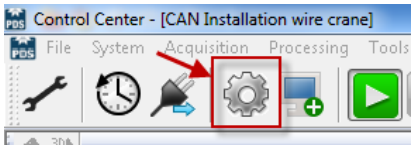

Figure 2-39 Open Configuration

2. Add the vessel configuration.

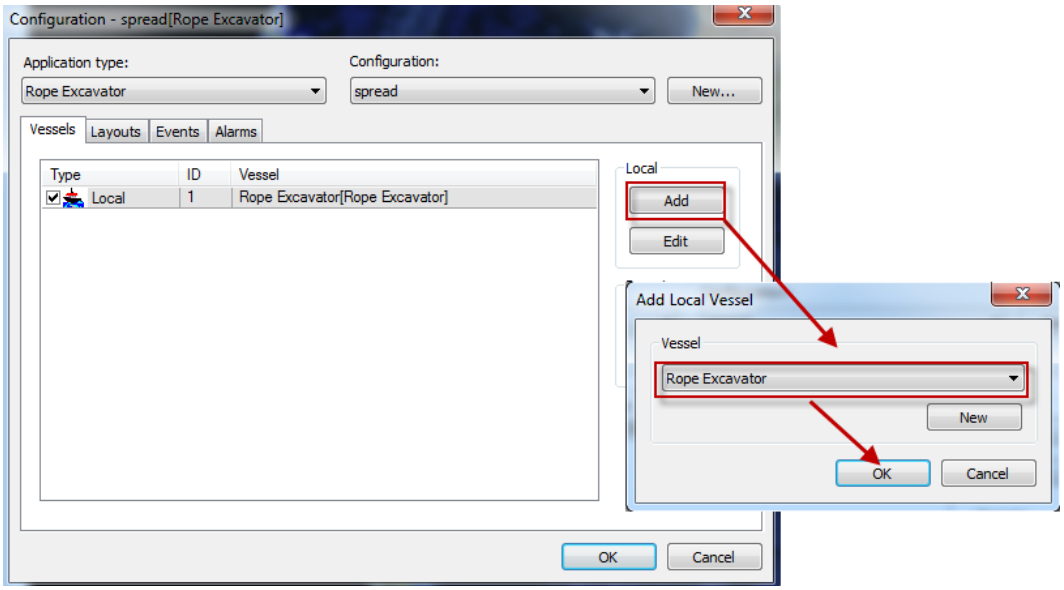

Figure 2-40 Add vessel configuration

3. Select all four tab pages of the configuration.

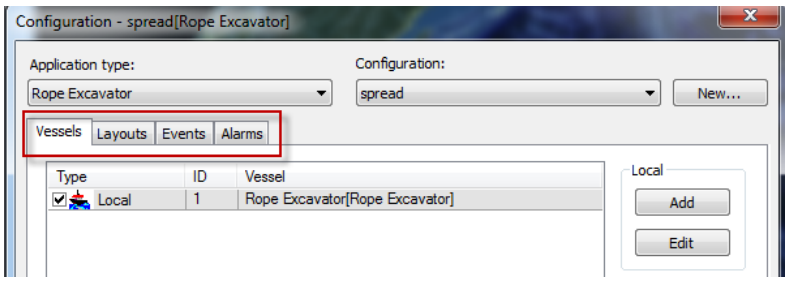

Figure 2-41 Tab pages

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2.19.6 Why is the data rate of the POSMV all couple modes –Ethernet msg 3+10+12+20+102+104 [pos] driver set to 10HZ while 100Hz is possible?

The PosMV all coupled modes- ethernet msg 3+10+12+20+102+104[pos] is set to 10Hz on purpose, data rate up to 100Hz is possible now a days, using all the observations it will hardly improve the position accuracy since we do linear interpolation between the position observations and for the height we merge in the heave observation. High position update rate will dramatically load the computer system since a position update will trigger all views to update. You can increase the rate in the driver as you like, this will then create bigger files and demands more powerful computers. You may not expect better survey results unless your vessel is so dynamic that linear interpolation over 0.1 second is not accurate enough.

2.19.7 The PDS Control Center opens with an empty screen?

This may be caused by a corrupt 'Master4.0 ini' file.

Remove the file from the (hidden) C:\ProgramData\Teledyne\PDS folder.

Start PDS again. PDS creates a new file automatically.

2.19.8 We have a network overload between the RESON SeaBat processor and the PDS computer.

This may be caused if the Sonar is closed before closing the PDS device test or realtime first.

PDS enables the output messages in the SeaBat processor when realtime or the device test is started. Problems occur when the real time/device test is not closed properly or if it is closed after stopping the sonar. In that case the output messages stay enabled and new output messages are added to it when the real time / device test is started again. This results in a heavier load on the network and at the end to an overload on the network.

