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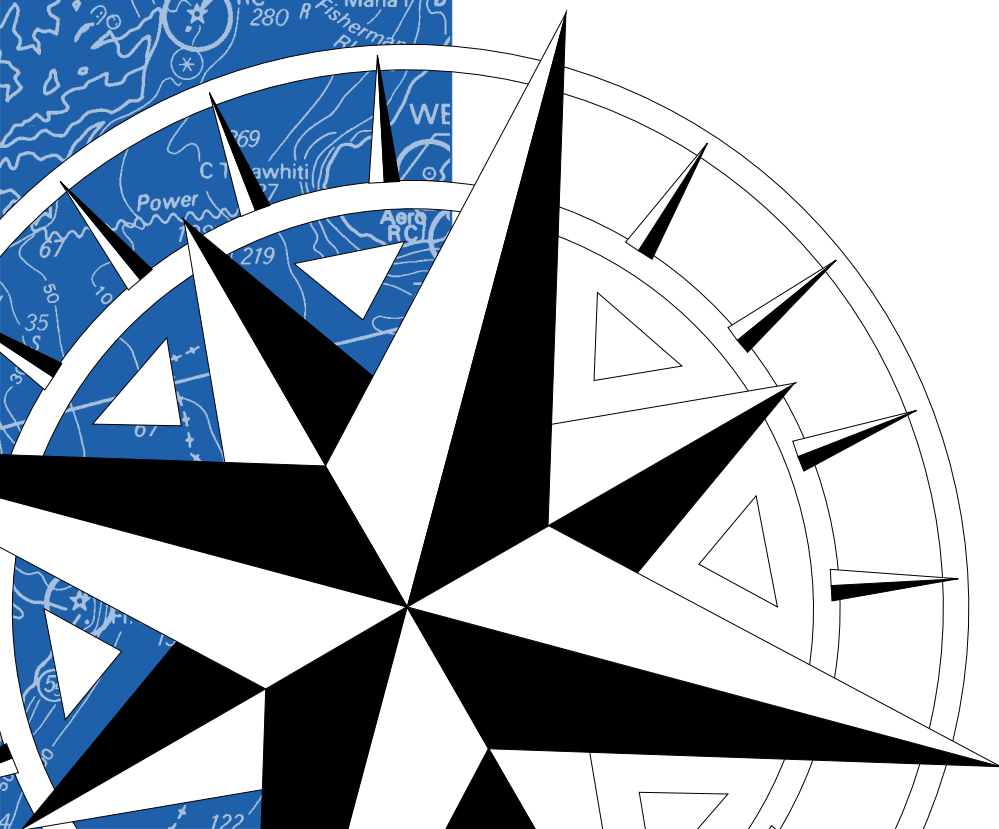
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HYDRO^{pro} NavEdit Software User's Guide



HYDRO_{pro}[™] NavEdit

Software User's Guide



Version 2
Part Number 34817-00-ENG
Revision A
June 2001

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About This Manual

Welcome to the *HYDROpro NavEdit Software User's Guide*. This manual describes how to install, set up, and use the Trimble HYDROpro NavEdit™ software.

Scope and Audience

We assume that you are familiar with the fundamentals of Microsoft Windows. We assume that you know how to use a mouse, open a menu, select options from menus and dialog boxes, make selections from lists, and use standard Help commands. For a review of these techniques, consult your Windows documentation.

The following sections provide you with a guide to this manual, as well as other documentation that you may have received with this product.

Organization

This manual contains the following:

- Chapter 1, Introduction, introduces you to the NavEdit software.
- Chapter 2, Installation, shows you how to install the software.
- Chapter 3, Before You Begin, describes the user interface of the software, and how to start and exit the software.
- Chapter 4, Quick Tours, gives you a step-by-step guide to carrying out frequently performed tasks.

- Appendix A, DELTA Database Schema, contains a description of each table in the Delta database.
- Appendix B, Export File Formats, explains the format of the Transfer file.
- Appendix C, Batch Processor, explains how the Batch Processor works.
- Appendix D, Tide ASCII File Format, describes the format that Tide ASCII files must be in.

Related Information

The following sections discuss other sources of information that introduce, extend, or update this manual.

Other Manuals

The *HYDROpro Navigation Software User's Guide* introduces you to the Navigation software.

The *HYDROpro Navigation Technical Guide* provides information on decoding devices, equipment interfacing, and other technical information.

As well as being supplied in hardcopy, the above manuals are also available on the installation CD. For more information, see Getting Help, page 3-3.

The *HYDROpro Processing Software User's Guide* is a three volume set of manuals that provides detailed information about the HYDROpro Processing software.

Readme.doc File

The installation program copies the file Readme.doc into the program directory. It contains information added after the manuals went to print. Check to see whether there is important information in it once you have installed the software or updated to a new version.

To view Readme.doc, double-click on its icon. Alternatively, use any text editor to open this file.

Release Notes

Release Notes may be provided with your product. They can describe new features of the product, information not included in the manuals, and any corrections to the manuals.

Other Information

This section outlines sources that provide information not necessarily related to this product.

World Wide Web

For an interactive look at Trimble, visit our site on the World Wide Web (www.trimble.com). To visit the Marine Survey web page click on the Marine link from the Trimble home page. We recommend that you visit these web pages to view regular newsletters, technical tips, and equipment interface files (called DLLs).

File Transfer Protocol (FTP) Site

Use the Trimble FTP site to send files or to receive files such as software patches, utilities, and answers to Frequently Asked Questions (FAQs). The address is <ftp://ftp.trimble.com>. You can also access the FTP site from the Trimble World Wide Web site.

To visit the Marine Survey FTP site, type ftp://ftp.trimble.com/pub/marine_survey.

Technical Assistance

If you have a problem and cannot find the information you need in the product documentation, *contact your local dealer*. Alternatively, request technical support using the Trimble World Wide Web site (www.trimble.com/support/support.htm).

Reader Feedback

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To forward your feedback, do one of the following:

- send an email to ReaderFeedback@trimble.com
- complete and fax or post the reader comment form at the back of this manual to the attention of the Documentation Group. (If the reader comment form is not available, send comments and suggestions to the address in the front of this manual.)

All comments and suggestions become the property of Trimble Navigation Limited.

Thank you for your help.

Document Conventions

Italics identify software menus, menu commands, dialog boxes, and the dialog box controls.

Helvetica Narrow represents messages printed on the screen.

Courier Bold represents information that you must type in a software screen or window.

Helvetica Bold identifies a software command button.

Ctrl is an example of a hardware function key that you must press on a personal computer (PC). If you must press more than one of these at the same time, this is represented by a plus sign, for example, **Ctrl**+**C**.

Warnings, Cautions, Notes, and Tips

Warnings, cautions, notes, and tips draw attention to important information, and indicate its nature and purpose.



Warning – Warnings alert you to situations that could cause personal injury or unrecoverable data loss.



Caution – Cautions alert you to situations that could cause hardware damage or software error.



Note – Notes give additional significant information about the subject to increase your knowledge, or guide your actions.



Tip – Tips indicate a shortcut or other time- or labor-saving hint that can help you make better use of the product.

1 Introduction

The HYDROpro™ software suite is made up of:

- The Navigation software – a real-time navigation and data acquisition system.
- The NavEdit software – a data editing and formatting system.
- The Processing software – data presentation and analysis software.

Additionally, HYDROpro includes the following utilities:

- Language – a utility that you can use to select the language to be used in Navigation and NavEdit.
- Coordinate Calculator™ – a utility for performing coordinate calculations.
- Coordinate System Manager™ – a geodetic database used for Navigation and NavEdit.
- Activation – a utility used to transfer software activations between disks and security keys.
- Remote Helmsman™ – a small utility run on a separate computer to provide a helmsman display.

For information on these utilities, refer to your *HYDROpro Navigation Software User's Guide*.



Note – The availability of these software modules and utilities depend on the activations available on your security key and what you have selected to install.

1.1 The NavEdit Software

The NavEdit™ software is a data visualization and cleaning tool for depth-related data that has been recorded by the Navigation software. It is an integral part of the HYDROpro software suite as it provides the link between the Navigation software and the Processing software.

NavEdit has been specifically developed to graphically and textually display depth, heave, tide, and position information that has been acquired by the Navigation software. The NavEdit software creates an export file that can be imported directly into the Processing software.

Figure 1-1 shows the relationship between NavEdit and the rest of the HYDROpro software suite.

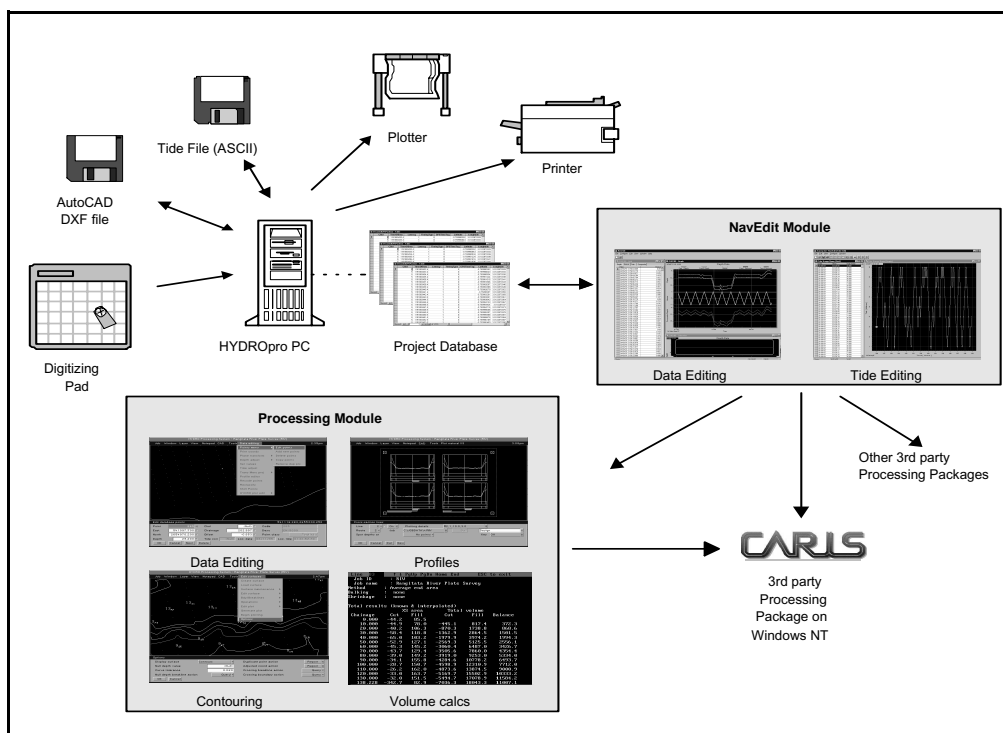


Figure 1-1 Overview of the NavEdit System

The NavEdit software provides hydrographic surveyors with the ability to view and edit depth and position data. Depth, heave, tide, and event information is displayed on a single graph with a common time axis. The data is also displayed in a list that provides the ability to edit individual depth and heave values. Additionally, a Plan View Map is provided to graphically display the positional information.

Data is loaded into the displays by selecting a guidance object (survey line) and defining a time period along the guidance object (GO) to display.

A batch processing element provides a quick and automated method of identifying depth and heave data outliers based on user-entered rejection criteria. Any values that are found to exceed the user-entered criteria are identified and stored in a DELTA database. This database also stores your manual changes to depth and heave data. NavEdit ***does not*** edit or delete the original data stored in the Navigation Project database.

The NavEdit software also provides a Tide Editor tool that is used to create Tide files. Tide data can be extracted from a Navigation project database file, imported from an ASCII file, or manually entered by the user. The resultant Tide file is then used throughout the software to calculate the reduced depth.

Once all the depth, heave, and position data has been checked and edited, the data is ready to be exported to the Processing software for final presentation and analysis.

2 Installation

This chapter explains how to install a single license of HYDROpro on a stand-alone computer.

This chapter covers:

- Hardware and software requirements
- Installing the software
- Using the Activation utility to activate the software
- Windows settings
- Removing the software

2.1 Hardware Requirements

Table 2-1 details the minimum and recommended requirements for the HYDROpro software.

Table 2-1 Hardware Requirements

Component	Minimum Requirements (Window 95)	Recommended Requirements (Windows NT)
CPU	Pentium 166 MHz	Pentium 233 MHz
RAM	64 MB	128 MB
Hard Drive	1 GB	2 GB
Monitor	SVGA color 800 × 600	SVGA color 1024 × 768
Parallel Ports*	1	1
Serial Ports**	RS232 port with 16550 UART	RS232 port with 16650 UART
Input Devices	Keyboard with mouse or trackball	Keyboard with mouse or trackball
Data Drives	CD-ROM drive 1.44 MB 3.5" floppy drive	CD-ROM drive 1.44 MB 3.5" floppy drive ZIP drive

* The voltage on pin 9 must be a minimum of 5 volts.

** A RS232 port is generally required for each device to be interfaced with.



Warning – In future releases (v1.5 and later) of HYDROpro the recommended requirements listed above will become the minimum requirements. Only Windows NT (v4 or later) and Windows 2000 will be fully supported in future releases.

2.2 Software Requirements

In order to run HYDROpro, you must have installed one of the following operating systems:

- Windows 95
- Windows 98
- Windows NT (version 4.0 or later)
- Windows 2000



Note – If you are installing the software under Windows NT or Windows 2000 you must have administrator rights, otherwise the software will not install correctly.

2.2.1 System Components

On some computers, the following system components must be updated.

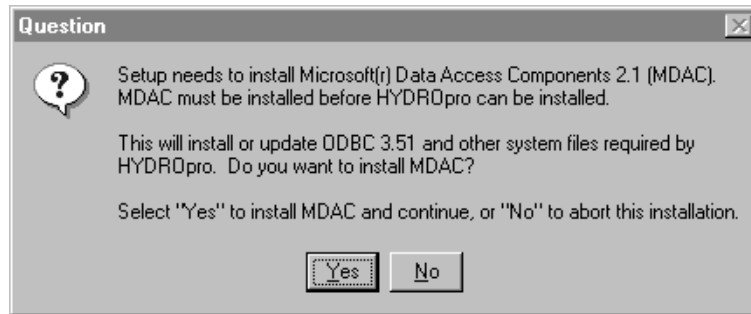
ODBC Drivers

HYDROpro version 1.40 requires version 3.5 of the Microsoft Open Database Connectivity (ODBC) software. ODBC version 3.5 is automatically installed during the HYDROpro installation procedure. If earlier versions of ODBC drivers are already installed, they are automatically upgraded.

The versions installed by HYDROpro version 1.40 are:

- ODBC Driver Manager version 3.510.4202
- Microsoft Access Driver version 4.00.4202.00

In order to install or update the ODBC drivers, the installation procedure will install Microsoft Data Access Components 2.1 service pack 2 (MDAC). If this needs to be done, the following dialog appears:



Note – Although these system files are intended to be backwards compatible this is beyond Trimble's control. Updating these components may affect other applications using these system files.

To determine what version of ODBC drivers you have installed:

1. From the Windows taskbar select *Start / Settings / Control Panel*.
2. Do one of the following, depending on the operating system that is installed:
 - Windows 95 and 98:
From the Control Panel double-click 32-bit ODBC.
 - Windows NT:
From the Control Panel double-click ODBC Data Sources.
 - Windows 2000:
From the Control Panel double-click Administrative Tools and then double-click Data Sources (ODBC).

