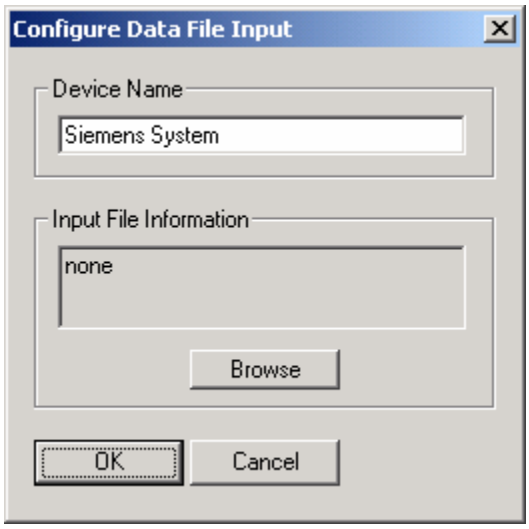
WinFrog Device Group:	**Cable Machinery**
Device Name/Model:	**Siemens System**
Device Manufacturer:	Norddeutsche Seekabelwerke GmbH & Co. KG Postal Address: P.O. Box 14 64, 26944 Nordenham, Germany Office Address: Kabelstrasse 9-11, 26954 Nordenham, Germany Telephone. +49 (4731) 82-1000 Telefax: +49 (4731) 82-1301 Website: www.nsw.com
Device Data String(s) Output to WinFrog:	See Telegram Specification section below.
WinFrog Data String(s) Output to Device:	NONE
WinFrog Data Item(s) and their RAW record:	COUNT 492 PLOWDATA 490 ATTITUDE 413 BOTTOMDEPTH 411 ROV REF VEH NONE

DEVICE DESCRIPTION:
This device is an interface between WinFrog and the Siemens cable laying machinery system. WinFrog and the Siemens system are on the same network. The Siemens system writes cable data to an ASCII file and this device allows WinFrog to read the cable data from the file.

DEVICE CONFIGURATION INSTRUCTIONS

WINFROG I/O DEVICES > EDIT I/O:

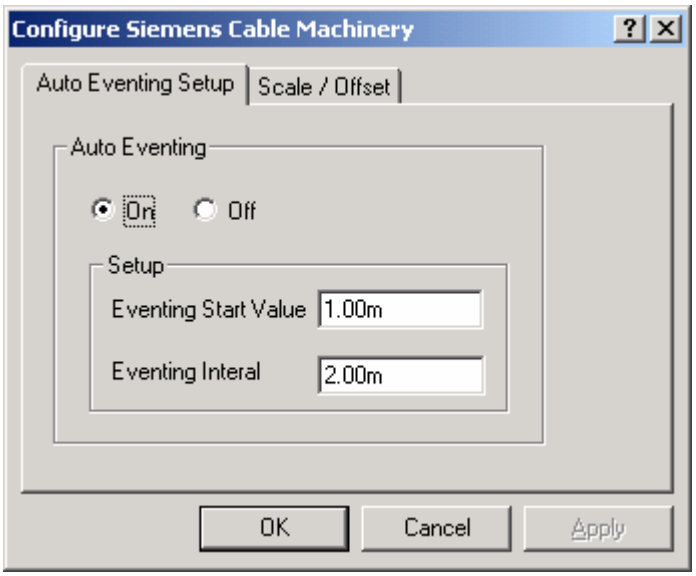
When this device is first added to WinFrog, the Configure Data File Input dialog opens as seen below. To access this dialog again, highlight the Siemens System device in the I/O Devices window, right-click and select the Edit I/O option.



The Siemens System writes cable data to an ASCII file. WinFrog reads the cable data from this file over the network. Click the Browse button to select the appropriate data file.

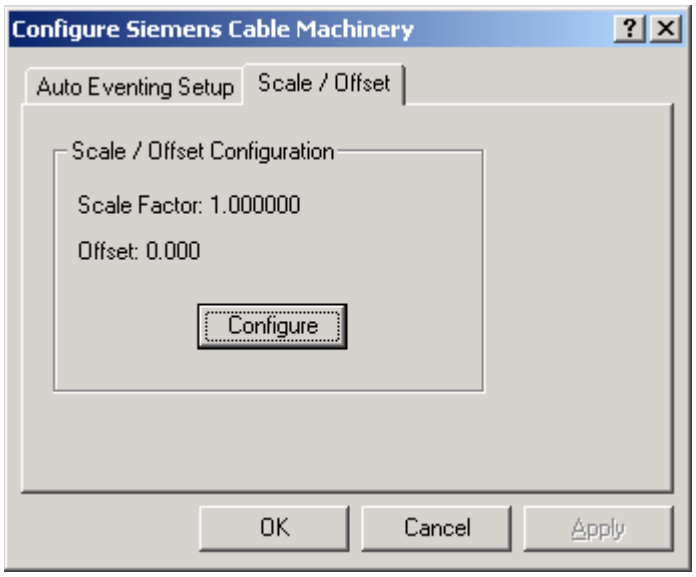
WINFROG I/O DEVICES > CONFIGURE DEVICE:

This device must be configured at the I/O Device window level. In the I/O Devices window, click the device name to select it, then right-click and select Configure Device. The Configure Siemens Cable Machinery dialog box appears. The configuration dialog consists of two tabs, the Auto Eventing Setup tab and the Scale/Offset tab as seen below.