To solve this problem:

1. Close PDS
2. On the SeaBat processor:
   a. Close the 7kCenter.exe
   b. Open the file '7kparameters.xml' located in the C:\ProgramData\Reson folder.
   c. Remove in the file all the set output messages. That is remove all between the first <UDP> and the next </UDP>.

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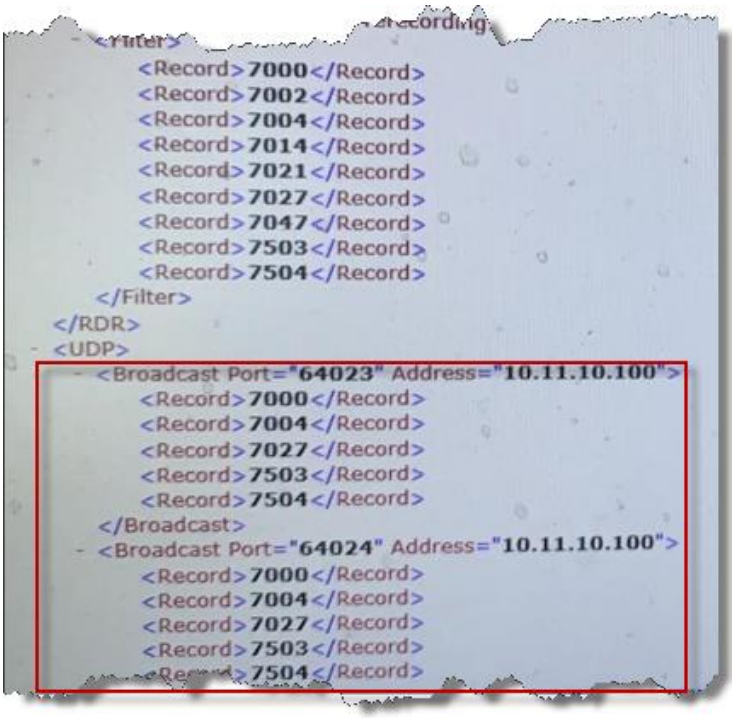

3. Restart the SeaBat processor.
4. Start PDS.

2.19.9 How to open the right click menu on a touch screen?

Hold down until a square appears then release and the right click menu appears.

2.20 Point Cloud

2.20.1 Can we import point cloud data in AutoCAD

Yes you can:

1. Use the PDS export module to export to xyz points.

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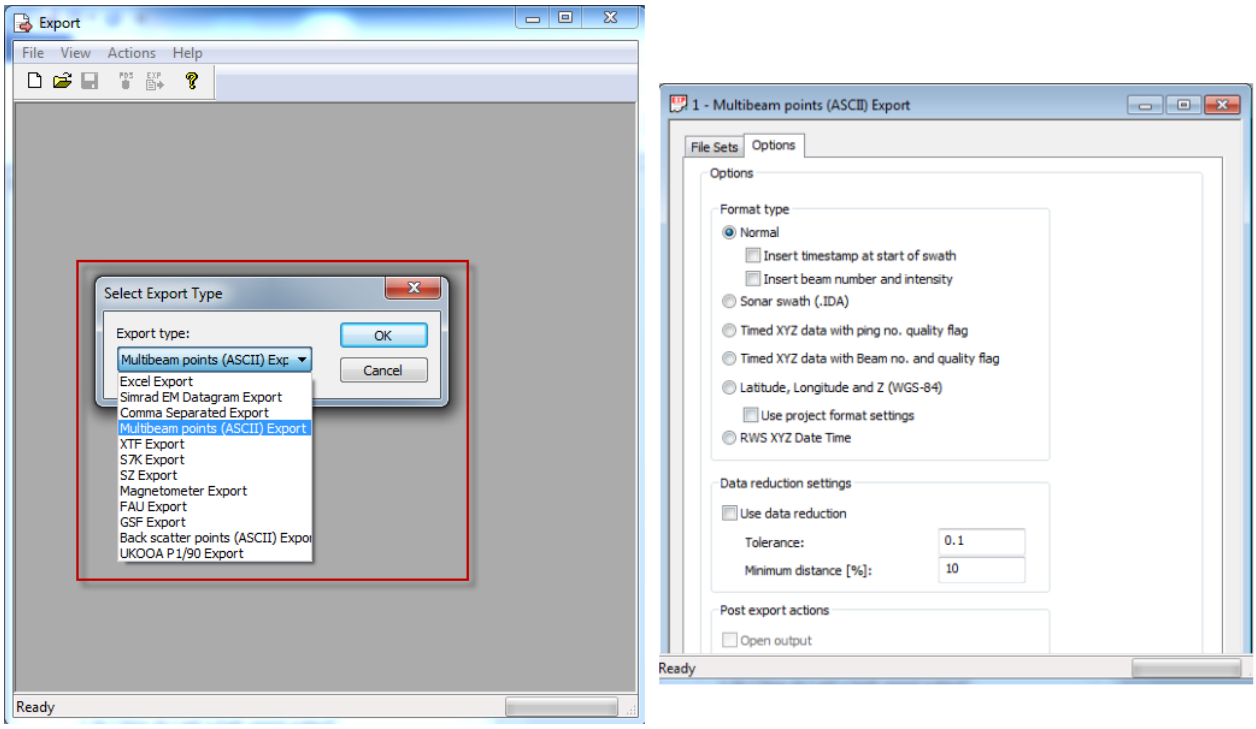