The ODBC Data Source Manager appears.

3. Select the *Drivers* tab to view the version number of the Microsoft Access Driver Manager.
4. Select the *About* tab to view the version number of the ODBC Driver Manager.

DCOM95

On Windows 95 computers, DCOM95 must be installed. If it is not, the HYDROpro installation process will install it. If Microsoft's DCOM95 is not installed, the following dialog appears:



After DCOM has been installed you must restart the computer and restart the HYDROpro installation.

2.3 Installing the Software

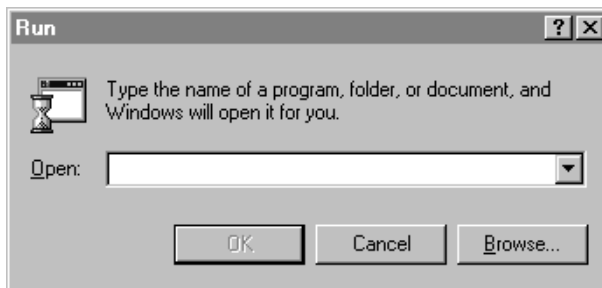
The installation process uses InstallShield, the standard installation program for Windows. InstallShield asks you for folder names to hold the HYDROpro software, data, and other files. No other information is required from you.

Before you install the software, make sure you have read the information in the previous sections.

Before you install the HYDROpro software, you should also make sure that you have closed all other Windows programs.

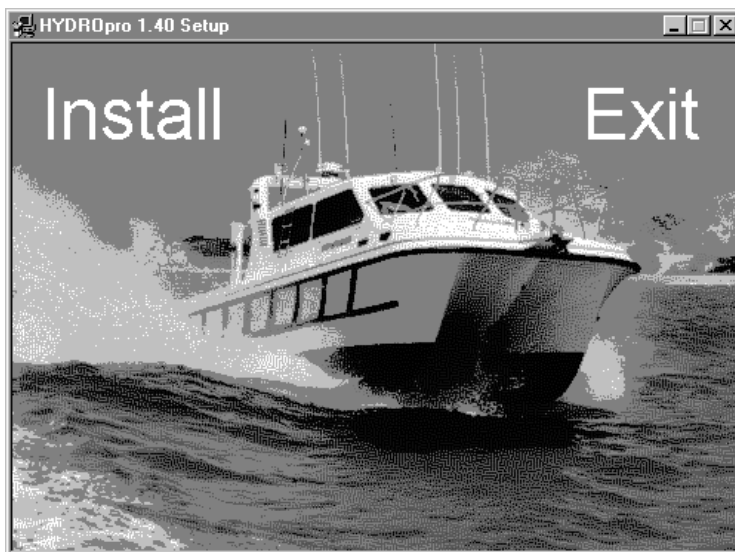
To install or upgrade the HYDROpro software:

1. Insert the HYDROpro CD-ROM into your CD-ROM drive.
2. The installation program should start automatically. If it does not:
 - From the Windows task bar select *Start / Run*. The following dialog appears:



- In the *Open* field, type **d:\msetup.exe** (the drive letter may be different on your computer).

The following dialog appears:



3. Click **Install** to start the install process.
4. Follow the instructions on the screen.

The HYDROpro folder is added to the Start menu. This folder includes icons for each installed module and utilities, online manuals stored on the CD-ROM, and a readme file with the latest amendments.

2.4 Activating the Licence

The HYDROpro software requires the correct security key to be plugged into the parallel port of your computer. The security key is required for normal operation and licence activation, but is not required during software installation.



Caution – The security key is an essential part of the HYDROpro software, and the most costly. It effectively provides the licence to use the software. The replacement cost is the same as purchasing new software. Please read your End User Licence Agreement carefully.

2.4.1 HYDROpro Upgrade: NavEdit and Processing

If you purchase a NavEdit and Processing upgrade to your existing HYDROpro Navigation only system you will need to transfer the licence from the activation disk to the security key.

To move an activation from an upgrade disk to a security key:

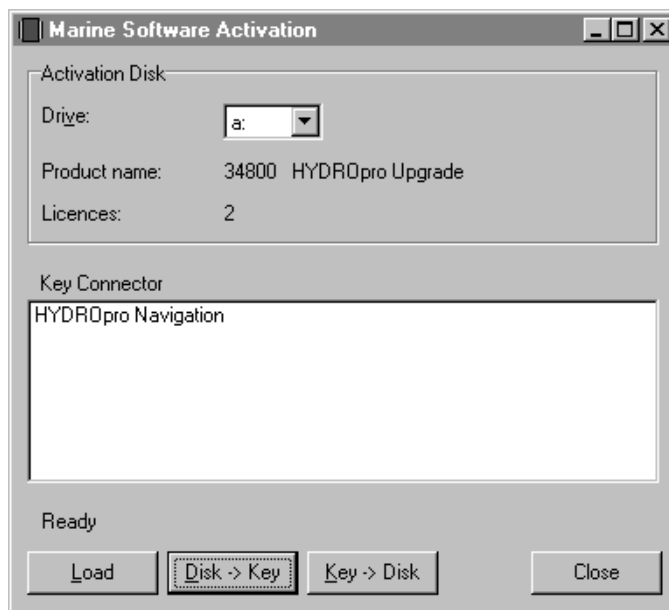
1. Switch off the computer.
2. Connect the security key to the parallel port on the computer.



Note – The security keys cannot be ‘piggybacked’ on other keys. Plug it directly into the parallel port.

3. Switch on the computer.
4. Select *Programs / HYDROpro / Utilities / Activation*.
The *Marine Software Activation* dialog appears.
5. Insert the upgrade activation disk into the floppy disk drive of the computer and specify the floppy drive letter in the *Drive* field of the dialog.
6. Click **Load**.

The activation software will detect what licences are available on the activation disk and activations installed on the security key:



7. If the NavEdit and Processing activation is not present on the security key, click **Disk → Key**.

Once the activation has been transferred the dialog updates to reflect the current status of the activations.

2.4.2 HYDROpro Upgrade: Navigation/NavEdit and Processing

On request from your Trimble supplier you can be supplied with activation disks to move your Navigation and/or NavEdit/Processing activations from your security key to the activation disk and then onto another security key. This is useful when running several Trimble applications from the same computer, thus letting you incorporate your HYDROpro activations on other Trimble security keys.

To move an activation from the security key to the activation disk:

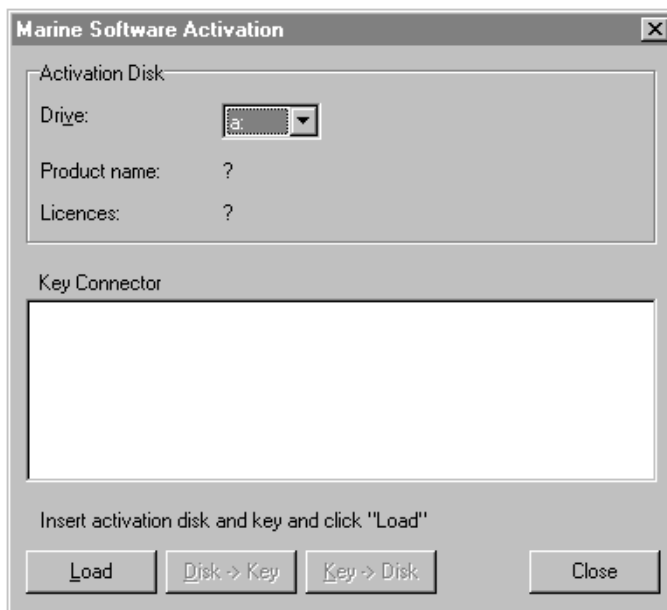
1. Switch off the computer.
2. Connect the security key to the parallel port on the computer.



Note – The security key cannot be ‘piggybacked’ on other keys. Plug it directly into the parallel port.

3. Switch on the computer.
4. Select *Programs / HYDROpro / Utilities / Activation*.

The *Marine Software Activation* dialog appears:



5. Insert the activation disk into the floppy drive and specify the floppy drive letter in the *Drive* field of the dialog.

6. Click **Load**.

The activation software will detect what licences are available on the activation disk and activations installed on the security key.

7. If the NavEdit and Processing or Navigation activation (depending on the activation disk loaded) is present on the security key, click **Key** → **Disk**.
8. Once the activation has been transferred the dialog updates to reflect the current status of the activations.

To move an activation from the activation disk to a security key:

1. Switch off the computer.
2. Connect the security key to the parallel port on the computer



Note – The security key cannot be ‘piggybacked’ on other keys. Plug it directly into the parallel port.

3. Switch on the computer.
4. Select *Programs / HYDROpro / Utilities / Activation*.
The *Marine Software Activation* dialog appears.
5. Insert the activation disk into the floppy drive and specify the floppy drive letter in the *Drive* field of the dialog.
6. Click **Load**.

The activation software will detect what licences are available on the activation disk and activations installed on the security key.

7. If the NavEdit and Processing, or Navigation activation (depending on the activation disk loaded) is not present on the security key and is present on the activation disk, click **Disk → Key**.

Once the activation has been transferred the dialog updates to reflect the current status of the activations.

2.4.3 Security Key Settings

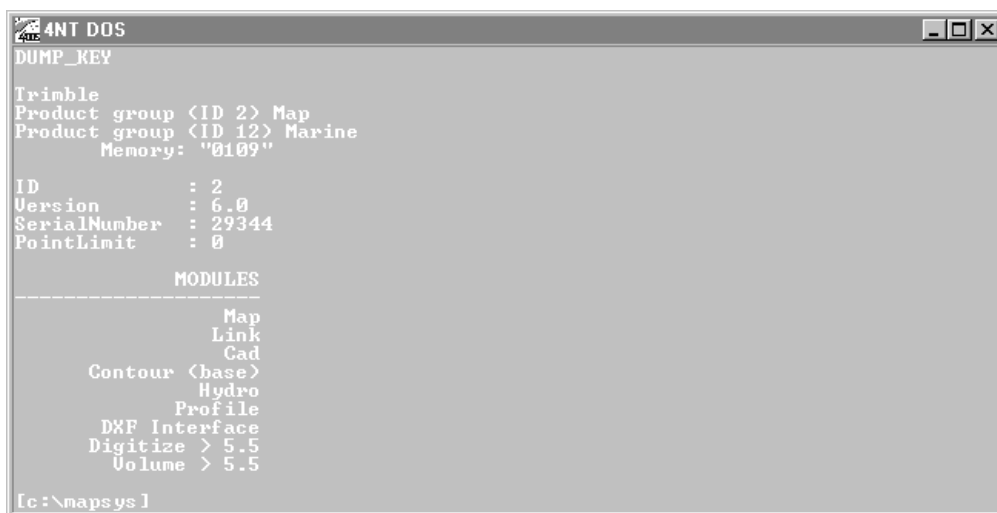
The HYPROpro software provides you with a utility to let you check the activations present on your security key. This utility is called Dump_key.exe.

If you install the Processing component of the HYDROpro software, the Dump_key utility is located in the C:\MapSys directory. Otherwise, it is located in the Util folder on the HYDROpro Installation CD.

To use the Dump_key utility:

1. Connect the security key to the parallel port on the computer.
2. Open a MS-DOS box.
3. In the MS-DOS box:
 - a. Change to the directory where Dump_key resides
 - b. Type **dump_key** and press **[Enter]**.

The utility will now check what activations are present on the security key. Information similar to that shown below should be displayed:



```

4NT DOS
DUMP_KEY

Trimble
Product group <ID 2> Map
Product group <ID 12> Marine
Memory: "0109"

ID          : 2
Version     : 6.0
SerialNumber : 29344
PointLimit  : 0

-----
MODULES
-----
Map
Link
Cad
Contour <base>
Hydro
Profile
DXF Interface
Digitize > 5.5
Volume > 5.5

[c:\mapsys]
  
```

Of interest is the Product group (ID 12) Marine Memory setting as shown above. The following memory settings show that:

- "0101" is a Navigation only system
- "0108" is a NavEdit only system
- "0109" is a Navigation and NavEdit system



Note – The Processing module requires the NavEdit activation to be present.



Tip – On high performing computers the Dump_key utility may not detect the security key. If this is the case, try the following:

- Type **set SSI_ACT=1000,1000,1000** in the MS-DOS box.
 - Run the MS-DOS box in Full Screen mode. Toggle the MS-DOS box between Full Screen and Window mode by pressing **Alt+Enter**.
-

2.5 Windows Settings

The HYDROpro software uses whatever global windows settings you have chosen. The time zone settings are of particular importance since they are used by the operating system to set system time to Greenwich Mean Time (GMT). HYDROpro uses Accurate System Time (AST) which is based on system time for data time tagging. Make sure that they are correct for your location. For more information refer to your *HYDROpro Navigation Technical Guide*.

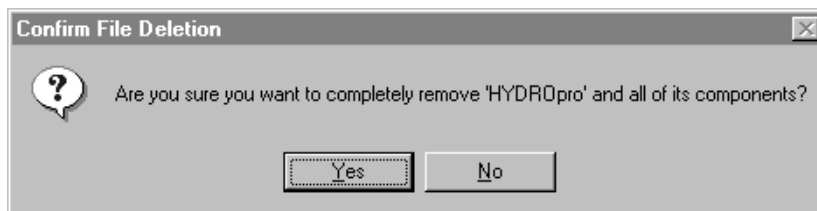
2.6 Removing the Software

This section outlines how to remove the HYDROpro software from your computer.



Note – This process removes more than just the program files. However, it does not delete data files. To delete data files use Microsoft Windows Explorer.

1. Select *Start / Settings / Control Panel*.
2. From the Control Panel choose *Add/Remove Programs*. The *Add/Remove Programs Properties* dialog appears.
3. Make sure that the *Install/Uninstall* tab is active.
4. Select HYDROpro and click **Add/Remove**. The following message appears:



5. Click **Yes** to delete the files.

3 Before You Begin

This chapter introduces you to the NavEdit software. This chapter shows you:

- How to start the NavEdit software
- Getting help
- The NavEdit displays
- The NavEdit menus
- The NavEdit toolbars
- Shutting down the NavEdit software

For information on using dialogs, windows, and other aspects of the Windows environment, see your Microsoft Windows online Help.

3.1 Starting and Exiting the NavEdit Software


Before you can start the NavEdit software, Microsoft Windows 95, or Windows NT version 4.00 or later must be running on your computer.

Once the NavEdit software is installed, it can be found in the HYDROpro folder under the *Programs* menu, that is,



The NavEdit software can also be found in the HYDROpro folder on your desktop.

To start the software:


1. Click .
2. Select *Programs / HYDROpro / NavEdit*.

Alternatively, double-click the shortcut on your desktop.



Tip – To start the NavEdit software automatically when you start Windows, create a shortcut to the program in your StartUp folder. For information on creating shortcuts see your Microsoft Windows Help.

To exit from the NavEdit software, do one of the following:

- From the *File* menu choose *Exit*.
- Click the Close  button in the top right corner of the title bar.