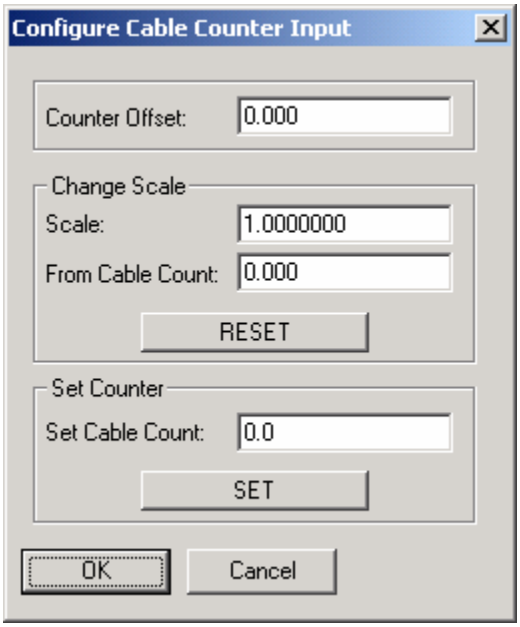
Auto Eventing Setup tab

In the Auto Eventing Setup tab you can enable or disable the Auto Eventing function. The eventing setup in this dialog box allows you to configure automatic eventing based on cable distance, as opposed to the standard Time or Ship travel distance options available in WinFrog. Also the Eventing Start Value (initial cable count) and Interval (incremental cable count) can be set here.



Scale/Offset tab

To set/change the scale or offset of the cable count, click the Configure button. The Configure Cable Counter Input dialog box appears as seen below.



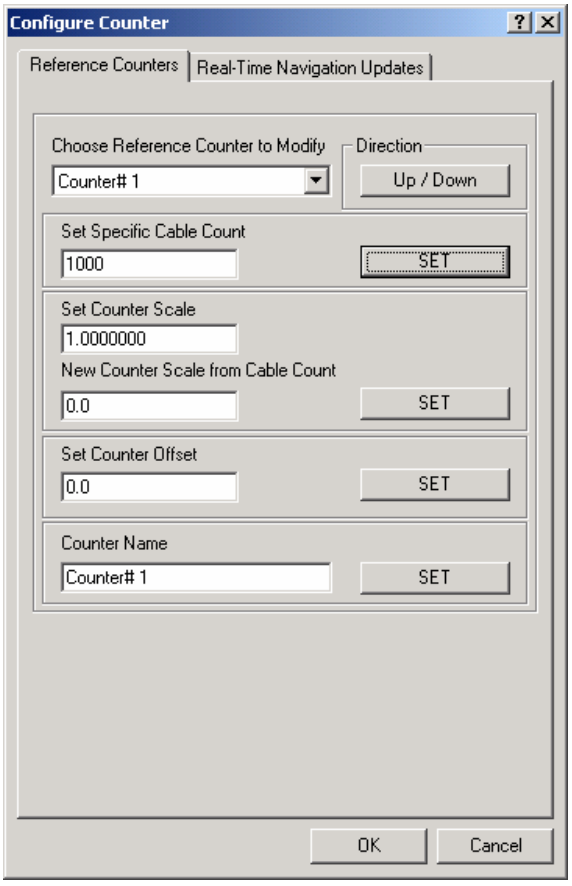
In this dialog box you can enter a counter offset in the top field to set the initial cable count to the desired value. If the cable counter itself is not properly calibrated, you may have to enter a Scale factor to compensate in order to have accurate cable count values recorded in the data collection process. Different cable types typically have different diameters and may require different scale factors. Therefore, you can specify a Cable Count at which to start applying the scale factor (typically at transitions). This dialog can also be used to convert incoming units to the desired units. If, for some reason, the cable count is found to be in error, the bottom field allows you to set the cable count to the correct value.

WINFROG VEHICLE > CONFIGURE VEHICLE DEVICES > DEVICE DATA ITEM > EDIT:

Adding the Siemens System device creates five data items: COUNT, PLOWDATA, BOTTOMDEPTH, ROV REF VEH and ATTITUDE. Once the data items have been added to the vehicle, they must be edited to suit the application.

Data item: CABLE MACHINERY, Siemens System, COUNT

Highlight the CABLE MACHINERY, Siemens System, COUNT data item and click the Edit button to open the Configure Counter dialog box. This data item configuration dialog has two tabs, Reference Counters and Real-Time Navigation Updates.



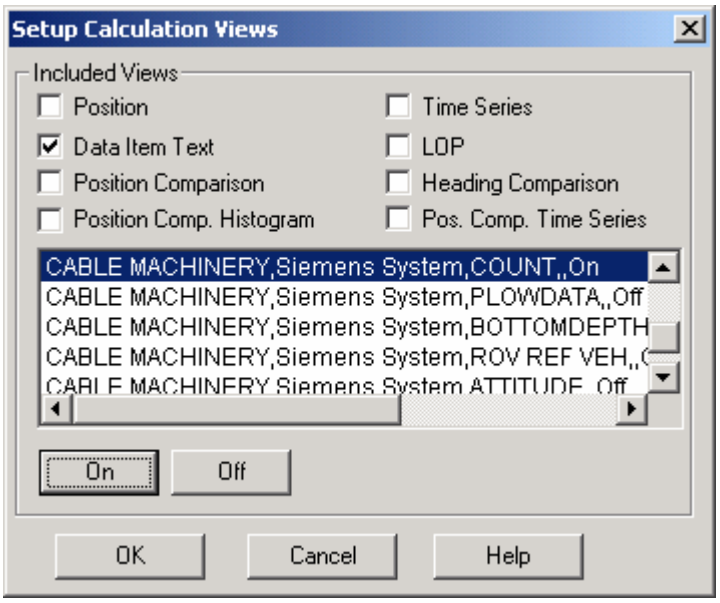
Reference Counters tab

This tab is used in conjunction with the Calculations window to maintain up to five reference counts based on the Channel One (cable) count. These reference counts are not used for any real-time calculations and are not logged to any file – they are intended for reference purposes only.

