# Chapter 5: Working Files

This chapter discusses the creation, selection, and use of **Working Files**.

Designating a file as a **Working File** instructs WinFrog to use that particular file for data retrieval or storage. There may be several different files of the same type on the computer's hard drive. Designating a file as the **Working File** specifies that all entry and/or editing of that type of data will occur in that specific file.

WinFrog's **Working Files** are not different in content than any other **non- working** file. All WinFrog generated files contain text-based, comma separated ASCII format data. WinFrog can also utilize some other files whose formats are specified by their third party creators. WinFrog utilizes these various files for different purposes; some are used to store data while WinFrog uses others in graphic presentations, etc.

Each WinFrog file has a unique three-letter file extension and contains different types of information. (See **Appendix B: WinFrog File Formats** for detailed information concerning the structure and contents of individual file types.)

Some **Working Files** contain coordinate data. For example, a **Working Survey Line** file contains a list of individual lines that can be displayed on screen and tracked by the helmsman. Each line is independent of the others in terms of name, coordinates, color, etc. A **Working Waypoints** file contains a list of individual target points that can be displayed and tracked. Each waypoint is independent of the others in terms of name, coordinates, etc.

Other **Working Files** are used only to refer to other WinFrog files that contain coordinate data. For example, the **Working Data (.ALG) file** simply contains a list of **data (.DAT)** files that have been created. These individual **.DAT** files contain the actual data fix information.

WinFrog can access **Working Files** from anywhere on the computer, but to keep projects organized it is recommended that the **Working Files** be kept in a single **Working Directory** on the computer's hard drive. When WinFrog was installed, default **Working Files** were created and stored in the default **Working Directory** named **Navdata**. You can use these default files for a project or create new files, as required.

Each of the different types of files used by WinFrog are easily identified by their three letter file extensions:

| File name | Extension | Contents |
|---|---|---|
| Survey line | .PTS | node coordinates and attributes of each survey line |
| Waypoint | .WPT | list of individual waypoints and their associated attributes |
| Data | .ALG | list of individual data files |
| Data | .DAT | contains automatic event information |
| Seismic Sources | .ASC | list of individual Source files |
| Source | .SRC | contains automatic event information |
| Seismic Receivers | .ALL | list of individual Receiver files |
| Receiver | .RCV | contains automatic event information |
| Logs | .LOG | manual event information |
| Picture | .PIC | list of entities comprising a picture |
| Charts | .*** | various 3rd party file types (.RML, .BSB, .HDR) |
| CRDD Database | .MDB | Cable Route Design Database |
| Xponders | .XPT | list of subsea transponders and their attributes |
| Control Stations | .CLS | list of individual control stations and their associated attributes |
| Velocities | .VEL | profile of velocities at different depths |
| Cable Events | .CET | manual event information |
| Passwords | .PWD | security password information |

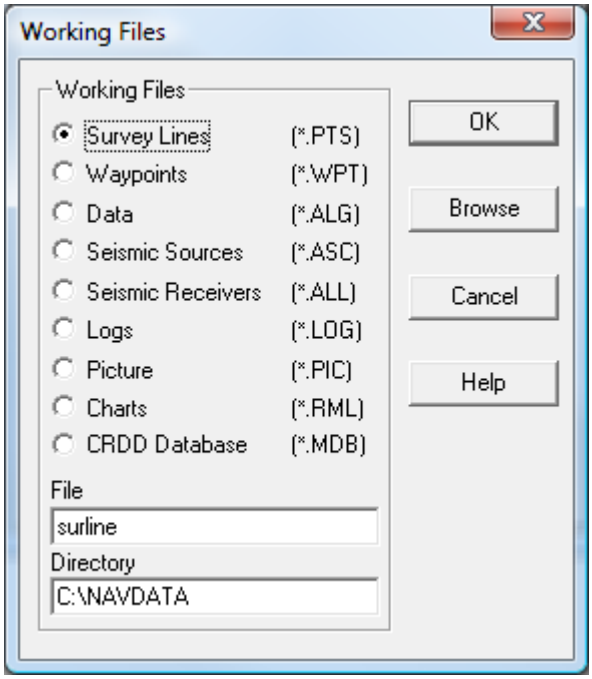
# Selecting Working Files

Working files are selected (or created) in two different ways, depending on which type is needed. The first (and quickest) way is by opening the **Select Working Files** dialog box. Use this method to select the more commonly used file types, i.e.: those files required in a typical hydrographic survey.

Other, less commonly used, WinFrog files must be created by selecting the main menu item **File**, then **New**. The following sections detail both of these methods.

## Working Files Dialog Box

The **Working Files** dialog box allows you to quickly select or create those working files most commonly used by WinFrog.




### To Configure a Working File Using the Working Files Dialog Box

**1** From the **File** menu, choose **Select Working Files**.

**2** Select the working file type by selecting the corresponding radio button.

**3** Type the path of the desired directory into the **Directory** input field and the file name into the **File** input field. **Note:** the directory must already exist in order to use it, since WinFrog will not create a new directory. If a file name that does not already exist is entered, a new file will be created with the specified name.

Or alternatively, click the **Browse** button, navigate to the desired directory, type the desired name in the **File name:** field and click **Open**.

**4** Repeat the above steps for all required file types. Once all the required **Working Files** have been specified, click **OK**.

## Creating and Selecting Less Common Working Files

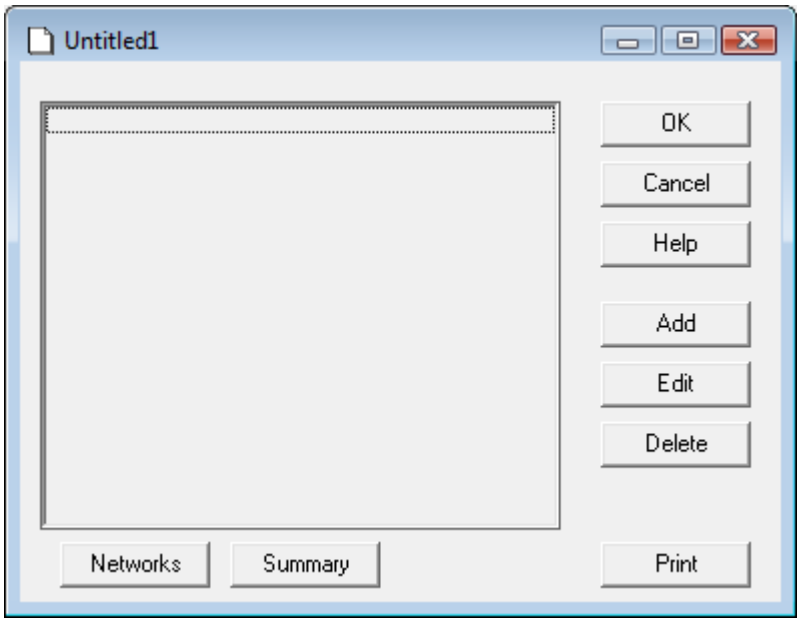
**Transponder** (**Xponder**) files, **Control Station (CtrlStation)** files, **Velocities** files, and **Cable Event** files are required only on certain specific projects such as those involved with subsurface positioning and cable installation projects. These file types are configured and selected differently from other WinFrog files.

### To Create a .XPT, .CLS, .VEL, or .CET file

**1** From the **File** menu, choose **New**

**2** From the list of available file types, choose the desired option.

For example, choosing the **.XPT** type brings up the following window:




**3** Click the **Add** button.

**4** Highlight the **Comment/Name** entry window and enter a temporary name. (You will delete this later). Click **OK** to close this and return to the previous dialog. You will see your entry reflected in the window.

**5** Click **OK.** A message will appear asking you if you want to save the changes. Select **Yes.**

**6** Once you select **Yes**, the **Save As** dialog box opens. Use the **Save as type** dropdown box to select the appropriate file type (.XPT for this example). Enter the name of the file, then click the **Save** button.

You have now created a file of that specific type.

**7** Now, open this file in order to designate it as the **Working File** for files of that type.

### To Designate an Existing File as the Working File

**1** From the **File** menu, choose **Open...**

2 From the **Files of type:** dropdown menu, select the file type you wish to open.

3 Navigate to the directory containing the file to be opened.

4 Select the desired file.

5 Click **Open**.

6 At the upper left of the dialog box, check the **Working** box.

This designates the file as the current **Working File.** Once a file is selected as the current **Working File**, WinFrog de-selects the previously selected **Working File** of the same type.

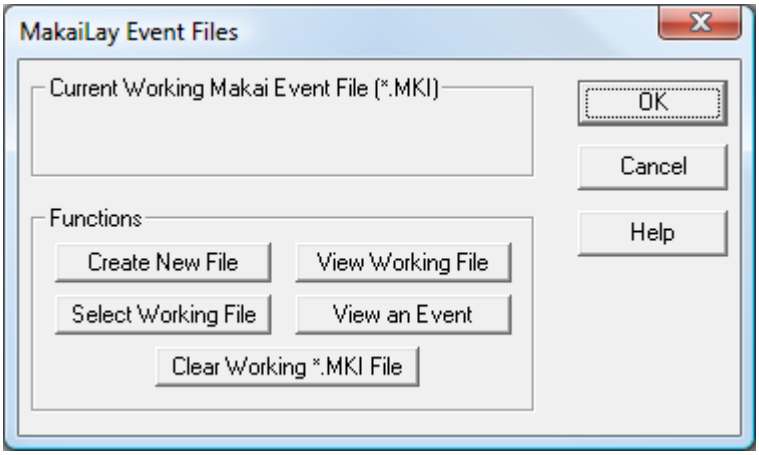
You can now edit or delete the "false" entry made when the file was created.

7 Click **OK**.

You can now access the contents of the file in the same way as you access the more common **Working Files.** (Select **File > Working Files**...)

### To Create a .MKI file

MakaiLay event files are used in conjunction with the MakaiLay interface drivers 'Tycom System' and 'DW System'. The MakaiLay operator may download a selection of events as recorded by WinFrog during the cable laying. This may be done periodically, say every six or twelve hours. To enable recording of these events by WinFrog, the WinFrog operator must set up a working *.MKI file. This is done by selecting **File > Edit Working Files > Makai Cable Event.** The **MakaiLay Event Files** dialog appears.




Use this dialog to first create a MKI file, then to select it as the working MKI file. **View Working File** provides a drop down list of the events in the file, one of which may be selected to view. **View an Event** allows you to select any MKI file and then view an event in that file.

If a file is not set up, events from MakaiLay will not be stored. Ribbit can read these MKI files.

# Working Survey Lines (.PTS) File

A **Survey Line** is a series of points (at least 2) joined together in consecutive order to create a line. All **Survey Lines** are accessed via the **Working Survey Lines (.PTS) File**. Each line in the **Working Survey Lines File** is treated independently of the others.

A **Survey Line** is made up of the following components:

- The **Start of Line**, also referred to as the **SOL**.
- Points where the line direction changes, referred to as **Alter Courses** or **A/C's**. **A/C's** are also referred to as **Segments** in the survey line coordinate entry window.
- The **End of Line** , also referred to as the **EOL**.

A **Survey Line's** length can be as long as required, with as many A/C's as needed. All Survey Line records are regarded as multi-segmented lines. (A simple point-to-point line is treated as a multi-segmented line with only one segment). Each line record contains the name, start of segment coordinates, and end of segment coordinates for each segment (the end of segment coordinates of each segment are the start of segment coordinates for the next segment).

Once a **Survey Line** has been defined in the **Working Survey Lines** file**,** it can be displayed in the **Graphics** and **Birds Eye** windows and a vehicle can be made to track the **Survey Line**. Once you have selected which line to track, WinFrog calculates such information as along-track distances from the **SOL** and **EOL**, as well as the cross-track distance perpendicular to the **Survey Line**. This information can then be displayed in one or more windows to assist the helmsman in keeping the vessel on course.

Other survey line features allow you to add a radius to a point to create a curved line, and change the line color to help differentiate one line from another. You can also have WinFrog automatically generate **Points on Line** between two existing points and you can create lines parallel to an existing line or automatically generate a series of lines in a grid pattern about a fixed point.

### To Create or Select the Working Survey Lines File

**1** Select the main menu item **File** > **Select Working Files.**

**2** Click the radio button beside **Survey Lines (.PTS).**

**3** In the **File** field**,** enter the name of an existing **.PTS** file or a new name for the **Survey Line** file.

**4** In the **Directory** field, enter the location and name of an *existing* directory where the file is (will be) located. (Alternatively, use the **Browse** button to select the appropriate directory.)

**5** Click **OK** to complete the designation of the file as the **Working Survey Lines** file.

### To Select a Track Route (.TRK) as the Survey Line

**1** Select the main menu item **File** > **Select Working Files.**

**2** Click the radio button beside **Survey Lines (.PTS).**

**3** In the **File** field**,** enter the name of an existing **.TRK**

4 In the **Directory** field, enter the location and name of an *existing* directory where the file is located. (Alternatively, use the **Browse** button to select the appropriate directory.)

5 Click **OK** to load the Track Route file as the **Working Survey Lines** file.

The Track Route file will be read when you click OK and you will be notified of any anomalous data that is found. Once the file has been read, a **.PTS** file will be created in the same directory as the original **.TRK** file with the same name. If a file of that name already exists, you will be prompted to choose to overwrite the existing file, enter a new name for the file or cancel opening the new file.

## Editing the Contents of the Working Survey Lines File

WinFrog stores **Survey Line** information in the **Survey Lines (.PTS)** file. This file contains all information pertinent to survey lines, including the line name(s) and all the coordinate points that define each of the line segments.

### To Edit the Working Survey Lines File

1 From the **File** menu, choose **Edit Working Files... > Survey Lines**.

WinFrog opens a dialog box whose title bar reflects the name of the **Working Survey Lines File.**

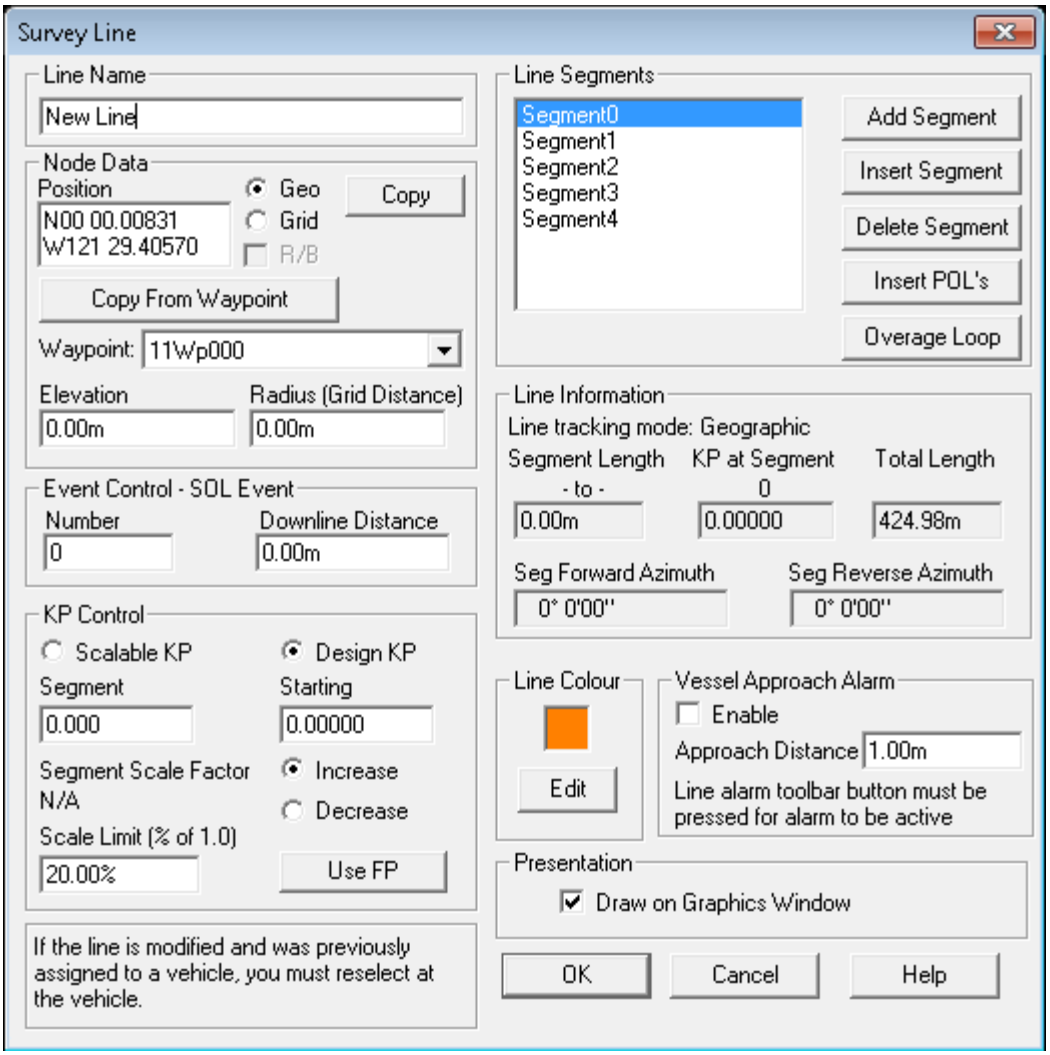
This dialog window allows you to **Add, Edit,** and **Delete** survey lines. You can also create new survey lines parallel to an existing survey line, and create a grid of survey lines around a specific coordinate.

## Creating a New Survey Line

A **Survey Line** is created by defining the coordinates of two or more points. These coordinates define the end points of each segment of the line.

### To Create a New Survey Line

1 Click the **Add** button to open the **Survey Line** dialog box, as seen below.




**2** In the **Name** field at the top of the **Survey Line** dialog box, enter a unique name for the line.

**Note:** problems will arise if two lines have the same name; specifically, if you try to track a survey line that is listed twice in the same file, WinFrog will select the first line found in the file.

**3** Highlight **Segment0** in the **Line Segments** area, indicating that you will be entering the coordinates for the **Start of Line (SOL)**.

**4** Enter the coordinates in the coordinate field.

These can be either manually entered or copied from the last position where a Graphics window cursor was positioned (clicked) using the **Copy** button. Also, the coordinates of waypoints can be copied to the coordinate field. To do this, select a waypoint from the drop down list and click the **Copy From Waypoint** button.

This sets the coordinates of the first point of the new line. Determining which point is the **Start of Line** is significant because it determines the direction of the line, as well as which side of the line will be deemed the starboard or port side of the line.

5 Select **Segment1** in the **Line Segments** list.

6 Enter the coordinates of the end of the first segment of the line.

You can also define this point by selecting the **R/B** checkbox to enter the **Range** and **Bearing** from the previous point. Ensure the distance units are correct and note that the bearing **must be** entered in **degrees and decimal degrees** (**dd.dddd**) format. If the point is below vertical datum (i.e. a depth) enter the elevation value as negative.

7 To **Add** another point to the end of the survey line, click the **Add Segment** button.

Enter the coordinates of the additional points.

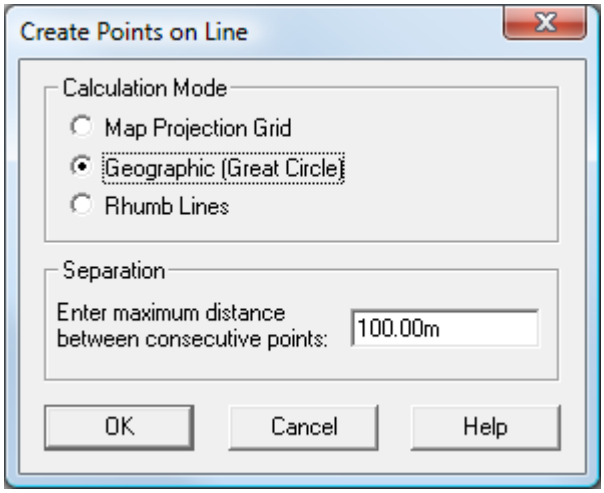
8 To **Insert** a point between two previously entered points, first highlight the **Segment** that you want the new point to **precede**, then click the **Insert Segment** button. **Note:** a new point is inserted in the coordinate listing just above the point that was highlighted.

The coordinates of the newly added point must be edited to the desired value.

9 Highlight the newly created **Segment**, then highlight and edit the coordinates as required.

10 To **Delete** a point, highlight the appropriate segment and select **Delete Segment**.

11 You can use WinFrog to generate "points on line" between two previously entered points, based on a defined maximum distance from a selected segment. First, highlight the segment that you want the new points to **follow**, then select the **Insert POL's** button. The **Create Points on Line** dialog box appears, as seen below.




WinFrog will generate points on the segment immediately following the selected segment using the inverse and direct algorithms for the selected Calculation Mode based on the entered Separation value. Note that the distance from the last new POL to the following original node may be less than the entered separation.

12 Highlight the value in the entry window and type in the desired interval between points. Click OK. WinFrog will create as many points that will evenly fit between the existing points.

13 The Line Colour panel displays the current colour assigned to the line. To change this, click the associated Edit button, select the desired colour and click OK.

**14** The Vessel Approach Alarm panel allows you to select the line to be used for alarming if a vehicle comes within the specified distance. To configure this line to be used for this alarm, check the respective Enable box and enter the distance of closest allowed approach. Note that this alarm is not activated until the Line Alarm toolbar button ( 

) is clicked.

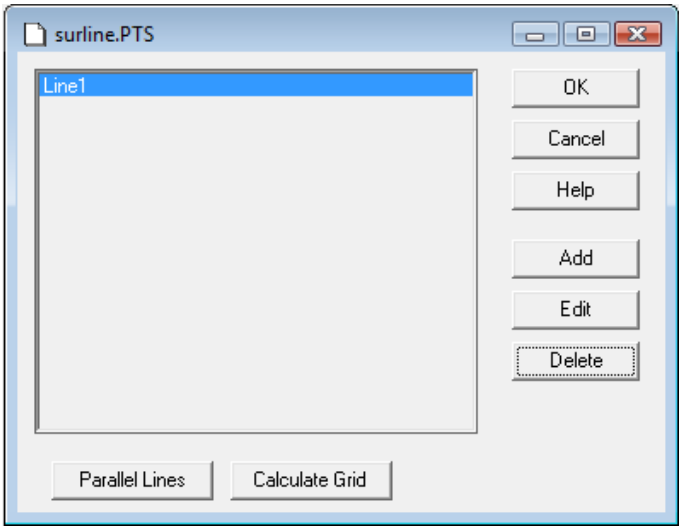
**Note:** The **Line Information** section of the survey line dialog box presents information pertaining to the selected segment. It also states the line tracking mode currently in affect, as configured via the main menu Configure – Units - Calculations option. The information displayed is based on this calculation mode and includes the following:

- **Segment Length** along with the nodes that define the segment, e.g. in the example, Segment 3 is selected in the Line Segment list, this is defined by the nodes 2 and 3.
- **KP at Segment** gives the **Kilometer Post** value at the end of the selected segment. If there is a curve at this node, the KP is given for the centre of the curve.
- **Total Length** gives the total length of the line, including curves if they are present.
- **Seg Forward Azimuth** gives the forward azimuth of the selected segment.
- **Seg Reverse Azimuth** gives the reverse azimuth of the selected segment.

**15** Visibility of the line can be switched on or off by the selection of the **Draw on Graphics Window** checkbox.

**16** Click **OK** to close this window and save the changes.

**17** The line is added to the list of Survey Lines in the Working Survey Lines file, as shown below.




To create additional **Survey Lines**, repeat this process giving the new **Survey Lines** unique names.

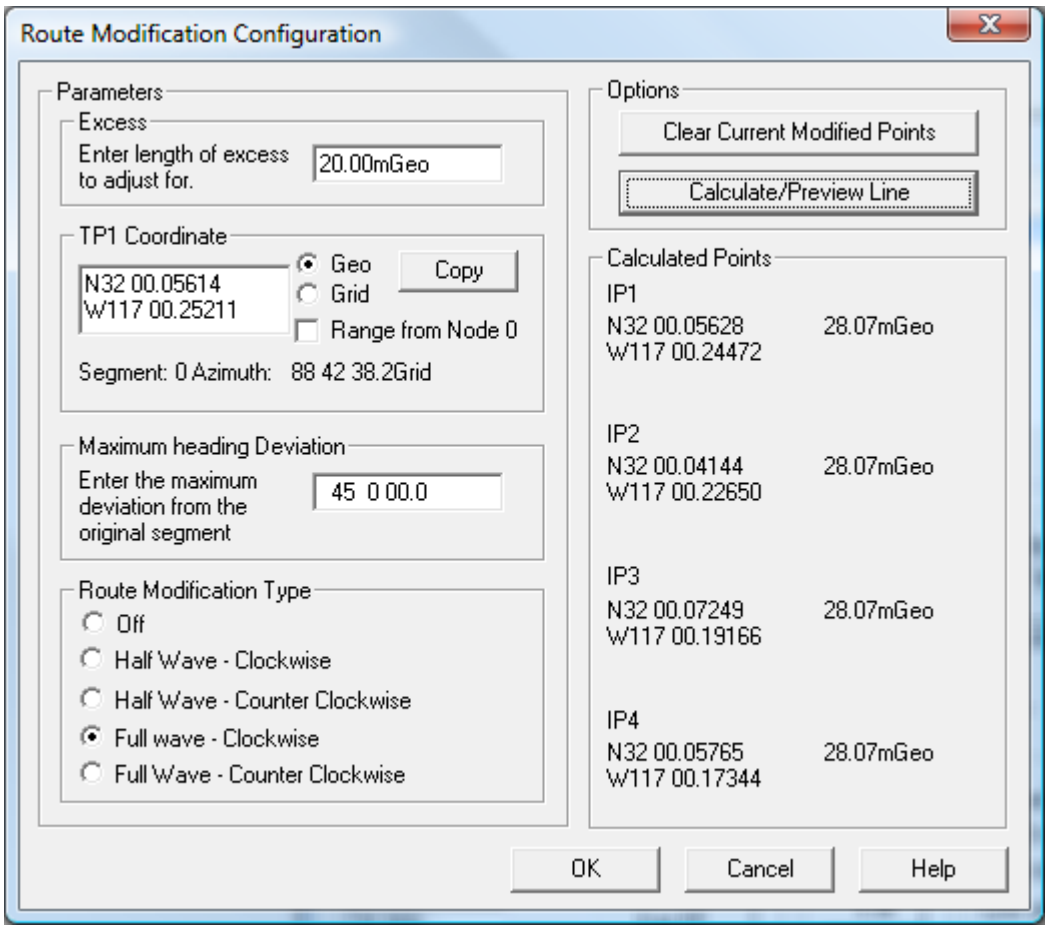
## Overage Loop Option

WinFrog supports the capability to generate the necessary alteration in the design route to allow for the laying of excess flexible pipe. This is referred to as an Overage Loop. This option is accessed via the Overage Loop button in the Line Segment panel and includes the option to preview the loop in the Graphics Window.

### To Apply an Overage Loop

**1** Select the appropriate line in the **Survey Line** dialog box and click the **Edit** button.

**2** Select the segment the overage loop is to be located on and click the **Overage Loop** button.




**3** In the **Excess** panel, enter the actual (true geographic) length of excess flexible pipe that is to be laid in the overage loop.

**4** In the **TP1** panel, select the coordinate type (Geo or Grid) and enter the coordinate that the loop is to start at. This can be either manually entered or copied from the last position a Graphics Window cursor was positioned (clicked) using the **Copy** button. In either case, WinFrog calculates the point on the segment that is closest to the entered coordinate. Alternatively, the range from the node that defines the start of the selected segment can be entered by selecting the **Range from Node n** checkbox. This distance is entered in grid if the Grid radio button is selected and actual (true) if the Geo radio button is selected.

5 In the **Maximum heading Deviation** panel, enter the maximum deflection angle allowed for any tangent defining the overage loop components.

6 In the **Route Modification Type** panel, select the type of overage loop to use.

7 Click the **Calculate/Preview Line** button to calculate the overage loop and preview it any Graphics or Bird's Eye window that is open. The previewed line is displayed in white. The calculated nodes are displayed in the **Calculated Points** panel.

8 To clear existing overage loop nodes, click the **Clear Current Modified Points** button.

9 To accept the overage loop, exit the dialog with **OK**.

10 During the process, if at any time WinFrog determines that a problem exists, you are alerted. WinFrog will not let the overage loop calculation proceed if a problem exists. An example of this is if based upon the selected staring point and length of excess flexible pipe to lay results in an end of the overage loop that extends beyond the following node.

It is important to note the following with respect to the overage loop option:

- Only one overage loop can be added to a survey line.
- The Overage Loop button is only active if the selected segment can support a loop. Thus when the last segment is selected, this button is disabled.
- WinFrog keeps track of the overage loop nodes, including when saving to and loading from a survey line file. In the **Survey Line** dialog in the **Line Segment** panel, if an overage loop has been added to a line, the segment the loop was added to is indicated with an asterisk.
- If a loop has already been added to a line, the Overage Loop button is only active when that segment is disabled. If another loop is to be added to the line, the existing loop must be cleared first.
- The nodes associated with the overage loop become actual nodes in the survey line and thus are incorporated in line tracking calculations, including alongline, offline and KP.

## Defining Curves in a Survey Line

As previously mentioned, **Survey Lines** are created by entering the coordinates of a series of points in consecutive order. The line that results simply joins those points together directly. However, some **Survey Lines** are defined with a certain curvature at these changes of direction. Pipe laying, for example, requires curves of a specific minimum radius at direction changes to accommodate for the rigidity of the pipe.

You can enter a radius in the **Radius Grid Distance** field for any line points except the **Start of Line** and **End of Line**, since the curve radius must be applied to a segment that is between two other segments. The radius is used to describe an arc between the two line segments at the point selected in the **Line Segments** list. The point to which the radius is applied is understood by WinFrog to be the **point of intersection (PI)** of the two tangents between which the curve is applied. If mathematically possible, WinFrog inserts the curve tangentially into the survey line. A message will appear if the operation is not mathematically possible.

To enter a radius, simply highlight the designated **PI** segment, and then enter a radius value in

the **Radius Grid Distance** window. Click in any other window to make the values in the **Line Information** windows change to reflect the changes. Now the **KP at Segment** and **Total Length** values are now calculated using the curve information, not the tangent information.