Figure 2-42 Export

2. Use Autodesk ReCap 360 to convert the PDS xyz file to scan files (RCS).

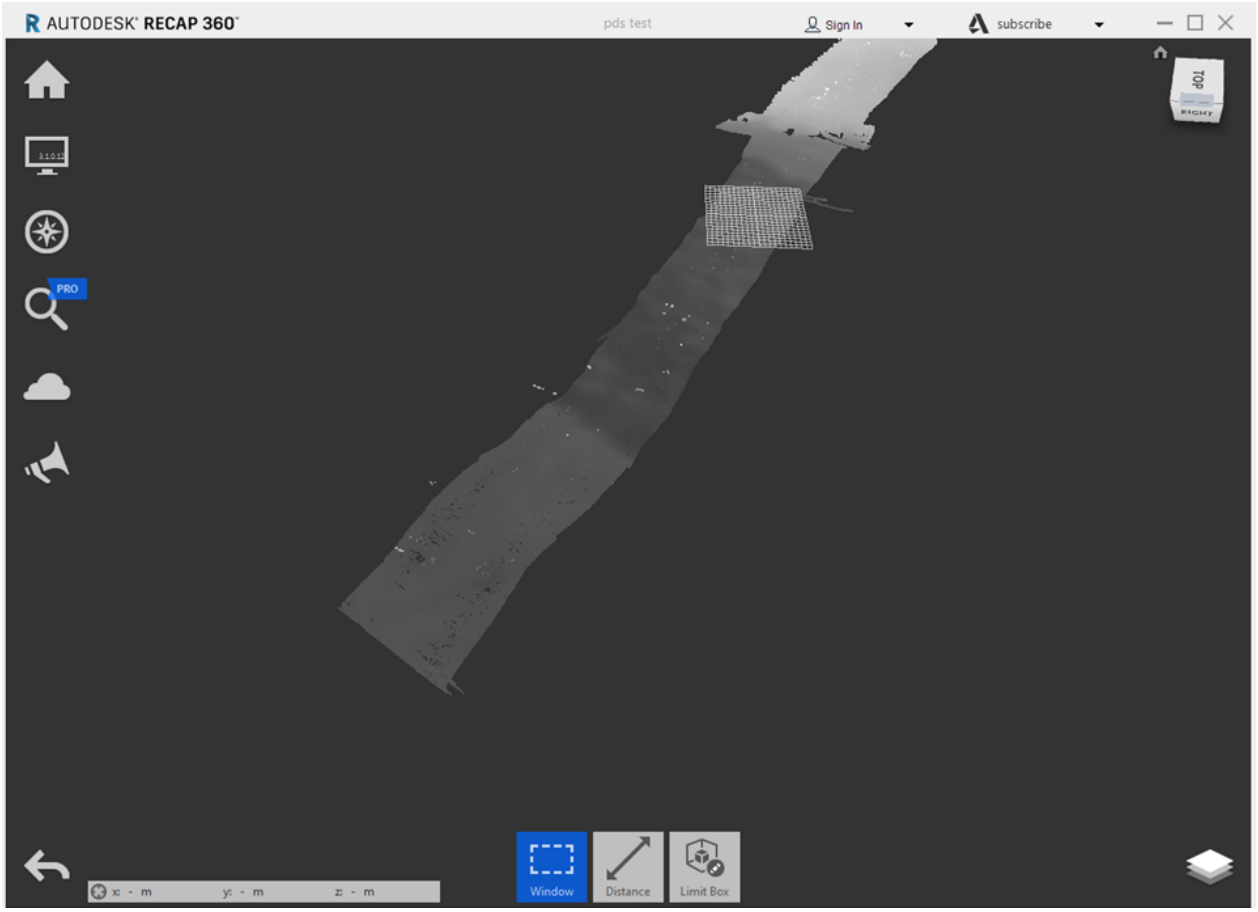

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Figure 2-43 ReCap

3. Then import RCS files in AutoCAD
   See https://www.youtube.com/watch?v=fC6WwoaqusI

2.21 Projects

2.21.1 Why do get the error message 'Error opening Project.prj'?

See the next figure.