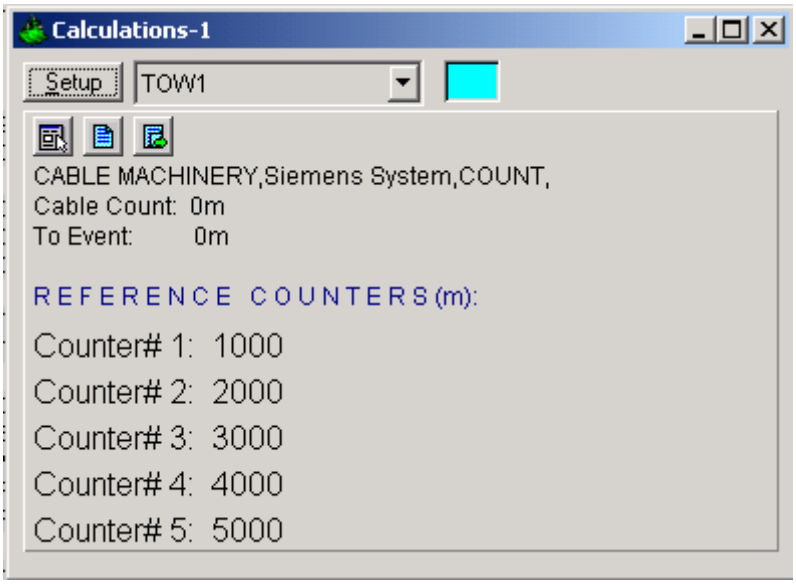
One common use for the Reference Counters tab is to have a 'count down' between cable body deployment. This is accomplished by entering the cable spans between cable bodies in the 'Set Specific Cable Count' field(s), selecting the 'Direction' as 'Down' and exiting with OK when the first cable body is launched.

View and configure the Calculations window (shown below) by completing the following steps.
Note: To view the reference counts the COUNT data item must be attached to the vehicle.

1. Select View > Calculations from the main menu to open the Calculations window.
2. In the Calculations window click the Setup button to open the Setup Calculation Views dialog shown below.



3. In the Setup Calculation Views dialog, select the Data Item Text checkbox. Then to turn On the COUNT data item, select the COUNT data item from the list and click the On button.
4. Click OK and the Calculations window opens as seen below.



Once the Calculations window has been opened and configured, the five reference counters can be modified using the Reference Counters tab of the Configure Counter dialog. (Note: the Configure Counter dialog can be directly accessed from the Calculations window by clicking the  icon in the Calculations window.)

The Reference Counter tab allows the reference counters to be modified in a number of ways, as described below. Start by selecting the reference counter you want to modify from the dropdown list box at the top of the page.

Direction
When the *Up/Down* button is not depressed, the reference count will increase if the input cable count increases and decrease if the input cable count decreases. When the *Up/Down* button is depressed, the reference count will decrease if the input cable count increases and increase if the input cable count decreases.

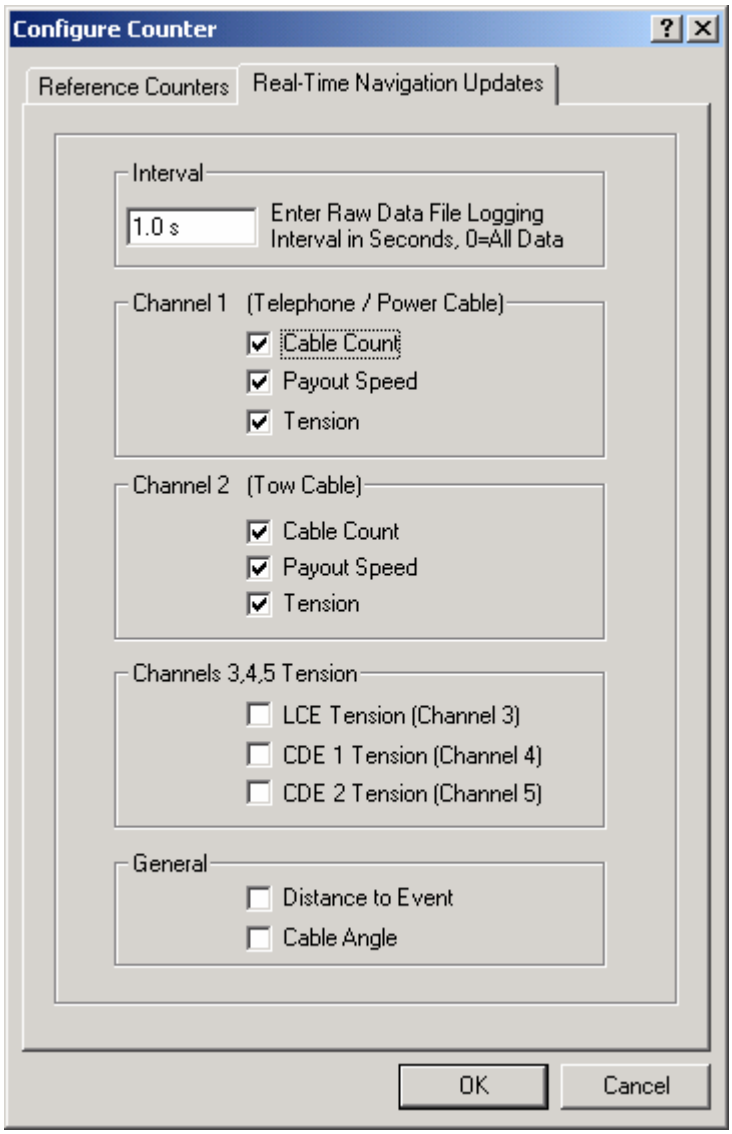
Set Specific Cable Count
To set the reference counter to a specific cable count, enter the desired value in the edit field then click the *Set* button. When you exit the Configure Counter dialog by clicking the OK button, the desired reference counter value will be set to the entered value. This value will then continue to increment or decrement based on the input cable count and the current settings for the reference count.

Set Counter Scale
To change the scale at which the reference count will increment or decrement relative to the input cable count, enter the desired scale factor into the scale field. Leave the *New Counter Scale from Cable Count* value at its present value to apply the scale from the current point onward. Enter in a count value into the *New Counter Scale from Cable Count* field to apply the scale from a previous count value onward. Once the desired scale factor and count value is entered, click the *Set* button and then click the *OK* button.