**Note:** If you select the **Scalable KP** radio button, any radii entered for any line segment is ignored. Scalable kilometer post calculations are based on a line segment-to-line segment basis. (For more details see the **Using the Kilometer Post Control** section later in this chapter.)

## Creating New Survey Lines Parallel to Existing Survey Lines

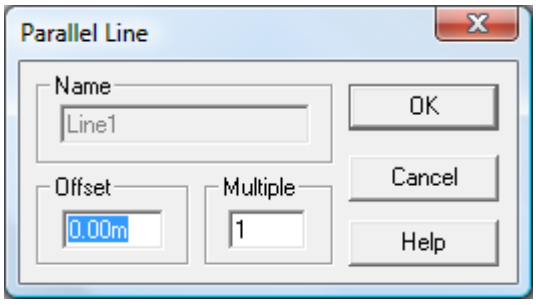
You can use WinFrog to generate new survey lines that are parallel to an existing survey line. This saves time that would otherwise be spent calculating Start of Line and End of Line coordinates and also ensures that the parallel line coordinates are correct.

### To Create Survey Lines Parallel to Existing Survey Lines

1. Choose **File** > **Edit Working Files...** > **Survey Lines** to display the contents of the **Working Survey Lines** file.

2. Click on the name of the existing **Survey Line** to which the new parallel lines will be created.

3. Click the **Parallel Lines** button at the bottom of the dialog box. The **Parallel Line** dialog box appears, as seen below.




4. Highlight the **Offset** field. This value defines the distance that the new lines will be offset from the chosen line.

5. Enter the offset value. (Remember, in WinFrog, **starboard** offsets are entered as **positive** values and **port** offsets are entered as **negative** values.)

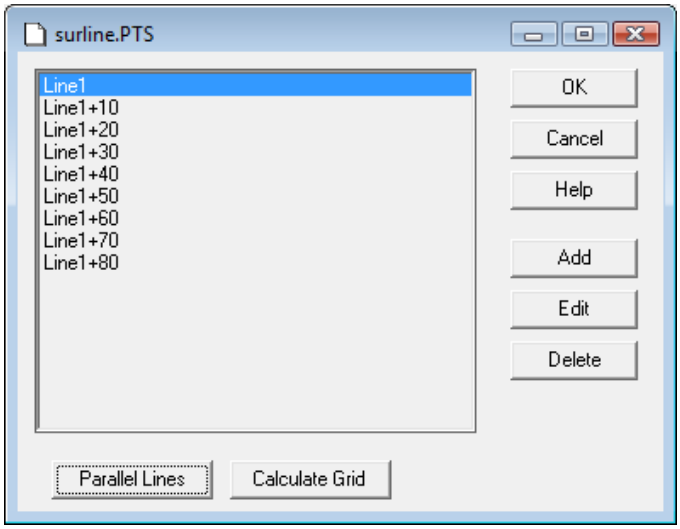
   **Note:** The **port** and **starboard** sides of the line are designated as viewed from the start of the line towards the end of line.

   If the original survey line contains a curve, the new parallel lines' curve radii will be increased or reduced by the offset value. This may result in incorrect line segment calculations if the radius is reduced to zero (or less).

6. Highlight the **Multiple** field.

7. Enter the desired number of survey lines to be created parallel to the selected line.

8. Click **OK** to close this window and initiate the creation of the new survey lines.




The **Survey Lines** dialog box now lists the newly created survey lines. The names of the new lines are based on the original line - appended with the offset value. You can highlight and edit any of these lines as described above.

**9** Click **OK** to close the **Survey Lines** dialog box and save the new lines.

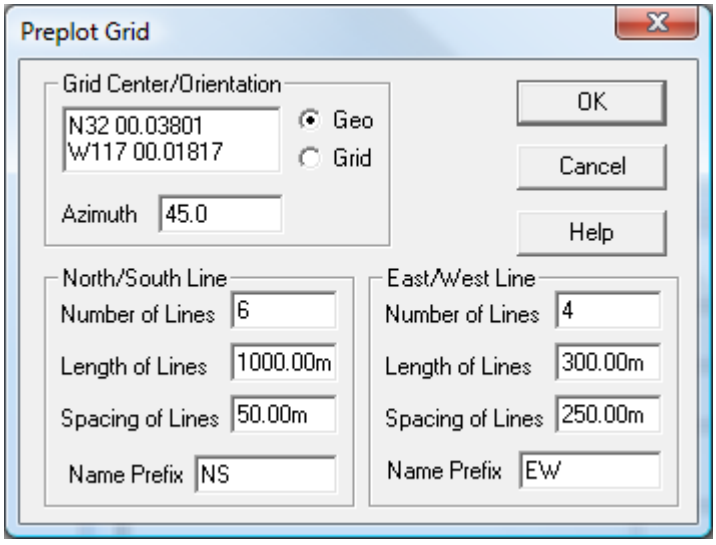
See the **Operator Display Windows** chapter for information about configuring the **Graphics** window to display the survey lines.

## Creating a Grid of Survey Lines Around a Point

Some projects require a grid pattern of survey lines centered around a single point. WinFrog has the capability to automatically generate a grid of survey lines, based on user-entered values such as Center Position, the Number of Lines, Line Offset, Line Length, and Orientation.

### To Create a Grid of Survey Lines

**1** With the **Working Survey Lines** dialog box open, click the **Calculate Grid** button to display the **PrePlot Grid** dialog box, as seen below.



2 In the **Grid Center/Orientation** field, enter the coordinates of the center point of the grid.

3 In the **Azimuth** field, enter the rotation of the grid in **degrees - decimal degrees (dd.dddd)**. The rotation refers to the bearing of the N/S lines, as measured clockwise from North.

4 In the **N/S Line** area, enter the **Number of Lines** that are required in the **North/South** direction.

If an even number of lines is to be created, half the number of lines are created to the left of the center point and half the number of lines are created to the right of the center point. If an odd number of lines are to be created, one line will be created directly over the center point.

5 In the **N/S Line** area, enter the length required for the lines in the **Length of Lines** field.

The lines are created so that the center point coordinates will be perpendicular to the mid-point of each line.

6 Enter a value in the **Spacing of Lines** area that reflects the required spacing between lines in the North/South direction. This entry is always a positive value.

7 In the **Name Prefix** field, enter the label you would like to precede each line name. For example, enter **NS** to indicate that these lines are North/South lines. WinFrog will add a numerical offset value to this prefix so that each line created will have a unique line name.

8 To create the lines in the East/West direction, repeat Steps **4**–**7** for the fields in the **E/W Line** area.

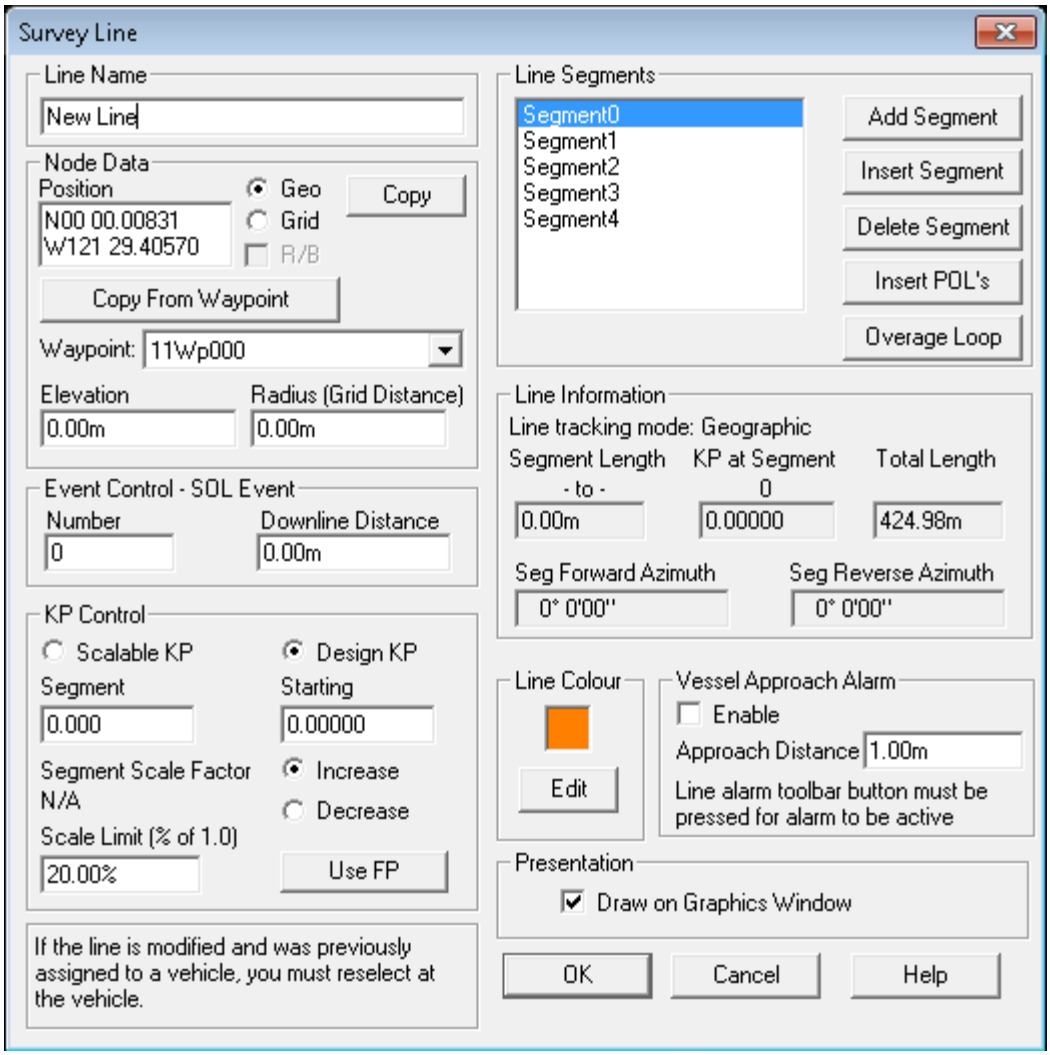
9 Once the parameters of the survey grid have been configured, click **OK**. WinFrog will generate the new lines and present them in the **Working Survey Lines** file. The newly created lines are completely independent and no different than any other lines contained in the **Working Survey Lines** file. You can edit each of the lines to change the name, color, etc. as required.

**Note:** If the grid was generated incorrectly, all of the newly created lines must be deleted and the new lines re-generated following the same procedures as there is no single "re-calculate grid" option.

10 Click **OK** to save the changes to the **Working Survey Lines** file. The new survey lines are now also visible in the **Graphics** window, if configured to display them.

## Using the Kilometer Post Control in the Survey Line Dialog

The **KP** (**Kilometer Post**) **Control** section of the **Survey Line** dialog box (as seen below) enables you to alter a **Survey Line's KP** value by selecting either **Scalable KP** or **Design KP**.




The two **KP Control** options are discussed in detail below.

## Design KP

Selecting the **Design KP** radio button in the **KP Control** area of the **Survey Line** dialog box results in kilometer post calculations executed based on a specified **Starting KP** user entry and increment selection (**Increase** or **Decrease** radio button). The value entered in the **Starting KP** field under the **Design KP** radio button always refers to **Segment 0** (i.e. SOL) of a **Survey Line**. The selection of the **Increase** or **Decrease** radio buttons indicates whether the kilometer post value increases or decreases downline. **Note:** if curves are present in the survey line, the curves are included in the kilometer post calculations.

## Scalable KP

Selecting the **Scalable KP** radio button in the **KP Control** area of the **Survey Line** dialog box allows you to input specific kilometer post values for each line segment. This entry then defines a scale factor used for that segment. This is often required when performing pipeline inspection surveys when, for example, a previous survey has assigned KP values for specific points along the structure. These assigned KP values do not necessarily match the actual calculated distance

between the respective points, but a KP value is entered so that subsequent surveys and inspections will be scaled to relate all information to the original KP data.

To accomplish this, specific KP values (as calculated by the initial survey) are entered in the **Segment** field under the **Scalable KP** radio button for each line segment selected from the **Line Segment** list. WinFrog then calculates a scale factor for that segment and applies the factor to the actual (new) KP distances to determine a scaled segment KP value for any point along the route.

**Note**: using the **Scalable KP** option requires a scale factor to be entered for every entered line segment.

The respective calculated **Segment Scale Factor** value is displayed below the **Segment** field as data are entered for each line segment highlighted in the **Line Segments** list. (You must click in any other entry window in this dialog box to update the value to reflect a new KP entry). For example, if **Segment2** is selected from the **Line Segment** list, the scale factor displayed is that for the first line segment (from **Segment1** to **Segment2**).

You can also enter a **KP Scale Limit**, which is used to test the calculated scale factor for each segment. The default value is 20 percent. When the line is assigned to a vehicle, WinFrog performs this test after the **Survey Line** dialog box is exited. If the test detects a violation after exiting the dialog box, a message box appears detailing the violation and requiring you to return immediately to the **Survey Line** dialog box to review and make adjustments as required. If the test detects a violation when the line is assigned to a vehicle, a message box displays detailing the violation, but the line is still assigned and operation continues. The onus is on you to review the line data and make the appropriate modifications. This test is applied at both points in the WinFrog operation to cover the case of reading a line file into WinFrog without actually reviewing the data from the **Survey Line** dialog box.

### Use FP/KP

If you require the stationing of points to be displayed in foot units instead of kilometers, click on the **Use FP** button. Observe the change in the KP values to the standard equivalent. The button also changes to now display **Use KP** should you want to switch back in the other direction.

## Line Information

The **Line Information** area on the lower right side of the **Survey Line** dialog box is intended to assist you in ensuring the correctness of the survey line data as it is entered.

The **Segment Length - to -** displays the calculated line segment length for the line segment immediately before the highlighted point, as selected from the **Line Segments** list.

The **KP at SegmentX/MidCurveX** displays the KP associated with the selected segment. If **Design KP** is selected, the KP is calculated, and in the case of a curve, the KP for the midpoint of the associated curve is shown; otherwise, the KP displayed is for the selected segment itself. If **Scalable KP** is selected, the KP is that entered for the selected segment.

The **Total Length** field displays the total line length. If curves are present and the KP mode is **Design**, the length is calculated including the curves rather than just directly point to point.

It is important to note that these calculations and all real-time line tracking calculations are

performed either on the map projection or the working ellipsoid, depending on the user selection in the **Line Distance Calc** area of the **Units** dialog box (**Configure > Units**).

## Event Control - SOL Event

The **SOL Event** area in the **Survey Line** dialog box is used to assist the configuration of events. For more information, see the **Eventing** chapter.

1 In the **Number** field under the **SOL Even**t area, enter the event number to be used at the **Start of Line**. This number will be recalled as the default **SOL event number** when eventing is configured.

2 In the **Downline Distance** field under the **Sol Event** area, enter the downline distance from the **Start of Line** to record the first event. This is usually left as **0.00**.

## Vessel Approach Alarm

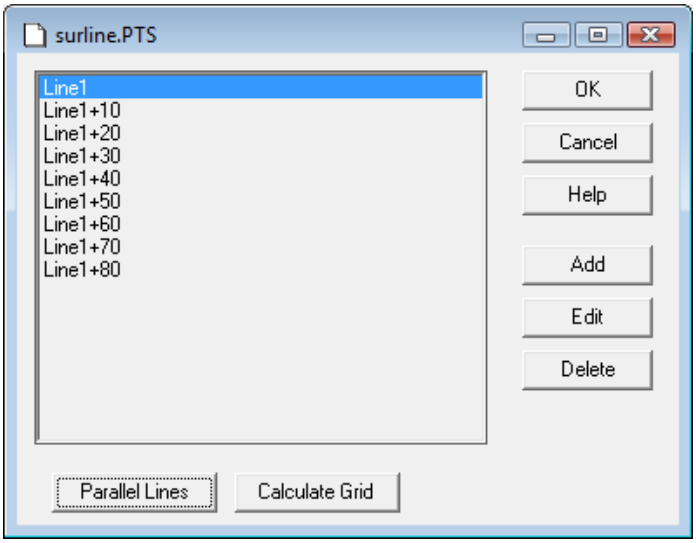
If an alarm is desired when a vessel approaches a certain location, you can create a line then enable the Vessel Approach Alarm and enter a distance. When one of the points describing the vessel shape comes within the specified distance, the computer will beep at 2 Hz. Several lines can be enabled. To toggle the beeping on/off, click the “Line” button on the WinFrog tool bar (see the Speed Toolbar section in chapter 1).

## Editing the Working Survey Lines File

For a variety of reasons, it may be necessary to modify one or more of the survey lines contained in the **Working Survey Lines** file.

### To Edit the Working Survey Lines File

1 From the **File** menu, choose **Edit Working Files... > Survey Lines**.



### To Edit a Survey Line

**1** Select the survey line to be edited.

**2** Click the **Edit** button.

The **Survey Line** dialog box opened is identical to the dialog box that was used to create the survey line.

**3** Change any of the available survey line parameters desired.

**4** Click **OK** to save the changes when finished.

## Deleting a Survey Line

Any existing survey line can be removed from the **Working Survey Lines** file.

### To Delete a Survey Line

**1** From the **File** menu, choose **Edit Working Files... > Survey Lines**.

**2** Select the survey line to be removed.

**3** Click the **Delete** button.

**4** Click **OK** to confirm the changes.

## Creating a Survey Line from the Working Waypts File

WinFrog can create a survey line using information already entered into the **Working Waypoints** file. This saves time and increases the accuracy of the entries, especially when entering coordinates of long survey lines with many segment entries.

### To Create a Survey Line from Waypoints in the Working Waypoints File

**1** From the **File** menu, choose **Edit Working Files... > Waypoints.**

**2** Select the desired waypoints.

Multiple waypoints can be selected by holding the **Ctrl** key on the keyboard and clicking the desired waypoints. You can also use the **shift** key with the mouse to highlight multiple waypoints listed in continuous order.

**3** Simultaneously press the **Ctrl+Insert** keys on the keyboard. This copies the coordinates of the waypoints to the computer's "clipboard" memory. Click **OK** to close the **Working Waypoints** file.

**4** From WinFrog's **File** menu, choose **Edit Working Files... > Survey Lines.**

**5** Simultaneously press the **Shift+Insert** keys on the keyboard.

WinFrog creates a new survey line with the coordinates of the waypoints used as the coordinates of the survey line points (segments), in the same order that they were found in the **Working Waypoints** file. The name of the new survey line will default to the name of the first waypoint that was copied. You can now highlight and edit this survey line just like

any other line in the **Working Survey Lines** file.

## Creating a Survey Line from the Working Logs File

WinFrog can create a survey line using information already entered into the **Working Logs (.log)** file. The **Working Logs** file contains event data collected manually by the user. Note that the manual events can contain one or multiple vehicle's positions. If multiple positions are recorded, WinFrog uses all positions (in the order found) to create the new survey line.

### To Create a Survey Line from Events in the Working Logs File

1. From the **File** menu, choose **Edit Working Files... > Logs.**
2. Select the desired manual events.

   Multiple events can be selected by holding the **Ctrl** key on the keyboard and clicking the desired events. You can also use the **shift** key with the mouse to highlight multiple events listed in continuous order.
3. Simultaneously press the **Ctrl+Insert** keys on the keyboard. This copies the coordinates of the events to the computer's "clipboard" memory. Click **OK** to close the **Working Logs** file.
4. From WinFrog's **File** menu, choose **Edit Working Files... > Survey Lines.**
5. Simultaneously press the **Shift+Insert** keys on the keyboard.

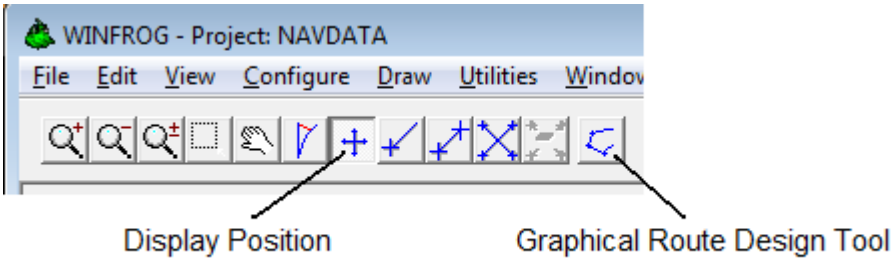
   WinFrog creates a new survey line with the coordinates of the events used as the coordinates of the survey line points (segments), in the same order that they were found in the **Working Logs** file. The name of the new survey line will default to the name of the first event that was copied. You can now highlight and edit this survey line just like any other line in the **Working Survey Lines** file.

## Creating a Survey Line using the Graphical Route Design Tool

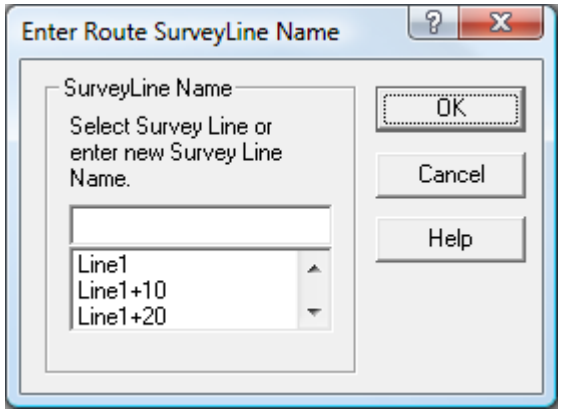
WinFrog's **Graphical Route Design** tool can be used to create a survey line using coordinates obtained by simply clicking a series of points on the **Graphics** or **Bird's Eye** displays. This tool provides a quick and easy way to create (or edit) survey lines whose coordinates need not be exact. (The accuracy depends on the Graphics display scale and the user's ability to move the mouse to the exact coordinates required). The **Graphical Route Design** tool is found in the Speed Tool bar, as is the **Display Position** button.

### To Create a Survey Line using the Graphical Route Design Tool

1. Before the **Graphical Route Design** tool is enabled, ensure that **only** the **Display Position** option is enabled in the Tool bar. (i.e., ensure that the zoom window and mouse pan buttons are not enabled).




**2** Click on the **Graphical Route Design** icon. The **Enter Route SurveyLine Name** dialog box appears as seen below.




**3** Click in the top entry window and type in the name of the survey line to be created. WinFrog lists the names of the existing survey lines found in the **Working Survey Lines** file. You could also select and edit one of these lines instead of creating a new line. For this example we will create a new line.

**4** Click **OK** to close this window. Note that WinFrog now creates a new display (as shown below) that shows the coordinates of the mouse pointer as it moves about the limits of the **Graphics** display space.


As line points are specified on the **Graphics** display, this display will update to include the newly created line's **Total distance**, and the last segment's **Distance** and **Azimuth**.

**5** With the mouse pointer located at the desired location within the limits of the **Graphics** display, click the left mouse button. A red circle symbol is plotted at the selected location.

**6** Repeat step 5 to create new points on the survey line.

**7** New points on line can be created between two existing points. Move the mouse pointer to the desired location for the new point on line. Once the pointer is close enough to the line

segment, it changes is appearance from a straight cross to a circular design. Once the pointer has changed in appearance, you can click the left mouse button to create a new point on line.

**8** Any point on line can be moved or deleted. To move a point, move the mouse pointer over the desired point. When the mouse pointer is close enough to the point, it changes is appearance from a straight cross to a more ornate cross design. To move the point, simply hold down the left mouse button as you drag the point to its new location.

To delete a point, move the mouse pointer over the desired point. When the mouse pointer is close enough to the point, it changes is appearance from a straight cross to a more ornate cross design. To now delete the point, click the right mouse button and select **Delete Point** from the presented options.

**9** Once all line editing has been completed, you can save this line to the **Working Survey Line** file. Click the **Graphical Route Design** tool icon. A confirmation message appears asking "Do you want to save this route to the surveyline file?" Click the **Yes** button to save the line to the **Working Survey Line** file.

This line can now be found and edited in the **Working Survey Line** file.

## Tracking a Survey Line From the Working Survey Lines File

Any vehicle in WinFrog can track any survey line contained in the **Working Survey Lines** file. When **Survey Line Tracking** is enabled, WinFrog constantly calculates the downline distance and perpendicular offline distance of the vehicle's current tracking point. This information is displayed in the **Vehicle Text Window**, **Helmsman Display**, and **Attitude Display.**

### To Enable Survey Line Tracking

**1** Move the mouse point to within the limits of the **Vehicle Text** window and click the right mouse button.

**2** Select the **Setup Line Tracking** option. For more information on enabling **Survey Line Tracking**, refer to the Vehicles chapter.

# Working Waypoints (.WPT) File

A "**waypoint**" is a singular target or destination point. For example, a waypoint could be the target position for a rig move, a rock, or even the pier. Once a **Working Waypoints (.WPT)** file is defined in WinFrog, waypoints can be added and edited. Once a waypoint has been added to the **Working Waypoints** file, it can be displayed on the **Graphics** and **Bird's Eye** displays. Also, any of the points contained within the **Working Waypoints** file can be tracked. Tracking involves the calculation and display of the range and bearing from a vehicle to a waypoint. As the vehicle moves, WinFrog re-calculates and displays the range and bearing automatically in the **Vehicle** window. You can also configure WinFrog to sound an alarm when the vehicle crosses the boundary of a certain radius around a waypoint.

## Adding a Waypoint to the Working Waypoints (.WPT) File

### To Create or Select the Working Waypoints File

1 Select the main menu item **File** > **Select Working Files...**

2 Click the radio button beside **Waypoint (.WPT).**

3 In the **File** field, enter the name of an existing waypoint file or the name of new **Working Waypoints** file.

4 Under **Directory,** type in the location and name of an *existing* directory.

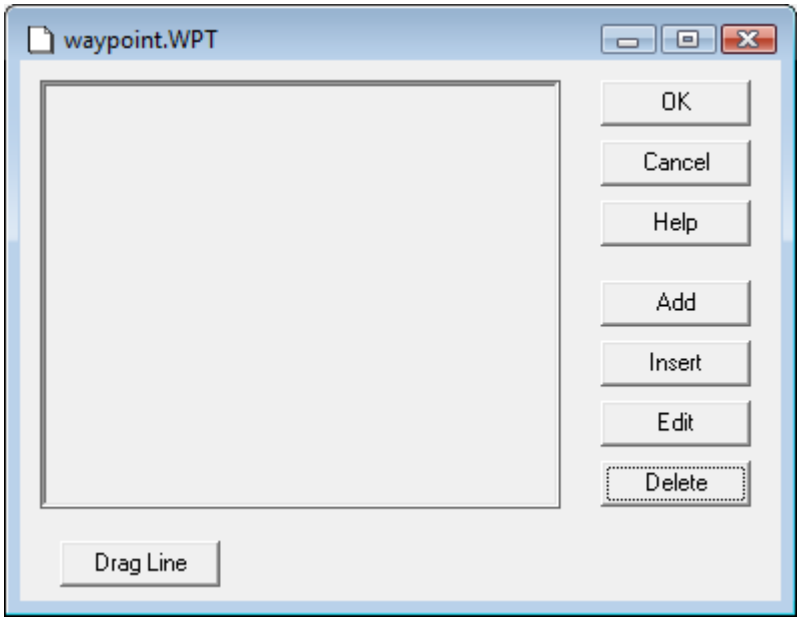
5 Click **OK** to complete the selection of the file as the **Working Waypoints** file.

## Creating New Waypoints

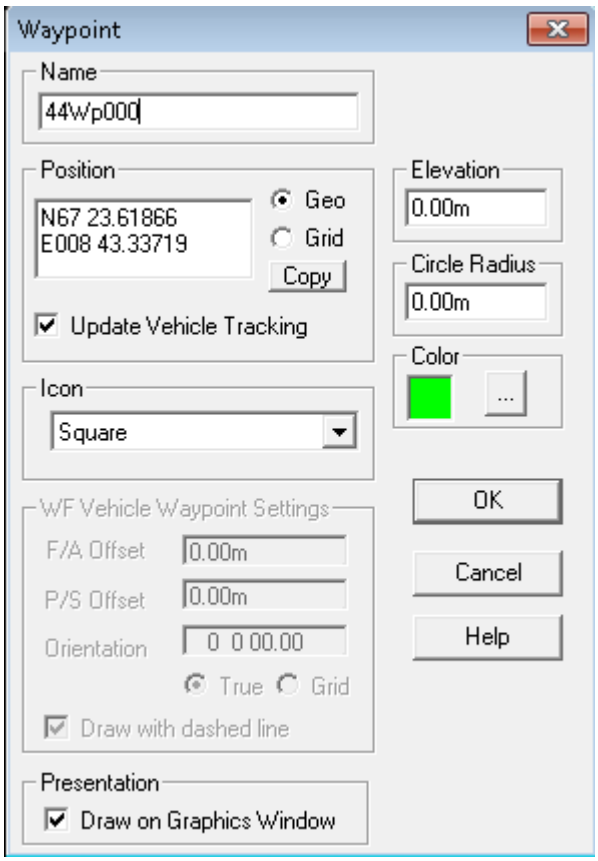
There are two ways to add a waypoint to the **Working Waypoints** file. You can edit the contents of the **Working Waypoints** file and adding a new waypoint from that location or use the **Add Waypoint** shortcut in WinFrog's **Graphics** and **Bird's Eye** displays. Both methods are detailed below.

### To Create a New Waypoint from Within the Working Waypoints File

1 From the **File** menu, choose **Edit Working Files... > Waypoints.** WinFrog opens the **Working Waypoints** file, shown below.




2 Click the **Add** button.




**3** In the **Name** field, type a unique name for the waypoint.

**4** Highlight the coordinate value in the **Position** entry window.

**5** Enter the coordinates of the waypoint**.**

The coordinates can be either entered in geographic latitude and longitude (if the **Geo** radio button is selected) or in grid Northing and Easting (if the **Grid** radio button is selected).

**6** The **Update Vehicle Tracking** checkbox ensures that when the position of a waypoint is changed by the user while a vehicle is tracking that waypoint, the vehicle receives the new position. If the checkbox is left unchecked, the vehicle will resume tracking the old position.

**7** Type in an elevation for the waypoint in the **Elevation** field.

**Note:** depths are negative values in this case. The elevation is used when viewing the waypoints in the **Profile** window and for **dZ** (delta depth) **waypoint** tracking calculations.

**8** Using the dropdown menu under the **Icon** area, select the icon to be used when displaying the waypoint in the **Graphics** and **Bird's Eye** windows.