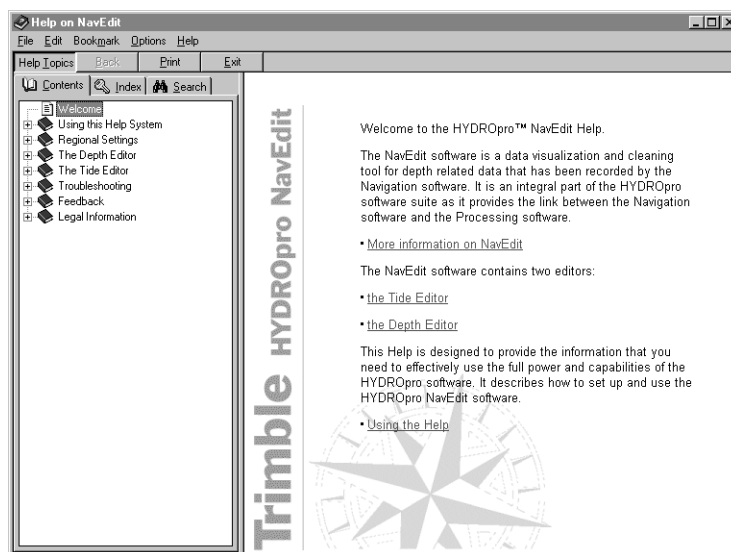
The current project is closed and NavEdit is exited.

3.2 Getting Help

The online Help system is the primary source of information about NavEdit. Use it to obtain more details about the software such as task information and reference information about the dialog controls.

To access the online Help system:

1. From the *Help* menu choose *Help Topics*:



The help topics are organized by category. Double-click a book icon to see what topics are in that category. To view a topic, double-click it.

To get Help in a dialog, make sure that the dialog box is active, and click **Help** or press **[F1]**.

To get Help on a menu command, place your cursor over the menu command and hold down the left mouse button, then press **[F1]**.

This manual is also available in PDF format on the HYDROpro installation CD. To access it, click **Start** on the Windows taskbar and select *Programs / HYDROpro / User Guides on CD / NavEdit User's Guide*.

3.3 Displays

The NavEdit software has several displays, which alter depending on if you are using the Tide Editor or the Depth Editor.

3.3.1 Tide Editor Desktop

The NavEdit Tide Editor desktop is based around two main displays, the Tide Graph and the Tide Grid displays. See Figure 3-1.

- Tide Grid display

The Tide Grid display lists all the tide data for the selected Tide file. Data is listed by date, time, and tide value. Values in this list can be edited and deleted as required. All point selection, and edit changes are displayed in the Tide Graph display.

- The Tide Graph display

The Tide Graph display is a graphical representation of the tide data listed in the Tide Grid display. Points selected in the Graph display are also highlighted in the Grid display.

Figure 3-1 shows the different display regions in the Tide Editor.

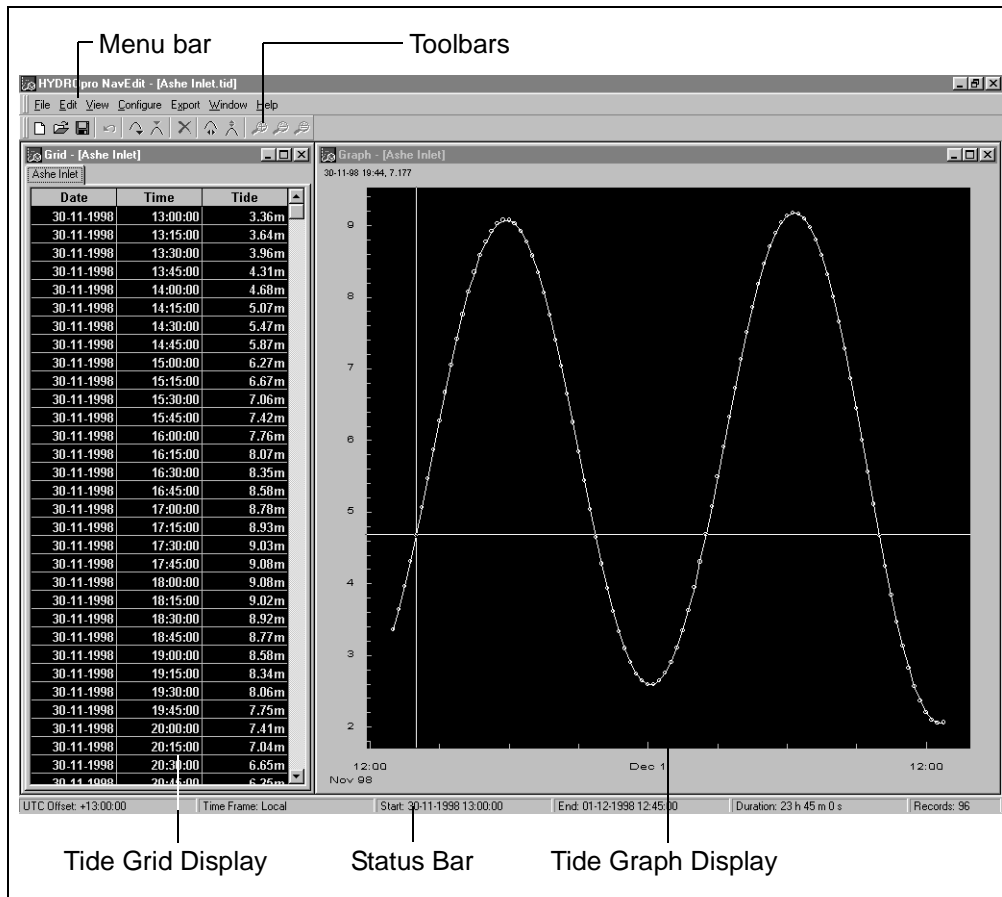


Figure 3-1 The NavEdit Tide Editor Desktop

3.3.2 Depth Editor Desktop

The NavEdit Depth Editor desktop is based around three main displays: Grid, Graph, and Thumbnail. See Figure 3-2.

- Thumbnail display

The Thumbnail display is a graphical time line representation of the currently selected guidance object. The start and stop points of the line represent the first and last event record that occurred while the guidance object was the current Steer-by Object.

Using the mouse, you can select a Time Region or subset along the guidance object to examine. The depth, heave and tide data that has occurred within the selected Time Region is loaded into both the Grid and Graph displays. The Thumbnail display governs what time range of data is loaded into the other two displays.

- Grid display

The Grid display contains a list for each data type selected in the Service Selection dialog. The time range of the data displayed is governed by the region selected in the Thumbnail display. Each record consists of the time stamp and data value(s) logged in the Navigation Project database by the Navigation software. Information listed includes depth, heave, tide, reduced depth, and events.

All depth and heave values are edited in the Grid display. All point selection and edit changes are interactive between the Grid and Graphs displays. See Figure 3-2.

- Graph display

The Graph display plots all the data in the Grid display. Each plot is displayed on a single common time axis graph. Using a common time axis time graph allows all the depth-related data to be viewed at the same time, letting you see and make decisions on the effect of heave and tide on the reduced depth. It also lets you see immediately the effect of editing heave and depth values in the Grid display.

The *Display Properties* dialog lets you turn plots off and on and change the plot style, color, and symbol type for each plot. See Figure 3-2.

Figure 3-2 shows the different display regions in the Depth Editor.

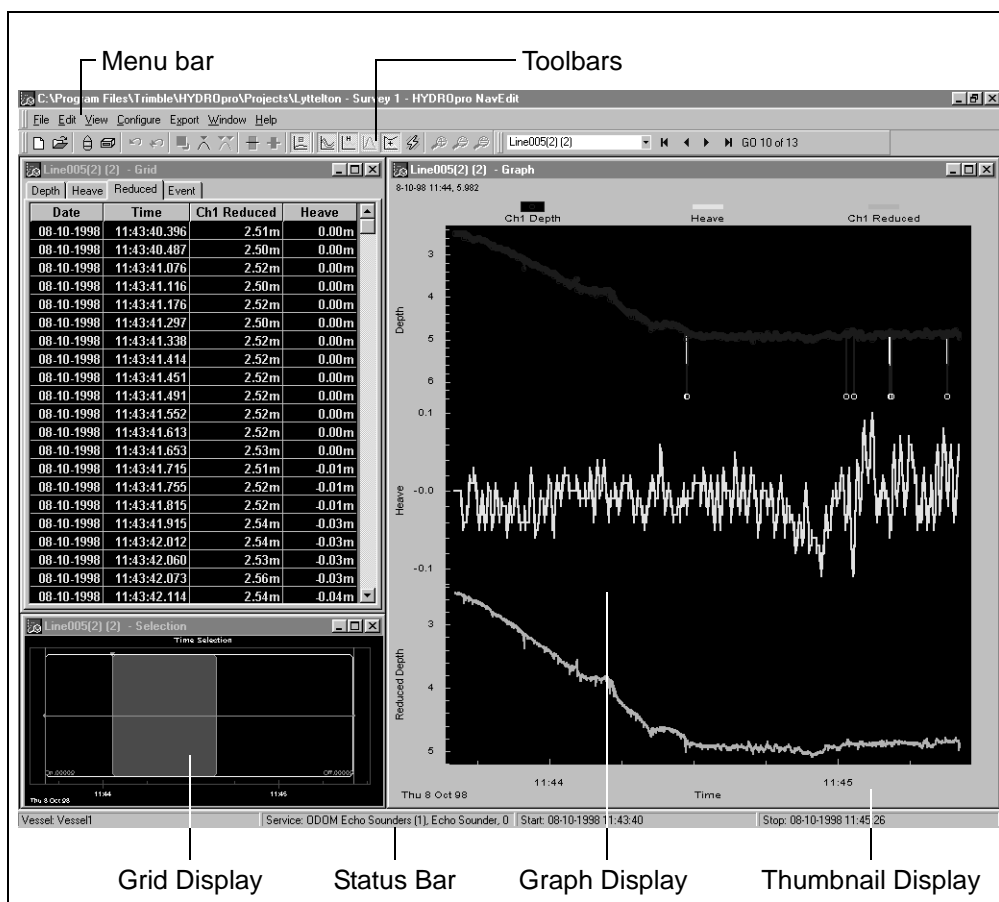


Figure 3-2 The NavEdit Depth Editor Desktop

3.4 Menus

The menu bar provides access to the menus in the NavEdit software. Each menu has a number of commands listed in it. Table 3-1 describes the available menus.

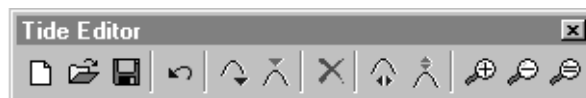
Table 3-1 The Menus in the NavEdit Software

Menu	Use this menu to ...
<i>File</i>	manage your project. The <i>File</i> menu contains options for opening and saving information.
<i>Edit</i>	apply filters and changes to the depth and heave data. The <i>Edit</i> menu contains options for the Batch Processor, Latency, and the Toggle Flag for individual data values.
<i>View</i>	customize the current NavEdit display. The <i>View</i> menu lets you enable and disable views, select toolbars, and view options.
<i>Configure</i>	select the survey, the vessel, and the equipment to display, and the guidance object to examine. Also use the <i>Configure</i> menu to configure display units and global settings.
<i>Export</i>	select export parameters such as depth type, range and quality, and create export files.
<i>Window</i>	open, select, configure, and arrange displays.

3.5 Toolbars

The NavEdit software contains the following toolbars:

- Tide Editor toolbar



The Tide Editor toolbar contains tools to manage your files and to add, insert, and delete tide values, as well as tools to apply delta time and delta tide shifts.

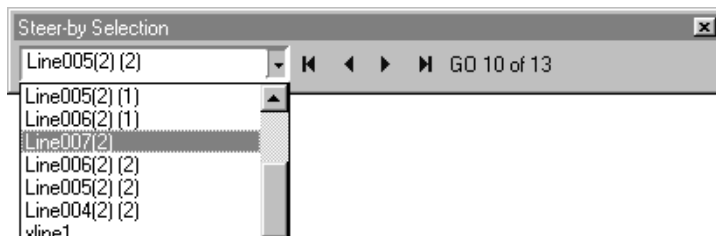
- Depth Editor toolbar



The Depth Editor toolbar contains tools to show, edit, and hide depth and heave data.

Tools with related functions are grouped together.

- Steer-by Selection toolbar



The Steer-by Selection toolbar contains tools for selecting steer-by GOs to load into the Thumbnail display.














Tip – To find out more about a button on the toolbar, position the pointer over it. After a few seconds, a small pop-up window (ToolTip) appears, showing you the name of the tool.

3.5.1 Tide Editor Toolbar Buttons

Each button on the toolbar represents a tool. Click on the button to activate the tool.

Table 3-2 Tide Editor Toolbar Buttons

Tool	Tool Name	Use this tool to ...
	New Tide File	create a new Tide file.
	Open	open a Tide file (*.tid) or a Navigation Project (*.mdb).
	Save	save the current Tide file.
	Add	add more consecutive tide values to the Tide file.
	Insert	insert new tide values to the Tide file.
	Delete	delete tide value records.
	Delta Time	apply a constant time shift to all the tide values in the Tide file.
	Delta Tide	apply a constant height shift to all the tide values in the Tide file.
	Zoom In	zoom in on a part of the Tide Graph display.
	Zoom Out	zoom out to the previous zoom window.
	Zoom All	zoom out to view all the tide values in the Tide file.

3.5.2 Depth Editor Toolbar Buttons

Each button on the toolbar represents a tool. Click on the button to activate the tool.

Table 3-3 Depth Editor Toolbar Buttons


















Tool	Tool Name	Use this tool to ...
	New Tide File	create a new Tide file.
	Open	open a Tide file (*.tid) or a Navigation project (*.mdb).
	Select Survey + Vessel	select a survey and vessel to load into the Depth Editor.
	Select Services	select an Echo Sounder, Heave service and/or Tide file(s) to load into the Depth Editor.
	Zoom In	zoom in on a part of the Graph display.
	Zoom Out	zoom out to the previous zoom window.
	Zoom All	zoom out to view all the values in Graph display.
	Interpolate	interpolate depths or heave over a range of points.
	Toggle Flag	flag a depth or heave point. Alternatively, use it to unflag a point that has been previously flagged.
	Show Flagged Points	turn on/off all flagged values in the Graph display.
	Mark as Edited	mark the current selection region as being edited.
	Unmark	unmark a previously created Selection Region.
	Depth plot	turn on/off the depth plots (Channel 1 and 2) in the Graph display.
	Heave Plot	turn on/off the heave plot in the Graph display.

Table 3-3 Depth Editor Toolbar Buttons (Continued)

	Tide Plot	turn on/ off the tide plot in the Graph display.
	Reduced Depth Plot	turn on/ off the reduced depth plots (both Channel 1 and 2) in the Graph display.
	Event	turn on/off the event markers in the Graph display.

3.6 Status Bar

The status bar displays information about the currently selected data.



The status bar always displays the current vessel and depth service. It also displays the start and end time of the current Selection Region defined in the Thumbnail display.


3.7 Zooming

You can zoom in on a smaller time range in the Graph display, zoom out to the previous extents, or zoom to extents to view all the visible points in the selected edit region.


Zooming out is the opposite of zooming in and works in a complementary way.

To zoom in:

1. Click on the Graph display window to make it active.
2. Move the mouse pointer over the window.
3. Holding down the left mouse button, drag the mouse pointer across the window until you produce a rectangle which contains the data you want to zoom in on.


You can also use the Zoom In tool  when previous Zoom Regions have been defined. The Zoom In tool is not available if no previous Zoom Regions have defined. Alternatively, select *View / Zoom In*.

To zoom out:

1. Click on the Graph display window to make it active.
2. Click the Zoom Out tool  or select *View / Zoom Out*.

The Graph display zooms out to the last Zoom Region.