Set Counter Offset
To set an offset from the input cable count to the reference count, enter the desired value into the Set Counter Offset field, click the *Set* button and then click the *OK* button. This value will be added to the input cable count.

Counter Name
To change the reference counter name, enter the desired name into the *Counter Name* field. Click the *Set* and then the *OK* button to enter the change.

Real-Time Navigation Updates tab



This tab enables/disables certain data from this device to be passed to the vehicle. Unlike the Reference Counters tab, data from the Real-Time Navigation

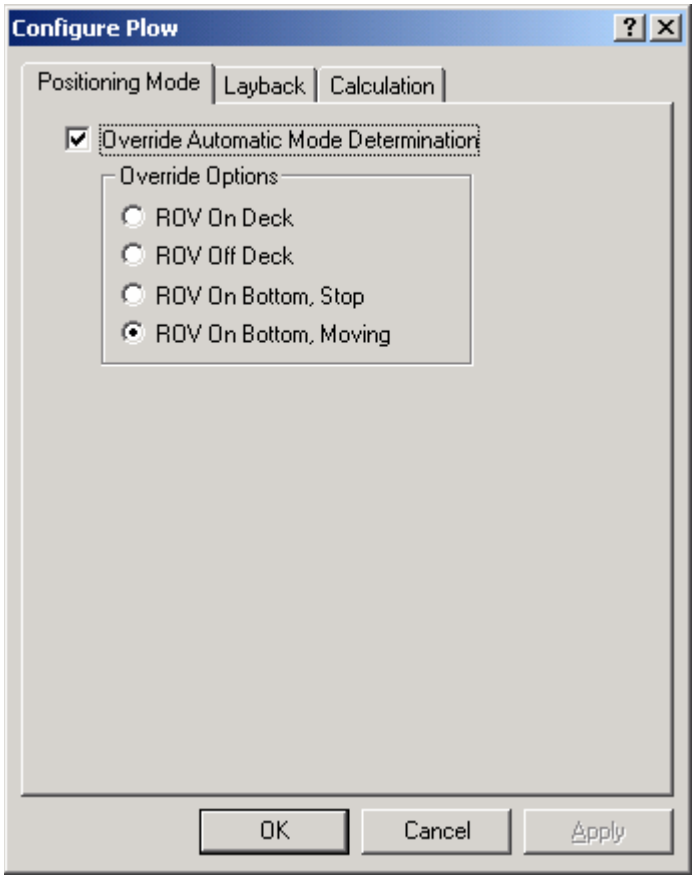
Updates tab can be logged to the raw files if this data item is associated with a vehicle. This allows the vehicle to have more than one COUNT without one conflicting with the other. One COUNTER device may provide the telephone cable count while the other provides the tow count. If a checkbox is selected (checked) the data value will be passed to the vehicle. For example, if the *Cable Count* checkbox is selected in the *Channel 1* section then the cable count from the input device will be passed to the vehicles channel 1 count.

The *Interval* section sets the data logging interval used when the "With Events" Logging Control option is selected (refer to chapter 10 of the WinFrog User's Guide for more information).

Data item: CABLE MACHINERY, Siemens System, PLOWDATA

This data item is used to read plow related data as well as to provide a reference point on the plow for positioning the plow relative to the ship. It is typically added to the plow vehicle in WinFrog.

Highlight the CABLE MACHINERY, Siemens System, PLOWDATA data item and click the Edit button to open the Configure Plow dialog box. This data item configuration dialog has three tabs: Positioning Mode, Layback and Calculation.

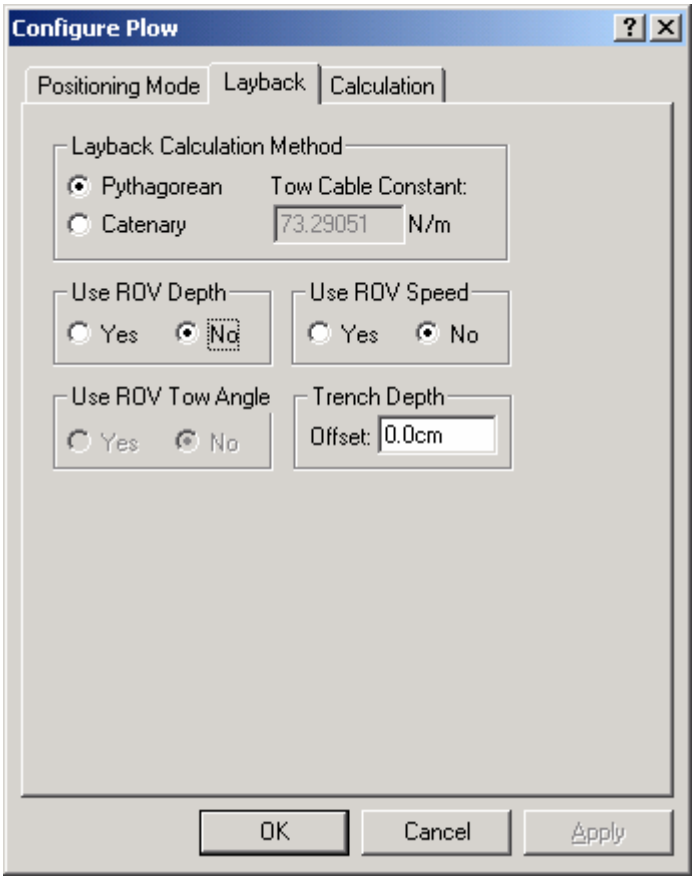


Positioning Mode tab

Override Automatic Mode Determination:
This checkbox determines whether WinFrog automatically determines the towed vehicle location and mode or whether the operator determines it.