The following choices are available:

- Square
- Circle
- Triangle
- Point

- Wreck
- Sewer/Pipeline
- Beacon - Triangular, Square, or Radio/Radar
- Post/Pile
- Rock
- Light - Directional or General
- Marker - General Buoy, Barrel Buoy, or Spherical Buoy
- Marker - Bicolor
- Bullseye
- Anchor
- Mine
- Existing vehicle outline

**9** Enter a value in the **Circle Radius** field, if desired.

This configures WinFrog to display a circle around the waypoint. This feature is useful when you want to stay a specified distance from a waypoint.

**Note**: This does not automatically enable WinFrog's audio alarm feature. That feature is enabled when you configure the tracking of a waypoint. (See the **Waypoint Tracking** section of **Chapter 6** for more details.)

**10** In the **Color** area, click the **Edit** button to change the color of the waypoint.

**11** Visibility of the waypoint can be switched on and off by selection of the **Draw on Graphics Window** checkbox.

**12** Click **OK**.

Repeat steps **2** through **9** to add more waypoints.

For information about displaying waypoints in the **Graphics** window, see the **Operator Display Windows** chapter.

### To Create a Waypoint Using the Graphics Window Shortcut

While this method of adding **waypoints** ultimately offers you more speed and convenience than the above mentioned "in file" method, it does initially require the configuration of various other WinFrog options, as detailed below.

**1** From the **View** menu, choose **Graphics.** (**Note**: the WinFrog's **Bird's Eye** display can also be used).

**2** Select the **Display Position** button in the toolbar.

**3** Move the mouse pointer to the desired location within the limits of the **Graphics** display, then press the left mouse button. A "cross" is now drawn at that location.

**4** Click the right mouse button and select **Add Waypoint** from the presented list of options.

**5** The **Waypoint** configuration window displays. (See the previous section for details about the contents of this window.)

**Note**: the coordinates shown in the **Position** entry window are automatically updated with the coordinates of the "cross" in the **Graphics** display.

6 Select **OK** to close this window and add this entry to the **Working Waypoints** file.

For information about displaying waypoints in the **Graphics** window, see the **Operator Display Windows** chapter.

## Editing the Contents of the Working Waypoints File

At some point during the project it may be necessary to modify one or more of the waypoints contained in the **Working Waypoints** file.

### To Edit a Waypoint in the Working Waypoints File

1 From the **File** menu, choose **Edit Working Files > Waypoints**

WinFrog lists all the previously created waypoints contained in the **Working Waypoints** file.

2 Select the **waypoint** to be edited and click the **Edit** button.

3 Make the desired changes.

4 Click **OK**.

WinFrog returns to the dialog box that displays all available waypoints. Repeat as required, then select **OK** to exit this window and save the changes.

### To Edit a Waypoint Using the Graphics Window Shortcut

1 Select the **Display Position** button in the toolbar.

2 Click in a **Graphics** window that has the Display Waypoints option enabled**.** (**Note**: the WinFrog's **Bird's Eye** display can also be used).

3 Move the cursor close to an existing waypoint in this Graphics window, the cursor will change from a cross to a target cursor (  ) and double-click the left mouse button.

4 The **Waypoint** dialog will appear displaying the information for the selected waypoint.

5 Edit the waypoint and exit the dialog with **OK**.

**Note**: Exiting with OK results in the Graphics windows updating to display the waypoint as edited and the Working Waypoint file to be updated to disk. Exiting with Cancel results in no changes taking affect.

For more information, see the **Operator Display Windows** chapter.

## Removing Waypoints from the Working Waypoints File

Previously created waypoints can be removed from the **Working Waypoint** file.

### To Remove Waypoints from the Working Waypoints File

1 From the **File** menu, choose **Edit Working Files... > Waypoints**

WinFrog lists all the previously created waypoints contained in the **Working Waypoints** file.

2 Highlight the waypoint(s) to be removed. (Use the **Shift** or **Ctrl** key to select multiple waypoints.)

3 Click the **Delete** button. The selected waypoints are now removed from the **Working Waypoints** file.

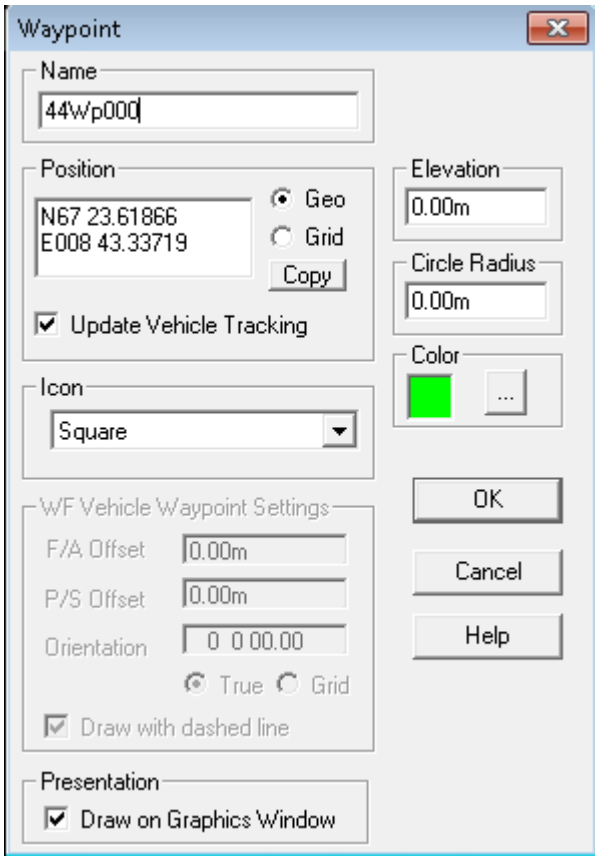
4 Select **OK** to close this window and save the changes.

## Using a Vehicle Shape as a Waypoint Icon

The option to draw a vehicle shape at a target location provides a good graphical reference for moving a structure into place. WinFrog supports this feature. Existing vehicles can be selected to be used as a waypoint's icon. When the Waypoint dialog is opened, the names of the current vehicles are listed after the standard icon options. Selecting one of the vehicle names enables the **WF Vehicle Waypoint Settings** group box allowing the configuration of how to position and orient the vehicle's shape with respect to the waypoint coordinate. In this case, that vehicle's shape is drawn at the waypoint, positioned and oriented as configured. The following details the configuration for this option.

### To Configure a Waypoint to Use a Vehicle Shape for an Icon

1 Open the **Waypoint** dialog.




2 Drop the **Icon** list down and scroll towards the bottom (the vehicles are listed after the standard icon options and prefaced with the term "VEH:") and select the vehicle whose shape is to be used for the waypoint icon.

3 Enter the **Forward/Aft** and **Port/Starboard** offsets from the vehicle's CRP to the point on the vehicle that is to be located at the waypoint coordinates.

4 Enter the **Orientation** the vehicle icon is to be displayed with. Specify if this orientation is **True** (geographic) or **Grid**.

5 If the vehicle shape is to be drawn with a dashed line (helps differentiate it from the actual vehicle), check the **Draw with dashed line** box. If this is unchecked the vehicle shape is drawn with a solid line.

6 Exit the dialog with **OK**.

**Note**: When a waypoint that is configured to use a vehicle shape as an icon is selected as a tracked waypoint, unlike waypoints configured for a standard icon that are drawn in the color of the tracking vehicle, a vehicle shape icon is drawn in the color configured for the waypoint, not that of the tracking vehicle. This is to help prevent confusion when the actual vehicle is near the waypoint.

**Note**: If a waypoint's icon was chosen to be a vehicle shape and subsequently that vehicle cannot be found in the current WinFrog vehicles list, e.g. it has been deleted or renamed, then the following will occur:

1. When the Graphics windows refresh, the icon for that waypoint defaults to a square. However, the waypoint's configuration is not changed.

2. When the Waypoint dialog is opened for that waypoint, a message appears informing you that the previously selected vehicle is not available and that the icon has been reset to the default square. In order to update the Working Waypoint file accordingly, you must exit the Waypoint dialog using OK.

3. If the change is not acknowledged and accepted as noted in 2 above, and if a vehicle with the same name is subsequently created, the waypoint will display using this new vehicle's shape.

**Note**: See the Controlled Remote Tug Telemetry chapter for details regarding the use of a vehicle shape as a waypoint icon for controlled remote operations.

## Tracking a Waypoint Contained in the Working Waypoints File

Any vehicle in WinFrog can be configured to track a **Waypoint** contained in the **Working Waypoints** file. When **Waypoint Tracking** is turned on, WinFrog calculates and displays real-time range and bearing information from the vehicle's current tracking point to the waypoint. This information can then be displayed in the **Vehicle Text** window.

### To Enable Waypoint Tracking

1 Move the mouse pointer within the limits of the **Vehicle Text** window and click the right mouse button.

2 Configure the presented options as desired.

3 Click **OK**.

For more details about enabling **Waypoint Tracking**, see the **To Track a Waypoint** section in the **Vehicles** chapter.

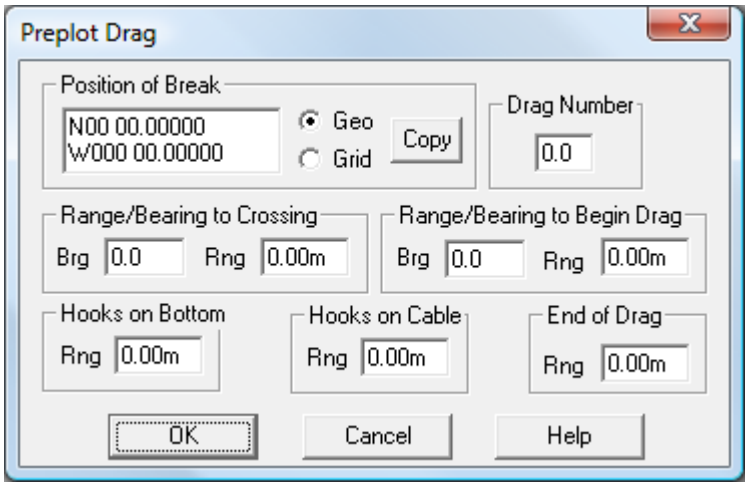
## Creating a Drag Line Waypoint Set

This consists of a set of five waypoints that provide a visual aid when running drag lines for bottom recovery. This was developed for retrieving cables that have a break at a known position, but can be adapted for general use.

### To Generate a Drag Line Set of Waypoints

**1** From the **File** menu, choose **Edit Working Files... > Waypoints**.

**2** Click the **Drag Line** button to display the following dialog.




**3** Enter the coordinates where the break is expected to be. This forms the base point from which the point where you want to cross the cable will be calculated.

**4** The **Drag Number** will be appended to the waypoint names allowing several sets of drag lines to be created.

**5** Enter the range and bearing to the crossing (from the point in step 3) where you want to set a drag line to cross the cable. Usually the bearing here is the direction that the cable is laying, one way or the other depending on which end you want to drag for.

**6** Enter the range and bearing (from the crossing point in step 5) to the start of the drag line. This becomes the reciprocal azimuth of the drag line.

**7** The **Hooks on Bottom** is measured from the crossing point toward the start of line.

**8** The **Hooks on Cable** is measured from the Hooks on the Bottom point toward the end of line. If you put the same number here as step 7, this point will be at the crossing point.

**9** The **End of Drag** is measured from the crossing point in the opposite direction from the start of line.

**10** Click **OK** to exit the dialog. Five waypoints will be created that lie on a line: BOLx, EST HOOKS ON BOTTOMx, CROSSx, EST HOOKS ON CABLEx, and EOLx. Where x = the drag line number entered in step 4.

# Working Data (.ALG) File

The **Working Data (.ALG) File** is used to reference related **Data** (.**DAT**) files. A **.DAT** data file contains data automatically collected during real time navigation. See **Appendix B: WinFrog File Formats** for detailed information concerning the structure and contents of data files.

The size of the **Working Data (.ALG) File** is typically quite small because this file simply consists of the names (and locations) of **.DAT** data files. For example, in a hydrographic survey application you may wish to group all **.DAT** data files under a file name corresponding to the name of the project or survey area. For example, a working data file named **Bay.ALG** may contain a listing of data files, **line1.DAT**, **line2.DAT**, etc., corresponding to the data lines associated with that area.

Unlike a working survey line, waypoint or picture file which typically contain design data, the **Working Data (.ALG)** file references **data** (.**DAT)** files that contain event data collected during a survey. The format and content of a **Data** (**.DAT)** file is identical to that used in a **receiver** (.**RCV)** file and a **source** (**.SRC)** file. These file types are different only in their extensions and the applications in which they are used. The use of these three different file extensions for identical types of files is to improve file organization and permit you to quickly ascertain the nature of the data stored in a working file.

The contents of the **Working Data (.ALG)** file can be displayed in the WinFrog **Graphics** window. You can change the amount of **.DAT** data seen on the **Graphics** display by simply adding or unloading **.DAT** files from the **Working Data (.ALG)** file. Again, since the **.ALG** file only records the reference to the **.DAT** files, you are not actually adding or deleting the **.DAT** files, but instead simply adding or removing the reference to that file.

The **.DAT** files are generated through automatic eventing based on time, distance, or an external trigger. Each **.DAT** file consists of the actual navigation event information recorded at those pre-configured intervals. You can edit the **Working Data (.ALG)** file to access the .**DAT** data files, then edit the **.DAT** files to read the individual event information. This editing can be done as the data are being collected or after eventing is finished, as desired.

For more details about event generation, see the **Eventing** chapter.

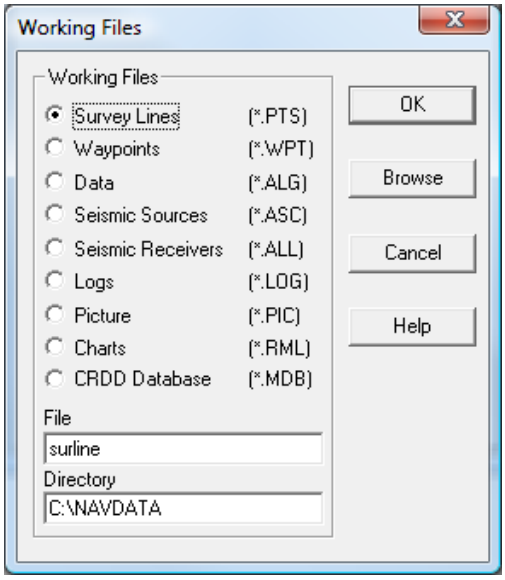
Note: The *.DAT files referenced in the *.ALG file are loaded into WinFrog memory when they are required, e.g. when they are displayed in the Graphics window or edited via the Edit Working Files > Data menu option. Once they are loaded into memory, they are not unloaded until the respective file is unloaded from the *.ALG file. Each *.DAT file is allowed a maximum of ten thousand events and during recording if this number is reached, a new file will be created and subsequent events placed therein.

## Creating or Selecting the Working Data (.ALG) File

WinFrog stores the name and location of data (**.DAT**) files in the **Working Data** (**.ALG**) data file.

### To Create a New Working Data (.ALG) File

**1** From the **File** menu, choose **Select Working Files**.




2 Select the radio button to the left of **Data (*.ALG)**.

At the bottom of the **Working Files** dialog box, WinFrog displays the name of the current **Working Data (.ALG)** file in the **File** field and the file's path in the **Directory** field.

3 Enter the desired directory path into the **Directory** input field and the desired .**ALG** file name into the **File** input field. The directory must already exist since WinFrog will not create a new directory.

**Note**: if you enter a file name that does not already exist, a new working file will be created. The directory must already exist since WinFrog will not create a new directory.

Or alternatively, click the **Browse** button, navigate to the desired directory, select the desired file from the list of **.ALG** files in the **Working File** box and then click **Open**.

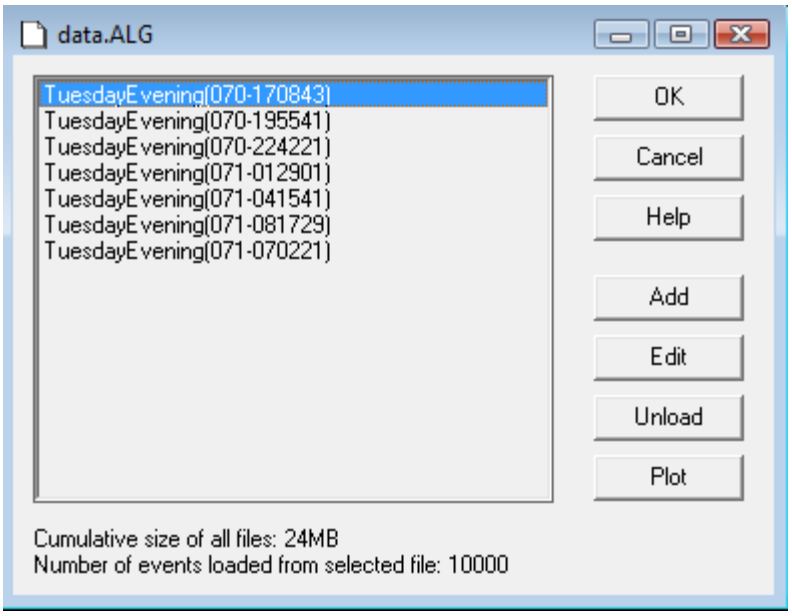
4 Click **OK**.

## Adding a Data (.DAT) File to the Working Data (.ALG) File

After the **Working Data (.ALG)** file has been defined, you can then specify which **Data** (.**DAT**) files are to be referenced by that particular **Data** (.**ALG**) file.

### To Add Existing Data (.DAT) Files to the Working Data (.ALG) File

1 From the **File** menu, choose **Edit Working Files... > Data.**




2 Click **Add**.

3 Navigate to the directory containing the **.DAT** data files to be added.

4 Select the file to be added.

5 Click **Open**

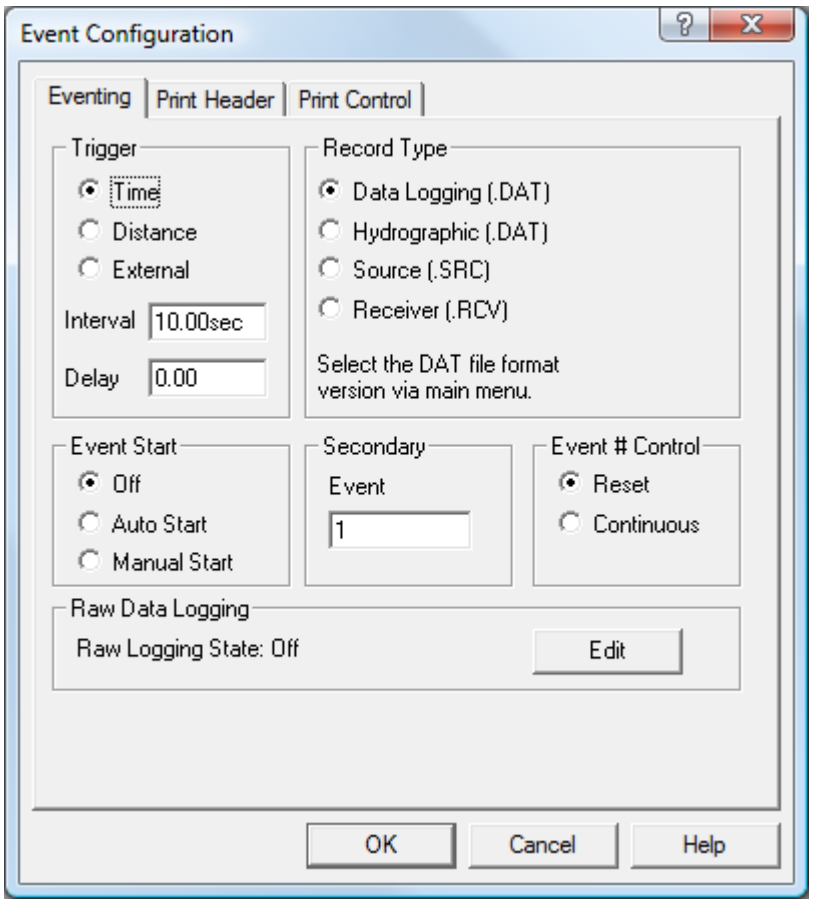
6 Click **OK**. WinFrog returns you to the **.ALG** contents dialog window, now listing the newly added file.

Note: At the bottom of the Working ALG file dialog there are two status lines. The first displays the sum of individual file sizes that are listed in the *.ALG file. The second line displays the number of events loaded from the selected file. If this file has not yet been loaded, this line displays File not loaded.

### To Create Data (.DAT) Files

WinFrog's data (**.DAT**) files can only be created by configuring **Automatic Eventing**. The following is a brief explanation of how to start automatic eventing. See the **Eventing** chapter for more information on generating **Automatic Events**.

1 From the **Configure** menu, choose **Data Events > Setup**.




2 In the **Trigger** area, select the desired interval radio button and enter the desired event interval.

3 In the **Record Type** area, select the **Data Logging (.DAT)** radio button or the **Hydrographic (.DAT)** radio button, as required.

4 In the **Event Start** area at the bottom of the **Event Generation** dialog box, select either **Auto Start or Manual Start**.

5 Click **OK**.

6 If you selected the **Hydrographic** radio button, the **Distance Fixing** dialog box will display. If you selected the **Data Logging** radio button, the **Event Secondary Configuration** dialog box will display. In either dialog box, configure any remaining parameters. WinFrog appends the appropriate three letter file extension, .**DAT**, when the file is created.

   For detailed information about events and configuring these dialog boxes, see the **Eventing** chapter.

7 Click **OK** to close this window and create a .DAT file.

## Editing the Working Data (.ALG) File

You can easily modify any parameter of the .**DAT** data contained in the **Working Data (.ALG)** file.

### To Edit Data Contained in the Working Data (.ALG) File

**1** From the **File** menu, click **Edit Working Files... > Data.**

**2** Select the .**DAT** file to be edited.

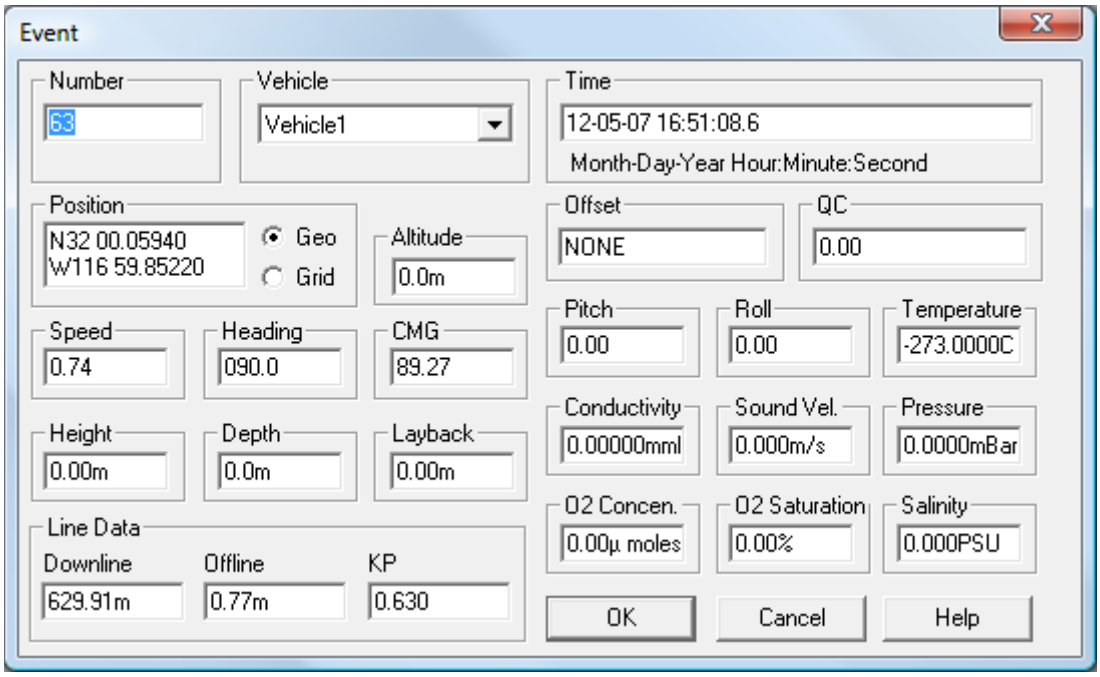
**3** Click **Edit**.

The **.DAT** dialog box opens, listing all of the events within that data file.

The event (fix) numbers correspond to the numbers generated during automatic eventing.

**4** Select the desired event.

**5** Click **Edit**.




**6** Edit the desired parameters.

**7** Click **OK** to save the changes and close this dialog box.

### To Add data to the Working Data (.ALG) File

**1** From the **File** menu, click **Edit Working Files... > Data.**

**2** Select the .**DAT** file to be edited.

**3** Click **Edit**.

The **.DAT** dialog box opens, listing all of the events within that data file.

The event (fix) numbers correspond to the numbers generated during automatic eventing.

4 Click **Add**.

5 The **Event** dialog box displays (detailed above) with empty parameter fields. Enter the desired parameters.

6 Click **OK** to save the changes and close this dialog box.

### To Delete data from the Working Data (.ALG) File

1 From the **File** menu, click **Edit Working Files... > Data.**

2 Select the .**DAT** file to be edited.

3 Click **Edit**.

The **.DAT** dialog box opens, listing all of the events within that data file.

The event (fix) numbers correspond to the numbers generated during automatic eventing.

4 Select the desired event.

5 Click **Delete**.

## Creating a Histogram of Data (.DAT) File Events

If the **.DAT** file fix data were acquired while line tracking was enabled, the crosstrack error data (in a .DAT file contained in the **Working Data .ALG** file) may be viewed as a histogram. A histogram for an entire line can be viewed to quickly ascertain the general accuracy, in terms of line tracking, at which the line was run.

### To Generate a Histogram of Offtrack Data from a Data (.DAT) File

1 From the **File** menu, choose **Edit Working Files... > Data.**

2 Select the **.DAT** file for which the histogram is to be created.

3 Click the **Plot** button.

A plot of the cross track (offline) histogram for that source file is generated and displayed.

The number of bins and their sizes can be modified using the two scroll bars.

## Monitoring the Working Data (.ALG) File

The size of the *.DAT files and the number of these that are currently loaded into WinFrog's memory can affect the performance of WinFrog with respect to responsiveness to mouse clicks and slow Graphic window refreshes. If a large amount of memory is used to hold this data, the performance can be degraded.

When WinFrog is launched or a configuration file is loaded, the *.ALG file is opened and the size of the individual files that are referenced is determined and used to calculate a cumulative total size for the respective *.DAT files. If this total size exceeds 5MB, you are alerted to the potential for degraded performance due to an excessive amount of memory required to load all of the files. It is recommended that the *.ALG file is edited to remove those files that are not required.

The file size of each individual event file is limited to 10,000 events (v3.9.41). This makes it more efficient to draw the events in the Graphics windows and makes it easier for the user to unload individual files. However, for long projects the accumulation of these files can still use up available memory to the point where WinFrog can no longer function properly. Although it seems that the accumulated size of the *.DAT files can reach 150MB without adverse effects, we recommend unloading older *.DAT files in order to keep the accumulated size of all the *.DAT files loaded below about 50MB. The amount of memory used is displayed on the Data.ALG dialog assessed from File > Edit Working Files > Data.

# Working Seismic Sources (.ASC) File

The **Working Seismic Sources (.ASC)** file is used to reference related **Source** (**.SRC**) data files collected during a seismic survey. The size of the **Working Seismic Sources** file is typically quite small because the file simply consists of the **names** of recorded **Seismic** (**.SRC**) files. The purpose of this "two-tiered" system is to improve the organization of the typically large data sets produced when undertaking a seismic survey.

WinFrog also organizes **Seismic Sources (.SRC)** and **Data (.DAT)** using the same two-tiered file structure; **.SRC** data are referenced in the **Seismic Sources (.ASC)** file, and **.DAT** data are referenced in the **Data (.ALG)** file. This file structure was implemented for projects such as an Ocean Bottom Cable (OBC) seismic project, for example, where all three (source, receiver, and data) files could be used. You can quickly ascertain the nature of the data stored in a working file simply by looking at the three-letter file extension. See the **WinFrog File Formats** appendix for detailed information concerning the structure and contents of **.SRC, .RCV,** and **.DAT** files.

Unlike **Working Survey Lines**, **Waypoints,** and **Picture** files, which contain design data, the **Working Seismic Sources (.ASC) File** references **Seismic (.SRC)** files that contain event data actually recorded by WinFrog during navigation. You can edit any one of these individual events by editing a **.SRC** file contained in the **Working Seismic Sources (.ASC)** file. (The same is true for the contents of the **Working Seismic Receivers (.ALL)** file and **Working Data (.DAT)** file).

The contents of all three data types can be displayed in WinFrog **Graphics** or **Bird's Eye** windows.

The data contained in these files are generated through automatic eventing based on time, distance, or an external trigger. For details about event generation, see the **Eventing** chapter.

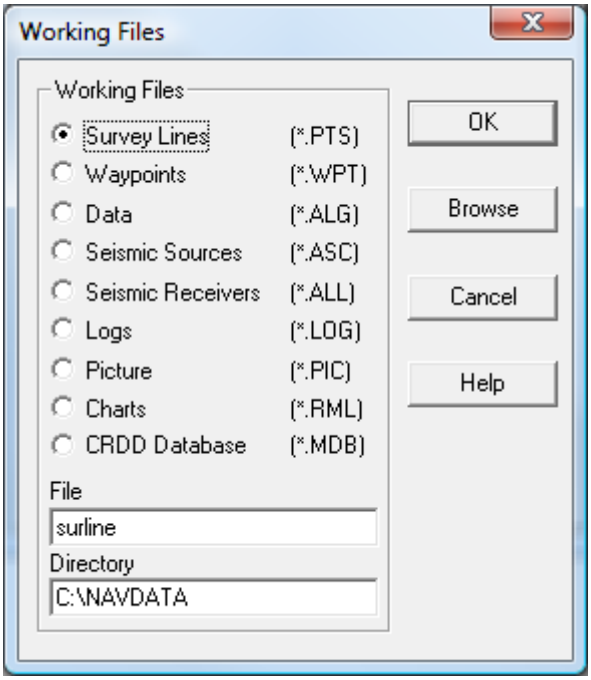
Note: The *.SRC files referenced in the *.ASC file are loaded into WinFrog memory when they are required, e.g. when they are displayed in the Graphics window or edited via the Edit Working Files > Data menu option. Once they are loaded into memory, they are not unloaded until the respective file is deleted from the *.ASC file.