To zoom all:

1. Click on the Graph window to make it the active window.
2. Click the Zoom All tool  or select *View / Zoom All*.

The Graph now displays all the visible points in the current Selection Region.

3.8 Selecting Points

There are several ways to select a point or points in NavEdit. This section covers selecting points in the Grid and Graph displays.

3.8.1 Grid Display

To select individual values in the Grid display:

1. Select the cell containing the required value with the mouse.
2. The focus cross-hairs highlight the corresponding value in the Graph display.

To select a continuous range of values in the Grid display:

1. Select the cell containing the first value with the mouse.
2. Press and hold the **[SHIFT]** key, then select the last value in the range with the mouse. Alternatively, hold down the left mouse button and drag the mouse up or down to define the range.
3. The selected values are highlighted in both the Grid and Graph displays.



Note – Multiple selection is only available for depth and heave values in both the Grid and Graph displays.


To select multiple values in the Grid display:

1. Select the cell containing the first value with the mouse.
2. Press and hold the **[CTRL]** key, then select the required values by clicking the left mouse button.
3. The selected values are highlighted in both the Grid and Graph displays.




Note – Selected values only appear in the Graph display once the **[CTRL]** key is released.



3.8.2 Graph Display

The mouse icon changes to a  when the mouse pointer is near or on a data point.

To select individual values in the Graph display:


1. Move the mouse to the desired data point in the Graph display. Wait until the mouse pointer icon changes to .
2. Click the left mouse button to select that value.

To select a continuous range of values in the Graph display:

1. Move the mouse to the desired data point in the Graph display. Wait until the mouse pointer icon changes to .
2. Click the left mouse button to select that value.
3. Press **[SHIFT]** and move the mouse over the desired end data point in the range. Wait until the mouse pointer icon changes to .
4. Click the left mouse button to select the end value.

The range of points is highlighted in both the Grid and Graph displays.

To select multiple values in the Graph display:

1. Move the mouse to the desired data point in the Graph display. Wait until the mouse pointer icon changes to .
2. Press and hold the **[CTRL]** key, then click the left mouse button to select that value.
3. Repeat steps 1. and 2. to select multiple values.

The selected points are highlighted in both the Grid and Graph displays.

Multiple values can also be selected in the Graph display using a graphical selection rectangle. All the values within the user-defined rectangle window are selected. This option is similar to defining a zoom window.



Note – The graphical selection rectangle can only be used to select multiple depth and heave values. This selection method is ***not*** available in the Tide Editor.

To select multiple values in the Graph display using a graphical window:

1. Press **CTRL** and **SHIFT** simultaneously in the Graph display and select the start point of the rectangle by holding down the left mouse button.

A pair of text boxes appear in the top left hand corner of the Graph display and the selection rectangle appears in red. The first text box contains the coordinates of the start point (time and data value) while the second text box contains the current cursor position.

2. Move the mouse to the required end point and release the left mouse button.

All the values contained within the limits defined by the rectangle will be selected. The selected points are highlighted in both the Grid and Graph displays.

In the case where you have a Depth service that has Channel 1 and Channel 2 depth data, and you have defined a graphical selection rectangle that contains both, press **F5** to toggle between selecting the Channel 1 and Channel 2 data.

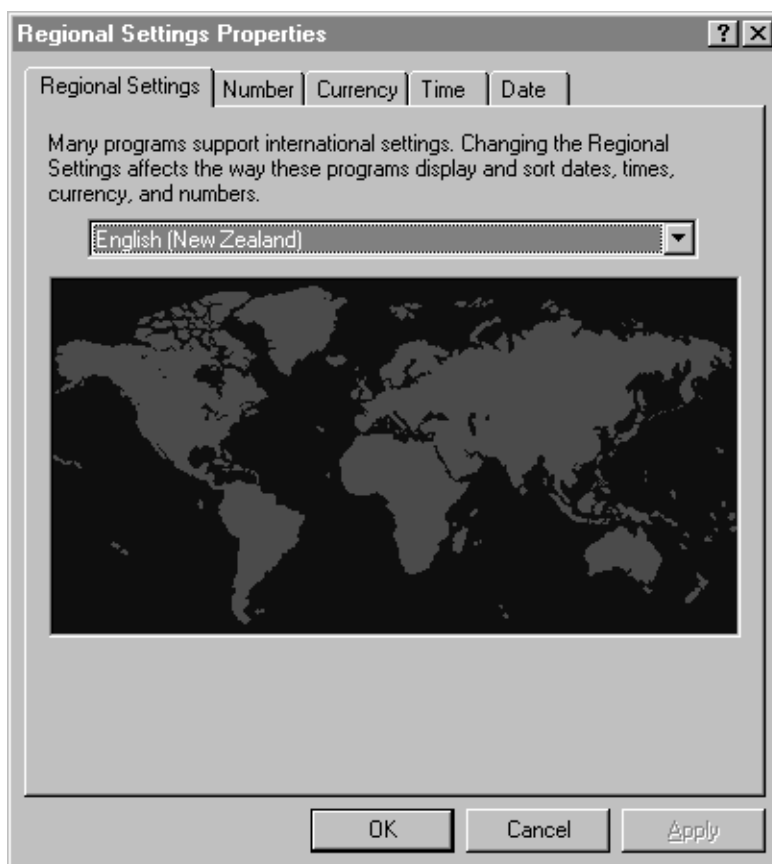


Note – The graphical selection rectangle can only be defined within a single profile axis. That is, you cannot define a selection that starts in the depth profile and finishes in the heave profile.

3.9 Regional Settings

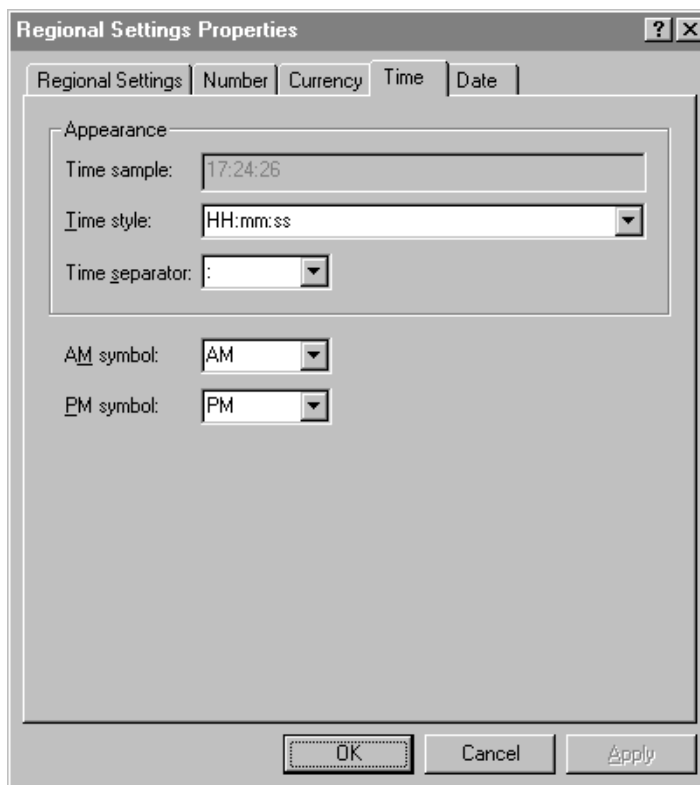
HYDROpro NavEdit utilizes date and time values consistent with the appearance style that is defined in the *Regional Settings Properties* dialog of your computer's operating system (Windows 95 or Windows NT).

Check your system's Regional Settings Properties, by going to the *Start* menu, and selecting *Settings / Control Panel*, double-click the Regional Settings icon.



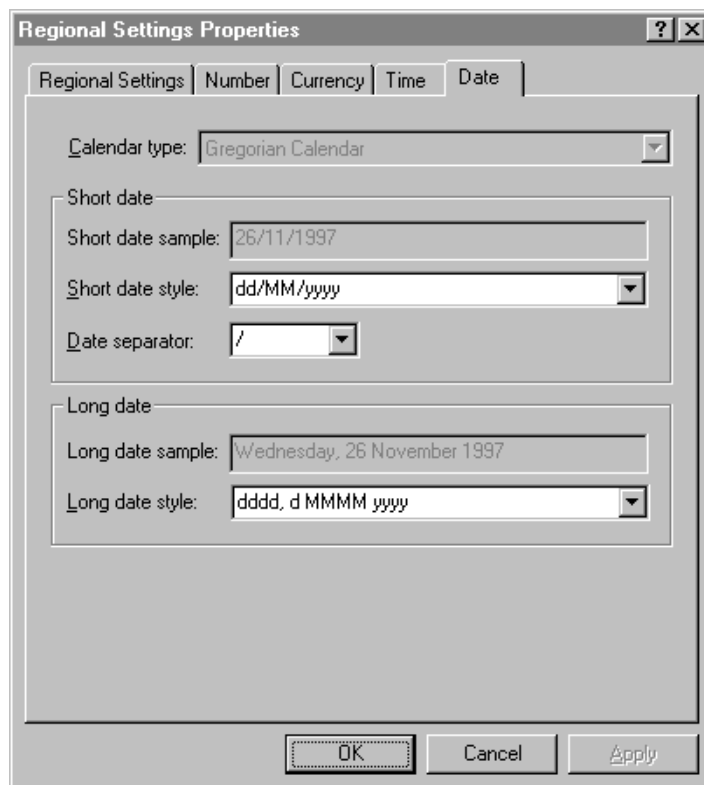
3.9.1 Time Tab

Select the *Time* tab to define the appearance style of the time. The time selections shown in the following dialog means that NavEdit only displays and accepts time in 24 hour format, with a colon (:) to separate the hours, minutes and seconds.



3.9.2 Date Tab

Select the *Date* tab to define the appearance style of the date. The example selection means that NavEdit only displays and accepts a date value in DD/MM/YYYY (for example, 25/11/1997) format, with a forward slash (/) to separate the day, month and year.



3.9.3 Areas of NavEdit Affected by Regional Settings

The appearance style defined in the *Regional Settings Properties* dialog, affects the following areas:

- Depth Editor Grid display
- Tide Editor Grid display
- Tide Editor Export ASCII file display
- Tide Editor Import ASCII file display
- Tide Editor Import Survey display



Note – Imported ASCII data will only be accepted if it conforms to the appearance style that is defined in the *Regional Settings Properties* dialog.

4 Quick Tours

The aim of this chapter is to help you become confident and familiar with using the NavEdit software.

The following examples instruct you on how to perform common operations and the basic procedures required to load and edit your Navigation project in NavEdit. By the end of this chapter you should be able to load, view, and edit depth data collected in your own project.

This information has been divided into three Quick Tour topics:

- Using the Demo project
- The Depth Editor
- The Tide Editor

This chapter is designed to provide you with an easy-to-use overview of the software for training purposes. For detailed information on the configuration and operation of the software, press the **F1** key or click **Help** at any stage. This will display comprehensive information about the currently selected dialog.

4.1 Using the Demo Project

The Demo project is provided with your HYDROpro software.


In this section you will learn about:

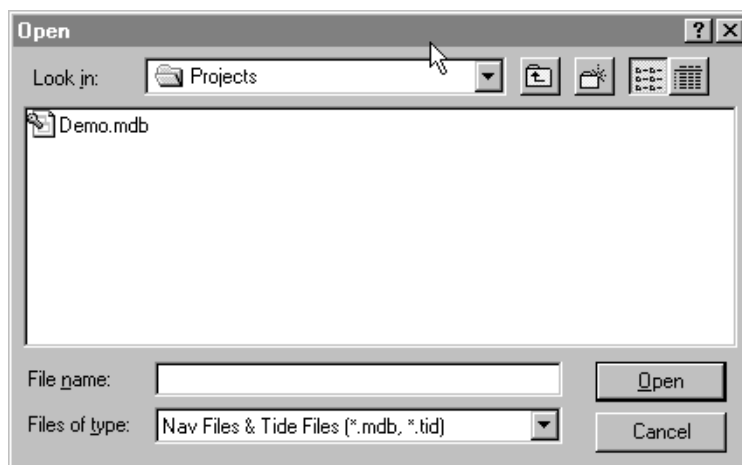
- Opening a Navigation project
- Selecting a survey and vessel
- Selecting an echo sounder, heave device, and Tide file
- Selecting a guidance object (GO)
- Defining a selected session
- Using the Grid and Graph displays
- Configuring display units

4.1.1 Opening a Navigation Project

The first step to review or edit depth and heave data is to open a Navigation project that has been created using the Navigation software.

To open the Demo project:

1. From the *File* menu choose *Open*. Alternatively, click  :





Note – You cannot create a new project. Only projects created in the HYDROpro Navigation software can be opened.



Tip – The *File / New* command is only used for creating new Tide files.

2. Set the *Look in* field to the Projects directory.
By default, the *Look in* directory is set to C:\Program Files\Trimble\HYDROpro\Projects.
3. Set the *Files of type* field to Nav Files (*.mdb).
4. Select the file Demo.mdb.
5. Click **Open** to open the Demo project.



Note – When there is no security key attached to your computer, NavEdit will only run in Demo mode. In this case, the only project available to select is Demo.mdb and the only Tide file that can be opened is Demotide.tid. All NavEdit features are available in Demo mode except that you can only export the Demo project to a Transfer File (*.axb) which is suitable for the Processing software.

4.1.2 Data Editor Setup Wizard

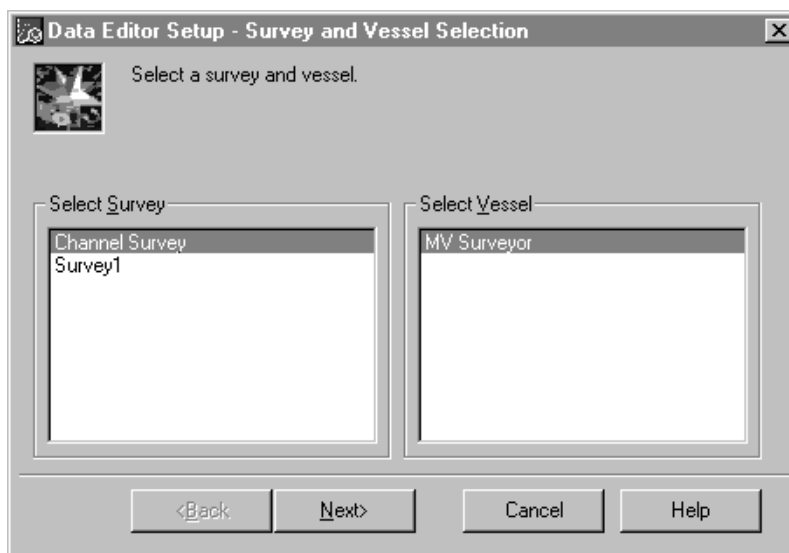
Data is loaded and displayed in NavEdit on a survey and per vessel basis. The Data Editor Setup wizard guides you through this process.

The *Survey and Vessel Selection* dialog appears automatically if the selected Navigation project file does not have an associated DELTA file. This occurs when the file is opened for the first time or the DELTA file has been deleted.

To manually start the wizard, from the *Configure* menu choose *Survey Vessel Select*.