When in automatic mode, WinFrog uses the following criteria to determine the mode of the towed vehicle.
ROV On Bottom, Moving is assumed if the speed is greater than .2 knots or the Use ROV Speed setting is off and the layback is calculated at more than 1 meter.
ROV Off deck is assumed if the speed is greater than .2 and the layback is calculated at less than 1 meter and the altitude is greater than 4 meters.
ROV On deck is assumed if the speed is 0 and the layback calculated is less than the sum of the depth offset entered on the Calculations tab and the Tow point above water entered on the ROV REF VEH dialog.
ROV On Bottom, Stopped is assumed if none of the others are true.

Override Options:
ROV On deck places the towed vehicle on the tow vessel 5 meters forward of the offset point entered in the ROV REF VEH dialog.
ROV Off deck places the towed vehicle on the tow vessel at the tow point, which is the offset point entered in the ROV REF VEH dialog.
ROV On Bottom, Stop leaves the vehicle where it was when this option was selected and makes no further calculations as to its position.
ROV On Bottom, Moving calculates the towed vehicle's position using the data available and updates all displays with this data.



Layback tab

Layback Calculation Method

Pythagorean uses the depth and cable count to form a right triangle. The layback is then calculated and applied to the tow vehicle's offset position along with an azimuth based upon the previous towed vehicle's raw position. WinFrog will use this position to calculate an azimuth, but use the calculated layback for the distance between the towed vehicle and the tow vehicle.

The right triangle is formed as follows: the hypotenuse is the cable count and the vertical value is the sum of the depth, Tow Point Above Water and the z offset found on the Calculations tab.

Catenary requires the weight of the cable in newtons/meter, (1lbs/ft = 14.63nt/m). This calculation uses the cable count, depth of the towed vehicle and the tow tension to calculate the layback using a static catenary model. The azimuth used is the same as described above.

Use ROV Depth

Yes causes two actions:

1) The depth obtained from this device will be added to the depth offset and assigned to this vehicle. The depth offset is entered in the Calculation tab.

The depth obtained from this device is either the manually entered value (if applicable) or the depth from one of the data items from the selected device.

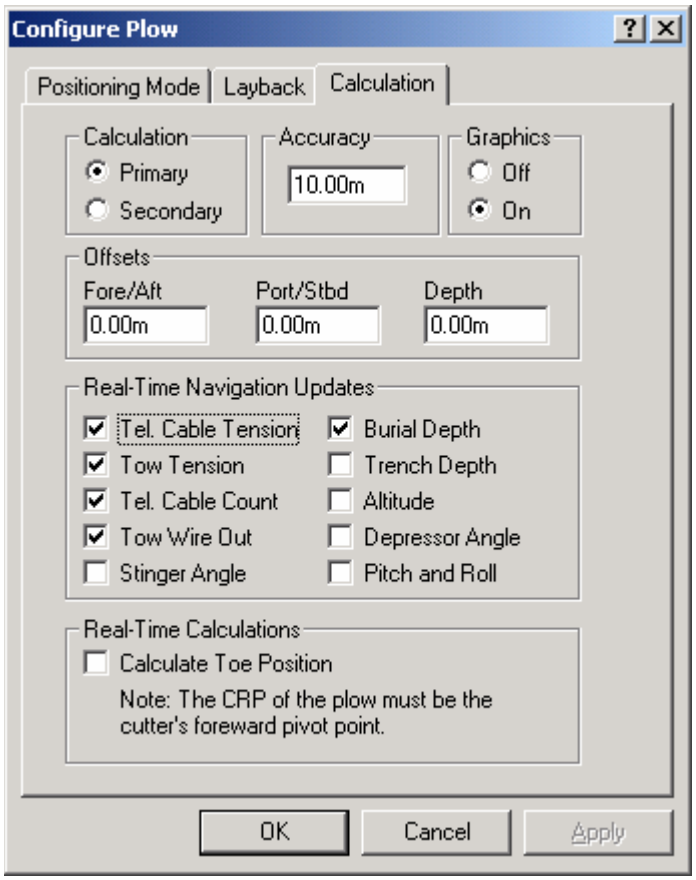
2) The depth obtained from this device is used to determine the layback. No offset is applied except which may be applied at the source device.

No causes the depth for the layback calculation to be obtained from the vehicle. Essentially, this means the depth must be assigned by another device. This overrides the selection of a device or manual entry of depth.

Use ROV Speed
Yes causes the speed of the device to be obtained from this device. This requires that the towed vehicle in use must have the ability to output a speed in its data string. If it does not, then select no. **No** causes the speed to be calculated from the positional information and time. It will be assigned to the vehicle.

Use ROV Tow Angle
This option only applies to the SeaplowVIII Device.

Trench Depth
Offset; If the Trench depth checkbox is selected on the Calculation tab, then this value, 0.0 or otherwise, will be assigned as this vehicle's trench depth.



Calculation Tab

Calculation

Primary – when selected, the layback described above will be used to calculate this vehicle's position which will be assigned to it.
Secondary – when selected, this device will not determine this vehicle's position.

Accuracy

The Kalman filter uses this value as a weight factor. It should be set to a reasonable value.

Graphics

On causes a box to be drawn in the Graphics and Bird's Eye windows, at the offset position below.

Offsets

The **Fore/Aft** and **Port/Stbd** offset point is the reference point for the layback distance. Essentially, the lay back distance is the distance between this point and the offset point of the tow vehicle described in the **ROV, Siemens System, ROV REF VEH** section below. This can also be viewed as the beginning or 0 point of the tow cable. This offset point is from the towed vehicle's CRP to the tow point.

Depth is an offset from the CRP, it is applied in several different ways:

1) If **Use ROV Depth** is set to **Yes** (on the Layback tab), this value is added to the depth from this towed vehicle device and assigned to the vehicle's depth. (See Use ROV Depth on the Layback tab above.)
2) If the Pythagorean solution is selected, this value is added to the vehicle depth and the Tow Point Above Water value to get the vertical portion of the right triangle when computing the layback.
3) If the catenary solution is selected this value is not used in the model.