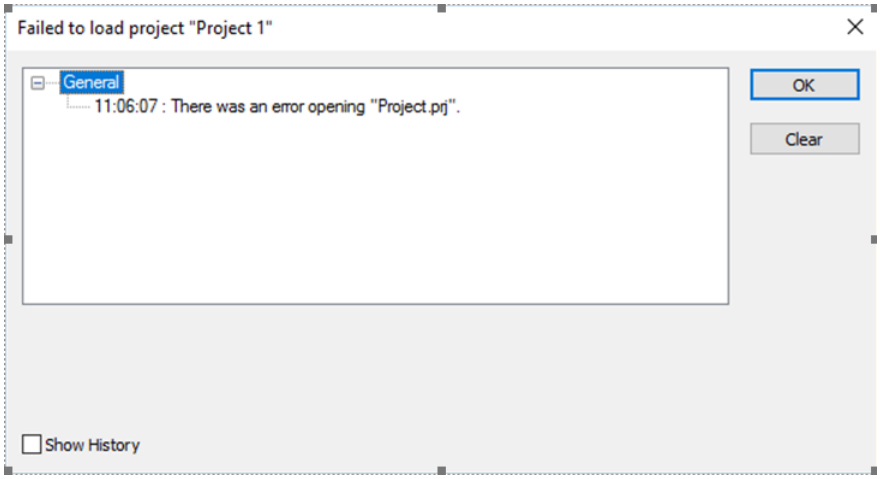

Figure 2-44 Error message opening project.prj

This error is caused because the project was not saved in a folder but straight on the root drive. Always save projects in a folder e.g. C:\PDS Projects\....

2.21.2 Failed to open a project due to corrupt Project.prj file

Try to create a new project. Select the same coordinate system! Then copy the Project.prj file to the failing project.

2.22 Replay

2.22.1 How can we use the original layout as used during Realtime?

Uncheck the checkboxes *External layout* and *Keep same layout when playing log files* of the Replay>Options menu.

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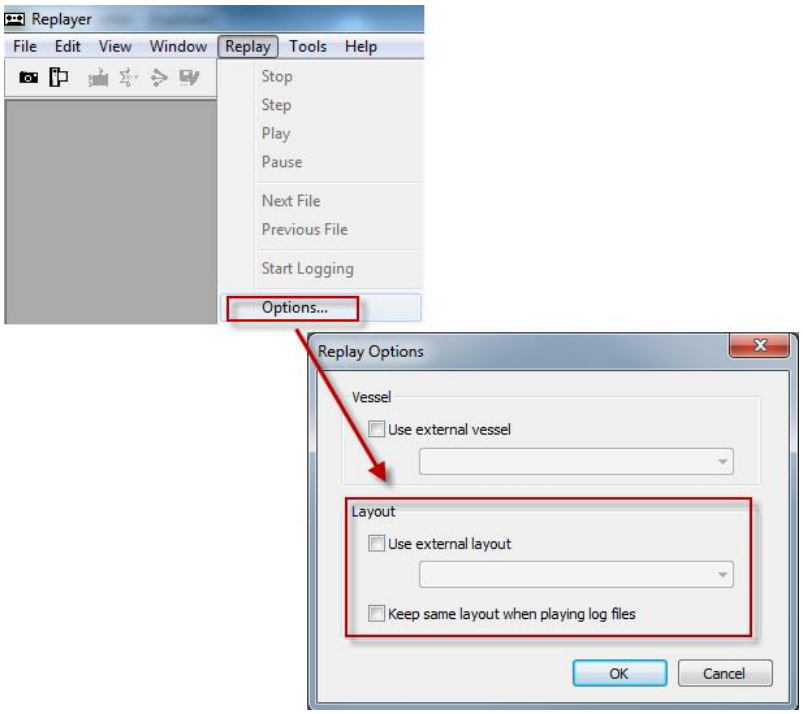

Figure 2-45 Replay Options

2.23 Reports

2.23.1 In our trip reports is the date and time is always the same (jan-1970). How can we solve this problem?

The reason that the report has a problem with the date and time is that probably in the vessel name a – (minus) sign is used. The data and time for the report is extracted from the log data filename which contains vessel name, trip number and date/time. Teledyne PDS is looking for the first minus sign in the name which is normally just before the data and time. If in the vessel name already a minus sign is used can the date and time not be found directly after the minus sign and is filled with the default date/time.
Solve this problem by not using minus signs in the vessel name.

2.24 Sound Velocity

2.24.1 Does the RESON SeaBat 7k only use the SVS to determine phase difference, or does it apply a straight SVP (based on that SVS value) to the sonar data?

In the RESON SeaBat 7k for the beam forming only the SVS is used.
In Teledyne PDS a retracing is done using the SVP and this is only possible after mounting and attitude correction.

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2.24.2 What should we do when installing a svp to the MBE head but do not apply any MBE offsets in PDS as this is already done in the positioning system. (E.g. Applanix POSMV), but we like to use the SV values valid for correct depth.

When you make the multi-beam the vessel reference point and you enter the proper sea level the svp sensor will handled properly.

2.24.3 Is it possible in PDS to apply and store more than one SV Profile?

Yes it can. The SVP profiles are stored in the PDS file and are applied 'from-to'.

We have SVP sensors which push a sound velocity profile in regularly (e.g. a profile each minute).