Step 1 – Survey and Vessel Selection

The *Select Survey* list contains all the surveys that were configured during the project. The *Select Vessel* list contains all the vessels that were configured or available during the selected survey. Within the Navigation database structure, the selected survey defines what vessels were available during the survey. You can only select one survey and one vessel at a time:



1. In the *Select Survey* list, select Channel Survey.
As a survey is selected, the vessel list options are updated.
2. In the *Select Vessel* list, select MV Surveyor.
3. Click **Next>** to accept the selections.

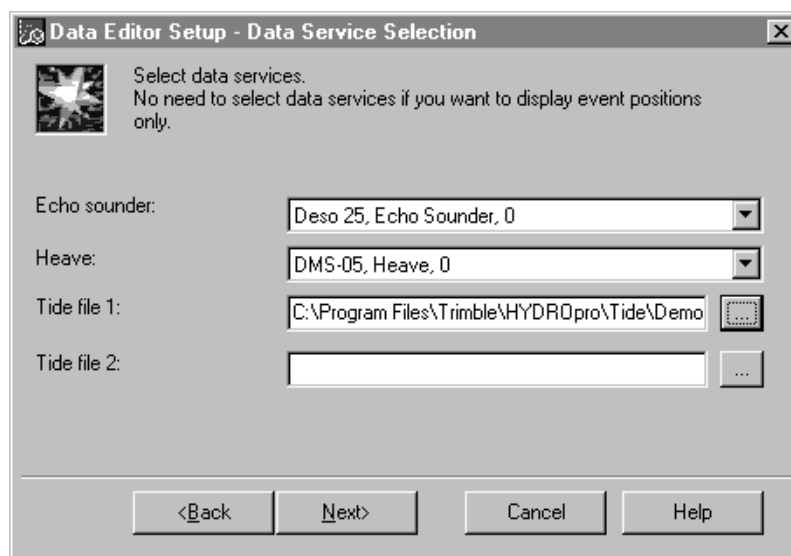



Note – The *Survey and Vessel Selection* dialog can be selected at any time to load a new survey or vessel. From the *Configure* menu choose *Survey Vessel Select*. Alternatively, click  .

The surveys are listed in the order that they were created by the user in Navigation. Any vessels configured in previous surveys appear in successive surveys unless they were deleted.

Step 2 – Data Service Selection

The *Data Service Selection* dialog lists all the echo sounder and heave devices that were configured on the selected vessel. You must select the *minimum* of an echo sounder to edit depth information and before data can be displayed in the Graph display.



1. In the *Echo Sounder* field, select Deso 25, Echo Sounder, 0.
2. In the *Heave* field, select DMS-05, Heave, 0.
3. In the *Tide file 1* field, click the browse button ().

The *Open* dialog appears.

By default, the *Open* dialog shows the contents of the folder:
C:\Program Files\Trimble\ HYDROpro\Tide.




Note – A maximum of two tides can be used to reduce the depth data.
The Tide file must have been previously created in the Tide Editor. For more information, see The Tide Editor, page 4-76.

4. Select the file Demotide.tid.
5. Click **Open** to select the DemoTide file.
6. Click **Next>** to select the echo sounder, heave, and Tide file.



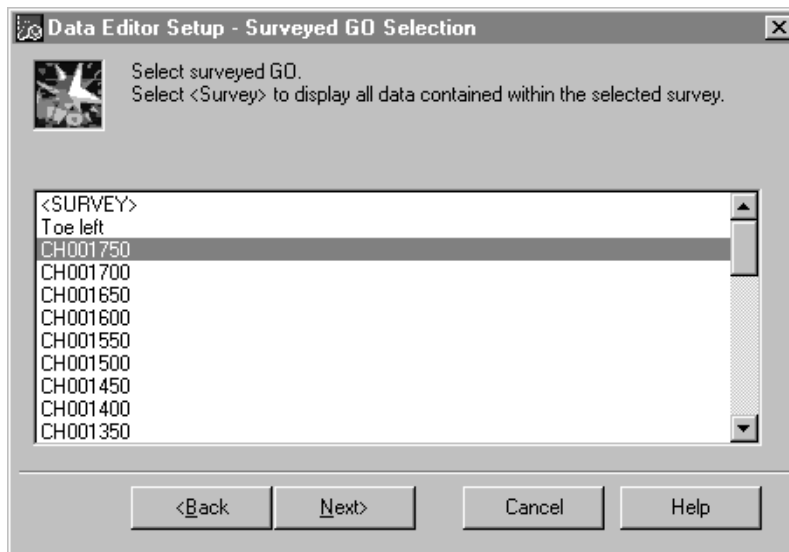
Note – The services selected in this dialog determines the information that is displayed in the Graph and Grid displays. For example, if no heave is selected, no heave data will be selected in the Grid and Graph displays and the depth data cannot be reduced for heave during export.



Note – You can load new services at any time. From the *Configure* menu choose *Service Select*. Alternatively, click  .

Step 3 – Surveyed GO Selection

Next you are prompted to select the guidance objects (GOs) that the selected vessel had a steer-by association with during the survey:



When a Steer-by GO is selected from the list NavEdit checks to see that there is valid depth data (from the selected echo sounder) and event position data for the echo sounder offset. If no event data or depth data is found for the duration of the steer-by GO, it is removed from the list.

1. Highlight the GO of interest.




Note – The *Surveyed GO Selection* dialog contains all the GOs that the selected vessel observed during the survey. GO names are repeated (number indicated in brackets) in the list if there is more than one instance of the GO—as would be the case if you re-surveyed the GO. If the selected GO has no event position or depth data associated with it, a message appears and the GO is removed from the list.

2. Click **Next>** to select the highlighted GO.



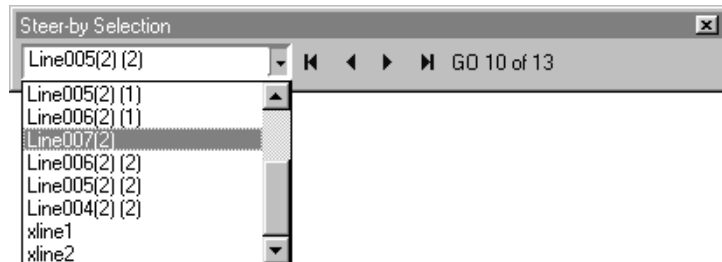
Tip – The <SURVEY> option is always available for selection in the Steer-by Selection toolbar for all projects that are loaded in NavEdit. The <SURVEY> steer-by GO option lets you select all the data between the first and last event that the selected vessel recorded during the survey. Use this option when you did not have a steer-by association or you did not configure any guidance objects.



Note – You can load new Surveyed GOs at any time. From the *Configure* menu choose *Surveyed GO Select*. Alternatively, click .

You can select a new GO at any time by using the Steer-by Selection toolbar. When a new GO is selected, the Grid and Graph displays are closed until a new edit region is defined in the Thumbnail display.

1. In the Steer-by Selection toolbar, click the list:

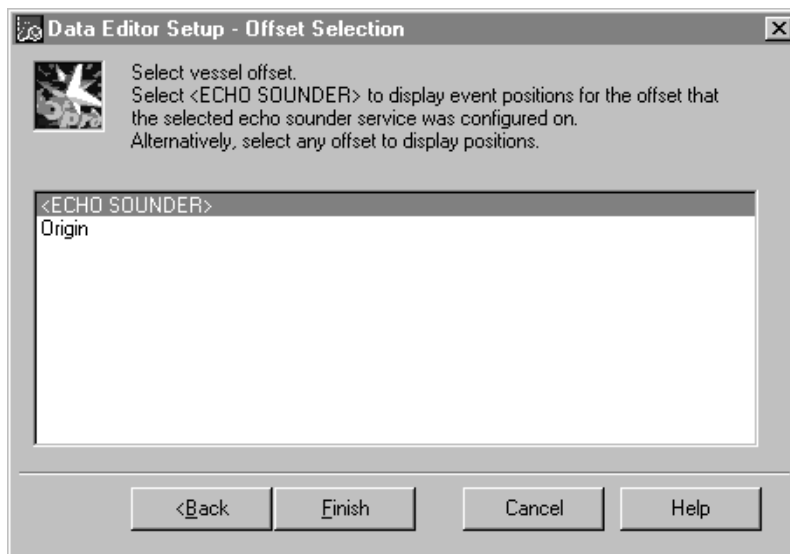


2. Select the required Steer-by GO – CH001750. Alternatively, use the First, Previous, Next, and Last buttons.

The Thumbnail display automatically appears loaded with the selected steer-by GO. The GO name appears in the Thumbnail display title bar.


Step 4 – Offset Selection

Finally, you are prompted to select an offset to display. Select the offset that had the echo sounder configured on it or select <Echo Sounder> to display depth information. If an offset is selected that did not have an echo sounder configured on it then only positional information will be displayed in the NavEdit software.



1. Highlight the offset to display information for.
2. Click **Finish** to select the offset.



Note – You can load new offsets at any time. From the *Configure* menu choose *Offset Select*. Alternatively, click  .

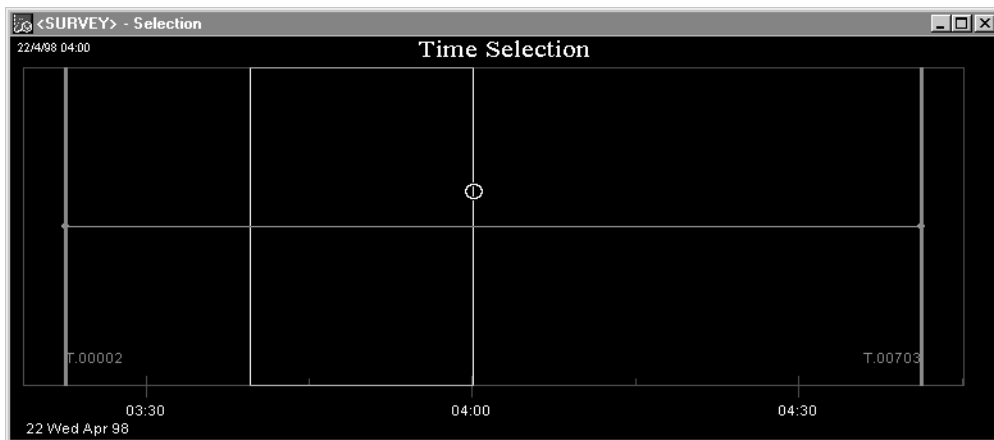
To display data in NavEdit you must first define an edit region.

4.1.3 Defining and Using an Edit Region

The Thumbnail display is a time line representation of the GO selected in the Steer-by Selection toolbar. It controls what depth, heave, and tide data is loaded into both the Grid and Graph displays. Use the Thumbnail display to define a time range (or edit region) within the GO. All the depth, heave, and tide data that occurs within the start and stop times is loaded into the other two displays.

To define an edit region:

1. Select the Thumbnail display to make it active.
2. Move the mouse cursor to the desired start time along the GO timeline and hold down the left mouse button.
3. While holding down the left mouse button, drag the cursor to the left or right to define the time range window.
4. To mark the end of the edit region, drag the cursor to the required position and release the left mouse button:



5. The *Wait State* dialog appears indicating that data is being loaded in the Grid and Graph displays.
6. The edit region is now highlighted with a white border. The depth, heave, tide, and event data is displayed in the Grid and Graph displays which appear automatically.




Tip – Press **[F6]** to move to the previous edit region. Press **[F7]** to move to the next edit region. This creates an edit region of the same duration.

An edit region can be marked as being edited (this is called an edited region).

Edited regions are used in the Thumbnail display as a visual guide to what has been checked or examined and what has not for the selected guidance object. An edited region is a time range or subset within the time range of the guidance object. All edited region time ranges are stored in the DELTA database.

To mark a edit region as being edited:

- From the *Edit* menu choose *Mark as Edited*. Alternatively, press **[Ctrl]+[M]**, or click .

Once a region has been marked as edited, the region is shaded green with a green border. Select marked regions by double-clicking anywhere in the shaded area, or click on the small triangle symbol found in the top left corner of each marked area. See Figure 4-1.

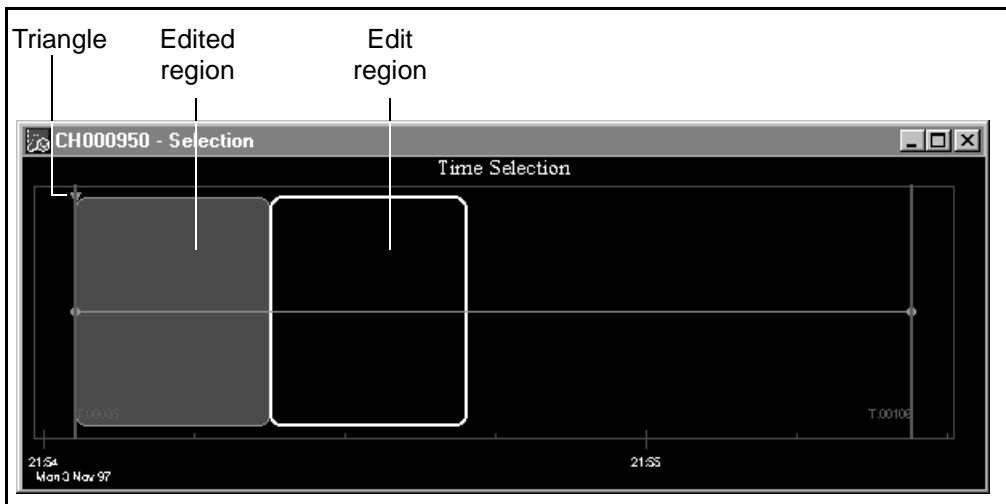



Figure 4-1 **Edit and Edited Regions**

Edited regions are saved to the DELTA database and always appear in the Thumbnail display when the guidance object is selected.



Note – The current edit region will be marked as edited.

To deselect an edit region that has been previously marked:

1. Make sure that the region in question is currently selected.
2. From the *Edit* menu choose *Unmark*. Alternatively, click  .
The edit region is removed from the DELTA database.

4.1.4 Viewing Information on the Displays

The NavEdit software uses two main displays to show the depth and event position that has been selected in the Thumbnail display.

Grid Display

The Grid display contains a list of each data type selected in the *Service Selection* dialog. Each data type is listed under a unique tab. The number of tabs available is dependent on the services selected in the *Service Selection* dialog. For example, if a heave or Tide file is not selected, the *Reduced Depth* tab is not available in the Grid display.

To select a depth value:

1. Select the *Depth* tab in the Grid display:



Date	Time	Ch 1 Depth	Ch 2 Depth
04/22/98	15:22:38.724	10.08m	12.11m
04/22/98	15:22:39.234	10.05m	12.00m
04/22/98	15:22:39.744	10.01m	12.03m
04/22/98	15:22:40.279	10.07m	12.07m
04/22/98	15:22:40.829	10.14m	12.18m
04/22/98	15:22:41.379	10.16m	12.14m
04/22/98	15:22:41.929	10.07m	12.02m
04/22/98	15:22:42.477	10.10m	12.05m
04/22/98	15:22:43.029	10.17m	12.06m

2. Click on a depth value in either the *Ch 1 Depth* or *Ch 2 Depth* column.
3. The selected depth value cell is highlighted, and the corresponding value in the Graph display is also highlighted.



Note – Once a depth or heave value is selected, you can edit or flag it. ***Tide, reduced depth, and event data cannot be edited or flagged.***

To select a range of depth values:

1. Select the *Depth* tab in the Grid display.
2. Click on a depth value cell in either the *Ch 1 Depth* or *Ch 2 Depth* column and hold down the left mouse button.
3. Drag the mouse up or down to select the range of depth values.