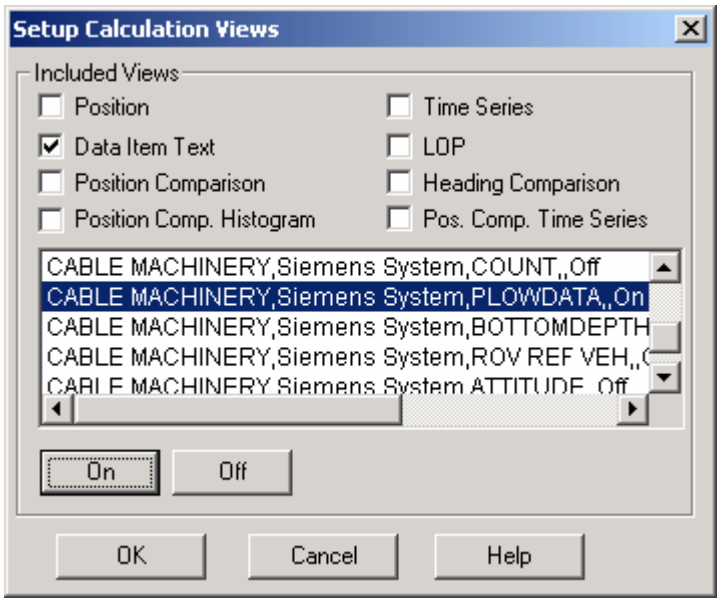
Real-Time Navigation Updates

Most Plow devices have the ability to provide real-time data updates via an umbilical. The Decoded data tab in the I/O Devices window will indicate what data is updated in real-time for each device. You should only select the checkboxes for data output by the device, as leaving these checkboxes selected causes data to be assigned to the vehicle. If the device does not output a particular type of data, 0 will be assigned for each item left selected and this may cause values from other devices to be overwritten.

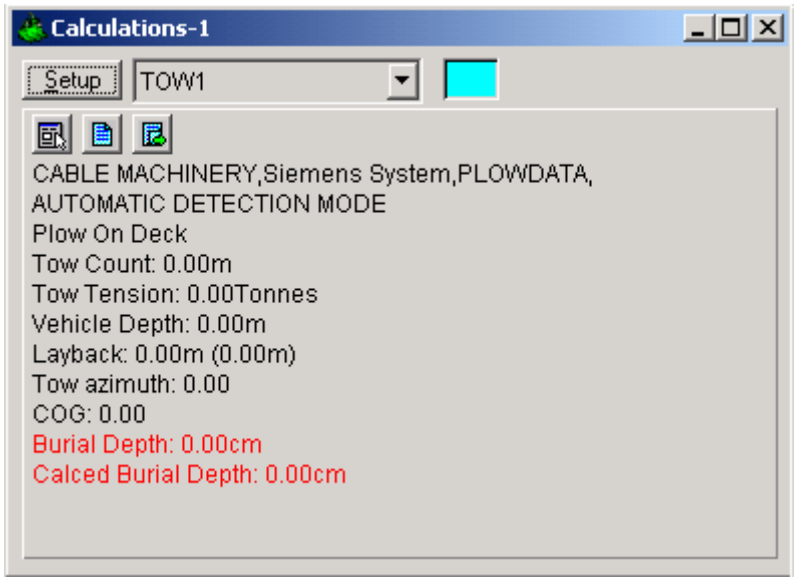
Real-Time Calculations

Calculate Toe Position this option only applies to the Smart Cutter plow device.

The results of the above configurations are typically viewed in the Calculations window. To display the Calculations window, select View > Calculations from the main menu. Select the appropriate vehicle from the dropdown list, then click the Setup button. In the Setup Calculation Views dialog box, select **Data Item Text** and turn the data item **ROV, Siemens System, PLOWDATA** on by highlighting it and clicking the **ON** button.



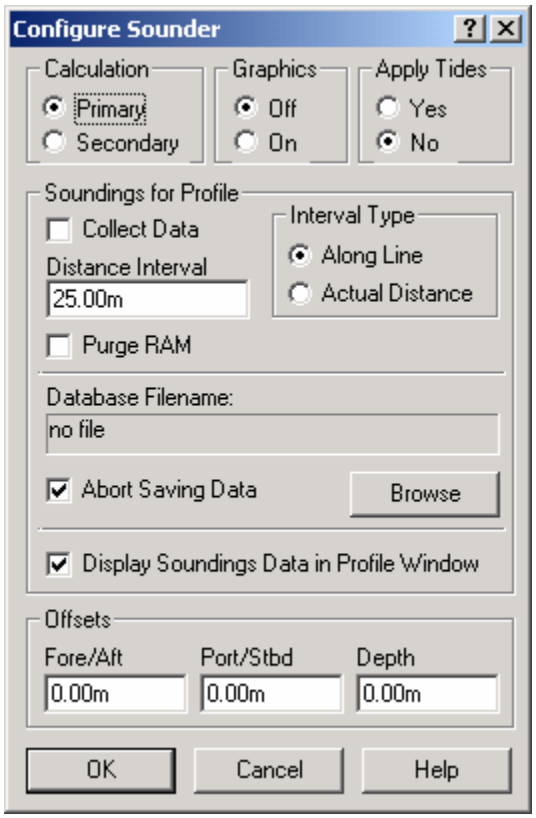
Exiting with OK will display the Calculations window as seen below.



From this window you can monitor some of the input data, as well as the layback calculation. This calculation window also provides a shortcut to the Configure Plow dialog box by clicking on the button.

Data item: CABLE MACHINERY, Siemens System, BOTTOMDEPTH

Highlight the CABLE MACHINERY, Siemens System, BOTTOMDEPTH data item and click the Edit button to open the Configure Sounder dialog box as seen below.



Calculation:
Set the type of calculation to Primary or Secondary using the appropriate radio button. WinFrog will only utilize (i.e. display and record) data from a Primary sounder device. If there is more than one Primary sounder attached to a vehicle's device list, WinFrog will not mean the data (as is done with positional devices), but rather alternate between the devices. Data from a Secondary status sounder will simply be monitored.