# Creating the Working Seismic Sources (.ASC) File

**Seismic Sources** (**.ASC**) files store the name and location of **Source** (**.SRC**) files. The **Working Seismic Sources** file contains all information pertinent to access a **Source** file for both "real-time" data collection and retrieval purposes.

### To Create the Working Seismic Sources File

**1** From the **File** menu, choose **Select Working Files**.




**2** Select the radio button to the left of **Seismic Sources (*.ASC)**.

At the bottom of the **Working Files** dialog box, WinFrog displays the name of the current working shot points file in the **File** field and the file's path in the **Directory** field.

**3** Enter the path of the desired (existing) directory into the **Directory** input field and the file name into the **File** input field.

**Note**: if you enter the name of a file that does not already exist, a new working file will be created.

Or alternatively, click the **Browse** button, navigate to the desired directory, select the desired file from the list of **.ASC** files in the **Working File** box and then click **Open**.

**4** Click **OK**.

# Adding Source Files to the Working Seismic Sources (.ASC) File

You can define which **Source (SRC)** files are to be referenced by the **Working Seismic Sources** (**.ASC**) file.

### To Add Existing Source Files to the Working Seismic Sources File

1 From the **File** menu, choose **Edit Working Files... > Seismic Sources.**

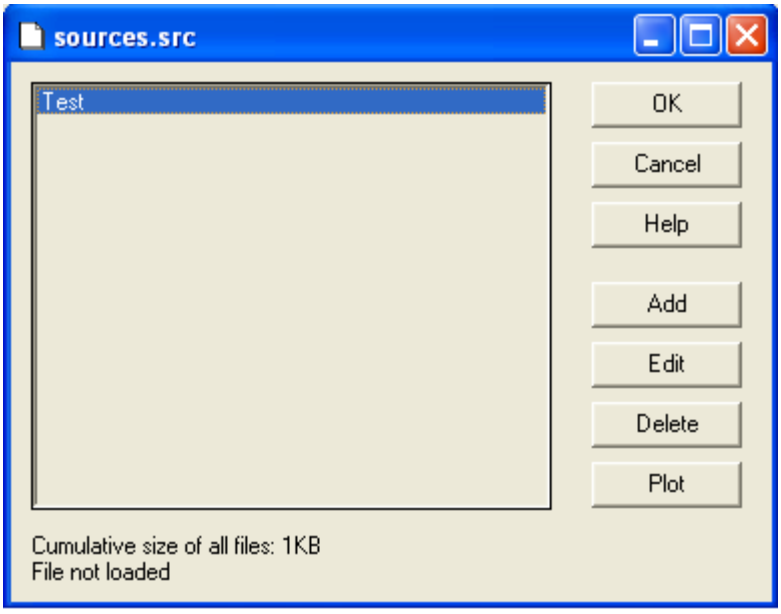
2 Click **Add**.

3 Navigate to the directory containing the source (**.SRC**) files.

4 Select the source file(s) you wish to add.

5 Click **Open**.

6 Click **OK**.



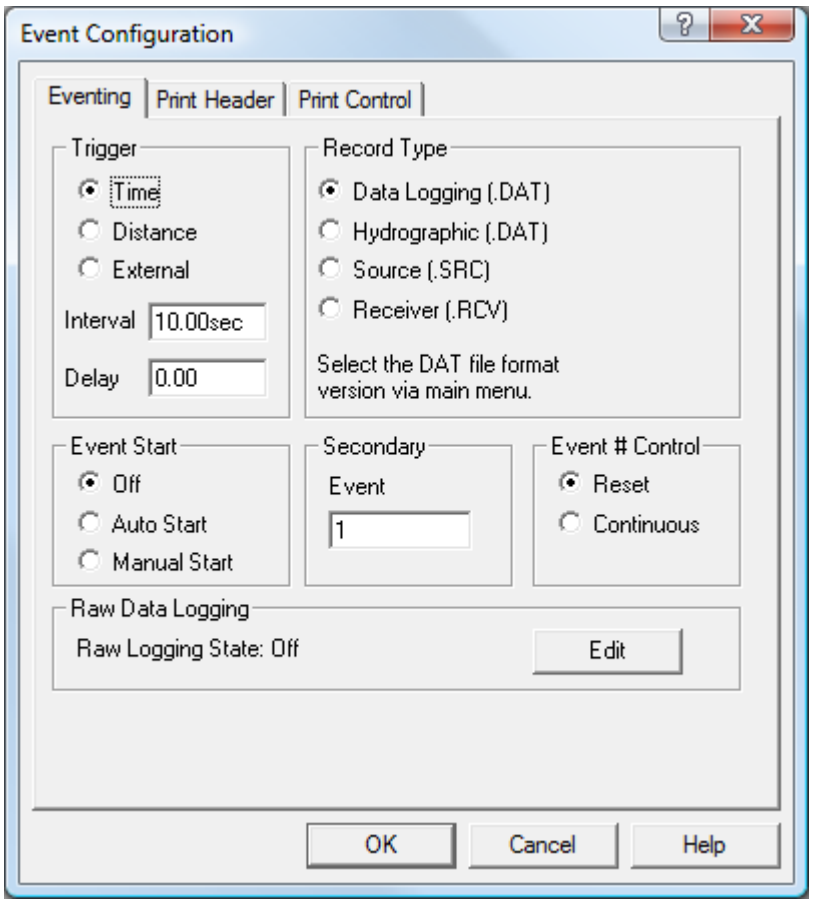

The **Source** (.**SRC**) file will now appear in the **Working Seismic Sources (.ASC)** file.

Note: At the bottom of the Working ASC file dialog there are two status lines. The first displays the sum of individual file sizes that are listed in the *.ASC file. The second line displays the number of events loaded from the selected file. If this file has not yet been loaded, this line displays File not loaded.

### To Configure WinFrog to Create Source (.SRC) Files

WinFrog's data (**.SRC**) files can only be created by configuring automatic eventing. The following is a brief explanation of how to start automatic eventing. See the **Eventing** chapter for more information on generating automatic events.

1 From the **Configure** menu, choose **Data Events > Setup**.




2 In the **Record Type** area, select the **Source (.SRC)** radio button.

3 In the **Trigger** area at the top left of the **Event Generation** dialog box, select the **trigger** option and **interval** value required.

4 In the **Event Start** area at the bottom of the **Event Generation** dialog box, select either **Auto Start** or **Manual Start**.

5 Click **OK**.

6 The **Distance Fixing** dialog box displays in which you can configure any remaining parameters. WinFrog appends the appropriate three-letter file extension, **.SRC**, when the file is created.

For detailed information about events and configuring these dialog boxes, see the **Eventing** chapter.

7 Click **OK** to close this window and create a .SRC file.

## Editing the Working Seismic Sources (.ASC) File

You can modify **Source (.SRC)** event data contained within the **Working Seismic Sources (.ASC)** file. Any individual parameter within the source record can be modified or edited.

### To Edit Data Contained in the Working Seismic Sources (.ASC) File

1 From the **File** menu, choose **Edit Working Files... > Seismic Sources.**

The **Working Seismic Sources** dialog box displays with a listing of all **Source** file names referenced by the **Working Seismic Sources** file.

2 Select the file you wish to edit.

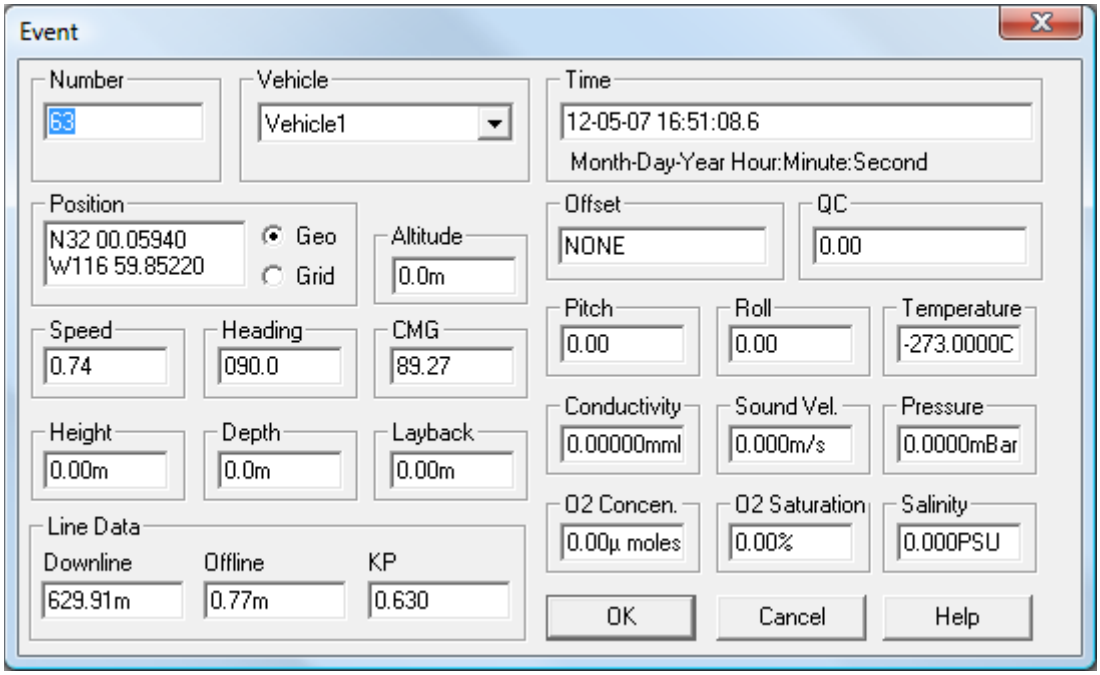
3 Click **Edit**.

A dialog box opens listing all of the events contained within that **Source** file.

The event numbers correspond to the numbering configured during the setup of the **Event Generation** dialog box.

4 Select the desired event.

5 Click **Edit**.




6 Edit the desired parameters.

7 Click **OK** to close this dialog box and save the changes.

### To Add Data to the Working Seismic Sources (.ASC) File

1 From the **File** menu, choose **Edit Working Files... > Seismic Sources.**

The **Working Seismic Sources** dialog box displays with a listing of all **Source** file names referenced by the **Working Seismic Sources** file.

2 Select the file you wish to edit.

3 Click **Edit**.

A dialog box opens listing all of the events contained within that **Source** file.

The event numbers correspond to the numbering configured during the setup of the **Event Generation** dialog box.

4 Click **Add**.

5 The **Event** dialog box displays (detailed above) with empty parameter fields. Enter the desired parameters.

6 Click **OK** to close this dialog box and save the changes.

### To Delete Data from the Working Seismic Sources (.ASC) File

1 From the **File** menu, choose **Edit Working Files... > Seismic Sources.**

The **Working Seismic Sources** dialog box displays with a listing of all **Source** file names referenced by the **Working Seismic Sources** file.

2 Select the file you wish to edit.

3 Click **Edit**.

A dialog box opens listing all of the events contained within that **Source** file.

The event numbers correspond to the numbering configured during the setup of the **Event Generation** dialog box.

4 Click **Delete**.

## Creating a Histogram of the Source File Data

After a **Source (.SRC)** file is created in the **Working Seismic Sources (.ASC)** file, its event data may be viewed in a graphical manner. Assuming that the data have been acquired with line tracking enabled, this feature permits the generation of a histogram of cross track error data. A histogram for an entire line can be viewed to quickly ascertain the general accuracy at which the line was run.

### To Generate a Histogram of Offtrack Data in a Source (.SRC) File

1 From the **File** menu, choose **Edit Working Files...> Seismic Sources** to open the **Working Seismic Sources** dialog box.

2 Select the **Source File** for which the histogram is to be created.

3 Click the **Plot** button.

A plot of the cross track (offline) histogram for that source file is generated and displayed.

The number of bins and their sizes can be modified using the two scroll bars.

## Monitoring the Working Sources (.ASC) File

The size of the *.SRC files and the number of these that are currently loaded into WinFrog's memory can affect the performance of WinFrog with respect to responsiveness to mouse clicks and slow Graphic window refreshes. If a large amount of memory is used to hold this data, the performance can be degraded.

When WinFrog is launched or a configuration file is loaded, the *.ASC file is opened and the size of the individual files that are referenced is determined and used to calculate a cumulative total size for the respective *.SRC files. If this total size exceeds 5MB, you are alerted to the potential for degraded performance due to an excessive amount of memory required to load all of the files. It is recommended that the *.ASC file is edited to remove those files that are not required.

# Working Seismic Receivers (.ALL) File

The **Working Seismic Receivers (.ALL)** file is used to refer to related **Receiver (.RCV)** files. A **Receiver (.RCV)** file contains data collected during Automatic Eventing based on time or distance down line. See the **WinFrog File Formats** appendix for detailed information concerning the structure and content of a **.RCV** Receiver file.

The size of a **Working Seismic Receivers (.ALL)** file is typically quite small because the file simply consists of the names of **Receiver (.RCV)** files that are included in the working cables files.

Unlike a working survey lines file, a working waypoints file, or a working pictures file, which typically contain design data (plans for a survey), the **Working Seismic Receivers** file references **receiver (.RCV)** files that contain event data recorded by WinFrog during navigation. The content and structure of a **Receiver (.RCV)** file is identical to that used in a **Data (.DAT**) file and a **Seismic Source (.SRC)** file. These file types are different only in their extensions and the application in which they are used. The reason WinFrog uses different working files for identical types of files is to improve file organization and permit you to quickly ascertain the nature of the data stored in a working file simply by looking at the three-letter file extension. (For details about event generations, see the **Eventing** chapter.)

You must designate a **Working Seismic Receivers (.ALL)** file before you can begin collection of **Receiver (.RCV)** data. This file can contain multiple **Receiver (.RCV)** files and each R**eceiver (.RCV)** file can consist of multiple events. All data within the **Working Seismic Receivers (.ALL) File** can be displayed in WinFrog's **Graphics** display.

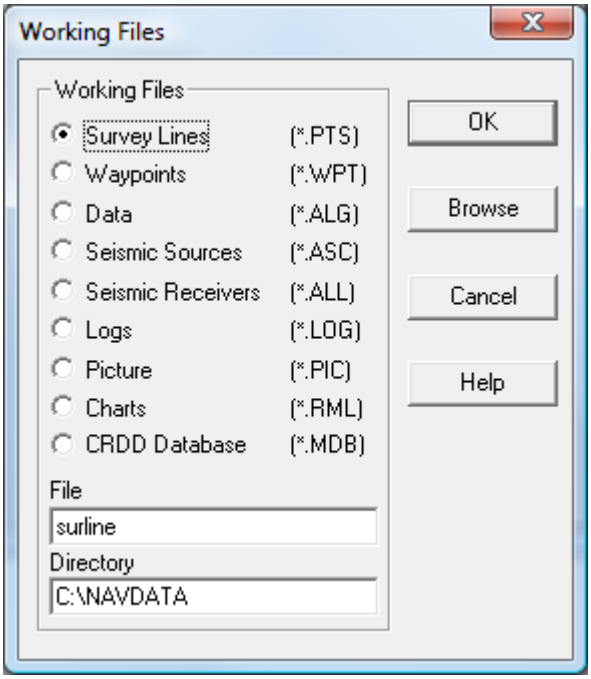
Note: The *.RCV files referenced in the *.ALL file are loaded into WinFrog memory when they are required, e.g. when they are displayed in the Graphics window or edited via the Edit Working Files > Data menu option. Once they are loaded into memory, they are not unloaded until the respective file is deleted from the *.ALL file.

## Creating a New Working Seismic Receivers (.ALL) File

WinFrog stores the name and location of **Receiver (.RCV)** files in the **Working Seismic Receivers (.ALL)** file. These files contain all information pertinent to reference a **Receiver** (.**RCV**) file, including the file name and the directory tree to locate that file.

### To Create a New Working Seismic Receivers (.ALL) File

**1** From the **File** menu, choose **Select Working Files**.




**2** Select the radio button to the left of **Seismic Receivers (*.ALL)**.

At the bottom of the **Working Files** dialog box, WinFrog displays the name of the current **Working Seismic Receivers** file in the **File** field and the file's path in the **Directory** field.

**3** Enter the path of the desired directory into the **Directory** input field and the file name into the **File** input field.

**Note**: if you type the name of a file that does not already exist, a new working file will be created.

Or alternatively, click the **Browse** button, navigate to the desired directory, select the desired file from the list of **.ALL** files in the **Working File** box and then click **Open**.

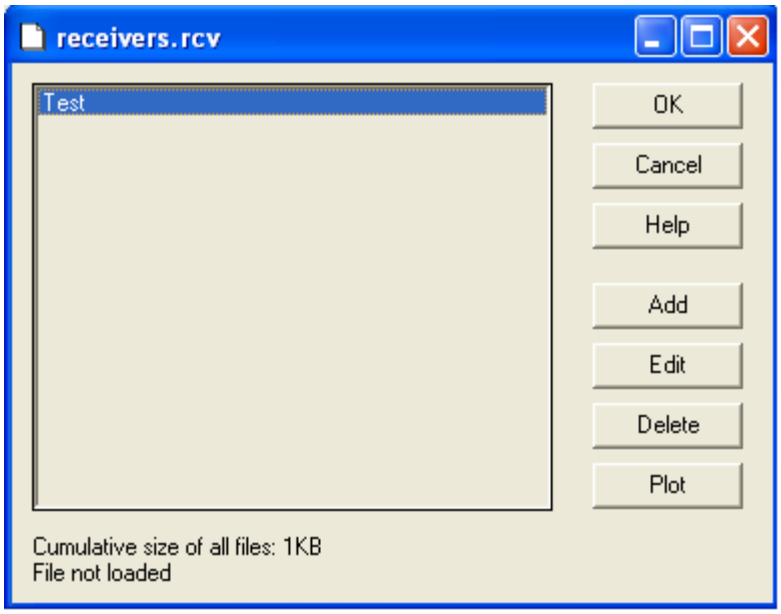
**4** Click **OK**.

## Adding a .RCV File to the Working Seismic Receivers (.ALL) File

After the **Working Seismic Receivers (.ALL)** file is selected, you can then define which **Receiver (.RCV)** files are to be referenced by that file.

### To Add Existing (.RCV) Files to the Working Seismic Receivers (.ALL) File

**1** From the **File** menu, choose **Edit Working Files... > Seismic Receivers.**




2 Click **Add**.

3 Navigate to the directory containing the **.RCV** files to be added.

4 Select the **.RCV** file to be added.

5 Click **Open**. WinFrog returns you to the **.ALL** contents dialog box, now listing the newly added file.rcv.

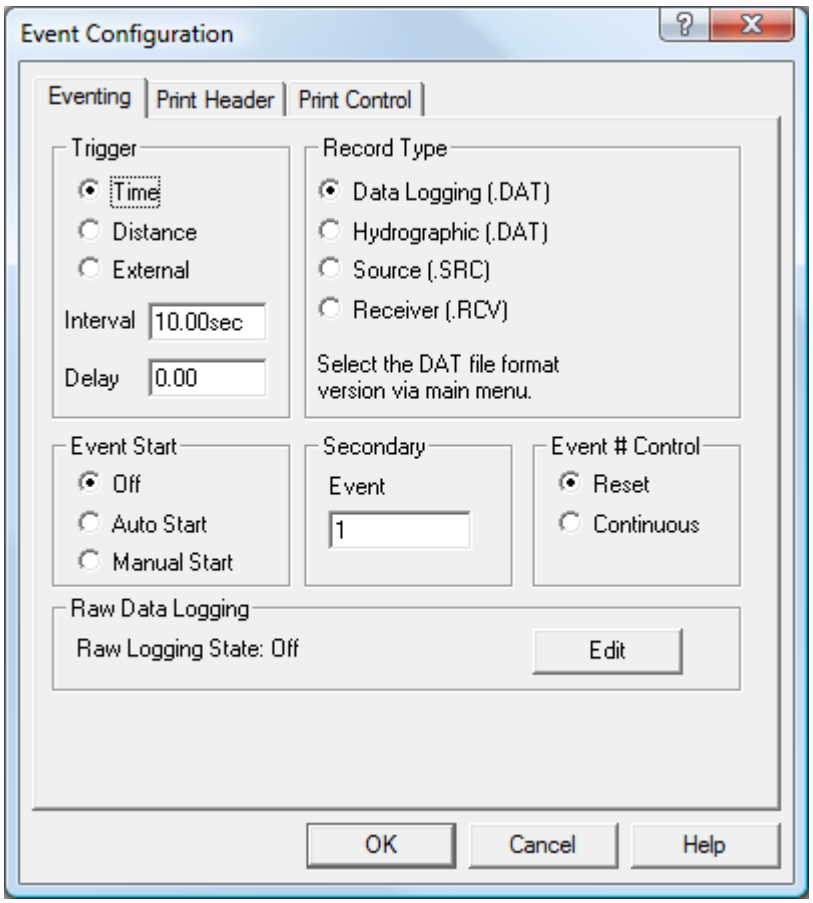
6 Click **OK**.

Note: At the bottom of the Working ALL file dialog there are two status lines. The first displays the sum of individual file sizes that are listed in the *.ALL file. The second line displays the number of events loaded from the selected file. If this file has not yet been loaded, this line displays File not loaded.

### To Configure WinFrog to Create Receiver (.RCV) Files

WinFrog's receiver (**.RCV**) files can only be created by configuring automatic eventing. The following is a brief explanation of how to start automatic eventing. See the **Eventing** chapter for more information on generating automatic events.

1 From the **Configure** menu, choose **Data Events > Setup**.




2 In the **Record Type** area, select the **Receiver (.RCV)** radio button.

3 In the **Trigger** area, select the desired interval radio button and enter the desired **Event Interval**.

4 In the **Event Start** area at the bottom of the **Event Generation** dialog box, select either **Auto Start** or **Manual Start**.

5 Click **OK**.

6 The **Distance Fixing** dialog box displays in which you can configure any remaining parameters. WinFrog appends the appropriate three-letter file extension, **.RCV**, when the file is created.

For detailed information about events and configuring these dialog boxes, see the **Eventing** chapter.

7 Click **OK** to close this window and create a .RCV file.

## Editing the Working Seismic Receivers (.ALL) File

You can modify any parameter within a **Receiver (.RCV)** file via the **Working Seismic Receivers (.ALL) File**.

### To Edit Data contained in the Working Seismic Receivers (.ALL) File

1 From the **File** menu, choose **Edit Working Files... > Seismic Receivers.**

The **.ALL** dialog box contains a listing of all .**RCV** file names referenced by the **Working .ALL** file.

2 Select the file to be edited.

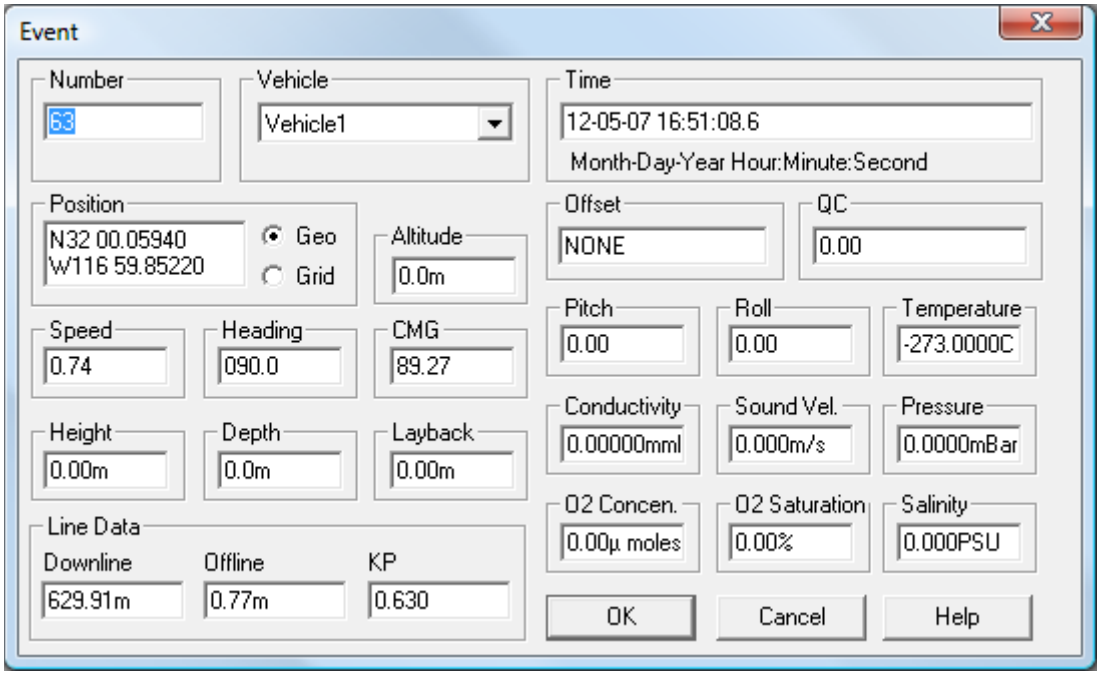
3 Click **Edit**.

A dialog box opens listing all of the events contained within that file.

The event numbers correspond to the numbers generated by WinFrog during **Automatic Eventing**.

4 Select the desired event.

5 Click **Edit**.




6 Edit the desired parameters.

7 Click **OK**.

### To Add Data to the Working Seismic Receivers (.ALL) File

1 From the **File** menu, choose **Edit Working Files... > Seismic Receivers**.

The **.ALL** dialog box opens containing a listing of all .**RCV** file names referenced by the **Working .ALL** file.

2 Select the file to be added to.

3 Click **Edit**.

A dialog box opens listing all of the events contained within that file.

The event numbers correspond to the numbers generated by WinFrog during **Automatic Eventing**.

4 Click **Add**.

5 The **Event** dialog box displays (detailed above) with empty parameter fields. Enter the desired parameters.

6 Click **OK**.

### To Delete Data from the Working Seismic Receivers (.ALL) File

1 From the **File** menu, choose **Edit Working Files... > Seismic Receivers.**

The **.ALL** dialog box opens containing a listing of all .**RCV** file names referenced by the **Working .ALL** file.

2 Select the file to be edited.

3 Click **Edit**.

A dialog box opens listing all of the events contained within that file.

The event numbers correspond to the numbers generated by WinFrog during **Automatic Eventing**.

4 Select the desired event.

5 Click **Delete**.

## Creating a Histogram of the Seismic Receivers (.ALL) File

After a **Receiver (.RCV)** file has been created or added to the **Working Seismic Receivers (.ALL)** file**,** its line tracking data may be viewed in a graphical manner. Assuming that the data have been acquired with line tracking enabled, this feature permits the generation of histogram of cross track error data. A histogram for an entire line can be viewed to quickly ascertain the general accuracy at which the line was run.

### To Generate a Histogram of Offtrack Data in a Receiver (.RCV) File

1 From the **File** menu, choose **Edit Working Files... > Cables** to open the **Working Cables** dialog box.

2 Select the **Receiver** file for which the histogram is to be created.

3 Click the **Plot** button.

A plot of the cross track (offline) histogram for that source file is generated and displayed. The number of bins and their sizes can be modified using the two scroll bars.

## Monitoring the Working Seismic Receivers (.ALL) File

The size of the *.RCV files and the number of these that are currently loaded into WinFrog's memory can affect the performance of WinFrog with respect to responsiveness to mouse clicks and slow Graphic window refreshes. If a large amount of memory is used to hold this data, the performance can be degraded.

When WinFrog is launched or a configuration file is loaded, the *.ALL file is opened and the size of the individual files that are referenced is determined and used to calculate a cumulative total size for the respective *.RCV files. If this total size exceeds 5MB, you are alerted to the potential for degraded performance due to an excessive amount of memory required to load all of the files. It is recommended that the *.ALL file is edited to remove those files that are not required.

# Working Logs File

The **Working Logs (.LOG)** file stores "**Manual Events**" that are generated by the user with the press of a key. **Manual Events** are a "snapshot" of the navigation information at any particular instant of time, and include data such as vessel position, speed, heading, course over ground/course made good, etc. See the **Eventing** chapter for more details on **Manual Events.**

The **Graphics** and **Bird's-Eye** windows can be configured to display the **Manual Events** recorded in the **Working Logs File**. **Manual Events** can also be tracked in the same way as **Waypoints**. After the survey, the **.LOG** file data can be used in post-processing, as all other WinFrog data.

### To Create or Select the Working Logs (.LOG) File

1. Select the main menu item **File** > **Edit Working Files...**
2. Click the radio button beside **Logs.**
3. In the **File** entry field, enter the name of an existing **.LOG** file or a name for the new picture file.
4. In the **Directory** entry field, enter the location and name of an ***existing*** directory where the file will be located.
5. Click **OK** to create (select) the **Working Logs (.LOG) File.**

## Editing the Contents of the Working Logs File

Once **Manual Events** have been recorded, it may be necessary to access or edit one or more of the **Manual Events** contained in the **Working Logs File**.

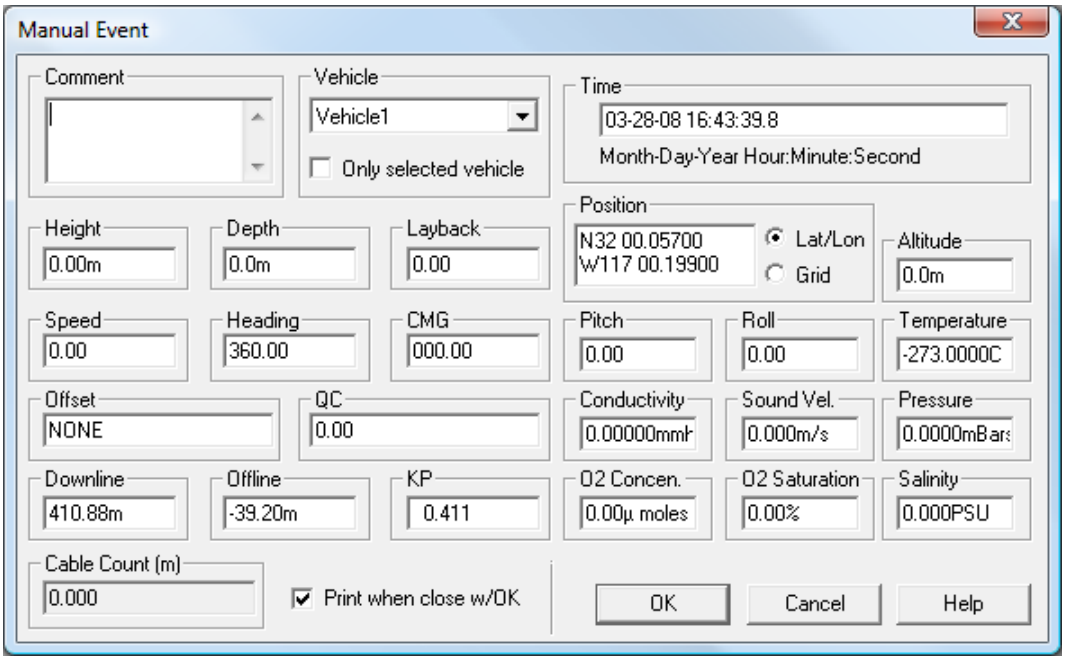
### To Edit the Contents of the Working Logs File

1. From the **File** menu, choose **Edit Working Files... > Logs**.

   WinFrog displays a list of all **Manual Events** contained in the **Working Logs** file.
2. Select the item to be edited.