The selected depth values are highlighted in a different colour scheme. Corresponding values in the Graph display are highlighted with a square symbol:

Depth Heave Tide 1 Reduced Event			
Date	Time	Ch 1 Depth	Ch 2 Depth
04/22/98	15:22:38.724	10.08m	12.11m
04/22/98	15:22:39.234	10.05m	12.00m
04/22/98	15:22:39.744	10.01m	12.03m
04/22/98	15:22:40.279	10.07m	12.07m
04/22/98	15:22:40.829	10.14m	12.18m
04/22/98	15:22:41.379	10.16m	12.14m
04/22/98	15:22:41.929	10.07m	12.02m
04/22/98	15:22:42.477	10.10m	12.05m
04/22/98	15:22:43.029	10.17m	12.06m

Once a continuous range of depth or heave values have been selected, you can edit them using the commands available in the *Edit* menu (*Flag* command, *Interpolate* command).

To change Grid display properties:

1. Select the Grid display to make it active.
2. Press **[Alt]+[Enter]**. Alternatively, from the *Window* menu choose *Properties*:



3. Select the text type in the *Fonts* list and use the *Font Style* and *Size* options to change the appearance of the text in the Grid display. Use the *Sample* field to view how the text will appear.
4. Select the text type in the *Colors* list and use the *Foreground* and *Background* color options to change the appearance of the text in the Grid display. Use the *Sample* field to view how the text will appear and click **OK**.




Tip – Use the *Grid Configuration* dialog to change how normal, flagged, selected, and edited values are displayed in the Grid. You can use font style and foreground/background colours to identify different states.




Graph Display

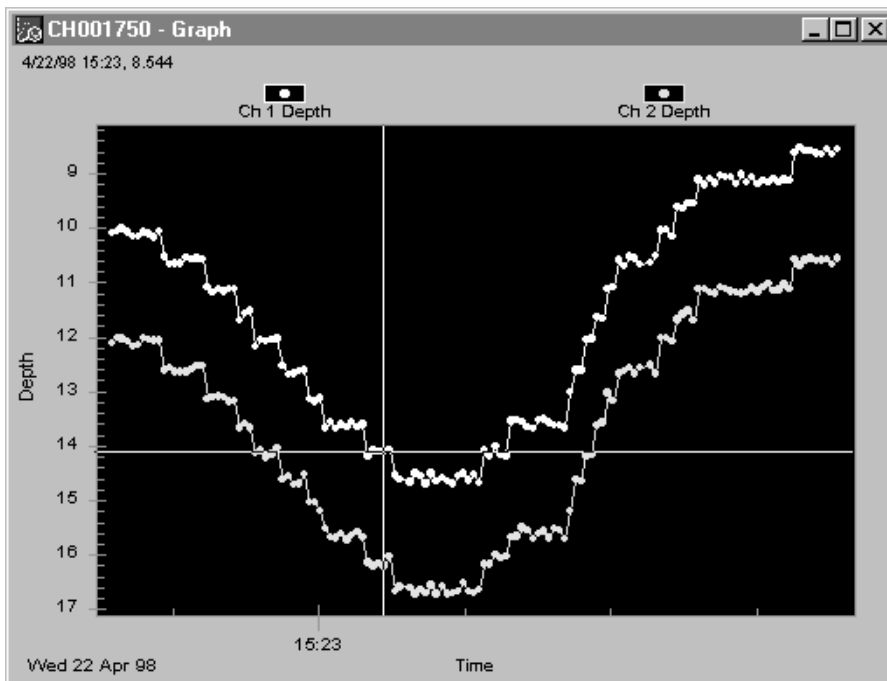
The Graph display shows a plot of each data type selected in the *Service Selection* dialog. Each data type is plotted on a unique y-axis on the graph. All plots have a common time axis (x-axis). Events are represented as vertical lines.

To select a depth value:

1. Move the mouse over the desired data point in the Graph display. Position the mouse until the mouse icon changes to .
2. Click the left mouse button.

The cross-hairs appear at the selected point. The corresponding point in the Grid display is also highlighted.

3. Use the zoom control buttons in the toolbar to zoom in (), zoom out (), and zoom all () in the Graph display:



Note – The *Zoom In*, *Zoom Out*, and *Zoom All* commands are only available when the Graph or Map display is highlighted and the mouse has been used to zoom in.

To turn data plots on/off:

1. Turn data plots on and off using the buttons in the Depth toolbar. See Figure 4-2.

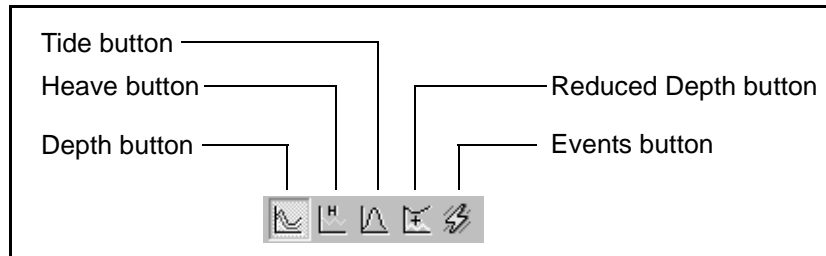
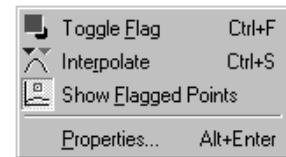


Figure 4-2 Depth Toolbar

2. Plot buttons are dimmed when the service has not been selected in the *Service Selection* dialog.
3. Alternatively, individual plots can be turned on and off in the *Graph Properties* dialog.

To display the shortcut menu:

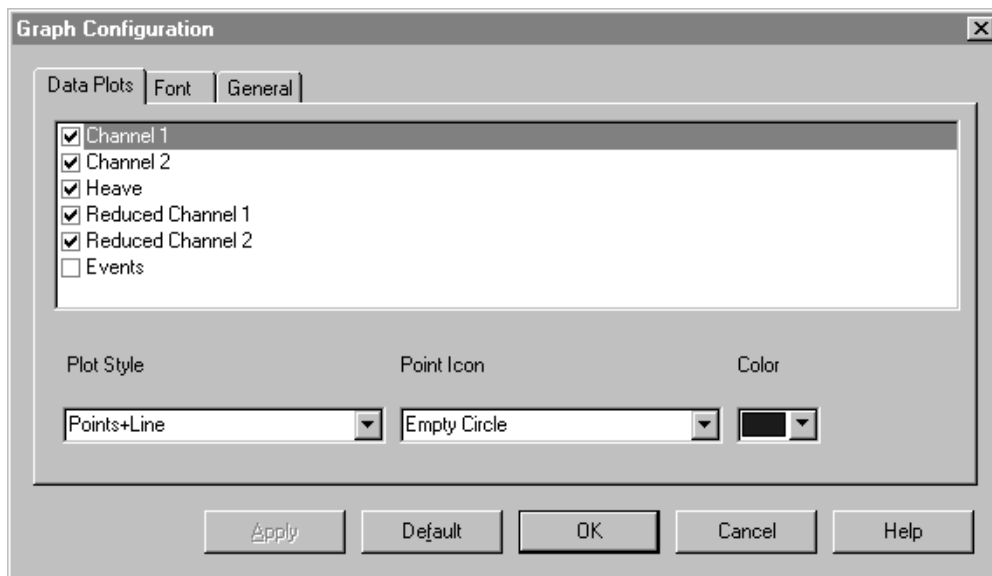
1. Right click the mouse button when the mouse is in the Graph display. The shortcut menu appears:
2. Select an edit action (Interpolate or Toggle Flag) for the currently selected data value or values.



Note – The *Interpolate* command is only available if you have selected a continuous range of depth or heave values.

To change the Graph display properties:

1. Select the Graph display to make it active.
2. Press **[Alt]+[Enter]**. Alternatively, from the *Window* menu choose *Properties*:



3. Select the *Data Plots* tab.
Use this tab to turn data plots on and off in the Graph display, and change the plot style, point icon, and color for each plot.
4. Select the *Font* tab.
Use this tab to change the font style, font appearance, and font size for text in the Graph display. Use the *Sample field* to view how the text will appear.
5. Select the *General* tab.
Use this tab to change the foreground and background colors, the color of flagged points, grid line display options, and numeric precision.
6. Click **OK**.

Map Display

The Map display provides a bird's-eye-view of surveyed events. Besides events, the following items can be displayed:

- DXF files
- Geo-referenced .bmp and .tif files
- Guidance objects



Note – It is not necessary to select an Echo Sounder service to view events on the Map display.

All the events for the selected survey or edit region will be displayed. No distinction is made between the event type with all the events being represented by large dots.

At this stage no interactive editing is supported on the Map display. However, the events displayed here reflect any changes made in the Thumbnail, Grid, or Graph displays.

Events are shown on the Map display depending on the following attributes (the default colour is listed in brackets beside the category):

- Background (grey)
All events that fall outside the selected surveyed GO. If <Survey> is selected then no events will be rendered in the Background color.
- Selected session (white)
All events that are included on the selected surveyed GO.
- Edit region (green)
All events that occur within the current edit region.
- Edited region (red)
All events that have been edited and fall within the current selected session.

- **Flagged (yellow)**
Events that have been flagged and fall within the current session.
- **Selected (blue)**
All events that are currently selected in the Graph or Grid display.

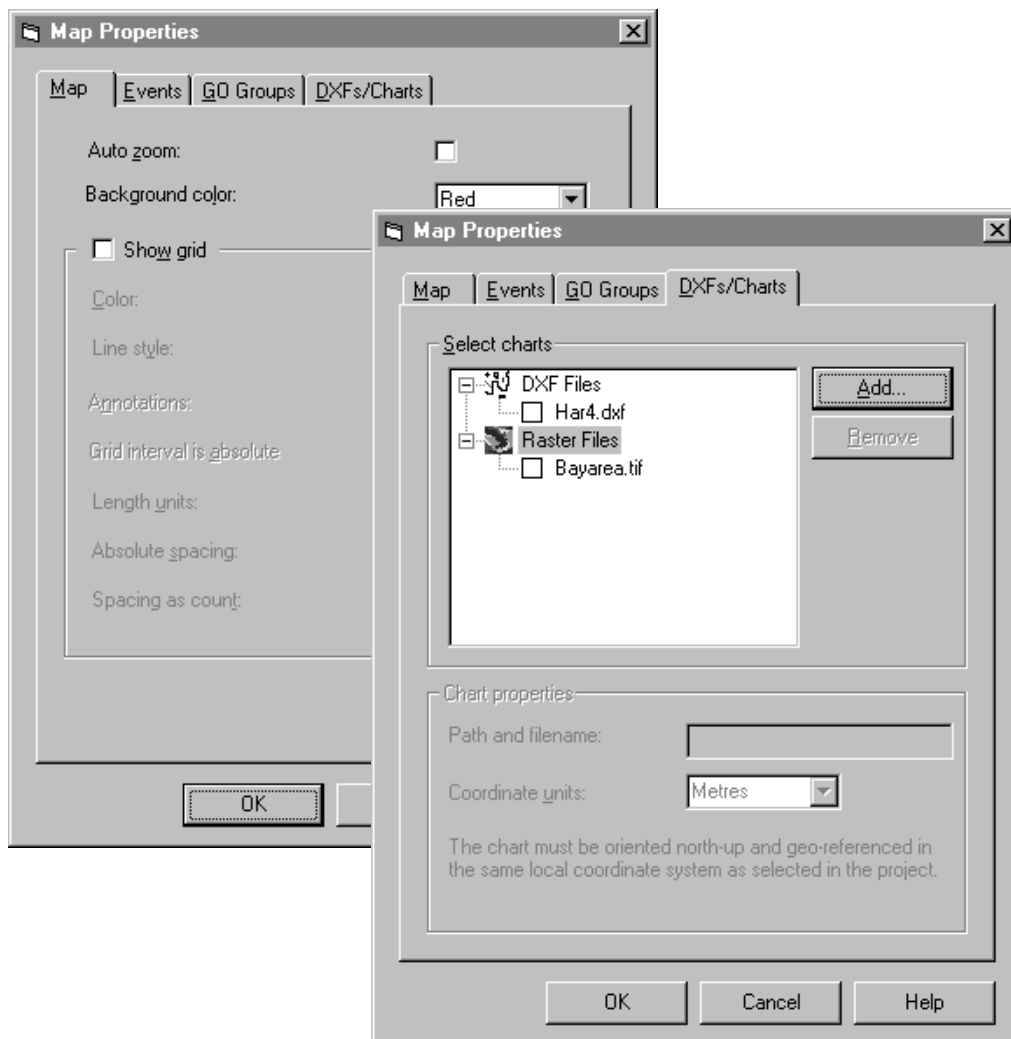
Events may fall into more than one category. If they do, the colour of the highest category will be displayed. Selected Session is the lowest category and Selected is the highest (Background is a completely separate category).



Note – If the colour of an event matches that of the background, the event's colour will be reversed.

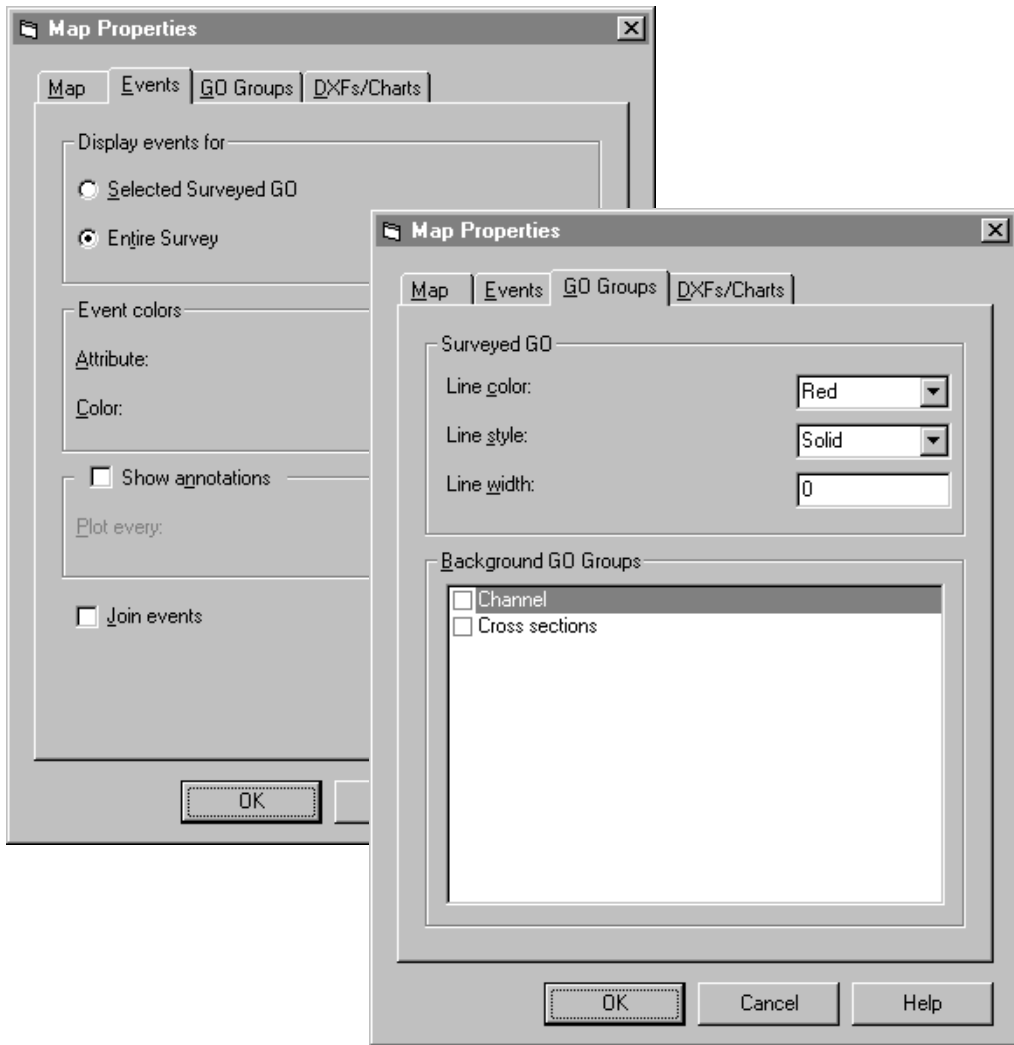
The Map display has four tabs in its properties dialog:

- *Map* and *DXFs/Charts* tabs:



Use the *Map* tab to set how the map background and grid is displayed. Use the *DXFs/Charts* tab to select the .dxf file and the geo-referenced .bmp and .tif files to appear in the Map display.