Graphics:
Select the On radio button to display a labeled square representing the location of the sounder in the Graphics and/or Bird's Eye windows.

Apply Tides:
If the Yes radio button is selected, WinFrog will apply tidal corrections to the observed water depths. Depths displayed in the Vehicle Text window and recorded in automatic event (i.e. .DAT, .SRC, and .RCV) and type 351 raw files will refer to the datum corrected depths. Note that type 411 raw data records will remain truly raw and will not reflect the tide correction.

The tide information can be supplied by a real time telemetry system or by predicted tide files. Either way, the tide "device" must also be attached to the same vehicle's device list. For more information, refer to documentation on Tide devices.

Soundings for Profile:
This section of the Configure Sounder dialog permits the collection of sounding data to an .mdb database file for display in WinFrog's Profile window. This collection is completely separate from automatic event or raw data collection.

Collect Data
Select this checkbox to enable the collection of data to an .mdb database file.

Interval Type
Select to utilize either Along Line or Actual Distance (i.e. between successive position updates) calculations for data collection intervals. Selecting Along Line requires that you also enable survey line tracking.

Distance Interval
Specify the distance interval at which the data will be collected.

Purge RAM
Sounding data is stored in the RAM memory of the computer. Any data collected, which will not be required at a later time, can be deleted if you select the Purge RAM checkbox, then click the **OK** button to exit the dialog box.

Database filename
Click the Browse button to define where and to what filename the .mdb file will be written. The file name and location is displayed here

Abort Saving Data
Select this checkbox to abort saving data to the .mdb file. In other words, to save data to the .mdb file ensure that this box is NOT checked.

Display Soundings Data in Profile Window
Select this checkbox to enable the display of this data in WinFrog's Profile window.

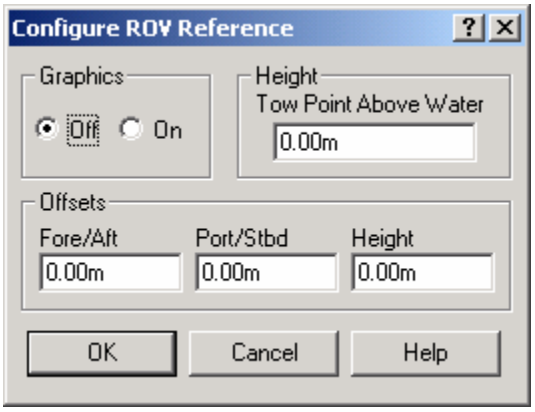
Offsets
This section of the dialog allows for entry of Offset values as measured from the vessel's Common Reference Point (CRP). Note that the Fore/Aft and Port/Stbd offsets are used for "cosmetic" visual purposes only: An echo sounder is not a positioning device, and hence its horizontal offsets have no application. If the echo sounder's position is to be recorded correctly, you must create and enable a vehicle Tracking Offset for that specific location. The offsets entered here can simply be used as a means of graphically confirming that the Tracking Offset values have been entered correctly.

The Depth Offset is applied. The entered value will be added to the received sounder data. Depths displayed in the Vehicle Text window and recorded in automatic event (i.e. .DAT, .SRC, and .RCV) and type 351 raw files will refer to the corrected depths. Note that type 411 raw data records will remain truly raw and will not reflect the depth offset correction.

Data item: CABLE MACHINERY, Siemens System, ROV REF VEH

This data item is used in conjunction with the PLOWDATA data item, discussed above, to provide a reference point on the ship for positioning the plow relative to the ship. It is usually attached to the ship vehicle in WinFrog.

Highlight the CABLE MACHINERY, Siemens System, ROV REF VEH data item and click the Edit button to open the Configure ROV Reference dialog box as seen below.



Graphics:
Select the On radio button to display the device name and a square at the location of the ROV, within the Graphics and Bird's Eye windows.

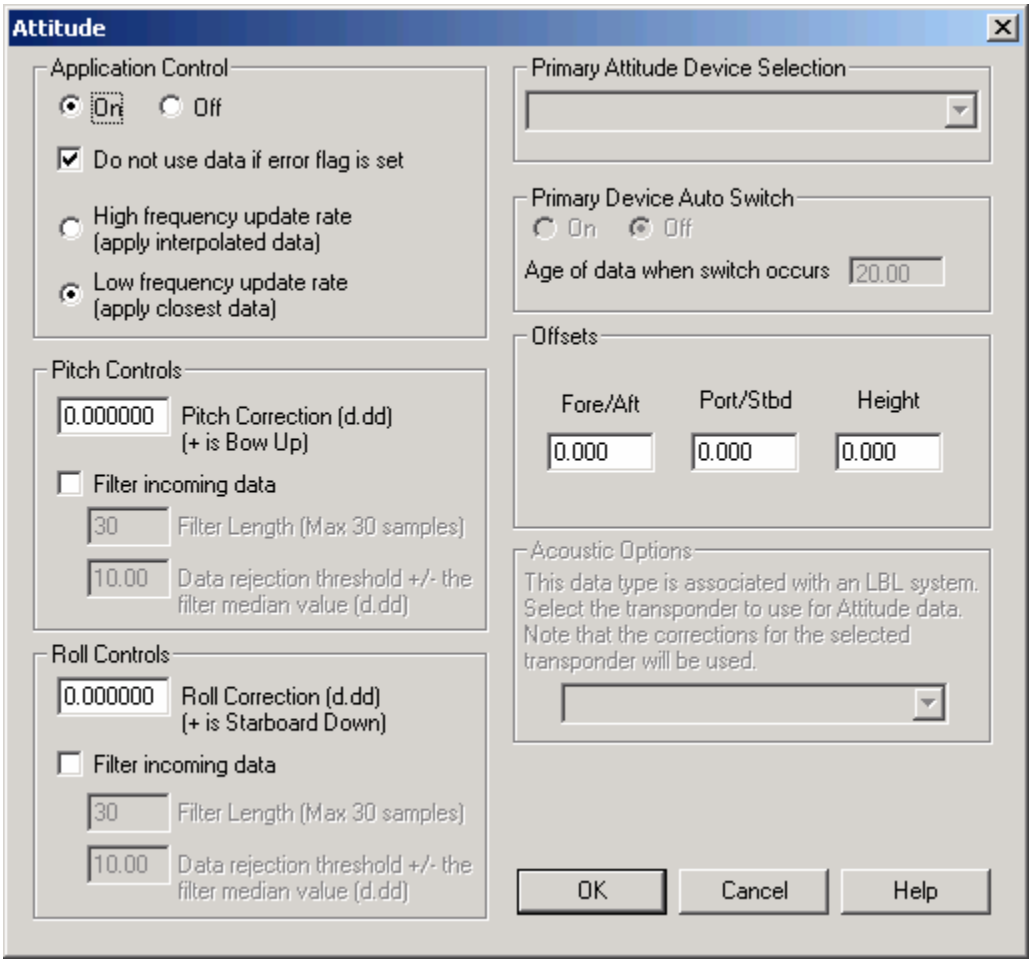
Tow Point Height:
The height of the tow point above water is added for layback calculations only if the Towed Vehicle device is used.