3 Click **Edit**.

The **Manual Event** dialog box now appears, as seen below.




The **Manual Event** dialog box allows you to modify all the displayed parameters except cable count. Printing of the event is only available when the log event is first created, not when being reviewed from the **Edit Working Files** item available from the **File** menu. The Print check box will always retain the setting that was in effect the last time the dialog was closed with OK.

4 Highlight the desired parameter and change as required.

5 Click **OK** to close this window and return to the **Manual Event** listing.

## Deleting a Manual Event from the Working Logs File

Any Manual Event can be removed from the **Working Logs** file.

### To Remove a Manual Event

1 From the **File** menu, choose **Edit Working Files... > Logs**.

2 Select the **Manual Event** to be removed.

3 Click the **Delete** button.

4 Click the **OK** button to close this window and save the changes.

# Working Picture (.PIC) File

A WinFrog **Picture** (**.PIC**) file is a WinFrog-specific file that contains a series of points that are connected to create a line that can be seen in WinFrog's **Graphics** displays. Picture file contents are somewhat similar to that of a **Survey Lines** file. The difference between the two is that survey lines are intended for vehicle tracking purposes, while picture files are used only to display linear information as a background reference.

One example of a typical use for a picture file is to display the outline of a coastal area. Coastline coordinate information can be digitized from existing charts or even downloaded from the internet. This information (once formatted in the WinFrog specific format) can then be used to display the approximate location of the coastline in a selected area.

Picture file information from unknown or unreliable sources such as these must be used with caution. Some low resolution data sets may oversimplify the actual shore details. You must also ensure that the geodetic datum used in the reference data source is the same one selected in WinFrog. Positional discrepancies of several hundred meters (between actual features and their plotted positions) could result if these matters are not addressed correctly.

### To Create or Select the Working Picture File

**1** Select the main menu item **File** > **Select Working Files.**

**2** Click the radio button beside **Picture.**

**3** In the **File** entry area, enter the name of an existing **.PIC** file or a name for the new picture file.

**4** In the **Directory** entry area, enter the location and name of an ***existing*** directory where the file is (or will be) located.

**5** Click **OK** to create (select) the **Working .PIC File.**

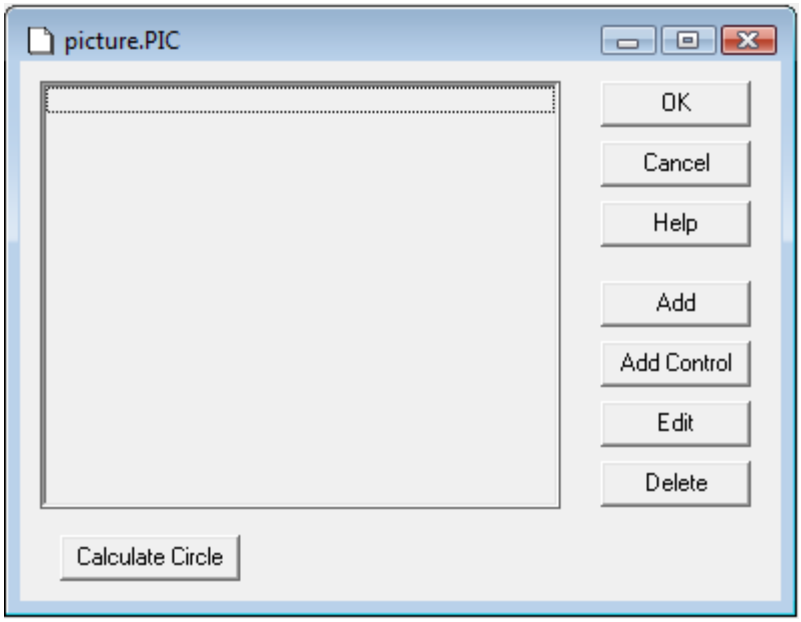
## Creating a Line in the Working Picture File

With a **Working Picture** file now selected, the next step is to add the picture information. As mentioned above, a picture file contains a series of coordinated points that are joined together to create a line on WinFrog's **Graphics** display.

There are actually two main components that must be configured to be able to see the contents of the picture file. First, a new **Picture Control** item must be created. This defines the name, color, and style of the line. The second step is to add coordinated points to define the line's location. A **Picture Point** item is a point that defines a node in the picture file. In the **Working Picture** dialog box, all **Picture Point** items listed after a **Picture Control** item will be associated with that control item and will have the same color and line style.

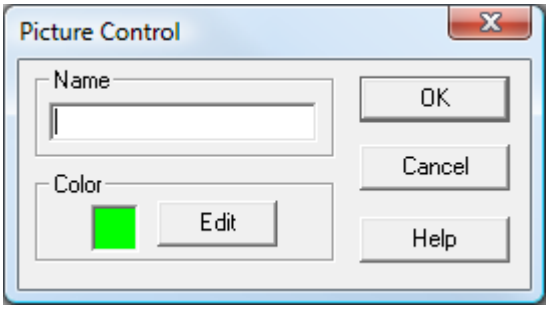
**1** Select **File > Edit Working Files... Picture**.

The **.PIC** file dialog box appears, as seen below.




2 Click the **Add Control** button.

The **Picture Control** dialog box opens, as seen below.



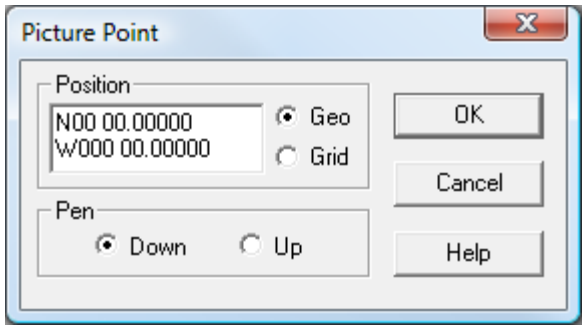

3 Enter a unique name in the **Name** field.

4 To change the color of the line, click the **Edit** button in the **color** area and select a different color from the available palette.

5 Click **OK** to close the **Picture Control** dialog box.

WinFrog adds this new **Picture Control** item to the list of items in the **Working Picture** (**.PIC**) dialog box.

6 Click the **Add** button to bring up the **Picture Point** dialog box, as seen below.




**7** In the **Position** field of the **Picture Point** dialog box, enter the coordinates of the first point of the line.

The coordinates can be either entered in geographic latitude and longitude or in grid Northing and Easting.

**8** In the **Pen** area, **select** either the **Down** radio button or the **Up** radio button.

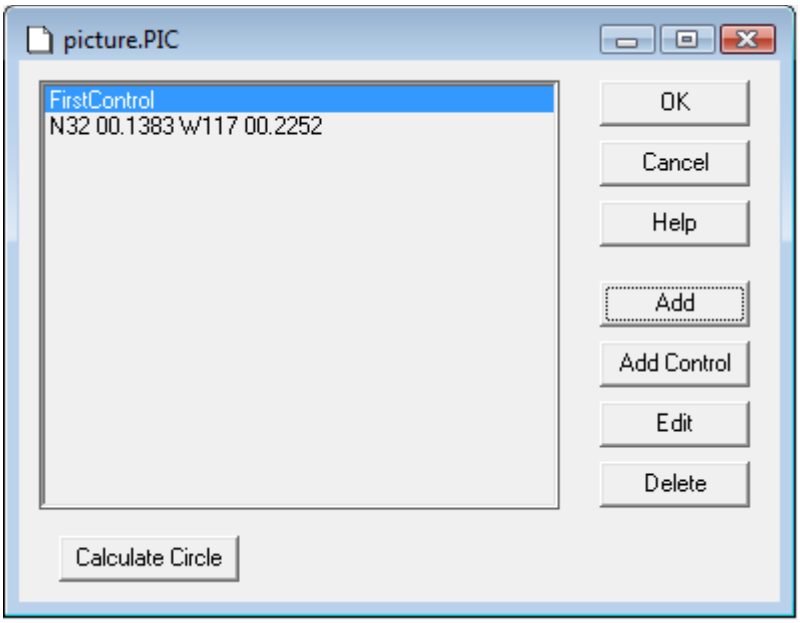
If **Pen Down** is selected, a line will be drawn from the previous **Picture Point** to this **Picture Point**, using the color and style defined by the above mentioned **Picture Control** item.

If **Pen Up** is selected, no line will be drawn from the previously entered **Picture Point** to this **Picture Point**.

**Note:** the ***first*** **Picture Point** added to the file must be configured with **Pen Up**. Failure to do so will result in an errant line being drawn from some random point to this point.

**9** Click **OK** to add the **Picture Point** item to the **Working Picture File**.

Add more points by repeating steps 6 to 9.

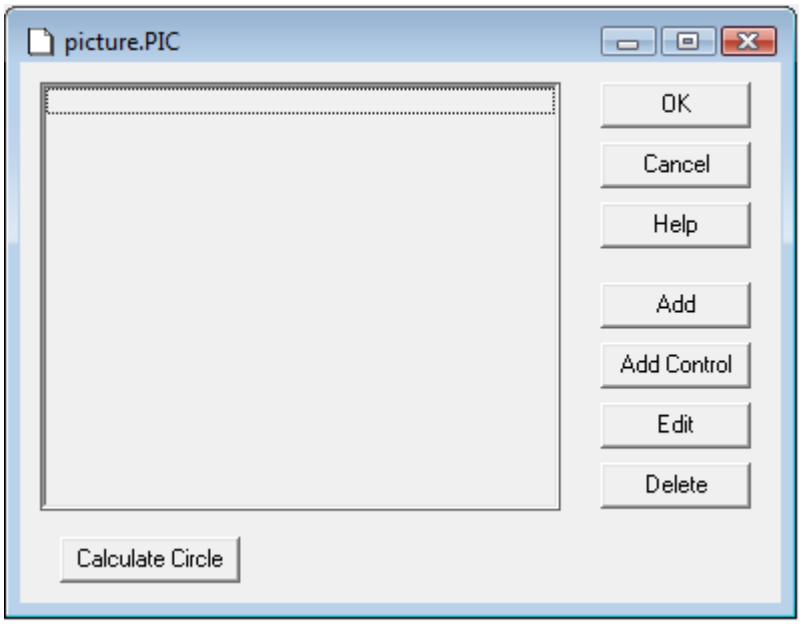


## Creating a Circle in the Working Picture File

With a **Working Picture** file selected, a circle can easily be drawn by clicking the Create Circle button.

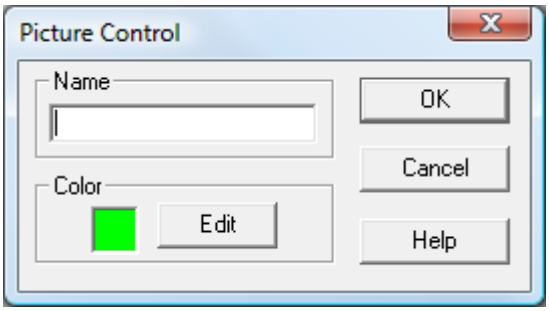
**1** Select **File > Edit Working Files... >Picture**.

The **.PIC** file dialog box appears, as seen below.




**2** Click the **Add Control** button.

The **Picture Control** dialog box opens, as seen below.




**3** Enter a unique name for the circle in the **Name** field.

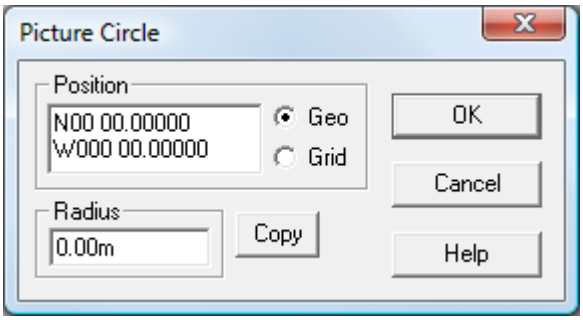
**4** To change the color of the circle, click the **Edit** button in the **color** area and select a different color from the available palette.

**5** Click **OK** to close the **Picture Control** dialog box.

WinFrog adds this new **Picture Control** item to the list of items in the **Working Picture** (**.PIC**) dialog box.

**6** Click the **Calculate Circle** button.

The **Picture Circle** dialog box opens, as seen below.




**7** In the **Position** field of the **Picture Circle** dialog box, enter the coordinates of the desired center point of the circle.

The coordinates can be either entered in geographic latitude and longitude or in grid Northing and Easting.

Click the **Copy** button to copy the coordinates in the system clipboard into the **Position** field.

**8** In the **Radius** field enter the desired radius in meters of the circle to be drawn.

**9** Click **OK** to calculate the circle points and add these points to the **Working Picture File**.

Add more circles by repeating steps 2 to 9.

## Importing Files

Creating a complex picture in WinFrog can be a time consuming and error prone task, since you have to manually enter the coordinates of each point. WinFrog includes the ability to import two different types of drawing files and convert them to a picture file. This can save you much time and frustration in creating a picture file.

WinFrog supports the following types of input files:

- DPC Picture files
- Pelagos DMS files

### To import drawing files into WinFrog:

**1** Select **File > Import**. This will open the **Import File** dialog box.

**2** Select the type of file to import using the appropriate radio button and click **OK**.

**3** This will open the standard Open dialog box. This can be used to select the desired file. Click the **Open** button to import the file. WinFrog will immediately start reading the drawing entities found in the file.

**4** Once the entities are all successfully loaded, WinFrog will create a new picture file. The picture file will have the same name as the input file with the file extension changed to **.PIC**. The file will be located in the Pictures subdirectory under the current project.

**5** If the file already exists, WinFrog will open a dialog box stating that the file already exists and asking if WinFrog should overwrite the file. Click **OK** to overwrite the file, or **Cancel**

to exit out of the import utility.

6 When WinFrog has finished converting all entities found in the input file, the **Import File Complete** dialog box is displayed. Click **OK** to return to the main WinFrog menu.

7 The imported picture file can then be used to display the imported information in the Graphics window. In addition, you can edit the control and point picture items as discussed in the section below.

## Editing the Working Picture File

It is possible to modify any **Picture Control** or **Picture Point** item contained in the **Working Picture File**.

### To Edit the Working Picture File

1 From the **File** menu, choose **Edit Working Files...** > **Picture**.

2 Select the item to be edited.

3 Click **Edit**.

The **Picture Control** dialog box opens if the selected item is a **Picture Control** item and the **Picture Point** dialog box opens if the selected item is a **Picture Point** item. These dialog boxes are identical to those used when the item was originally created.

4 Make the desired changes.

5 Click **OK** to confirm the changes and return to the **Picture Point File** content listing.

## Removing an Item from the Working Picture File

It is possible to remove a **Picture Point** item contained in the **Working Picture File**.

### To Remove a Picture Point from the Working Picture File

1 From the **File** menu, click **Edit Working Files...** > **Picture**.

2 Select the **Picture Point** item to be removed.

3 Click the **Delete** button.

4 Click **OK** to confirm the changes and return to the **Picture Point File** content listing.

# Working Charts (.RML) File

The **Working Charts (.RML)** file contains raster image data that can be displayed in WinFrog's **Graphics** and **Bird's Eye** displays. These data can be loaded and displayed, but not edited. Three different formats of raster chart files can be loaded and displayed in WinFrog: **.RML**, **.BSB**, and **.HDR**. Each of these formats is a non-WinFrog-specific format.

### To Load a New Working Chart (.RML/.BSB/.HDR) File

1 From the **File** menu, choose **Select Working Files**.

2 Select the **Charts (*.RML)** radio button.

At the bottom of the **Working Files** dialog box, WinFrog displays the name of the current **Working Chart (.RML) File** in the **File** field and the file's path in the **Directory** field.

3 Enter the desired directory path into the **Directory** input field and the desired file name into the **File** input field.

**Note**: the file and directory must already exist, a WinFrog will not create a new directory or a new working file.

Or alternatively, click the **Browse** button, navigate to the desired directory, select the desired file from the files listed in the **Working File** dialog box and then click **Open**.

4 Click **OK**.

### To View the Working Chart (.RML/.BSB/.HDR) File

After a **Chart File** has been specified as the **Working Chart File,** it can be viewed in WinFrog's **Graphics** and **Bird's Eye** displays. See the **Operator Display Windows** chapter for details on configuring WinFrog to display a chart.

# Working CRDD Database (.MDB) File

The **Working CRDD (.MDB)** file contains data pertaining to Fugro Pelagos, Inc.'s **Cable Route Design Database (CRDD)**. This database is created using the **CRDD** software and loaded into WinFrog for use with WinFrog's real time cable lay modeling utilities.

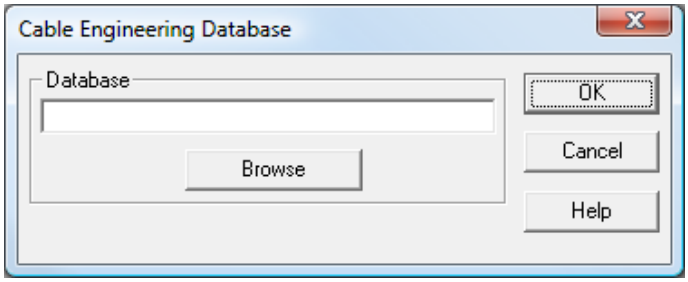
The CRDD database, as loaded into WinFrog, typically contains only pre-lay "plan" cable lay information such as the **Route Position List** (**RPL**), the location of cable bodies, and the amount of cable slack that will be laid in the various sections of the cable route.

During the cable installation, WinFrog updates this database with actual "as-laid" cable data such as cable body locations and cable counts. This provides the on-board cable engineers the ability to analyze in near real-time how well the cable installation is matching the proposed installation plan and, subsequently, adapt the installation as required.

### To Load a New CRDD Database (.MDB) File

Although WinFrog's **File** > **Select Working Files** menu lists the **CRDD Database File** as an option, this dialog window cannot be used to load a .**MDB** file.

1 Select the main menu item **File > Cable Database > Open Database**. The **Cable Engineering Database** dialog window appears, as seen below.




2 Enter the name and location of the database file or select the **Browse** button to navigate to the desired file.

3 Select **OK** to confirm the entry and close this window.

At the bottom of the **Working Files** (**File > Select Working Files)** dialog box, WinFrog now displays the name of the **Working CRDD (.MDB)** file in the **File** field, and the file's path in the **Directory** field.

### To Edit the Working CRDD (.MDB) File

Once a **CRDD File** has been loaded**,** its contents can be viewed and edited. See the **WinFrog Cable Management Extension Module (WCMEM) and Cable Route Design Database (CRDD) User's Guide** for more information. The .**MDB** file can also be used to generate a survey line in the **Working Survey Line** file.

# Working Transponders (.XPT) File

The **Working Transponders** (also referred to as **Xponders**) file is used to maintain the position data and transponder specific attributes associated with either **Long Baseline** (**LBL**) or **Ultra Short Baseline** (**USBL**) subsea transponder **stations**. In the case of **Fixed** transponders, this approach allows for the support of the stations in a similar manner as taken to land control networks, including occupancy and re-occupancy of any given station by multiple transponders, either simultaneous or non-simultaneous. In the case of non-**Fixed** transponders, this approach does not affect the configuration or use of these except to enhance the configuration of the **Fixed** stations to measure to. The reader is referred the **LBL Operation**, **USBL Operation** and **Acoustic Calibration** chapters for details.

Multiple Xponders files may be created, saved and edited. However, only one can be set to be the **Working Xponders** file at any one time.

A **Working Xponders** file is required for all LBL and selected USBL operations.

In the context of WinFrog, the term transponders refers to subsea hardware devices that receive an impulse, either electronically or acoustically, that triggers them to transmit an acoustic pulse in return. Ranges are derived by analyzing the time it takes for the sound to travel (round trip) and knowing the speed of sound in water. In addition, some transponders are what are known as **smart transponders**. These are capable of performing operations other than simply responding to a signal, such as measuring to other transponders, reading internal sensors providing depth and attitude data and/or executing a sequence of pre-loaded commands. Smart transponders can usually be operated in more than one mode.

In the case of LBL acoustics, the transponders in the Xponders file generally include a network array of static **Fixed** transponders located on the seafloor or nearby structures at known coordinates. If these transponders are to be ranged to using transceivers connected directly to an LBL control unit, these are the only transponders required in the file. If transponders are to be used on static structures that require final position determinations or moving vehicles or structures that are to be tracked, they must also be included in the Xponders file.

In the case of USBL acoustics, the transponders in the Xponder file are generally static **Fixed** transponders (or other) which are used for the calibration of the USBL system. These **Fixed** units can also be used to position the vessel with the USBL system. USBL transponders can also be used in similar situations as LBL transponders to track and position subsea vehicles and structures. In this case, it is not currently necessary to include these in the Xponders file, but it is recommended. WinFrog currently utilizes the information for these tracking transponders if it is available in the Xponders file and future development will require it.

Transponders contained in the **Working Xponders** file can be displayed in WinFrog's **Graphics** and **Bird's Eye** window. See the **Operator Display Windows** chapter for more information about WinFrog graphics displays.

**Note:** Prior to performing any LBL acoustic calibrations or positioning, a **Working Xponders** (.**XPT**) file and a **Working Velocity (.VEL)** file must be created.

**Note:** Prior to performing a USBL calibration, a **Working Xponders (.XPT)** file must be created. A **Working Xponder (.XPT)** file is not required for USBL tracking of beacons, but is required if a beacon is fixed for use in tracking the USBL transceiver.

## Overview of the Working Xponders Types

Transponders with varying capabilities are available from several manufacturers. The following is a list of the available transponder types and/or operational modes that WinFrog supports and an example of their application. It should be noted that in many cases, the same transponder can be used for any one of the modes simply by configuring it accordingly. Details on the configuration for each is given in **Editing Xponders**. The list mirrors the options available in the aforementioned section.

### LBL

- **Fixed**

The transponder is static and is generally part of a network array of other **Fixed** transponders. It is measured to by a transceiver or a **smart transponder**, providing range data. The resulting observations are used in a Least Squares Adjustment to solve for the position of the transceiver or **smart transponder**. The **Fixed** transponders form the basis of almost all LBL acoustic positioning. The positions of the **Fixed** transponders are determined with an **LBL Calibration** (see **Chapter 20: LBL & USBL Calibrations**). These positions are then used as known data in associated adjustments.

- **Relay**

The **Relay** transponder is dynamic, usually mounted on an ROV. It is used for positioning in **Relay**, or **sing-around** mode and requires an array of **Fixed** transponders. An LBL control unit and its transceiver are usually located on a surface vessel. This control unit transmits a signal to the **Relay** transponder on a unique frequency. The **Relay** transponder then transmits a common interrogation signal. This signal is received by the originating

transceiver. In addition, this signal is also received by the **Fixed** transponders in the array which each then transmit their own signals which are received by the aforementioned transceiver. A subsequent direct interrogation of the **Fixed** transponders by the transceiver completes the data collection cycle. By combining the observations, WinFrog derives the ranges from the **Fixed** transponders to the **Relay** transponder in addition to the range from the control unit's transceiver to the **Relay** transponder. This data is then used in a Least Squares Adjustment to solve for the position of the **Relay** transponder.

- **Responder**

This is a special case of transponder. It is a transmit-only unit that is connected directly to a control unit via a cable. The control unit and its transceiver are usually located on a surface vessel. The **Responder** is used in the same way **Relay** transponder except that instead of receiving a signal from the control unit's transceiver acoustically, it receives it directly electronically via the cable. The **Responder** is usually located on an ROV and is connected to the control unit via the ROV's umbilical.

- **Simultaneous**

This is a **smart transponder** capable of performing its own range interrogation of other transponders (usually **Fixed**) when instructed to do so by the control unit via an acoustic trigger. The observed data is then acoustically telemetered to the control unit where they can be used in a Least Squares Adjustment to solve for the position of the **smart transponder**. **Simultaneous** transponders are usually mounted on ROVs and structures being placed or monitored on the seafloor.

- **Cyclic**

This is a **smart transponder** capable of being programmed with a series of measurement commands. Then on a trigger from the control unit, the series of commands is executed and the results are telemetered to the control unit for use in a Least Squares Adjustment to solve for the position of the **Cyclic** transponder. A **Cyclic** transponder is used for low dynamic situations such as the final positioning of a structure in acoustically noisy conditions.

- **Sequential**

This is a **smart transponder** capable of measuring baselines to specified **Fixed** transponders. WinFrog instructs the **Sequential** transponder to execute baseline measurements, sequencing through a list of specified **Fixed** transponders. The results are used in a continuous Least Squares Adjustment of the **Sequential** transponder position. That is, as new baseline data is observed, it replaces old data for the same baseline and a new position is determined using all baseline data currently available. The **Sequential** transponder is used for lower dynamic situations such as the final positioning of a structure in acoustically noisy conditions.

- **Static Transceiver**

This is a standard control unit transceiver. However, whereas the control unit transceiver is generally dynamic, attached to a moving vessel and therefore not included in the **Working Xponder File**, this is a special case where the transceiver is static, attached to a fixed structure or simply on the seafloor. The **Static Transceiver** is used to range to a dynamic array of transponders. The observations are combined with observations from other **Static Transceiver** units or **Static Simultaneous** units in a Least Squares Adjustment of the position of the dynamic transponders. In addition, WinFrog can also be configured to perform a subsequent Least Squares Adjustment for the attitude and orientation of the dynamic transponders. (See **Static Simultaneous** and **Dynamic Array**.) This is used for monitoring the movement of a dynamic structure.

- **Static Simultaneous**

This is a **smart transponder** capable of operating as a **Simultaneous** transponder. However, like the **Static Transceiver** whereas a **Simultaneous** transponder is generally dynamic, attached to a moving vehicle, this is a special case where the transponder is static, attached to a fixed structure or simply on the seafloor. The **Static Simultaneous** is used to range to a dynamic array of transponders. The observations are combined with observations from other **Static Simultaneous** units or **Static Transceiver** units in a Least Squares Adjustment of the position of the dynamic transponders. In addition, WinFrog can also be configured to perform a subsequent Least Squares Adjustment for the attitude and orientation of the dynamic transponders. (See **Static Transceiver** and **Dynamic Array**.)

- **Dynamic Array**

This is a **Fixed** transponder mounted on a moving vehicle or structure. It is required for use with the **Static Transceiver** and **Static Simultaneous** units. In addition, it can be part of a network array of **Dynamic Array** transponders on the moving structure that have been precisely surveyed prior to deployment. This provides precise baselines for each **Dynamic Array** transponder pair. These baselines are constrained in the Least Squares Adjustment using the observations from the associated **Static Transceiver** and **Static Simultaneous** units for the positions of the **Dynamic Array** transponders and subsequent Least Squares Adjustment for the attitude and orientation of the structure the **Dynamic Array** transponders are mounted on.

- **Synchronized Pinger**

This is a pinger that outputs a pulse at regular intervals. The beacon is synchronized with an atomic clock so that the epoch of the pulse is known. Thus the travel time from it to a passive hydrophone can be determined without actually triggering the beacon.

## USBL

- **Fixed**

This beacon is static. In most applications, it is deployed and used only for the calibration of the USBL hydrophone, although it can also be used to position a vessel with a USBL hydrophone mounted on it.

- **Tracking**

This beacon is dynamic, generally attached to an ROV or towed body. It is positioned from a vessel with a USBL hydrophone mounted on it.

**USBL Beacon Types**

- **Transponder**
  The beacon is an independent unit, that when interrogated with an acoustic signal, responds.

- **Pinger**
  The beacon is an independent unit that transmits an acoustic signal at a predefined rate.

- **Responder**
  The beacon is a unit linked to the USBL control unit by cable. It is interrogated with an electrical signal and responds with an acoustic signal.

# Working with Xponders Files (*.XPT)

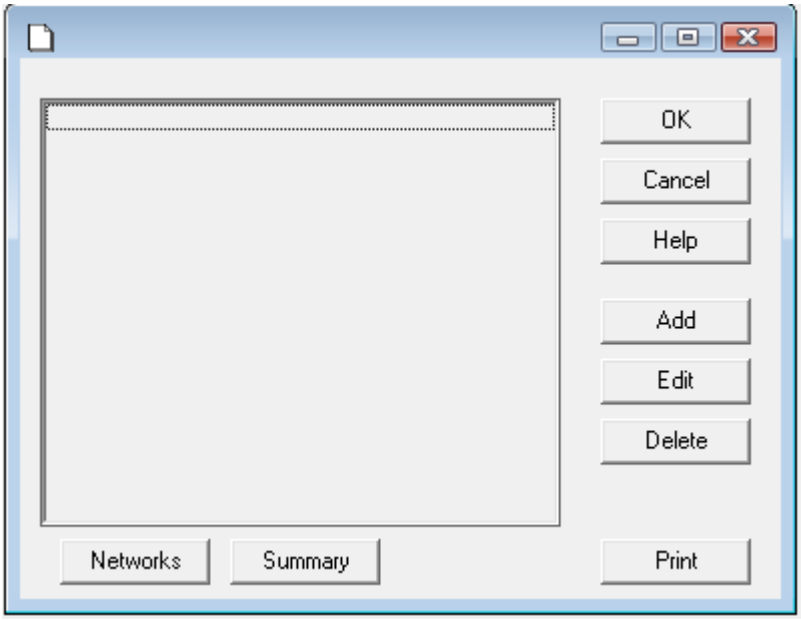
Multiple Xponder files may be created, saved and edited. However, only one can be set to be the **Working Xponders** file at any one time.