- *Events and GO Groups tabs:*



Use the *Events* tab to select which events are displayed. Use it to also set the event colors, annotations, and whether the events are joined or not.

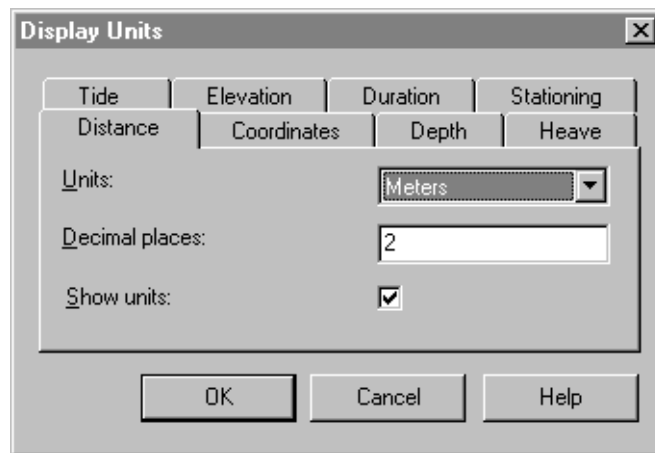
Use the *GO Groups* tab to select how the current surveyed GO is to appear and which GO groups to display in the background.

4.1.5 Configuring Display Units and Global Settings

The settings contained in the *Units Configuration* and *Global Settings* dialogs determine in what units, to how many decimal places, and in what coordinate order that data is displayed in Grid, Graph, and Thumbnail displays in the Depth and Tide Editors. These settings also affect how the data is exported in the various ASCII format files.

To configure the units for the different data types:

1. From the *Configure* menu choose *Display Units*:



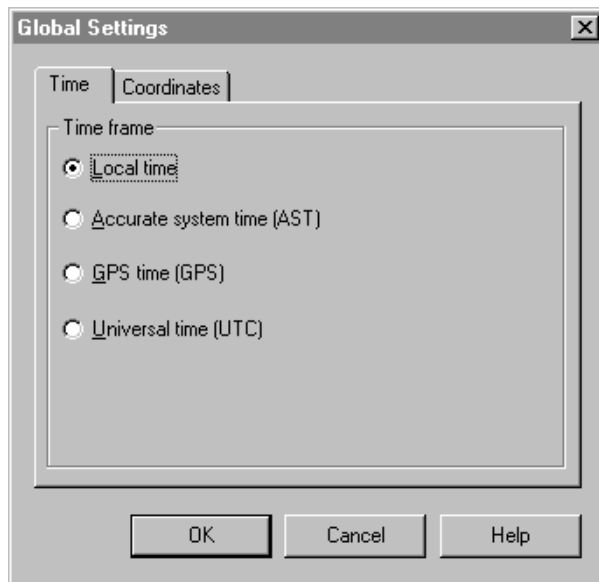
2. Select the corresponding tab for the data type that you want to edit. For example, select the *Depth* tab.
3. Select the *Units* field to display a list of available units that are supported for that data type.
4. Select the desired unit type.
5. Enter the number of decimal places that data values are to be displayed to in the *Decimal Places* field.
6. Select the *Show Units* check box if you want the unit type to be displayed in all of the dialogs.

This **does not** apply to ASCII format files generated by Export.

7. Click **OK**.

To configure global settings:

1. From the *Configure* menu select *Global Settings*:



2. Select the *Time* tab.
3. Select the time frame to be used in NavEdit.

If you select the *Local time* option, NavEdit uses the time zone offset set in the Regional Settings of your operating system to calculate the local time value.



Note – The *GPS time (GPS)* and *Universal time (UTC)* options are only available if a GPS Time service was decoded in the Navigation project.

4. Select the *Coordinates* tab.
5. Select the order in which coordinate pairs are displayed, either east then north or north then east.
6. Click **OK**.

Whenever changes are made to settings in the *Units Configuration* or *Global Settings* dialogs, data in both the Grid and Graph displays is updated immediately. The *Units Configuration* and *Global Settings* dialogs can be activated in both the Tide and Depth Editors.



Note – Remember that the options set in both of these dialogs will effect how your data appears in the various ASCII format files created during Export.

4.1.6 Multiple Steer-by Associations in NavEdit

It is possible to configure and survey with multiple steer-by associations configured for the same vessel in the Navigation software. When the survey and vessel are selected in the Depth Editor, NavEdit determines all the steer-by associations that were active during the survey period. From the *Steer-by Association* list the NavEdit software then determines all the guidance objects (GOs) that were active during that period.

Figure 4-3 illustrates a vessel that had four steer-by associations during the life of the project. The project consists of three separate surveys:

- Steer-by 1 was active during all three surveys.
- Steer-by 2 was active during all three surveys and was only associated with one GO (GO8).
- Steer-by 3 was only active during Survey 1, and then it was removed.
- Steer-by 4 was not configured until Survey 2 and remained active to the end of the project.

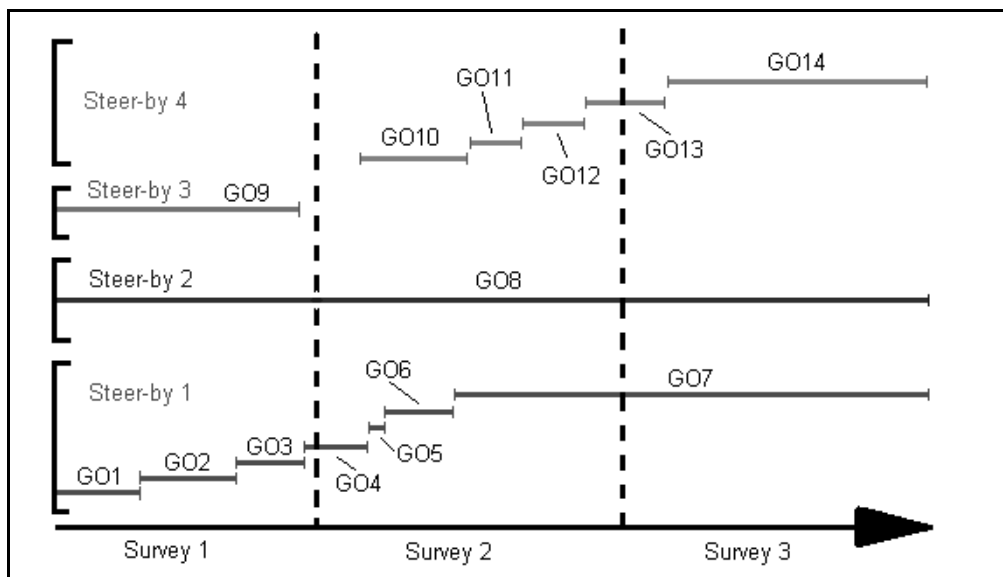


Figure 4-3 Steer-by Configuration During Surveys

Using the above example, the steer-by GOs shown in Table 4-1 will be available for selection (by using the Steer-by Selection toolbar) for each survey in NavEdit.

Table 4-1 Steer-by GOs Available for Each Survey

Survey 1	Survey 2	Survey 3
GO1	GO4	GO7
GO2	GO5	GO8
GO3	GO6	GO13
GO4	GO7	GO14
GO8	GO8	
GO9	GO10	
	GO11	
	GO12	
	GO13	

Note the following:

- GO4 appears in both Survey 1 and Survey 2
- GO7 and GO13 appear in both Survey 2 and Survey 3
- GO8 appears in all three surveys.



Note – Take care when exporting data where multiple steer-by associations have been configured. Duplication of data in export files occurs when you export GOs that were active at the same time in different steer-by associations in the Navigation software.

4.2 The Depth Editor

The Depth Editor is the main function of NavEdit. It provides the means of viewing, both textually and graphically, the depth-related data logged in the Navigation project database. It also provides the tools to identify and edit erroneous depth and heave data. Edited data is then exported to the Processing software.

In this section you will learn about:

- Editing depth data
- Adjusting depth for latency
- Manually flagging depth and heave data
- Batch Processing
- Exporting data

4.2.1 Editing Depth and Heave Data

Whenever you make changes to the depth and heave data in NavEdit, the original Navigation database remains unchanged. All changes are saved in the DELTA database (*.dlt).

The DELTA database stores all the depth and heave values that have been manually edited or 'flagged'. Flagging is a means of identifying unwanted data. Flagged data values are not used in the Batch Processor or Export routines.

You can edit depth and heave values once you have selected a guidance object (GO) and defined an edit region in the Thumbnail display. The Grid and Graph displays contain all the data within the edit region time range. Use the tabs at the top of the Grid display to move between different data types such as depth, heave, tide, and event positions. The corresponding value is always highlighted in the Graph display and vice versa.

If you have completed batch processing the data, (see Batch Processing, page 4-48) any depth or heave values that have been identified as being outside the user-specified ranges appear in the 'flagged' state in both the Grid and Graph displays.



Note – All edit changes are reflected in the Grid and Graph displays. In the Grid display, edited values are displayed in a different colour scheme so that they can be easily identified.

There are three ways to manually edit depth and heave values in the Grid or Graph displays:

- incremental editing
- graphical editing
- text editing

Incremental Editing

Edit depth and heave values by increasing or decreasing their values by incremental amounts.

To edit a depth or heave value by incremental amounts:

1. Highlight the required depth or heave value in the Grid or Graph display.
2. Press **Ctrl** (and **Shift**) and the assigned function key to increase or decrease the value:

Press

Ctrl+**F8**

Ctrl+**F9**

Ctrl+**Shift**+**F8**

Ctrl+**Shift**+**F9**

To ...

decrease a value by 0.01 unit

increase a value by 0.01 unit

decrease a value by 0.1 unit

increase a value by 0.1 unit



Tip – You can undo any changes using the *Undo* or *Restore* commands.



Note – The values are increased/decreased by 0.01 or 0.1 of the current depth or heave unit type selected in the *Display Units* dialog.

Graphical Editing (Drag-and-Drop)

Edit depth and heave values graphically in the Graph display by dragging the point to the desired value.

To edit a depth or heave value graphically:

1. Hold down the **Alt** key.
2. Move the mouse cursor to the desired depth or heave value in the Graph display and when the hand icon appears, hold down the left mouse button. A red horizontal line appears on the Graph display.

3. While holding down the **[Alt]** key and the left mouse button, drag the horizontal red line (up or down) to adjust the depth or heave value. The red horizontal line indicates the current location. See Figure 4-4.

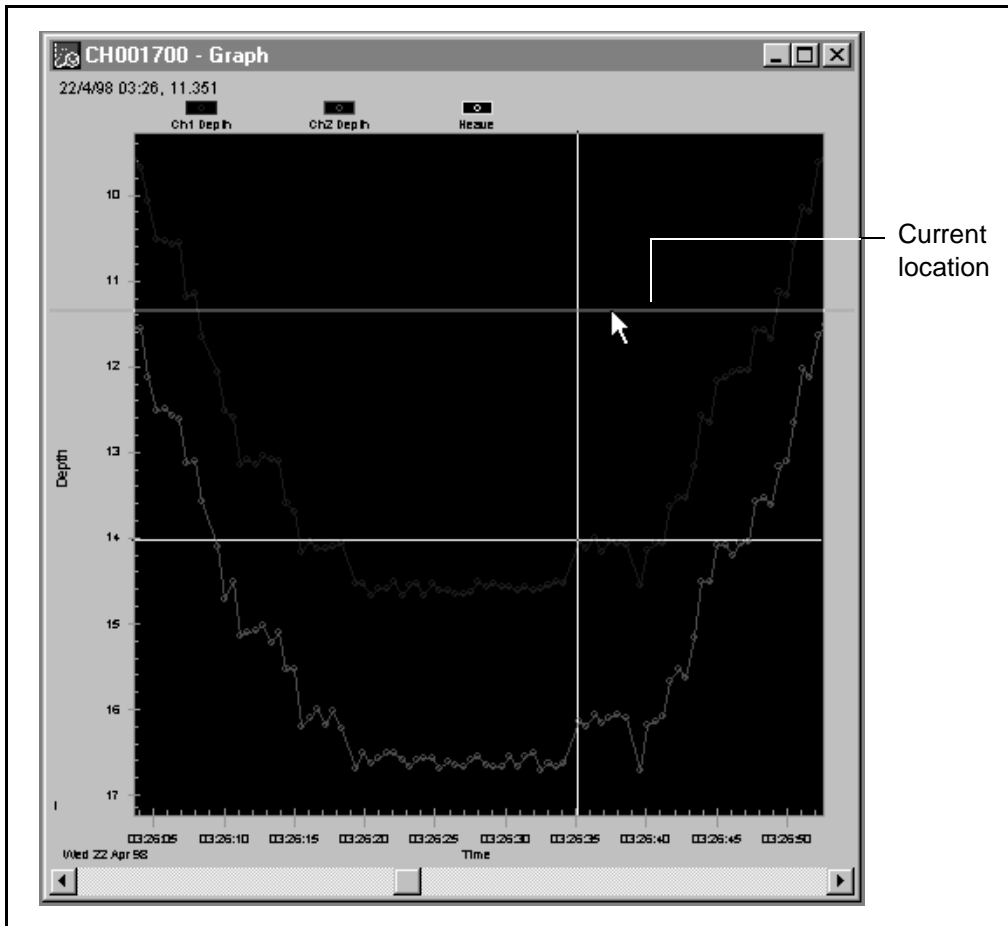


Figure 4-4 Illustration of the Graphical Edit Line

4. Release the left mouse button.
The Grid and Graph displays update with the new value.



Note – The date/time of the data record cannot be edited using this method. You can only edit one record at a time.



Tip – The current cursor location is displayed at the top left corner of the Graph display.



Tip – For easier graphical selection, zoom in on the required area.

Textual Editing

Edit depth and heave values textually in the Grid display.

To edit a depth or heave value textually:

1. Highlight the required depth or heave value in the Grid or Graph display.

Alternatively, double-click on the cell (in the Grid display) to activate the edit mode for the cell.

2. Type in the new value.
3. Press **[Enter]** or select a new depth or heave value.



Note – You can only edit one record at a time.