And of course manual imported SVP's can be applied. This can happen both online and offline.

The SVP's are also maintained in s7k files with logging and or exporting.

2.25 Tide

2.25.1 How do I setup Teledyne PDS for tide?

The setup for tide starts in the Equipment page of the vessel configuration.
Add a tide gauge for the real time received tide and add a second tide gauge for the manual tide. The manual tide can be useful when occasionally no data from the real time tide gauge is received.
For both devices automatically a tide computation is added.

In the Advanced Computations it is not needed to add a tide computation. Select here only a tide computation when a different tide computation setup from the one made in the Equipment has to be defined.
Don't add a manual tide computation this one is already created in the Equipment

A tide station has to be created for the in the real time received tide. There is no need to have one for the manual tide.
When the tide station is created, open the tide station info by selecting

in the Tide Station Editor.

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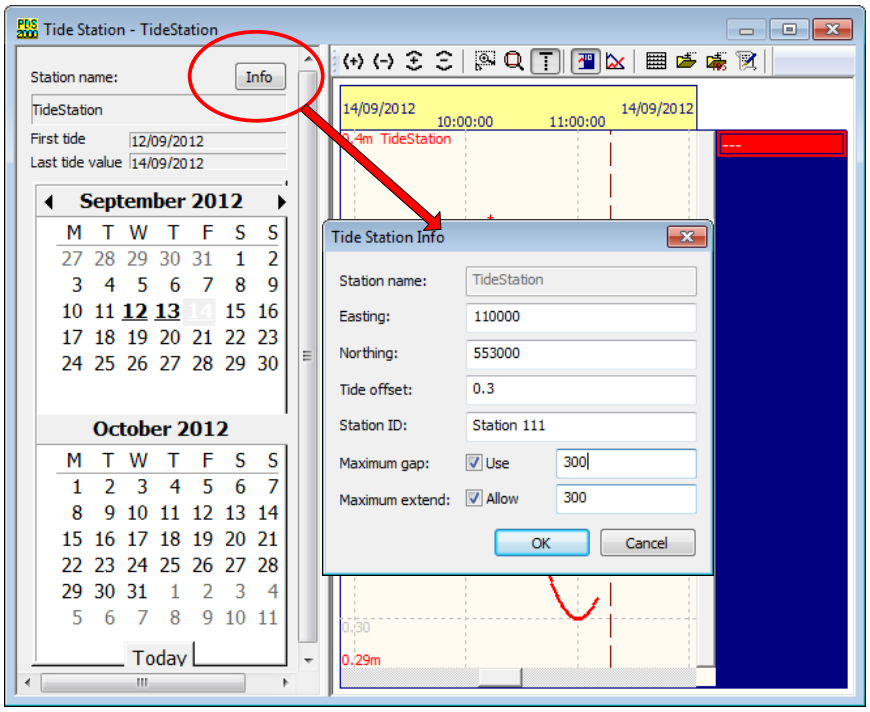

Figure 2-46 Tide Station Info dialog in the Tide Station Editor

In the Tide Station Info dialog the location and ID of the tide gauge can be defined. Also the maximum gap and maximum extend can be set. Both are in seconds. A tide value must be received within the set maximum gap time. When the maximum time gap is too short it is possible that no tidal data is received and the tide computation gives an error. When the maximum extend time is too short Teledyne PDS will not interpolate between the received tide values. This is visible in the Tide Station Editor as single crosses and not as crosses connected with a line.

In the Acquisition add to the screen layout via the menu options *Tools* > *Equipment Control* the display for the manual input. If in the manual input view the option *Force Manual Tide* is checked the manual tide becomes the primary tide source. When it is unchecked the tide source that is set as primary in the Data Source will be the primary data source.

2.26 System

2.26.1 How should we set the 3D settings of the NVIDIA video card?

Set the 3D settings of the video card to NVIDIA instead of autoselect or Intel.