The **Working Xponders (.XPT)** file must be created (or selected) before data for information for a specific transponder can be added.

## Creating a New Xponders File

The creation of an Xponders file is detailed in the **Creating and Selecting Less Common Working Files** section earlier in this chapter.

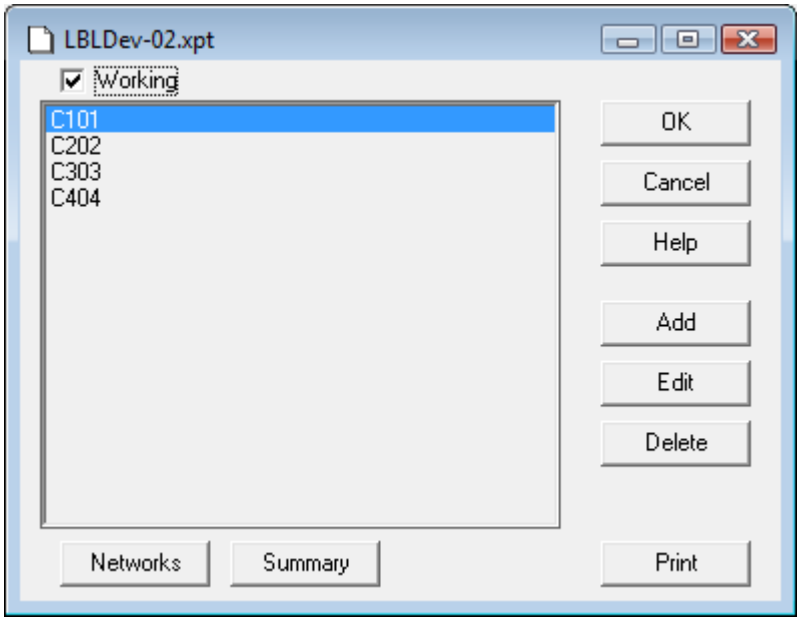
In addition, the Xponders file can be created directly from the Acoustic Window via **File\ New…>Xponder**.




In both cases, before the xponders file can be saved to disk, at least one xponder must be added (see **To Add an Xponder to the Working Xponders File**). WinFrog will then detect that the document has been altered and prompt you to save it.

## Opening an Xponders File

The opening of an existing Xponders file is detailed in the **Creating and Selecting Less Common Working Files** section earlier in this chapter. Once open, the file can be edited or assigned as the **Working Xponders** file. Upon the completion of editing, WinFrog will detect that changes have been made and prompt you to save the file.




The Xponders file can be edited even if it is not set to be the **Working Xponders** file. The editing is performed as detailed in **Editing the Working Xponders File** below with the exception that the non **Working Xponders** file must be opened from the Main Menu **File\ Open** item.

When an existing or **Working Xponders** file is opened, the name of the file will be displayed as the title for the dialog.

### Designating an Xponders File to be the Working Xponders File

The designation of an Xponders file as the **Working Xponders** file is detailed in the **Creating and Selecting Less Common Working Files** section earlier in this chapter.

In addition, the Xponders file can be set to be the **Working Xponders** file directly from the Acoustic Window via **File\ Set to Working…>Xponders**. This accesses a browse dialog allowing you to find and select the Xponders file to set to the **Working Xponders** file. When done this way, the file is not presented for editing but simply set to be the working file.

## Editing the Working Xponders File

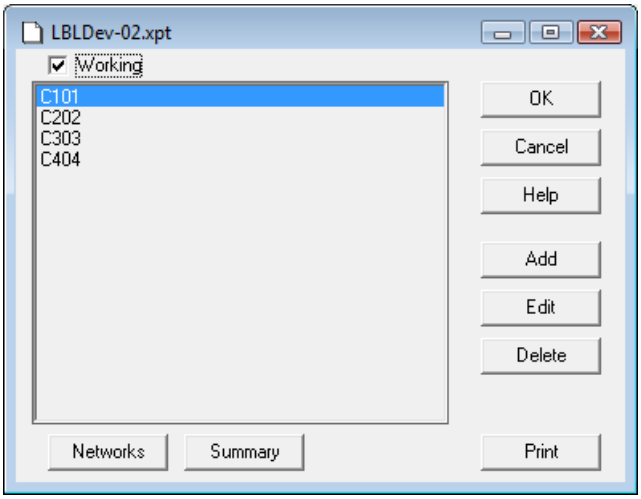
This section details the steps required to perform basic file operations. The specific details of editing the actual Xponder configuration is given **Editing the Xponder** section in this chapter.

#### To Open the Working Xponders File

1 From the main menu **File** item, choose **Edit Working Files... > Xponders**. The **Working Xponders** file will open.

Or

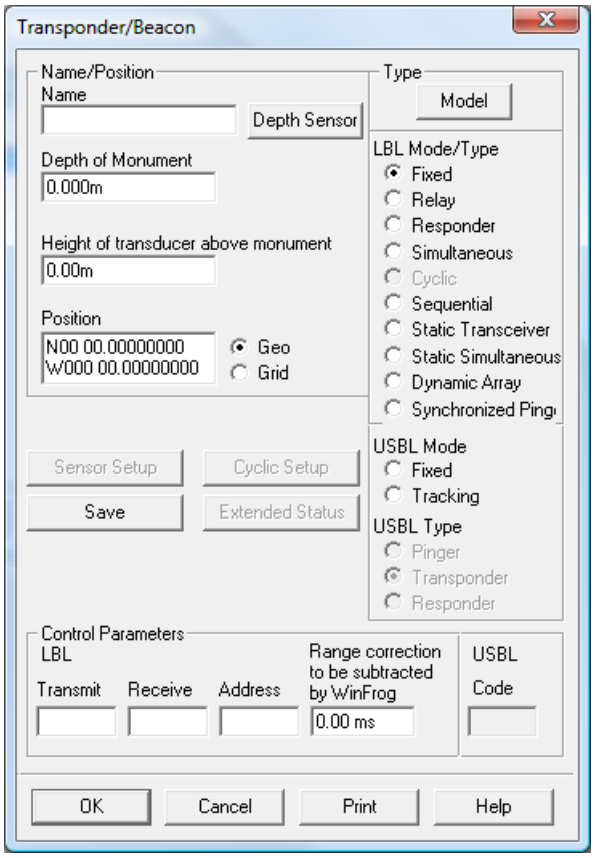
2 From the Acoustic Window **File** item, choose **Edit…> Xponder**. The **Working Xponders** file will open. Note the **Working** checkbox will be checked for the file that is currently set to be the **Working Xponders** file.




### To Add a Transponder to the Working Xponders File

**1** Open the **Working Xponders** file.

**2** Click **Add** to bring up the **Transponder/Beacon** dialog.




**3** Configure the Xponder (see **Editing Xponders**) and click the **OK** button. WinFrog will check that a name has been entered and if not return you to the **Transponder/Beacon** dialog to correct this.

### To Delete a Transponder from the Working Xponders File

**1** Open the **Working Xponders** file.

**2** Select those Xponders from the list that are to be deleted. Multiple Xponders can be selected by holding the **Ctrl** key while selecting the Xponders with the mouse.

**3** Click **Delete** to remove the selected Xponders from the list and file.

### To Edit a Transponder in the Working Xponders File

**1** Open the **Working Xponders** file.

**2** Click on the Xponder in the list to be edited and click the **Edit** button to bring up the **Transponder/Beacon** dialog.

Or

**3** Double-click on the Xponder in the list to be edited to bring up the **Transponder/Beacon** dialog.

**4** Configure the Xponder (see **Editing the Xponder**) and click the **OK** button. WinFrog will check that a name has been entered and if not return you to the **Transponder/Beacon** dialog to correct this.

### Special Case: Double Occupancy

WinFrog supports multiple transponders co-located on the same station. This addresses two main scenarios. The first is when transponders of different frequencies (generally MF and EHF) are placed at the same location to support surface ranging and baseline observations when EHF observations are required for optimum baseline accuracy, but the water depth is too great for the EHF to be interrogated from the surface. In this case, each transponder is added and edited accordingly and referenced to the same point, both horizontally and vertically. The latter is generally achieved using the **Height of Instrument** entry. The second scenario is when a transponder that supports both USBL and LBL operations is used, the USBL mode for surface ranges and the LBL mode for baseline observations. In this case an Xponder is created for each operation mode, again ensuring that they are both referenced to the same point horizontally and vertically. The vertical reference must be the transducer of the transponder. In both scenarios it is critical that the same name be entered for each Xponder entry.

When WinFrog detects that a name used for an Xponder is the same as that used for another, it will report this and ask for confirmation that this is correct. If it is not, you are returned to the Xponder configuration dialog for the one just edited/added so that the name can be changed.

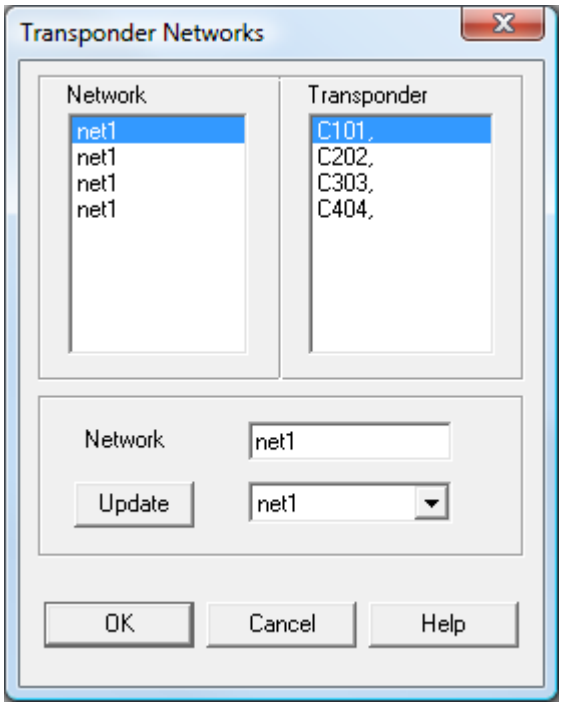
### To Configure the Fixed Transponder Networks

Transponders in an Xponders file can be associated in groups or networks. Currently, this functionality is limited to the collection of calibration data. This grouping of the transponders allows WinFrog to be set to automatically determine all possible baselines between **Fixed LBL** transponders in a given network, initiate the measurements of these and log the results to the calibration data file. Similarly, WinFrog can be configured to automatically interrogate all the transponders in a given network for depth observations and log the results to the calibration data file.

All **Fixed LBL** transponders default to be part of **Net1**.

1 Open the **Working Xponders** file.

2 Click **Networks** to bring up the **Transponder Networks** dialog.




The **Transponder Networks** dialog provides the following information and controls:

| | |
|---|---|
| **Network** list | This lists the network the corresponding transponder is a member of. If you select a network in this list, the corresponding transponder in the **Transponder** list will be highlighted and the network will be displayed in the **Network** field. |
| **Transponder** list | This lists all the **Fixed LBL** transponders in the **Working Xponders** file. If you select a transponder in this list, the corresponding network in the **Network** list will be highlighted and the network will be displayed in the **Network** field. |
| **Network** field | This presents the network the currently selected transponder is a member of. It also allows you to change and add networks. |
| **Available Network** list | This is a drop down list of all the networks that existed when the dialog was opened plus those added during the current editing. |
| **Update** button | This allows you to apply changes made to the network association for the currently selected transponder, made either via the **Network** field or the **Available Network** list. |

3 **To Change a Transponder's Network to a New Network**

**i** Select the transponder in the **Transponder** list that is to be a member of the new network.

**ii** Enter the name of the new network in the **Network** field.

**iii** Click the **Update** button.

**iv** The name of the network as displayed for the edited transponder will be updated to the new network name. In addition, the new network name is added to the **Available Network** list.

**4 To Change a Transponder's Network to a Existing Network**

**i** Select the transponder in the **Transponder** list that is to be changed to an existing network.

**ii** From the **Available Network** list, select the desired network.

**or**

**iii** Enter the name of the existing network.

**iv** Click the **Update** button.

**v** The name of the network as displayed for the edited transponder will be updated to the new network name.

**5** Click **OK** to exit the **Transponder Networks** dialog and apply the changes to the **Working Xponders** file.

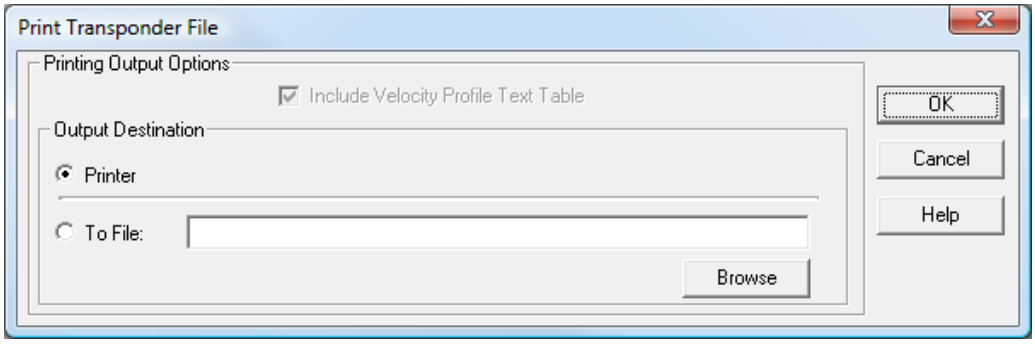
Or

**6** Click **Cancel** to exit the **Transponder Networks** dialog and without apply the changes to the **Working Xponders** file.

### To Print the Transponder File

**1** Open the **Working Xponders** file.

**2** Click **Print** to bring up the Print Transponder File dialog.




**3** Select either **Printer** or **To File** option. Selecting **Printer** results in the print going directly to the Windows default printer. If selecting the **To File** option, you must either enter the target file or use the **Browse** button to locate or enter an appropriate file name.

**4** Click the **OK** button. This will exit this dialog and execute the appropriate printing. When the printing is completed, you will be informed with a message box stating **Writing to File Finished**.

### To View the Transponder File Summary

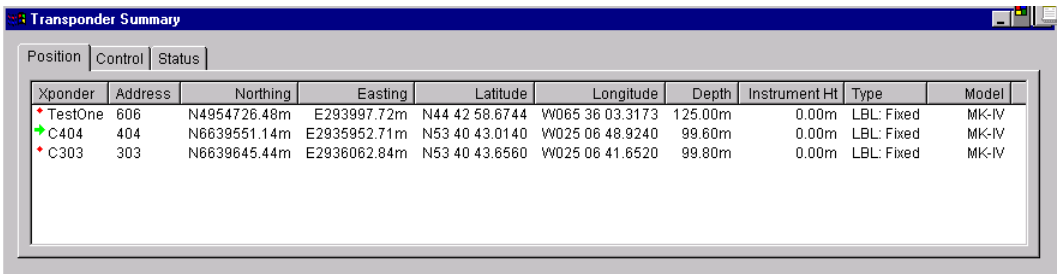
WinFrog provides an Xponders File summary window where the information for all transponders in the file can be viewed together. The information is presented in a tab format in resizable window, complete with scroll bars as required.

Clicking on selected column headers will result in the information being sorted based upon the information in that column.

A transponder can be edited by double clicking the name. The **Transponder/Beacon** dialog appears. You must be careful as multiple **Transponder/Beacon** dialog boxes can be opened in this manner, even for the same transponder.

**1** Open the **Working Xponders** file.

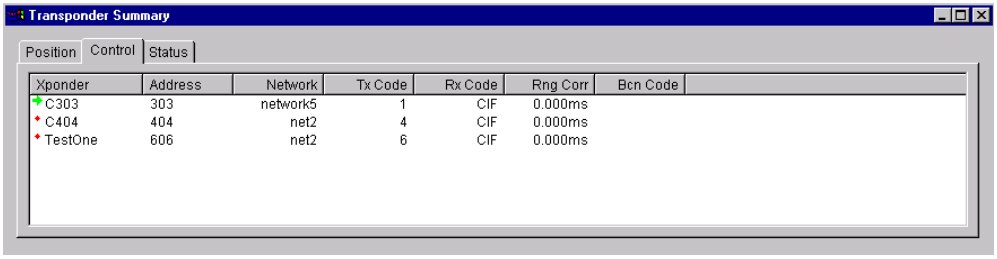
**2** Click **Summary** to bring up the **Transponder Summary** window.




**3** The first tab presented is the **Position** tab, presenting in the following columns:

| | |
|---|---|
| **Xponder** | The name of the transponder station (supports sorting). |
| **Address** | The address of the transponder station (supports sorting). |
| **Northing** | The Map Projection Grid Northing of the transponder station. |
| **Easting** | The Map Projection Grid Easting of the transponder station. |
| **Latitude** | The Working Ellipsoid latitude of the transponder station. |
| **Longitude** | The Working Ellipsoid longitude of the transponder station. |
| **Depth** | The depth of the transponder station. |
| **Instrument Ht.** | The height above the station the transponder's transducer is. |
| **Type** | The LBL Mode/Type and/or USBL Mode setting of the transponder station (supports sorting). |
| **Model** | The manufacturer model of the transponder station (supports sorting). |

**4** Clicking the **Control** tab shows the following information:




**Xponder** The name of the transponder station (supports sorting).

**Address** The address of the transponder station (supports sorting).

**Network** The name of network the transponder is assigned to.

**Tx Code** The frequency or corresponding channel the transponder is set to reply to common interrogations on (supports sorting).

**Rx Code** The frequency or corresponding command the transponder is expecting to receive (supports sorting).

**Rng Corr** The correction to the TWTT un-accounted for by the LBL acoustic control unit to be applied by WinFrog.

**Bcn Code** The USBL transponder identifier (supports sorting).

**5** Clicking the **Status** tab shows the following information. This is specifically designed to support Sonardyne hardware.

**Xponder** The name of the transponder station (supports sorting).

**Address** The address of the transponder station (supports sorting).

**Firm Ver.** The firmware version number of the transponder.

**Enabled** The operation mode/status of the transponder (supports sorting).

**Reply Chan** The channel the transponder will reply to an Individual Interrogation Frequency (IIF) interrogation.

**Int Wait** The length of time in milliseconds the transponder is configured to wait between receiving an interrogation command and interrogating the specified transponder.

**Reply Wait** The length of time in milliseconds the transponder is configured to wait for a response to its interrogation command.

**Tel Wait** The length of time in milliseconds the transponder is configured to wait between commands when operating in **Cyclic** mode and between telemetry bursts when operating in **Simultaneous** mode.

**Battery** The type of battery installed in the transponder.

**Time** The time of the last **Status** update.

## Editing Xponders

The editing and configuring of transponders is done from the **Transponder/Beacon** dialog. The options available depend upon the transponder model and application mode. Those options that are not applicable for the current model and application mode are disabled to eliminate confusion.

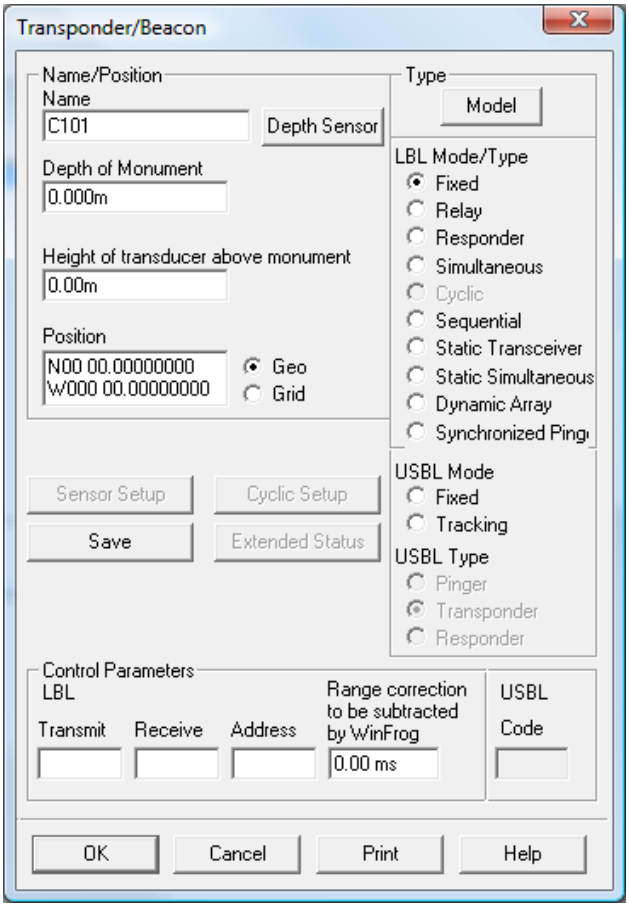
In addition, there are two distinct configuration option sets, one for what is considered standard application mode, and another for non- standard application mode. Non-standard mode are **Static Transceiver**, **Static Simultaneous** and **Dynamic Array**. All others are considered to be standard. This section looks at each individually.

For standard **Fixed** applications, the concept of a survey station is applied in that the station is defined in the Xponder file plus the transponder that is mounted at that station. That is, the **Name**, **Depth of Monument** and **Position** information refer to the station independently of the transponder itself. The occupying transponder is referenced to the station by the **Height of Transducer Above Monument** information. This supports the simultaneous occupancy of one station by multiple transponders. It also facilitates the use of mounting buckets for holding transponders in a semi-permanent array. The transponder is assumed to be mounted vertically over the station. In the case of a non-vertical deployment, the station **Depth of Monument** and **Position** should be related to the transponders transducer and the **Height of Transducer Above Monument** be set to 0.

WinFrog identifies **Fixed** transponders by station **Name** and **Address**.

## Editing Standard Xponders

The following details the configuration options for standard application mode transponders. Please refer to **Overview of the Working Xponders Types** for a description of each application mode to decide which is required.




## Name/Position

**Name** field — Enter a **unique** name for the **station**. Stations can have more than one transponder assigned to them. If more than one transponder is located at the same station, whether simultaneously or not, each must have an Xponder (**station**) added to the file with the same name used for both. Transponders are differentiated by WinFrog using the (station) **Name** and transponder **Address**.

**Depth of Monument** field — If this is an **LBL Fixed** or **USBL Fixed** transponder application, then this value is the depth of the station, that is some point on the seafloor that will remain constant regardless of what transponder is deployed over it. If the transponder is not deployed vertically over the station, this should be set to the depth of the transducer.

**Height of transducer above Monument** field — If this is an **LBL Fixed** or **USBL Fixed** transponder application, then this value is the distance from the station to **Monument** to the transponder's transducer, also referred to as a **Height of Instrument** or **HI**. If the transponder is not deployed vertically over the station, this should be set to 0.

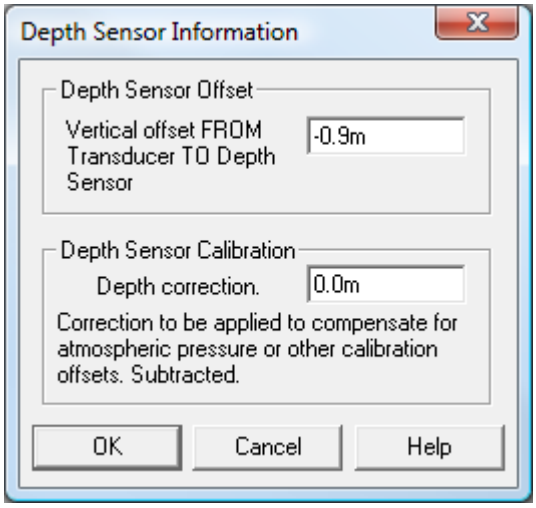
**Position** field — If this is an **LBL Fixed** or **USBL Fixed** transponder application,

enter the coordinates of the station the transponder is located over. If the transponder is not deployed vertically over the station, this should be set to the position of the transducer.

The coordinates can be either entered in the Working Ellipsoid geographic latitude and longitude or in the currently selected Map Projection grid coordinates, Northing and Easting.

**Depth Sensor** button

This accesses a **Depth Sensor Information** dialog. This allows you to enter the data required to relate the depth sensor to the transponder's transducer.




**Depth Sensor Offset**

This is the vertical offset **from** the transponder's transducer **to** the depth sensor. This value is automatically set based on the transponder model selected, but may be changed to suit the actual conditions. It must be modified in cases where the transponder is not mounted vertically with the transducer on the top.

**Note:** The sign convention to use is as follows: if the **transducer** is above the depth sensor, this value is a **negative** number; if the **transducer** is below the depth sensor, this value is a **positive** number.

**Depth Sensor Calibration**

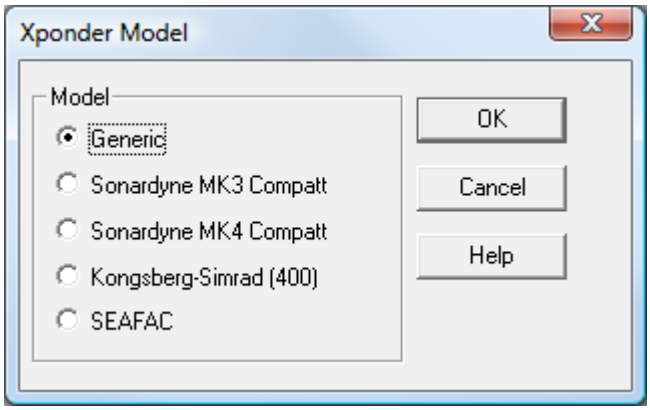
This field is for entry of the depth sensor calibration value for that particular sensor. To obtain this value, observe the sensor's apparent depth while the transponder is on the deck. Enter the observed value here, keeping the same sign.

## Type

**Model** button

This opens the **LBL Xponder Model** dialog box, as seen below. Note that the model selection impacts the transponder

configuration options. Selecting **MK3** or **MK4 Compatts** causes the **LBL Mode Responder** radio button to disable, as this is not supported for the **PAN** device. It also causes the **Extended Status** button to become **active** as this is only supported for the **Sonardyne** transponders. Additionally, the **Control Parameter** edit boxes become dropdown boxes with preset values for **Sonardyne** transponders.




| | |
|---|---|
| **Generic** | The default setting is **Generic**. This is the setting for all LBL and USBL transponders except for those listed below. |
| **MK3 Compatt** | This is a specific Sonardyne **smart transponder** model used with the **Sonardyne PAN** or **ROVNAV** device. Setting this enables WinFrog to provide extended functionality, including **Extended Status** monitoring. |
| **MK4 Compatt** | This is a specific Sonardyne **smart transponder** model used with the **Sonardyne PAN** or **ROVNAV** device. Setting this enables WinFrog to provide extended functionality, including **Extended Status** monitoring.<br>**Note:** Select this model for the MK 5 COMPATTs also. |
| **Kongsberg Simrad (400)** | This is a specific Kongsberg Simrad USBL beacon (or similar if it emulates the same) that is used primarily with the HPR 400 systems and APOS software. The associated beacon codes are not simple integers. Selection of this type instructs WinFrog to accept entry and display of the USBL beacon code in the native format (e.g. B61). |
| **SEAFAC** | This is a specific type of acoustic equipment using passive hydrophones and synchronized pingers. |

## LBL Mode radio buttons

Select one of the following if the transponder is for LBL use. For more information regarding each option, see **Overview of the Working Xponders Types** at the beginning

of this chapter. For information concerning their use, see the **LBL Acoustic** chapter.

| | |
|---|---|
| **Fixed** | This is a static transponder located at a known point. A group of these form a network array(s) that provide the basis for all the standard LBL applications. |
| **Relay** | This is generally a mobile transponder, normally attached to a subsea vehicle. It is interrogated acoustically by a ship-based transceiver/control unit. |
| **Responder** | This is generally a mobile transponder, normally attached to a subsea vehicle, that is actually attached to the LBL control unit via a cable and triggered electronically. |
| **Simultaneous** | This is generally a mobile transponder, normally attached to a subsea vehicle, that upon being triggered acoustically by a transceiver attached to a control unit, performs measurements to other transponders and transmits the data acoustically to the originating transceiver. |
| **Cyclic** | This is generally a mobile transponder (low dynamics), normally attached to a subsea vehicle, that upon triggering acoustically by a transceiver attached to a control unit, executes a series of preprogrammed commands. |
| **Sequential** | This is generally a mobile transponder (low dynamics), normally attached to a subsea vehicle. If an XPONDER data type is attached to a vehicle, WinFrog automatically sequences through a list of **Fixed** transponders commanding this **Sequential** transponder to measure the baseline to each one in turn. |
| **Static Transceiver** | See **Editing Non-Standard Xponders**. |
| **Static Simultaneous** | See **Editing Non-Standard Xponders**. |
| **Dynamic Array** | See **Editing Non-Standard Xponders**. |
| **Synchronized Pinger** | This is disabled unless the SEAFAC model is selected. Select this mode to describe the pinger mounted on the vehicle to be positioned. |

## USBL radio buttons

The configuration for the USBL transponders is broken into two parts, **Mode** and **Type**.

**Note:** The term transponders is used here as a general term for USBL systems. As seen below, there are actually different types. In addition, the units are often referred to as beacons.

***USBL Mode***

The **Mode** refers to how the transponder used.

**Note:** WinFrog currently bases some optional timing control for positioning a tracked beacon upon data entered in the Working Xponders file for the tracked beacon. If the tracked transponder is not entered in the Working Xponders file, WinFrog will assume

it is a transponder.

| | |
|---|---|
| **Fixed** | The transponder is static at a known location and used for positioning the hydrophone vehicle, or for a USBL Calibration. |
| **Tracking** | The transponder is attached to a moving vehicle, generally an ROV or towed body, whose position is being tracked from the USBL hydrophone vehicle. |

***USBL Type***

The **Type** refers to the actual operating type of beacon.

| | |
|---|---|
| **Pinger** | This unit transmits a signal at a set frequency and rate, it is not interrogated by the USBL system. |
| **Transponder** | This unit is acoustically interrogated by the USBL system and replies. |
| **Responder** | Like the **Responder** for the LBL acoustics, this unit is connected to the USBL system via a cable. It is electronically interrogated by the USBL system and replies with an acoustic signal. |

## Control Parameters

***LBL group***

**Transmit** field

Enter the **transmit frequency** or **code** of the **LBL** transponder. If the **LBL** equipment uses actual **frequencies** rather than a **code** or a **channel**, then the **frequencies** must be entered with a decimal point and all significant digits, including zeros. Essentially, what is entered here must match the data string coming from the instrument. In the case of Benthos, the information associated with the transponder transmitting at 14kHz will have 14.00 in the message coming from the instrument. (i.e. for Benthos xponders, 14 kHz must be entered as **14.00**).