Offsets:
The X,Y,Z Offsets are applied from the CRP to the tow point (usually the winch) on the ship. These values are set similar to values that would be applied to any device offset within WinFrog.

Note: It is advised to use the waterline as the vertical CRP reference when sub-sea positioning devices are employed.

Data item: CABLE MACHINERY, Siemens System, ATTITUDE

Highlight the CABLE MACHINERY, Siemens System, ATTITUDE data item and click the Edit button to open the Attitude dialog box as seen below.



Attitude
By default, the sensor mode is off, meaning that data from the device will not be used in the vehicle's calculations. To turn the sensor on, and begin using the inclination corrections in the position output, click the 'On' radio button.

Error flag testing
The error flag check box is applicable to those devices that output a code indicating the data is either good or bad. If checked and the device supports such a code in its telegram, WinFrog will look at the code and if the data is indicated as bad, WinFrog will not use the data.

Sensor Update Frequency Rate
If the associated attitude sensor has a high frequency update rate (e.g. 10Hz and higher) it is appropriate to extract attitude data for application by either interpolating

or extrapolating for a given epoch. In this case, the *High frequency update* option should be selected. Some attitude sensors have slow update rates, in particular those installed in acoustic transponders that require interrogation. For these sensors interpolation/extrapolation can produce a bad value as there is insufficient information to determine the correct shape of the curve (aliasing). Thus the most current attitude needs to be used. In this case, select the *Low Frequency update* option. This option applies to the use of the attitude data by the following data items:

- POSITION
- ELEVATION
- ALTITUDE
- XPONDER
- LBL TRANSCEIVER
- PROFILE

Pitch and Roll
There are two control groups, one for each of pitch and roll. Correction values can be added in this section of the window. The correction values (entered in units of degrees-decimal degrees) are added to the raw pitch and roll values received from the device before the data is applied to the vehicle's calculations. Ensure that entered values adhere to the sign convention used by WinFrog. You can verify that the corrections are entered properly by viewing the pitch and roll values in the I/O Device window and the Vehicle Text window.

Filtering
Additionally you may filter the incoming values to remove extraneous noise or spikes – check boxes are provided to switch this feature on or off. A filter length (up to 30 samples) and a threshold value (applied to the median of the samples in the filter to obtain lower and upper bounds) can be entered. Any pitch or roll values outside of the bounds are rejected and not used in the vehicle calculations, but will be recorded in the RAW files. If either one of pitch or roll is rejected, both values are ignored, although you may set up the filtering parameters for them separately. The status of the filters, including the current valid range for each of pitch and roll, and the percentage of values rejected, can be viewed in the calculations window, selecting the appropriate ATTITUDE data item.

> ***Important:***
> Do not enable filtering unless there is a high enough data rate (say 10hz) to correctly determine the shape of the curve. Essentially, if the low frequency update rate is selected above, do not enable filtering.

Primary Attitude Device Selection
If more than one attitude device is present, you may select one of them to be primary and the others to be secondary and allow WinFrog to automatically switch between them should the primary system stop sending data or has bad data. There must be at least two attitude data items added to the vehicle to use this feature.

(Note: The attitude and offset data displayed in this dialog is for the attitude device corresponding to the data item that is being edited. Selecting a Primary Attitude Device from the drop down list does not affect these values for any attitude device in the list. Every attitude device needs to be set up for its own corrections and offsets.)

Primary Device Auto Switch
Select the On radio button to turn on this feature. Then enter the time out time in the edit box. If WinFrog does not receive data from the primary attitude device, or if it receives bad data for this length of time, it will switch to the next secondary that is enabled and has good data.

Auto Switch Feature Usage
To use this feature first turn the sensor on as described in the Attitude section above. Next, select the attitude device that you wish to be primary from the drop down list box. Then turn the primary device auto switch on and enter the time out time. Then edit all the other attitude data items and enable them in the Attitude group box. Note that the same selected primary will be displayed for all attitude data items; similarly, the automatic feature will be turned on and the time out time will be the same. However, you must individually enable each attitude device in the Attitude group box.

Offsets
These are not applicable in this case.

Acoustic Options
This applies to long base line acoustic transponders that have inclinometers. See chapter 17 for more information.

TELGRAM SPECIFICATION:

The file read by WinFrog is ASCII in the following format

towcabletension = #### ;

cuttingforce = #### ;

burialdepth = #### ;

waterdepth = #### ;

cableTension = #### ;

cablecount = #### ;

cablespeed = #### ;

towcablecount = #### ;

plowpitch = #### ;

plowroll = #### ;