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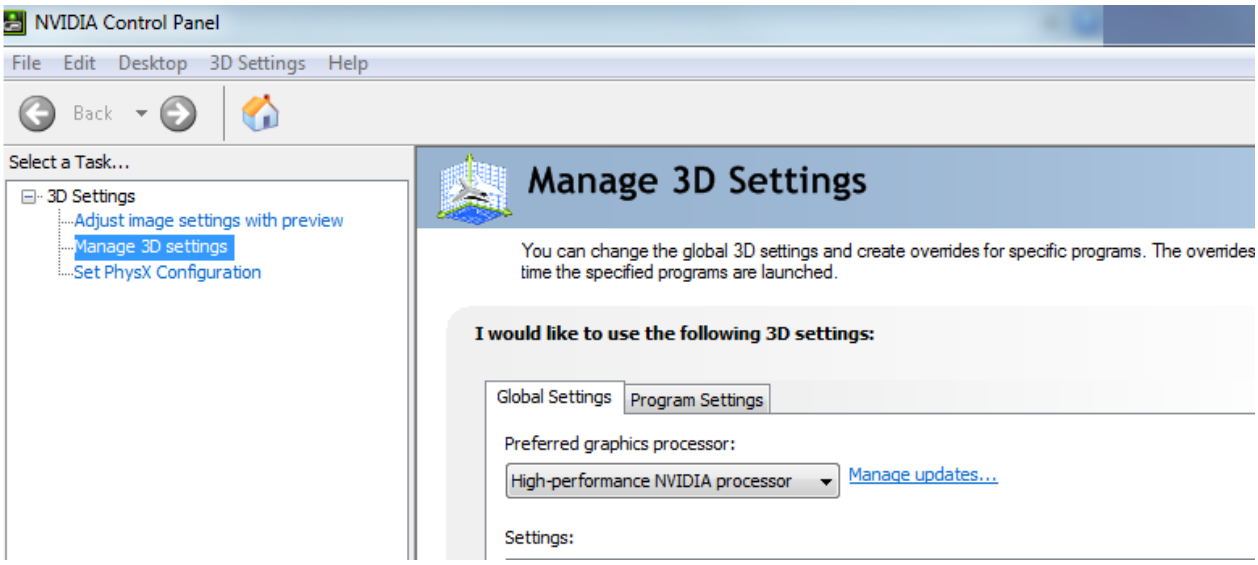

Figure 2-47 3D Settings

2.27 Time Stamp

2.27.1 I have a time stamp warning message that appears when the Real Time Acquisition is started.

The warning 'time stamping in the future' may occur for a few seconds during startup, after that it should not occur anymore.
Time stamp in the future means that Teledyne PDS receives a message from a device where the time in the message is newer than the computer time. In other words Teledyne PDS receives the result of a measurement in the future. This problem can occur when there is a clock synchronization error or when the PosMV is predicting too hard.

2.27.2 How are the values of PDS time stamps?

PDS timestamps are miliseconds since January 1,1970.

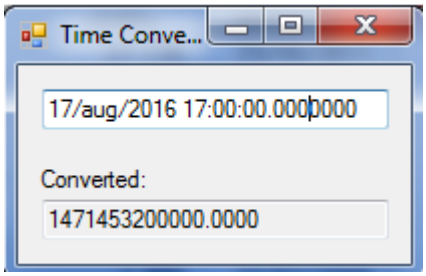

Figure 2-48 Timestamps

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2.28 Vessel configuration

2.28.1 Our vessel configuration is corrupt. We lost all our calibration values and offsets, what can we do?

Every time Realtime starts a backup of the vessel configuration is created.

Only the last 10 are saved. When there are problems; do not start Realtime more as 10 times, but first try to use a backup vessel configuration.

Select *Acquisition>Use Vessel Backup* from the PDS Control Center menu bar.

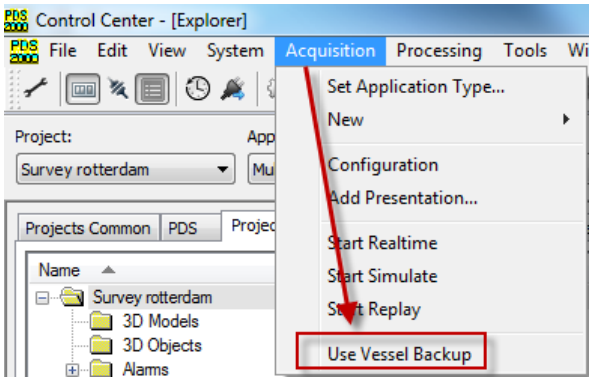

Figure 2-49 Vessel Backup

Start Realtime.

Select from the dropdown list a backup of a (older) vessel configuration.

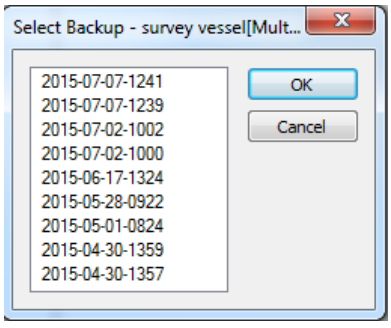

Figure 2-50 Vessel configuration

When this vessel configuration is not corrupt it is possible to accomplish the survey.

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2.29 Cutter Dredge

2.29.1 Is the runlines page not shown in the Guidance Tab of a Cutter Dredge project?

Cutter suction dredge project does not have the run line guidance enabled. The cutter guidance is based on routes, offset line relative the guidance route and swing limits. Run lines are generally used to guide the survey.

2.29.2 How to visualize the spud

The spud visualization in Acquisition is done by adding a Shape Layer to the Planview then select the spud computation in the Shape Layer. The spud computation has a rectangular shape that will be drawn at the right position.

2.30 Excavator

2.30.1 Can PDS support an excavator with an extendable stick?

Yes. The stick extension is measured with a wire length sensor same as used for a spud carrier.