If the **LBL** equipment uses **codes** or **channels** rather than actual **frequencies**, then enter the appropriate **code** or **channel** (i.e. **Common Interrogate Frequency** should be entered as **CIF**, and **channel 3** should be entered as **3**).

A **Fixed** transponder's **transmit** frequency (channel) will normally be the transponder's **Output** frequency (i.e. 14.0 or 3).

A **Relay transponder** or **Responder's Transmit** f**requency/channel** will normally be the **Fixed transponder's Receive** frequency (i.e. **11.50** or **CIF**).

**Receive** field

Enter the **LBL** transponder's **Receive frequency** or **code**. If the **LBL** equipment uses actual **frequencies** rather than **code** or **channel**, then the **frequencies** must be entered with a decimal point and all necessary significant digits including zeros. (i.e. 11.5 kHz should be entered as **11.50**). The value entered here must match the data string coming back from the instrument. In the case of Benthos, the information associated with the transponder receiving at 11.5kHz will have 11.50 in the message coming from the instrument.

If the **LBL** equipment uses **code** or **channel** rather than actual

**frequencies**, enter the **code** or **channel** (i.e. **Common Interrogate Frequency** should be entered as **CIF**, and Simultaneous interrogation is selected as SI or FS).

A **Fixed** transponder's **receive** frequency or **channel** will normally be the **transceiver's** (or **relay transponder's**) **transmit** frequency (i.e. 11.50 or CIF).

A **Relay transponder's receive** frequency **or command/channel** will normally be the **transceiver's** transmit frequency (i.e. 9.0 or RY1).

A **Responder**, although triggered by a physical connection (i.e. a wire), still requires a **receive** frequency/channel to be entered to match the configuration of the acoustic hardware.

**Address** field — Enter the transponder **address**. This is only applicable to MK-III and MK-IV Compatts.

**Note:** Do not enter an address for transponders that do not use addresses. Also ensure there are no blanks present in any entries made.

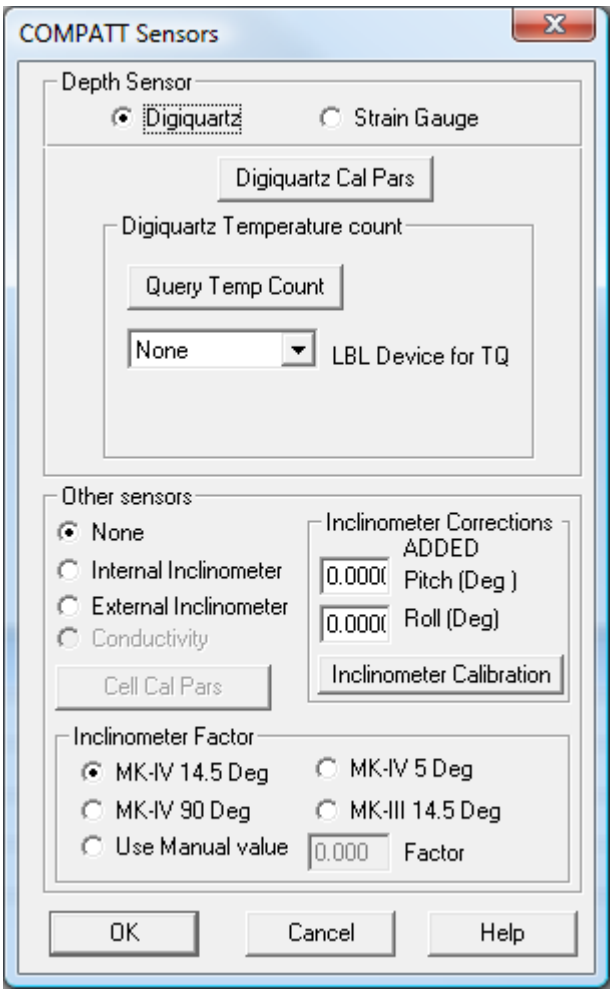
**Range Correction to be subtracted by WinFrog** field — This entry is that portion of the transponder's turn-around-time (TAT) that is not accounted for by the LBL control unit. It is subtracted from the two-way-travel-time (TWTT) for this transponder received by WinFrog. This entry is **not** the value actually subtracted by the acoustic electronics before a range is sent to WinFrog.

***USBL group***

**Code** field — Enter the **code** of the **USBL** beacon. If the USBL device is a Kongsberg Simrad HPR 400 (see **Type** above), enter the HPR beacon code (e.g. B61).

## Supporting Configuration Options: Sensor Setup Button

To access the extended sensor configuration options available for Sonardyne MK-III and MK-IV Compatt transponders click the **Sensor Setup** button. Note that only one sensor can be available in one transponder due to space constraints.

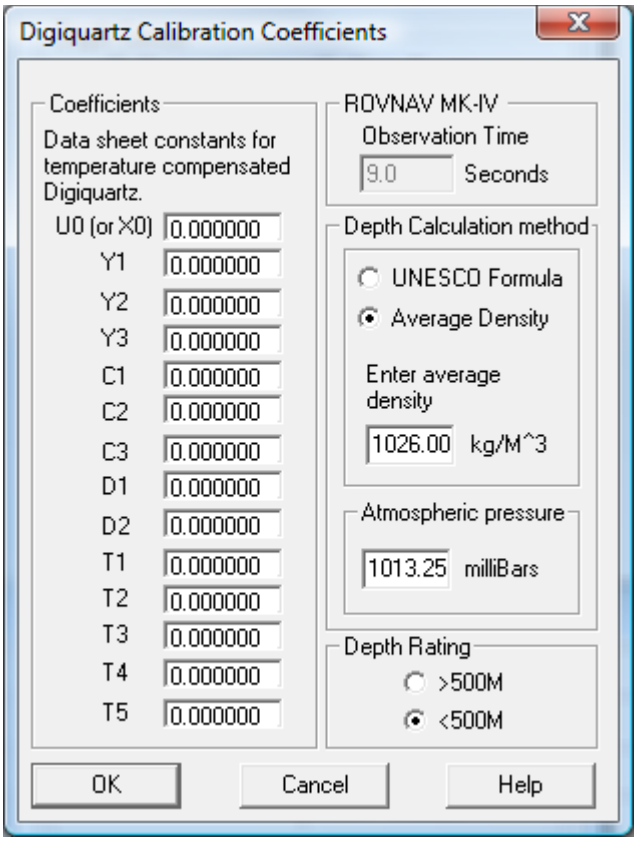



**Depth Sensor**

Select the depth sensor type installed in the transponder, either **Digiquartz** or **Strain Gauge** (default).

**Digiquartz Cal Pars** button

This accesses the **Digiquartz Calibration Coefficients** dialog.




**Coefficients** — Enter the coefficients directly from the digiquartz coefficient sheet provided with a digiquartz equipped transponder.

**Depth Calculation Method** — Select either the UNESCO formula or average density. If the average density is selected then enter the density to use in the edit box. The formula used to convert the pressure to depth is D = (pressure-atmosphere pressure)/density
If the UNESCO formula is selected, enter the latitude of the work area in the edit box. The UNESCO formula is described by Fofonoff N.P. and Millard R.C. Algorithms for computation of fundamental properties of seawater UNESCO technical papers in marine science No 44 (1983).

**Water Density** — Enter the average water density for the water column in kilograms per metre$^3$.

**Latitude** — Enter the latitude of the work area in degrees.

**Atmospheric Pressure** — Enter the ambient atmospheric pressure in millibars.

**Depth Rating** — Select the appropriate rating for the digiquartz sensor.

## (COMPATT Sensors dialog box)

### Digiquartz Temperature count

**LBL Device for TQ** — If interrogating the transponder for a temperature count, select the LBL Device to use to obtain the initial count.

**Initial Temp Count** — Clicking this button will cause WinFrog to interrogate the transponder for a **Temperature Count** value. The response is automatically associated with this transponder for subsequent digiquartz value interrogations (DQ commands).

### Other Sensors

Select any other sensor that is installed in the transponder.

**None** — There is no other sensor available.

**Internal Inclinometer** — There is an internal inclinometer installed in the transponder. This enables use of the **ATTITUDE** data item with the transponder.

**External Inclinometer** — There is an external inclinometer installed in the transponder. This enables use of the **ATTITUDE** data item with the transponder.

**Inclinometer Corrections** — Enter calibration values for this inclinometer. The values entered here are saved with this transponder in the *.XPT file, but not applied directly from here. However, they may be accessed from this transponder from the ATTITUDE data item when edited, after assigning to a vehicle.

**Inclinometer Calibration** button — The corrections may be determined by performing a calibration. Click this button to perform an inclinometer calibration. An LBL device must already be available to perform the calibration, as readings of the inclinometer are required. See below.

**Conductivity** — Future development.

**Cel Cal Pars** — Future development.

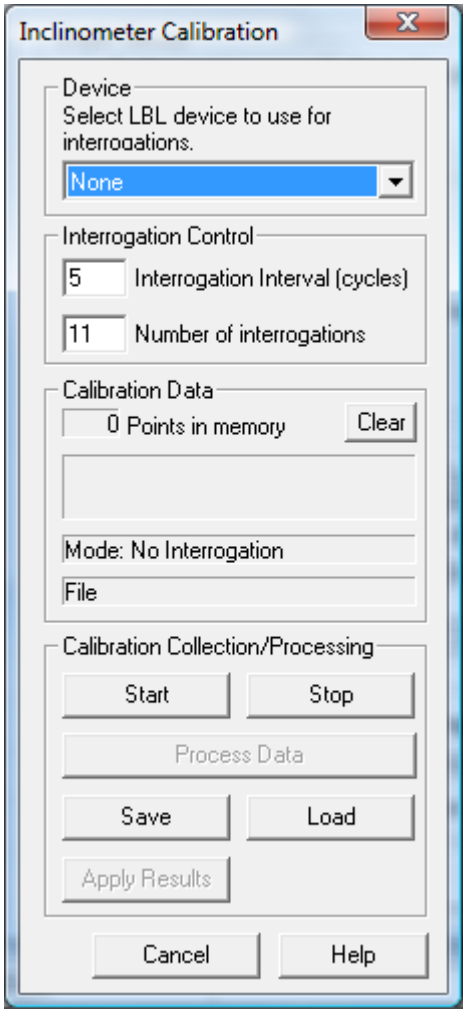
#### Inclinometer Factor

The inclinometer factor is used to convert the observed analog value (volts) to an angle. The factor depends upon the range of the instrument and the COMPATT. Several preset values can be obtained by selecting the COMPATT model and range. If none of these options are correct for this COMPATT and inclinometer, a manual factor may be entered. WinFrog uses the following formula to convert the voltage to an angle:

Angle = $\sin^{-1}$(voltage/factor)

## Inclinometer Calibration

When you click the Inclinometer Calibration button the following dialog opens:




This dialog is used to obtain pitch and roll readings of a transponder that can be compared to known values in order to estimate a calibration or correction factor. Note: When performing this calibration you should stop all other interrogation activity.

## Device

**Device** — Select the device to use to interrogate the transponder.

## Parameters

**Interrogation Interval** — Enter the time interval between interrogations in seconds.

**Number of interrogations** — Enter the total number of observations.

## Information

**Points in memory** — This is the current number of pitch and roll

observation in memory.

**Clear** This button clears all the points currently in memory. All of this data will be lost so be sure to save it first.

**Blank Area** When a telegram is received from the device in response to a command it will be displayed here.

**Mode** Indicates if the device is being interrogated or not.

**File** File name of the data.

## Controls

**Make Observations** Click to start the observation process. If other interrogations are taking place these observations will be queued.

**Stop** Stops the observations if they have not finished.

**Process Data** When the desired amount of data has been obtained and interrogation has ceased, click this button to compute the calibration values. A dialog box will appear, see below.

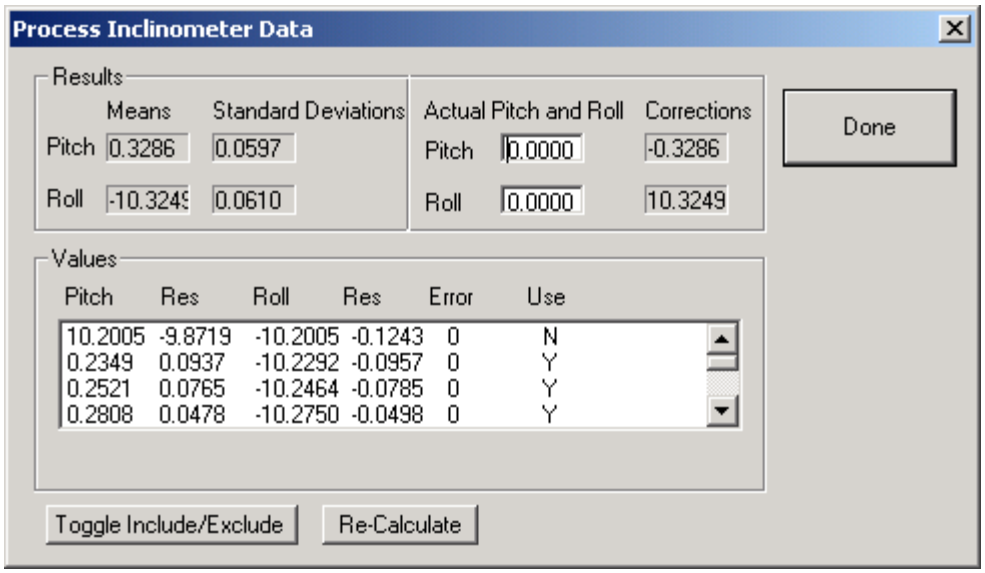
**Save and Load** These buttons allow the data to be saved in an ASCII text file or loaded from such a file. The default file type is *.ATT

## Apply Values

After the data has been processed, this button will become active. Click this button to copy the corrections to the COMPATT Sensors dialog. Note: it does not apply them to observations for the ATTITUDE data item. You must edit this data item and enter the values manually or select these values by selecting this COMPATT from the dropdown list of COMPATTS.

### Processing the Inclinometer Data

**1** After the data has been obtained, click the **Process Data** button to obtain the following dialog box:




The dialog opens with the data set already processed. Displayed is the mean, standard deviation and residuals of the pitch and roll data set. Corrections are also determined based on default actual pitch and roll values of zero.

The "Error" indicator in the Values list box is the error code received from the LBL device.

To reject an observation set, highlight it in the Value list box and click the Toggle Include/Exclude button. Although the observation of pitch and roll of this record will no longer be used to calculate the mean and standard deviation, the difference between the mean and the observation will be displayed under the Res heading.

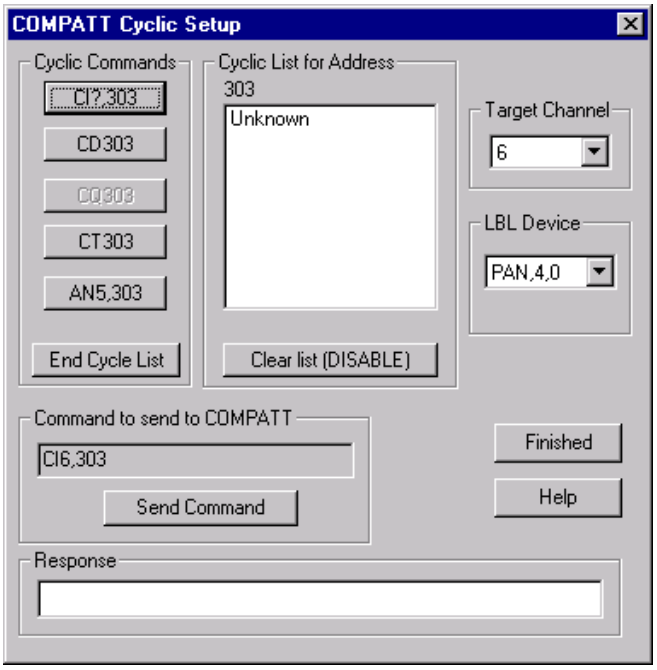
If the default "Actual Pitch and Roll" of zero is incorrect, enter the actual pitch and roll of the transponder while the observations were taken.

When all the desired changes have been made, click the **Re-Calculate** button.

Click **Done** to close the box and carry the corrections back to the previous dialog where the Apply button will become active.

## Supporting Configuration Options: Cyclic Setup Button

To access the Cyclic setup dialog, click the **Cyclic Setup** button. To enable the cyclic transponder mode the transponder address must be entered, the model must be set to either a Mk III or Mk IV COMPATT and the LBL Mode must be set to "Cyclic". (Note: if the address is entered last the focus must be changed from the address edit box before the "Cyclic" button will enable.) Since setting up a COMPATT for cyclic operation requires communication with the COMPATT, either a PAN or ROVNAV device must be added to WinFrog before the cyclic setup can be accomplished. In addition, the Xponders file must be the current **Working Xponders** file. If either of these conditions have not been satisfied when the cyclic button is clicked a message box will appear informing you of the lack of communications.




The dialog box presents only those commands available for loading to the transponder's memory. This dialog also acts as a terminal to communicate with the COMPATT via the PAN or ROVNAV. Each command is a two part operation; a) select the desired command which will then appear in the "Command to send…" box, where it can be edited, then b) push the "Send Command" button and wait for the response before closing.

Initially WinFrog does not know which commands are stored in the COMPATT's table, thus it is recommended that the list be cleared before continuing. First select the device from the "LBL Device" drop down list box, ignore the numbers after the device's name. Then click the **Clear list (DISABLE)** button and send the COMPATT disable command. Once the device responds the cyclic command list will clear. Then select and send the desired commands. To send a sequential command (CI) first select the target channel, only those currently in the transponder file will appear the list. Once all the desired commands have been sent click on the **Finish** button to send the **Terminate Cycle** (TC) command. This will prevent additional commands from being placed in the table until the next time the **Clear list (DISABLE)** is clicked. Older COMPATT's may not support the TC command, thus additional commands to this COMPATT will enter the table. The reader is referred to the Sonardyne documentation.

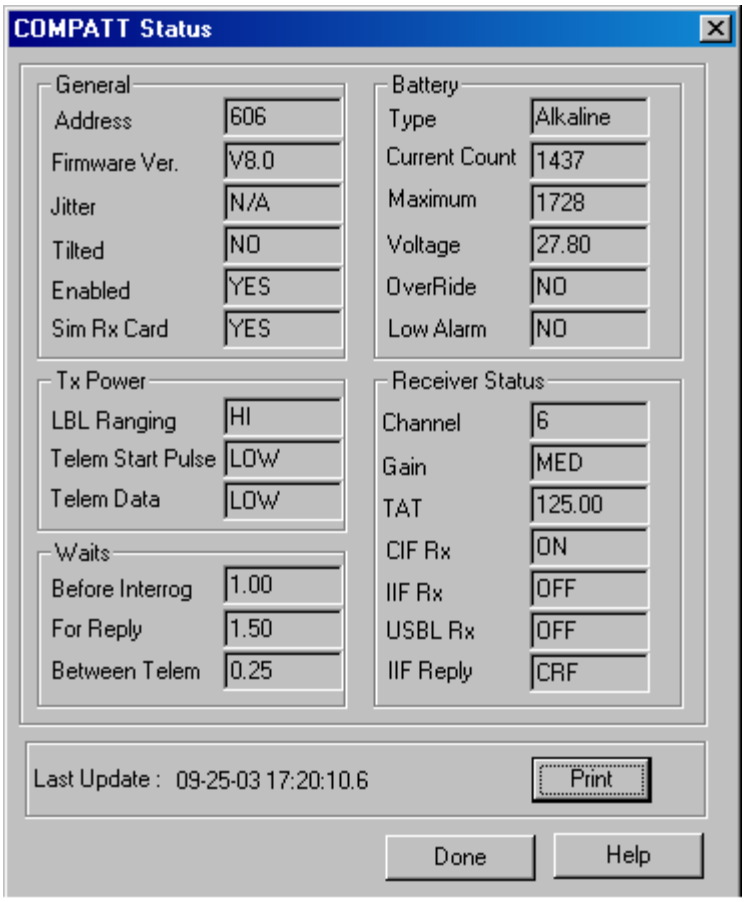
## Supporting Configuration Options: Save Button

Click the **Save** button to force the saving of this transponder configuration to the Xponders file on disk. Note that this effectively accepts the configuration changes and therefore the **OK** button is disabled and the **Cancel** button is changed to a **Done** button. Click the **Done** button to exit the dialog.

## Supporting Configuration Options: Extended Status Button

To view the status and configuration of this transponder, click the **Extended Status** button. This is specifically for the Sonardyne **MK-III** and **MK-IV Compatts**. You

must interrogate the transponder using the **TS, BC** and **PS** commands via one of WinFrog's acoustic **Terminal Windows**. See in the **Operators Display Windows** chapter.




**Note**: It is important to note that if a transponder's IRF is changed, the TS must be executed so that WinFrog can note the new IRF to use in its commands.

**Note**: The Sonardyne Dual Band Compatts must be treated carefully since the status they return when interrogated depends upon the mode they are operating in, i.e. either the EHF status or the MF status. WinFrog currently only supports a single status configuration for each transponder station and therefore cannot maintain the status for both frequencies, nor does it differentiate between the two. As a result, if the operator is not careful, the status information displayed may actually reflect a bit of each frequency.

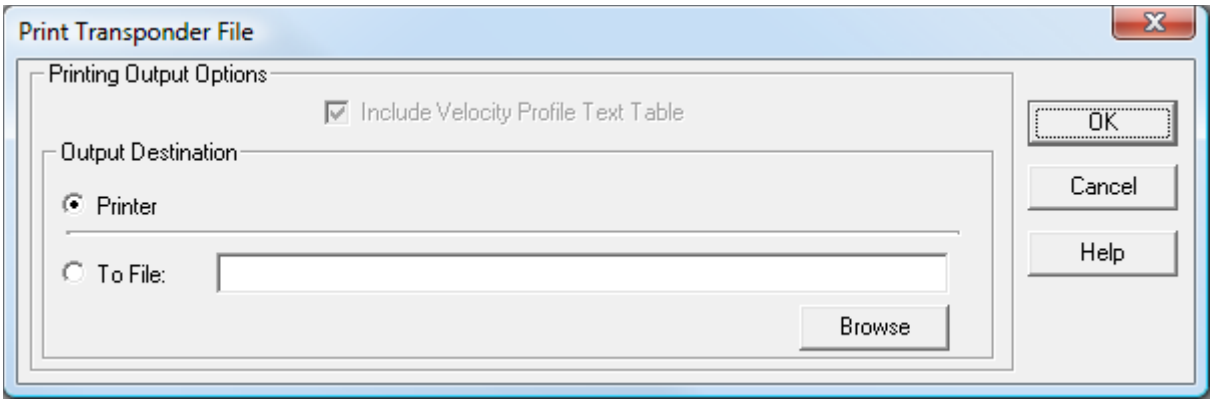
The time of the latest interrogation with the TS or BC command is given.

To print the extended status for the transponder, click the **Print** button.

Refer to Sonardyne's technical manual for an explanation of the status information.

### To Print The Transponder Configuration

**1** To print this transponder, click the **Print** button.




2 Select either **Printer** or **To File** option. Selecting **Printer** results in the print going directly to the Windows default printer. If selecting the **To File** option, you must either enter the target file or use the **Browse** button to locate or enter an appropriate file name.

3 Click the **OK** button. This will exit this dialog and execute the appropriate printing. When the printing is completed, you will be informed with a message box stating **Writing to File Finished**.

### Completing the Configuration

Click the **OK** button to exit and keep the configuration changes or Cancel to exit and discard the configuration changes made. WinFrog checks for a valid transponder/station name. If one is not detected you are so informed and returned to the Transponder/Beacon dialog.

## Editing Non-Standard Xponders

The following details the configuration options for non-standard application mode transponders. These non-standard applications involve fixed LBL Transceivers and Simultaneous COMPATTS and the moving transponders arrays, that is, the inverse of the *standard* application. Please refer to **Overview of the Working Xponders Types** for a description of each application mode to decide which is required.

The following details the configuration options for each specific LBL Mode/Type option associated with this application, that is, the **Static Transceiver**, **Static Simultaneous** and **Dynamic Array** settings.

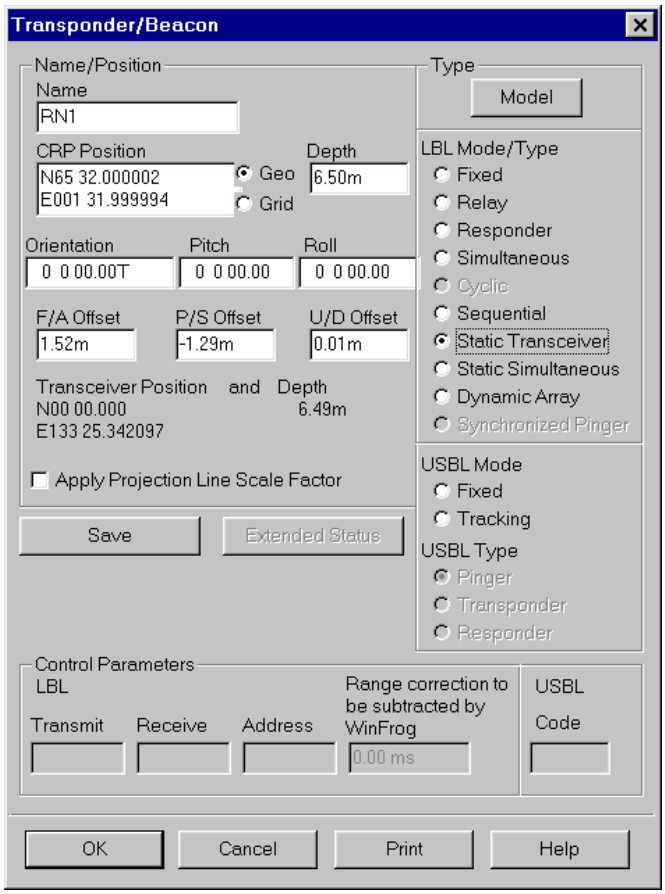
**Note:** The **Model**, **Save**, **Extended Status** and **Print** buttons use is the same as that for standard applications. They are enabled and disabled accordingly.

### Configuring the Static Transceiver

The Static Transceiver refers to a Sonardyne transceiver connected to either a PAN or ROVNAV MkIV and located at a known fixed point. The configuration of this unit within the Xponder file is independent of the actual device interface. The configuration options for this mode option are shown in the following figure.

You are prompted for the information that will enable WinFrog to determine the position of the Static Transceiver's actual transducer. A Static Transceiver will most likely be associated with a structure and /or vehicle and thus the configuration reflects this. However, it is important to note

that the application is not restricted to this and any position can be entered for the Static Transceiver. The data entry options are as follows:




## Name/Position

**Name** — Entry of the name by which the transceiver is to be known (maximum 24 characters).

**CRP Position** — The position of the CRP of the structure to which the transceiver is attached. If the transceiver is not attached to a specific structure, the known position of the transceiver's transducer is entered. The coordinate entry is in either Grid or Geographic coordinates depending upon which of the Geo or Grid radio buttons is selected.

**Depth** — The depth of the CRP of the structure to which the transceiver is attached. If the transceiver is not attached to a specific structure, the known depth of the transceiver's transducer is entered.

**Orientation** — The orientation of the structure to which the transceiver is attached. This is entered in either Grid or True depending upon which of the Geo or Grid radio buttons is selected. If the transceiver is not attached to a specific structure, the position and depth entered is for the transceiver's transducer and therefore the orientation is not required and can be left at 0.

**Pitch** The pitch of the structure to which the transceiver is attached. If the transceiver is not attached to a specific structure, the position and depth entered is for the transceiver's transducer and therefore the pitch is not required and can be left at 0. Note that the sign convention is bow up, pitch is positive.

**Roll** The roll of the structure to which the transceiver is attached. If the transceiver is not attached to a specific structure, the position and depth entered is for the transceiver's transducer and the roll is not required and can be left at 0. Note that the sign convention is starboard down, roll is positive.

**F/A Offset** The foreward/aft offset from the structure's CRP to the transceiver's transducer. Foreward is positive, aft is negative. If the transceiver is not attached to a specific structure, the position of the transceiver's transducer is located at is entered and this offset is left at 0.

**P/S Offset** The port/starboard offset from the structure's CRP to the actual transceiver's transducer. Starboard is positive, port is negative. If the transceiver is not attached to a specific structure, the position of the transceiver's transducer is located at is entered and this offset is left at 0.

**U/D Offset** The up/down offset from the structure's CRP to the actual transceiver's transducer. Up is positive, down is negative. If the transceiver is not attached to a specific structure, the position of the transceiver's transducer is entered and this offset is left at 0.

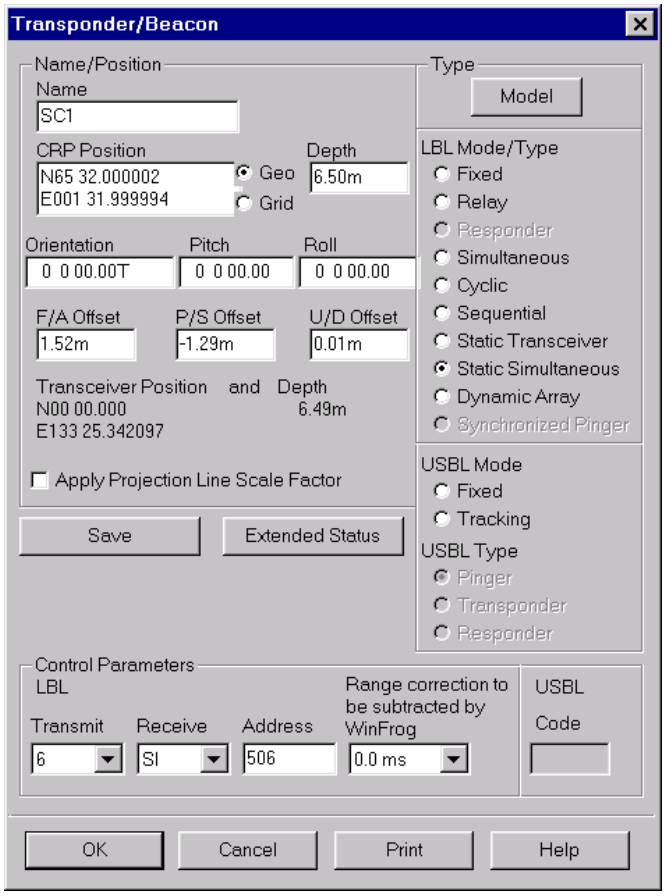
**Apply Projection Line Scale Factor** This allows you to apply scaling of offsets to the Map Projection before being applied to the CRP position to determine the transducer position. In addition, the INVERTED LBL data types that use this Xponder will check this setting and if it is set, all observations will be scaled to the Map Projection before being used. If this option is not set, the observations are not scaled and the resulting positioning is truly relative. The default and normal mode would for this not to be set.