2.30.2 What field of the Tool configuration is used to scale a standard bucket shape?

Only the Y offset is used to scale the standard bucket shape.

2.30.3 What fields of the Tool configuration are required to define a bucket?

See the Excavator Installation manual. The mandory fields for a bucket are the Y offset (T1), the holes seperation (T5), the holes tooth angle(T6) and the effective area width (T3).

2.30.4 Can we use a keyboard to trigger the clamshell to close or open?

You can add from the Device Group called State a Device called Keyboard to the Equipment list, to use a keyboard as trigger device.

In PDS a keyboard function must be assigned. Open in Acquisition the Tools menu, Customize menu item. Open the Shortcut Keys tab and select Tools:Pulse Keyboard State device. Press the Create button and press the key to use as trigger signal.

The state device can be used for updating the grid model using a condition status signal in the Dredge Logging settings.

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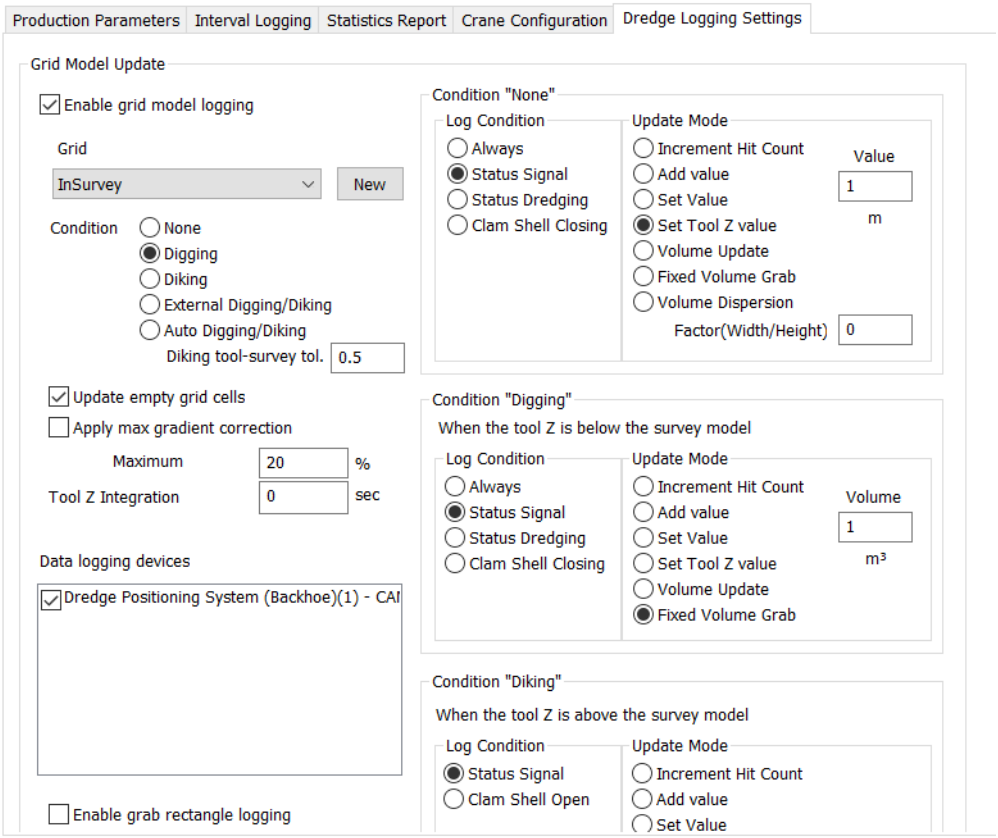

Figure 2-51 Dredge Logging Settings

This will do a rectangular area update at the moment of the state change. The grab will in this case not visual open/close. For open close PDS requires an angular value from a sensor or from the push button USB open/close device.

A keyboard button in real excavating operation is not a workable method, normally the push button is attached to one of the free buttons of the crane joy stick so the operator can press the button without leaving the joystick.

2.31 Wire Crane

2.31.1 Multi-turn sensor on wire Crane. Does 1 rotation of the cable drum have to equal with1 rotation of the multi-turn axle?

No. The ratio of the multi-turn sensors can be done in the formula in the driver.

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2.32 Laser

2.32.1 Why can we only collect laser data using a low data rate?

The number of detection point PDS can handle depends on the processing speed of the computer and the DLL provided by the laser manufacturer. When the dynamic delay grow, the computer cannot keep up with the laser. It is recommended to log to a SSD hard drive to make the required data rate.

Back to the overview of the Frequently Asked Questions.

2.33 Backscatter Processing

2.33.1 The generated mosaic looks a bit blurred, with less details.

Set the resolution of the backscatter mosaic lower (smaller cell size).

See the next figures. In the first figure the created mosaic looks blurred, a cell size of 20 meters is used. In the second figure the mosaic is good, a cell size of 1 meter is used.

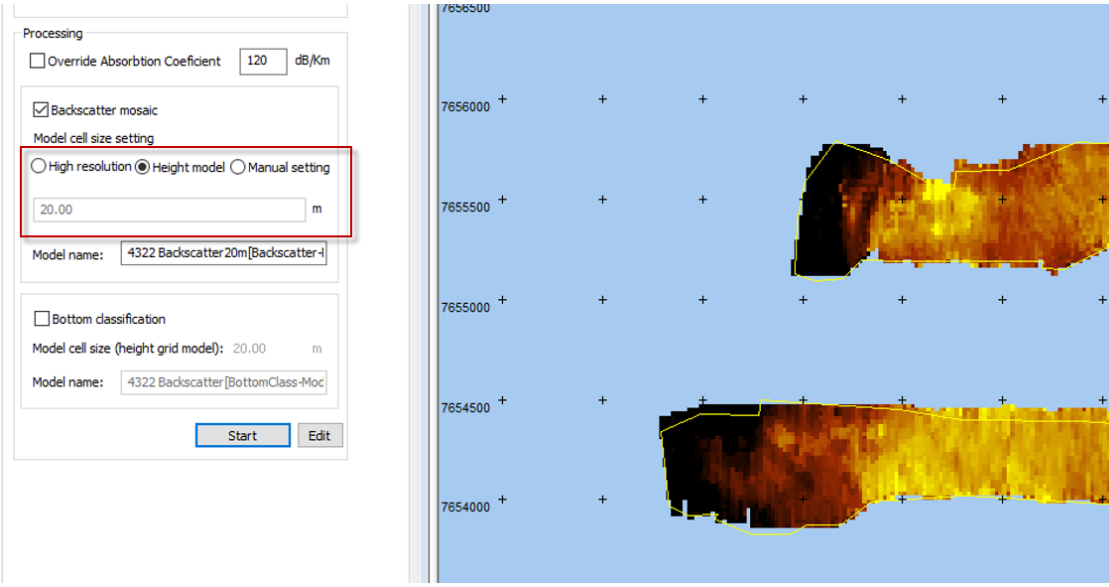

Figure 2-52 Blurried mosaic, cell size 20m

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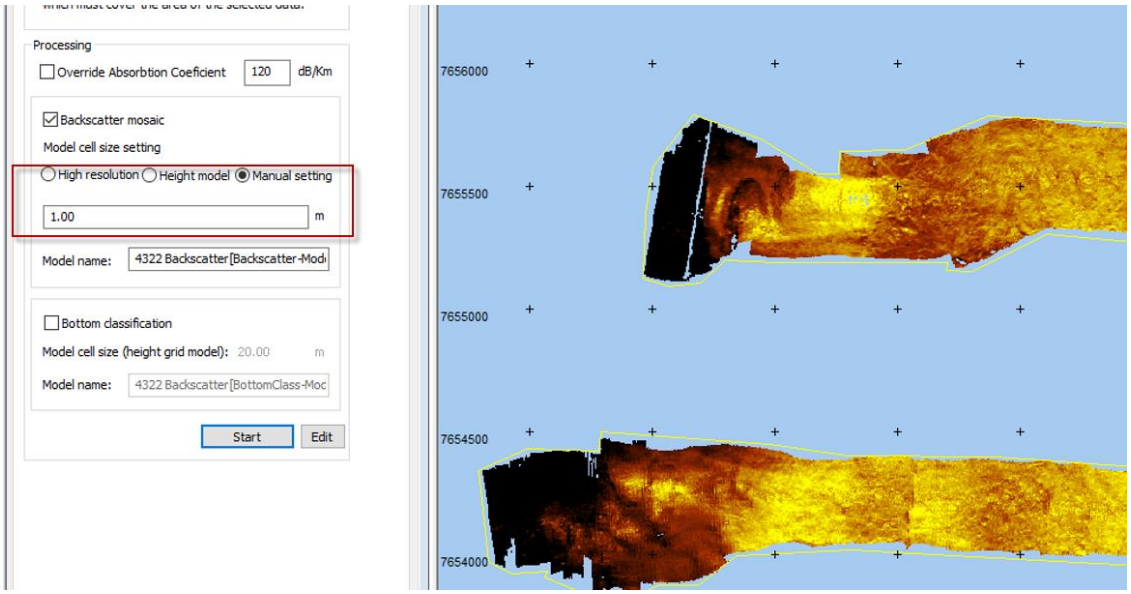

Figure 2-53 Good mosaic, cell size 1m

Back to the overview of the Frequently Asked Questions.

2.34 Coordinate system

2.34.1 The Coordinate system area is totally empty in the Project Configuration – Coordinate systems page.

This can happen when the pds.ini file is 'disturbed''.

Copy from another PDS installation the PDS.ini file to c:\ProgramData\Teledyne\PDS

C:\ProgramData is a hidden folder but when you type the folder name on the explorer bar you can go into it.

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