When the above data is entered, WinFrog automatically uses the CRP position and depth, orientation, attitude (pitch and roll) and offsets to compute the position and depth for the Static Transceiver's transducer. This data is displayed in the bottom of this panel. The position is displayed in either Grid or geographic coordinates depending upon which of the Geo or Grid radio buttons is selected.

No other options or operator I/O is available for this mode.

## Configuring the Static Simultaneous

The Static Simultaneous (COMPATT) refers to a Sonardyne COMPATT located at a known fixed point. The configuration of this unit within the Xponder file is independent of the actual device interface. The configuration options for this mode option are shown in the following figure.




You are prompted for the information that will enable WinFrog to determine the position of the Static Simultaneous COMPATT's actual transducer. A Static Simultaneous COMPATT will most likely be associated with a structure and /or vehicle and thus the configuration reflects this. However, it is important to note that the application is not restricted this and any position can be entered for the Static Simultaneous COMPATT. The data entry options are as follows:

### Name/Position

**Name** — Entry of the name by which the COMPATT is to be known (maximum 24 characters).

**CRP Position** — The position of the CRP of the structure to which the COMPATT is attached. If the COMPATT is not attached to a specific structure, the known position of the COMPATT's transducer is entered. The coordinate entry is in either Grid or Geographic coordinates depending upon which of the Geo or Grid radio buttons is selected.

**Depth** The depth of the CRP of the structure to which the COMPATT is attached. If the COMPATT is not attached to a specific structure, the known depth of the COMPATT's transducer is entered.

**Orientation** The orientation of the structure to which the COMPATT is attached. This is entered in either Grid or True depending upon which of the Geo or Grid radio buttons is selected. If the COMPATT is not attached to a specific structure, the position and depth entered is for the COMPATT's transducer and therefore the orientation is not required and can be left at 0.

**Pitch** The pitch of the structure to which the COMPATT is attached. If the COMPATT is not attached to a specific structure, the position and depth entered is for the COMPATT's transducer and therefore the pitch is not required and can be left at 0. Note that the sign convention is bow up, pitch is positive.

**Roll** The roll of the structure to which the COMPATT is attached. If the COMPATT is not attached to a specific structure, the position and depth entered is for the COMPATT's transducer and therefore the roll is not required and can be left at 0. Note that the sign convention is starboard down, roll is positive.

**F/A Offset** The foreward/aft offset from the structure's CRP to the COMPATT's transducer. Foreward is positive, aft is negative. If the COMPATT is not attached to a specific structure, the position and depth entered is for the COMPATT's transducer and therefore this offset is not required and can be left at 0.

**P/S Offset** The port/starboard offset from the structure's CRP to the actual transceiver's transducer. Starboard is positive, port is negative. If the COMPATT is not attached to a specific structure, the position and depth entered is for the COMPATT's transducer and therefore this offset is not required and can be left at 0.

**U/D Offset** The up/down offset from the structure's CRP to the actual transceiver's transducer. Up is positive, down is negative. If the COMPATT is not attached to a specific structure, the position and depth entered is for the COMPATT's transducer and therefore this offset is not required and can be left at 0.

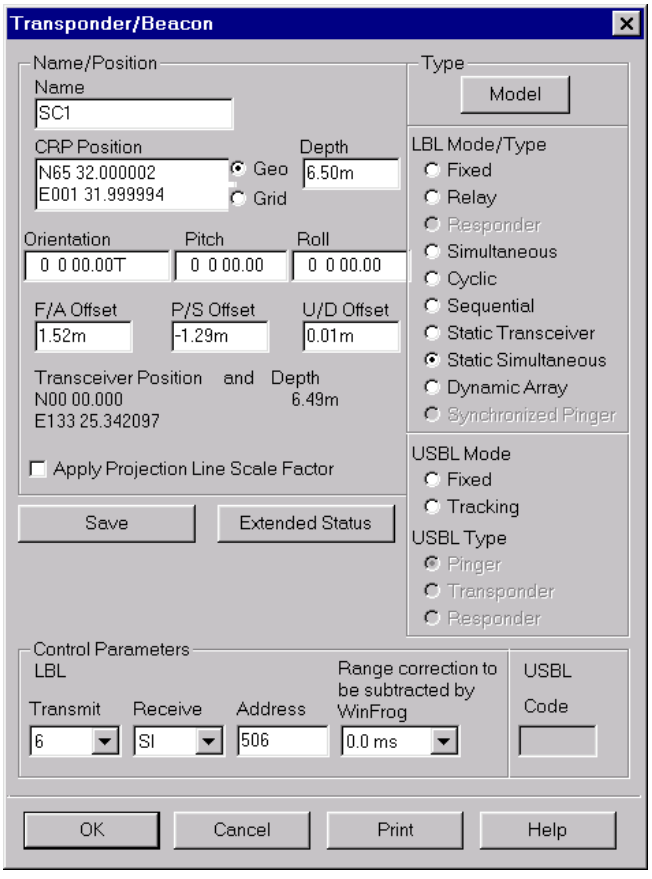
**Apply Projection Line Scale Factor** This allows you to apply scaling of offsets to the Map Projection before being applied to the CRP position to determine the transducer position. In addition, the INVERTED LBL data types that use this Xponder will check this setting and if it is set, all observations will be scaled to the Map Projection before being used. If this option is not set, the observations are not scaled and the resulting positioning is truly relative.

When the above data is entered, WinFrog automatically uses the CRP position and depth, orientation, attitude (pitch and roll) and offsets to compute the position and depth for the Static Simultaneous COMPATT's transducer. This data is displayed in the bottom of this panel. The position is displayed in either Grid or geographic coordinates depending upon which of the Geo or Grid radio buttons is selected.

The remaining configuration options are the same as those for a Sonardyne COMPATT with the exception of the Sensor and Cyclic setup options.

## Configuring the Dynamic Array

The Dynamic Array refers to a transponder located on a moving vehicle/structure and thus is not fixed. The transponder's offsets with respect to the CRP of the vehicle in the vehicle's local coordinate reference frame are known, but the actual position and depth are unknown. The configuration options for this mode option are shown in the following figure.




You are prompted for information that will enable WinFrog to determine a CRP position after the position of the transponder's transducer is determined.

### Name/Position

**Name** — Entry of the name by which the COMPATT is to be known (maximum 24 characters).

**F/A Offset** — The foreward/aft offset from the structure's CRP to the COMPATT's transducer. Foreward is positive, aft is negative.

| | |
|---|---|
| **P/S Offset** | The port/starboard offset from the structure's CRP to the actual transceiver's transducer. Starboard is positive, port is negative. |
| **U/D Offset** | The up/down offset from the structure's CRP to the actual transceiver's transducer. Up is positive, down is negative. |

The remaining configuration options are the same as those for a Sonardyne COMPATT with the exception of the Sensor and Cyclic setup options.

# Working Control Stations (.CLS)

The **Working Control Stations (.CLS)** file is used to store all of the pertinent attributes of a reference station. This information is required when using **Range/Range** peripheral devices. Some **Range/Range** systems (Such as Racal's MicroFix) are internally configured with the control station coordinates and so are able to calculate (and output) a final position. Other ranging systems require that the coordinates of the transponders (AKA **Control Stations**) be entered into WinFrog where the final coordinates are then calculated. Control station information includes the station's name, code, position, elevation and calibration values.

Control stations entered in the **Working Control Stations** file can also be displayed in WinFrog's **Graphics** window.

## Creating a Working Control Station (.CLS) File

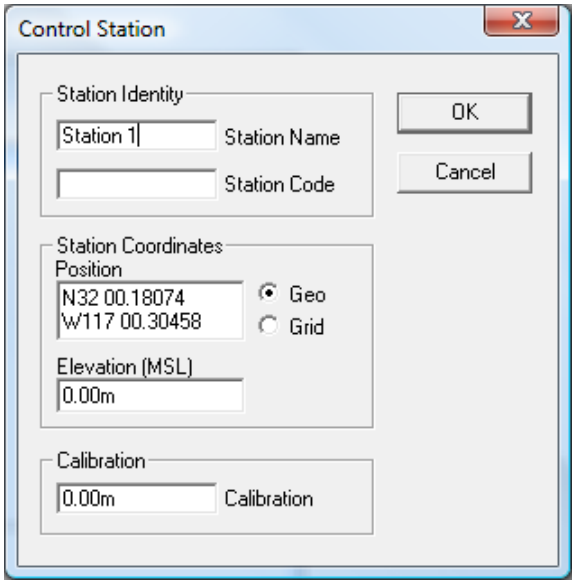
### To Create a New Working Control Stations File

The creation and designation of a file as the **Working Control Station** file is detailed at the beginning of this chapter in the **Creating and Selecting Less Common Working Files** section.

### To Add a Control Station to the Working Control Stations File

**1** From the **File** menu, choose **Edit Working Files... > Control Stations**.

**2** Click the **Add** button. The **Control Station** dialog box displays, as seen below.




**3** Highlight the various windows to change the entries, as detailed below:

## Station Identity

**Station Name** — This can be any identifying name up to 25 characters.

**Station Code** — This is the code that the ranging system uses to identify the range data in the serial output. For example, for the Del Norte Trisponder 540 DDMU, it is the first two digits of the three-digit beacon code.

## Station Coordinates

**Position** — Enter the station coordinates as referred to the current **Working Ellipsoid (datum)** or the current **Map Projection**.

**Elevation** — Enter the **mean sea level** elevation. This is used to reduce the slope range to a horizontal distance.

## Calibration

**Calibration** — Enter the calibration value to be ***added*** to the raw range.

**4** Click **OK** to save the entered data and return to the main **Working Control Station** dialog box.

## Editing the Working Control Stations File

You can edit any **Control Station** parameter via the **Working Control Stations File**.

### To Edit Parameters in the Working Control Stations File

1 From the **File** menu, choose **Edit Working Files... > Control Stations**.

The **Working Control Stations** dialog box contains a listing of all **Control Stations** in the **Working Control Stations** file.

2 Select the name of the **Control Station** that requires editing.

3 Click **Edit**.

4 Highlight the desired entry and make the required changes.

5 Click **OK t**o save the changes and return to the main **Control Station** dialog box.

## Removing a Control Station from the Working File

Any **Control Station** can be removed from the **Working Control Stations File**.

### To Remove a Control Station from the Working Control Station File

1 From the **File** menu, choose **Edit Working Files... > Control Stations**.

2 Select the **Control Station File** to be removed.

3 Click the **Delete** button.

4 Click **OK** to save the changes and return to the main **Control Station** dialog box.

# Working Velocities (.VEL) File

A Velocities file is used to store a single sound velocity profile. A sound velocity profile is a table that contains the speed of sound through water at various water depths. This information is essential in the accurate calculation of underwater ranges using acoustic travel times. Sound velocity is never constant through a water column and is affected by the temperature, salinity, and conductivity of the water. Environmental, oceanographic, and/or meteorological factors dictate the rate that sound velocity varies, both spatially and temporally.

One of the Velocities files must be set to be the **Working Velocities (.VEL)** file to enable its use for the long baseline (LBL) algorithms in WinFrog to convert acoustic travel times into actual subsea ranges. An incorrect definition of the sound velocity profile for a work area will result in erroneous range calculations and subsequently erroneous subsea positioning.

Multiple Velocities files may be created, saved and edited. However, only one can be set to be the **Working Velocities** file at any one time.

**Note:** The validity of the velocity data is checked upon the loading of a file into WinFrog. If loading during boot up and the data fails the validity tests, you are alerted and the file is not loaded. If loading from an operator initiated file opening and the data fails the validity tests, you

are alerted and the file is loaded. The velocity file check tests that the velocity values are between 1420m/s and 1575m/s and that the depths are in sequentially descending order.

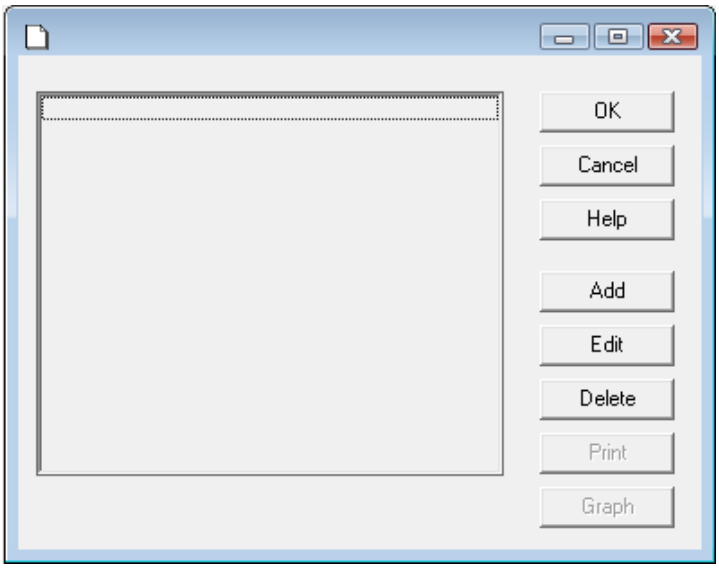
## Creating and Opening the Working Velocities File

The **Working Velocities** file must first be created or selected before the sound velocity data is added.

### To Create a New Velocity File

The creation of a velocities file is detailed in the **Creating and Selecting Less Common Working Files** section earlier in this chapter.

In addition, the Velocities file can be created directly from the Acoustic Window via **File\ New…>Velocity**.




In both cases, before the velocities file can be saved to disk, at least one velocity record must be added (see **To Add a Velocity Record to the Working Velocities File**). WinFrog will then detect that the document has been altered and prompt you to save it.

### To Open a Velocities File

The opening of an existing Velocities file is detailed in the **Creating and Selecting Less Common Working Files** section earlier in this chapter. Once open, the file can be edited or assigned as the **Working Velocities** file. Upon the completion of editing, WinFrog will detect that changes have been made and prompt you to save the file.

The Velocities file can be edited even if it is not set to be the **Working Velocities** file. The editing is performed as detailed in **Editing the Working Velocities File** below.

### To Designate a Velocities File to be the Working Velocities File

The designation of a Velocity file as the **Working Velocities** file is detailed in the **Creating and Selecting Less Common Working Files** section earlier in this chapter.

In addition, the Velocity file can be set to be the **Working Velocities** file directly from the Acoustic Window via **File\ Set to Working…>Velocity**. This accesses a browse dialog allowing you to find and select the Velocities file to set to the **Working Velocities** file. When done this way, the file is not presented for editing but simply set to be the working file.

## Editing the Working Velocities File

### To Open the Working Velocities File

1 From the main menu **File** item, choose **Edit Working Files... > Velocities**. The **Working Velocities** file will open.

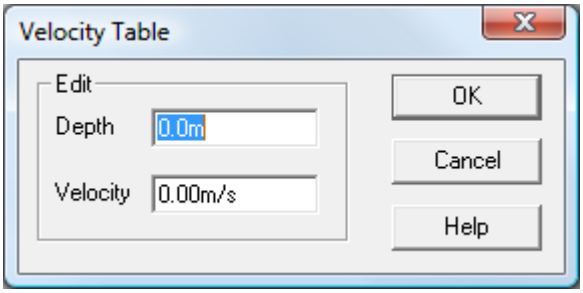
Or

2 From the **Acoustic Window File** item, choose **Edit…> Velocity**. The **Working Velocities** file will open.

### To Add a Velocity Record to the Working Velocities File.

1 Open the **Working Velocities** file.

2 Click **Add**. The **Velocity Table** dialog box appears, as seen below.




The following information can be modified in the **Velocity Table** dialog box:

| | |
|---|---|
| **Depth** field | Enter the depth of the sound velocity observation. This is displayed and entered in the Default Water Depth units.<br>**NOTE:** Depths are entered as positive values. |
| **Velocity** field | Enter the sound velocity observation. This is displayed and entered in the default Distance units per second. |

3 Enter the appropriate values in these two fields.

**NOTE:** Velocities must be between 1420 and 1575 m/s.

**NOTE:** All depths must be in the correct sequence starting at the water surface.

**NOTE:** All depths must be below the water surface, that is, a negative value cannot be entered.

4 Click **OK** to confirm these entries and close this window. WinFrog will check the data entry and prompt you if it is detected that the entered depth does not fit the descending order sequence or the velocity value is outside the above limits.

5 Repeat steps 2 to 4 entering depth/velocity to a depth greater than the expected working depth. The final depth/velocity entry should be at a depth greater than the maximum working depth to ensure that the interpolation of velocities is complete through the entire water column.

### To Edit a Velocity Record in the Working Velocities File

1 Open the **Working Velocities** file.

2 Select the entry that requires editing.

3 Click **Edit**. Or,
Double-click the desired record. Or,
From the Velocity Profile Graph (see **Viewing a Velocities File Graphically**), double-click the desired point.

4 The same **Velocity Table** dialog box used to initially add the depth record is opened, displaying the current data. Make the desired changes.

5 Click **OK** to save the changes and close this window. WinFrog will check the data entry and prompt you if it is detected that the entered depth does not fit the descending order sequence or the velocity value is outside the above limits.

### To Delete a Velocity Record in the Working Velocities File

1 Open the **Working Velocities** file.

2 Select the entry to be removed.

3 Click the **Delete** button.

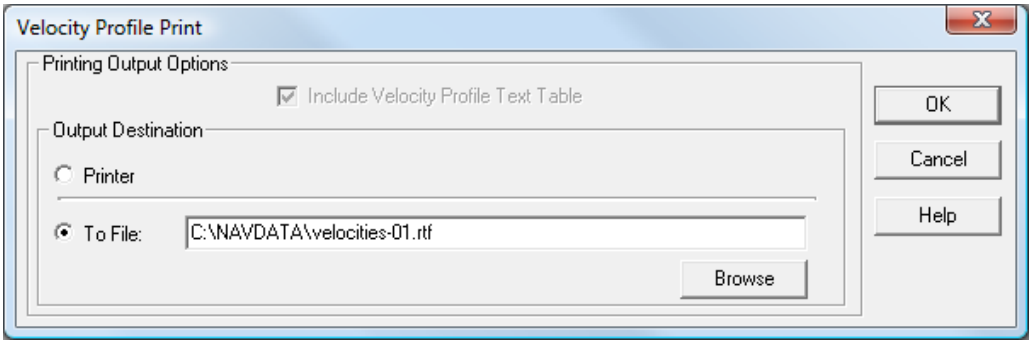
4 Click **OK** to save the changes and close this window.

## Printing a Working Velocities File

1 Open the **Working Velocities** file or an existing Velocities file not set to be the **Working Velocities** file.

2 Click the **Print** button. This will present the Velocity Profile Print Options dialog.

**Note:** The **Print** button is only enabled if there is at least 1 velocity record in the file.



3 Select either **Printer** or **To File** option. Selecting **Printer** results in the print going directly to the Windows default printer. If selecting the **To File** option, you must either enter the target file or use the **Browse** button to locate or enter an appropriate file name.

4 Click the **OK** button. This will exit this dialog and execute the appropriate printing. When the printing is completed, you will be informed with a message box stating **Writing to File Finished**.

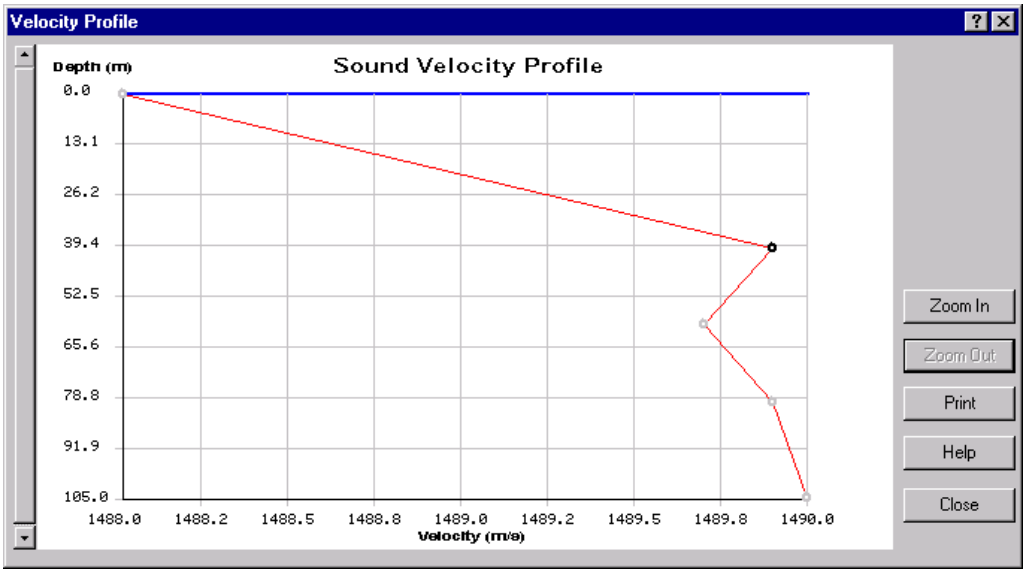
## Viewing a Velocities File Graphically

This feature allows you to view the velocity data graphically complete with zoom in and out, direct data editing and printing features.

1 Open the **Working Velocities** file or an existing Velocities file not set to be the **Working Velocities** file.

2 Click the **Graph** button. This will present the Velocity Profile dialog.

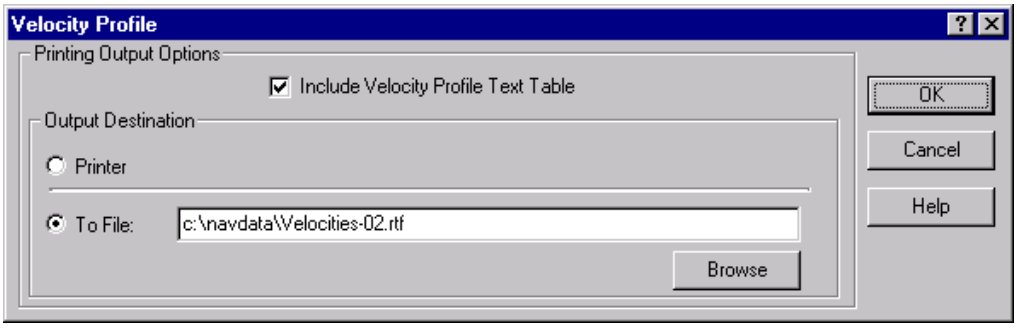
**Note**: The **Graph** button is only enabled if there are at least two velocity records in the file.




3 Clicking the **Zoom In** button presents a more detailed view of the data. Note that the vertical sliding bar on the left of the window allows you to move up and down the water column to view the data.

4 Clicking the **Zoom Out** button presents a less detailed view of the data. This button is only active if the data has been Zoomed In already. The vertical sliding bar on the left of the window allows you to move up and down the water column to view the data if required.

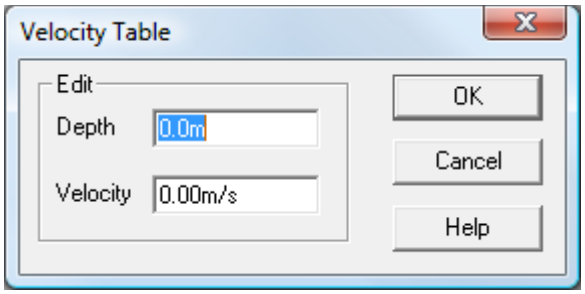
5 Clicking the **Print** button presents the Velocity Profile Print Options dialog.




**i** Select either **Printer** or **To File** option. Selecting **Printer** results in the print going directly to the Windows default printer. If selecting the **To File** option, you must either enter the target file or use the **Browse** button to locate or enter an appropriate file name. Check the **Include Velocity Profile Text Table** if you wish to print the velocity file data in tabular form with the graphics.

**ii** Click the **OK** button. This will exit this dialog and execute the appropriate printing. When the printing is completed, you will be informed with a message box stating that **Writing to File Finished**.

**6** Double-clicking near a data point in the graphics area of the screen will enable you to edit the data for the velocity data point nearest the cursor. The **Velocity Table** dialog box appears.




See **To Add a Velocity Record to the Working Velocities File** for details on entering data in this dialog.

# Working Cable Events (.CET) File

The **Working Cable Events (.CET)** file is used to store **Cable Events** generated by the user. **Cable Events** are specifically used for submarine cable lay operations, where they are used to record navigation and cable lay slack information at the press of button. For more information about **Cable Events**, see the **Eventing** chapter.

The **Graphics** and **Bird's Eye** windows can be configured to display cable events recorded in the **Working Cable Events** file. This provides a graphical record of the cable events logged during the survey.

## Creating the Working Cable Events File

In order to record cable events, the **Working Cable Events** file must first be defined.

### To Create a New Working Cable Events File

The creation and designation of a file as the **Working Cable Events** file is detailed earlier in this chapter in the **Creating and Selecting Less Common Working Files** section.

## Editing the Working Cable Events File

Once the **Working Cable Events File** has been designated and cable events have been recorded, it may be necessary to edit the cable events contained in the file.

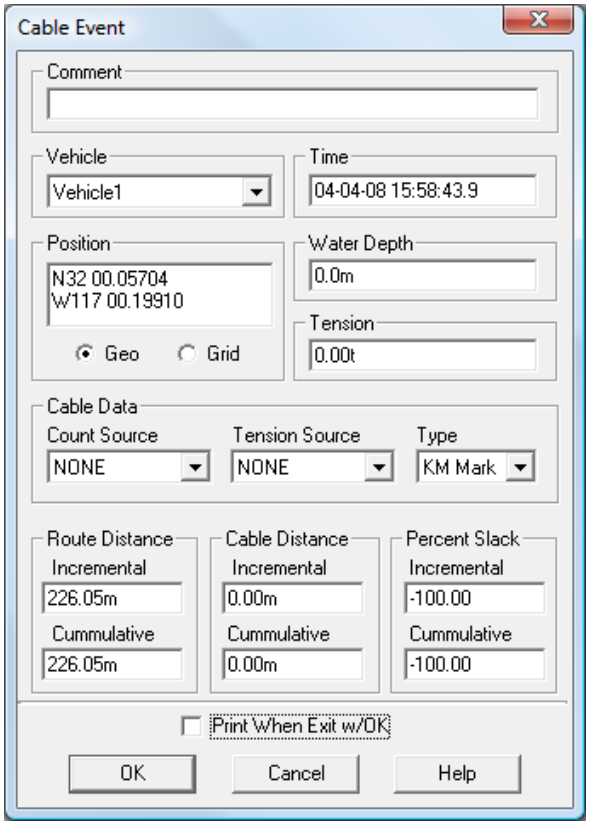
### To Edit the Contents of the Working Cable Events File

**1** From the **File** menu, choose **Edit Working Files... > Cable Events**.

The **Working Cable Events** dialog box displays a listing of all cable events contained in the **Working Cable Events** file.

**2** Select the cable event that requires editing.

**3** Click **Edit**. The same **Cable Event** dialog box that appeared when the cable event was initially taken opens, as seen below.




This dialog box allows you to modify any of the following parameters:

| | |
|---|---|
| **Comment entry** field | Allows you to enter a comment to describe the event. |
| **Vehicle** dropdown menu | Allows you to select the vehicle associated with the other parameters in this dialog box. |
| **Time** field | Indicates the time and date that the cable event was taken. |
| **Position** field | Indicates the position of the vehicle selected in the dropdown menu. |
| **Water Depth** | The depth of the water at the vessel when the cable event was taken. |
| **Tension** | The amount of tension in the cable at the instant that the cable event occurred. |

### Cable Data

| | |
|---|---|
| **Source** dropdown menu | Selects a cable counter peripheral device previously added to this vehicle. |
| **Type** dropdown menu | Selects the kind of icon that will be used to represent the cable event in the **Graphics** display. The types are specific to cable laying jobs:<br>KM Mark, Transition, Splice Box, Repeater, Branch, Cable End<br>Additional generic options are available, such as square, circle, and triangle. |

### Route Distance

| | |
|---|---|
| **Incremental** | The distance traveled along the route since the previous Cable Event. |
| **Cumulative** | The distance traveled along the route since the first cable event in the **Working CET** file (i.e. the sum of the Incremental Distances). |

### Cable Distance

| | |
|---|---|
| **Incremental** | The amount of cable let out since the previous cable event. |
| **Cumulative** | The amount of cable let out since the first cable event in the **Working CET** file (i.e. the sum of the Incremental Distances). |

### Percent Slack

| | |
|---|---|
| **Incremental** | The calculated amount of slack in the cable since the previous cable event. |
| **Cumulative** | The calculated amount of slack in the cable since the first Cable Event in the **Working CET** file. |

**4** Highlight the appropriate data field and make the desired changes.

**5** Click **OK** to close this dialog and return to the **Cable Event Table** dialog.

**6** Click **OK** close this dialog box and save the changes.

## Deleting a Cable Event

Any cable event can be removed from the **Working Cable Events** file.

### To Remove a Cable Event

**1** From the **File** menu, choose **Working... > Cable Events**.

**2** Select the record to be removed.

**3** Click the **Delete** button.

### To Add a Cable Event to the Working Cable Events File.

Use the following instructions to add **Cable Events** to the .CET file "after the fact". See the **Eventing** chapter for details on adding **Cable Events** to the **.CET** table in "real-time".

**1** From the **File** menu, choose **Edit Working Files... > Cable Events**.

**2** Click **Add**. The same **Cable Event** dialog box opens as when a cable event is taken or when a record is edited.

**3** Configure the various parameters, as detailed above.

**4** Click **OK** to close this window.

**5** Click **OK** to close the **Cable Events Table** and to save the changes made.