4.2.2 Adjusting Depth for Latency

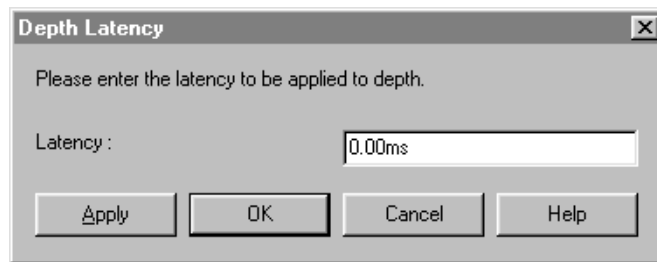
The *Latency* command lets you apply a constant time adjustment (latency) to all depth values for the selected Echo Sounder service.

The latency value is stored in the DELTA database and can be changed at any time. The latency value is applied to depth values in both the Grid and Graph displays, and the Batch Processing and Export routines.

If a positive latency value is entered, the value is subtracted from the time stamp of the depth value resulting in a time stamp value that is 'earlier' than the original value. If a negative value is entered, the time stamp of the depth value becomes older.

To apply a constant latency value:

1. From the *Edit* menu choose *Latency*:



2. In the *Latency* field, enter a value.

All the depth values in the Grid and Graph displays are updated to reflect the new time stamp values for each depth.



Note – Applying a latency adjustment to depths may result in depth time stamps that are outside the time range defined by the first and last Event record for the selected GO. If this occurs, those depth values that lay outside the Event time range cannot be used in Batch Processing or Export.

4.2.3 Manually Flagging Depth and Heave Data

Depth and heave data values can be manually flagged using the *Toggle Flag* command. This command either ‘flags’ a depth or heave value or it ‘un-flags’ a previously flagged value.



Note – Depth and heave values that have been flagged manually or by the Batch Processor are **not** used in subsequent sessions of the Batch Processing or Export.

Spikes and other anomalies that have been flagged by the Batch Processor can be un-flagged using the *Toggle Flag* command. Depth and heave values that have been flagged are displayed with a flag symbol when viewed in the Graphical display. See Figure 4-5.

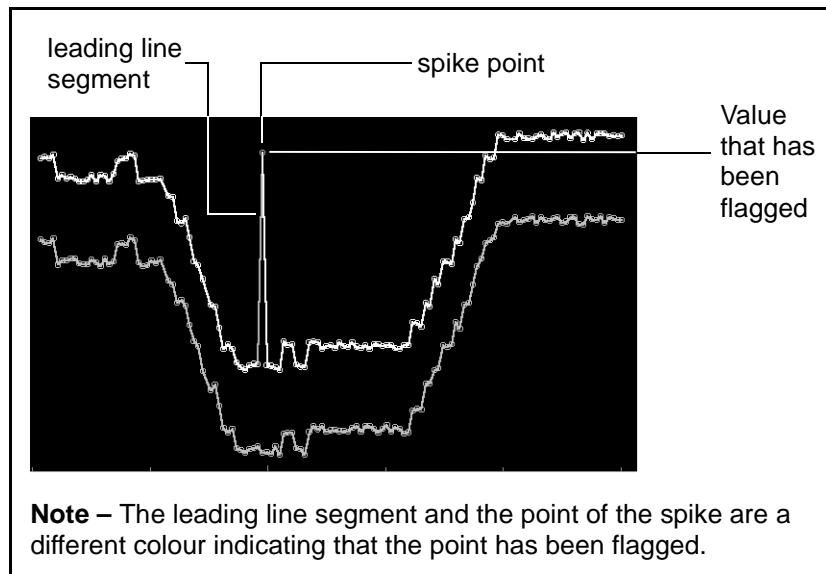


Figure 4-5 Flagged Values

To manually flag or un-flag a depth or heave data point:

1. Select the point in the Grid or Graph display.



Note – To flag or un-flag a point, toggle the *Show Flagged Points* command from the *View* menu.

2. From the *Edit* menu choose *Toggle Flag*.

Alternatively, press **Ctrl+F**, or click .


The depth or heave value is now assigned the flag symbol in the Grid and Graph displays. In the case of a value being un-flagged, the flag symbol is removed.

4.2.4 Viewing Flagged Data

Flagged data points can be displayed or hidden in both the Grid and Graph displays. When a depth or heave value is flagged, it is not used in the computation of reduced depth values. This occurs regardless of flagged points being displayed or hidden in the Grid and Graph displays.

To toggle flagged points on and off in the Grid and Graph displays:

- From the *View* menu choose *Show Flagged Points*.

Alternatively, click  or from the shortcut menu in the Graph display choose *Show Flagged Points*.

4.2.5 Recovering Original Data

No matter what changes have been made using the NavEdit software, you can always recover the original data. There are several ways to do this:

- Reversing edit actions
- Restoring values
- Resetting the database

Undo

Use the *Undo* command to reverse any of the following edit actions applied to depth or heave values:

- Textual edit
- Graphical edit
- Incremental edit
- Interpolation
- Flag
- Insert
- Batch process

You can *only* reverse the *last* edit action. The last edit action is indicated in parentheses next to the *Undo* command listed in the *Edit* menu. Once a new edit action is performed or another value is edited, the edit action is updated in the undo buffer.




Warning – If a new edit region is selected or the project is closed, then the edit action is cleared from the undo buffer.

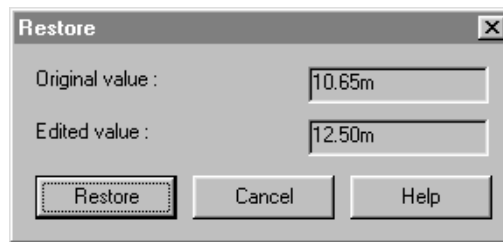
Restore

Use the *Restore* command to change an edited depth or heave value back to its original value. When a depth or heave value is edited, the new value is stored in the DELTA database. When a value is restored, the edited value is removed from the DELTA database and the original value that was logged in the Navigation project is displayed.

To restore a depth or heave value:

1. Highlight an edited depth or heave value in the Grid or Graph display.
2. From the *Edit* menu choose *Restore*. Alternatively, click  on the Depth Editor toolbar.

The following dialog appears:



3. Click **Restore** to change the value back to the original recorded value. Once a value is restored, the edited color scheme for that value is removed from the Grid display.



Note – You can only restore one edited depth or heave value at a time.

Any depth or heave data that has been inserted cannot be restored as the Navigation database does not contain the original value for this entry.

Reset Deltabase

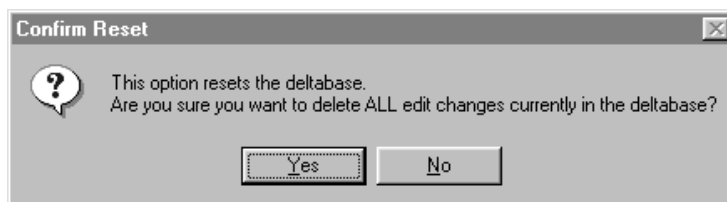
Use this command to globally remove *all* edit changes stored in the DELTA database. Resetting the DELTA database also removes all previous survey, vessel, echo sounder, heave, and tide selections. A confirmation dialog appears before the DELTA database is reset. Once the DELTA database is reset, the *Survey and Vessel Selection* dialog automatically appears.



Warning – Use this command with extreme caution. Once the DELTA database is reset, all previous edit changes made cannot be recovered.

To reset the DELTA database:

1. From the *File* menu choose *Reset Delta*. The following dialog appears:



2. Click **Yes** to reset the DELTA database.

The *Survey and Vessel Selection* dialog automatically appears.

4.2.6 Data Statistics

Use the *Statistics* command to view a statistical summary of all the data in the current edit region. The *Statistics* dialog details the start and stop time (and duration) of the edit region, as defined in the Thumbnail display. It also details the number of each data type that exists within the defined time range. This equates to the number of data records loaded in the Grid and Graph displays.

To view the edit region statistics:

1. From the *View* menu choose *Statistics*. The following dialog appears:



2. Click **OK** to close the dialog and continue editing.



Note – The start and stop times are displayed according to the time frame selected in the *Global Settings* dialog. The duration value is displayed according to the duration unit settings in the *Display Units* dialog.

4.2.7 Project Reports

A variety of reports can be generated when a Navigation project has been opened in the Depth Editor. Reports can be generated on a Project, Survey, or Vessel basis. The *Project Reports* command is available under the *View* menu as soon as a Navigation project has been in the Depth Editor.

All reports can be printed directly to a printer or saved to a text file. The *Save* command lets you specify the name and location of the file to be created. If the file already exists, you can either overwrite the existing file or append the report to the end of the text file.

Project Report

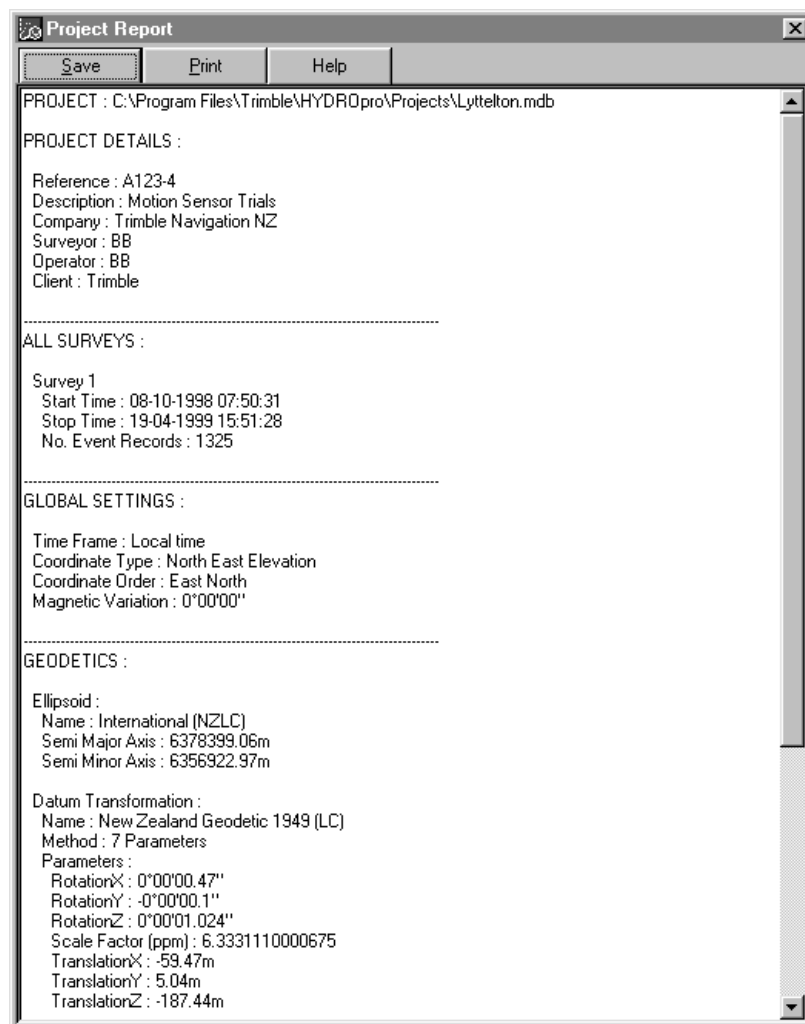
The Project report contains general information about the current Navigation project. The report extracts the following information from the Navigation project database:

- Project name and directory
- Project details
- List of all the surveys in the project (start/stop times, number of events recorded)
- Global settings
- Geodetics (ellipsoid, datum transformation, projection, geoid model)

To generate a Project report:

1. From the *View* menu choose *Project Reports / Project Report*.

The Project Report appears:



2. Print the report to a printer or save it to a text file.

Survey Report

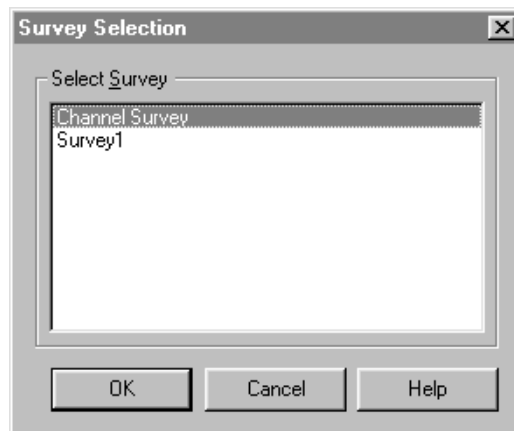
The Survey report contains configuration information for the selected survey. The start and stop times of the survey define what information is displayed in the report. The report extracts the following information from the Navigation project database:

- Project name and directory
- Start and stop times of the survey
- Vessels active during the survey
- Equipment configured on each vessel active during the survey
- Master services
- Vessel with steer-by associations during the survey
- List of all vessel offsets that have event positions during the survey
- Active event categories during the survey

To generate a Survey report:

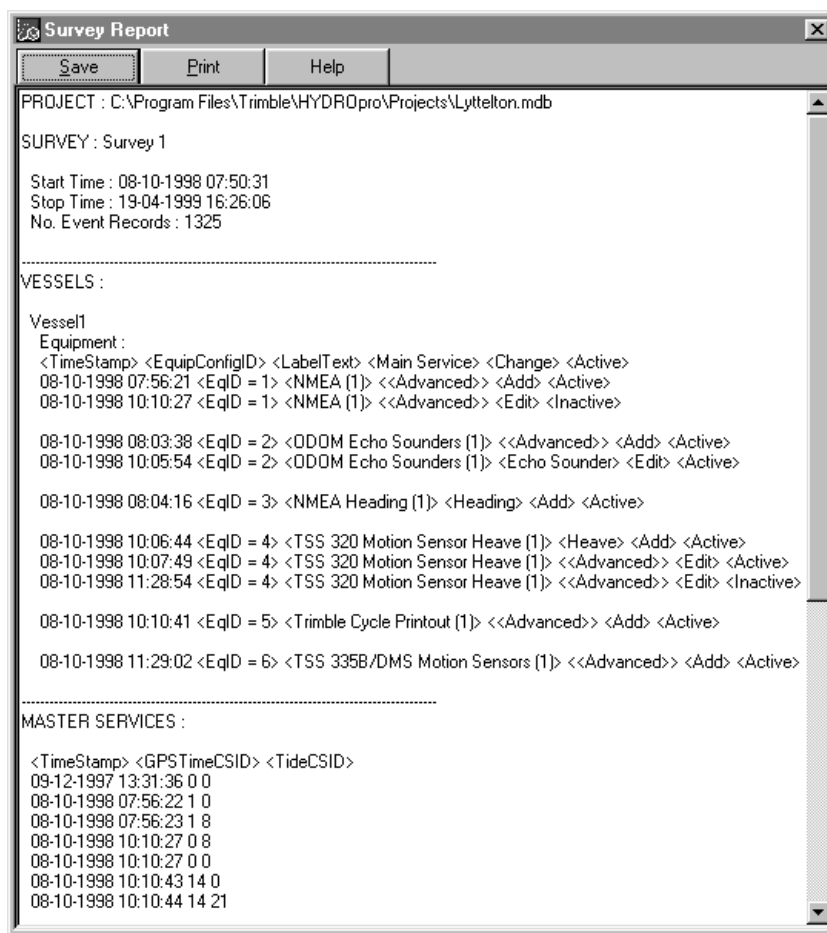
1. From the *View* menu choose *Project Reports / Survey Report*.

The *Survey Selection* dialog appears:



2. Select the required survey from the list. The list contains all the surveys that were configured in the project (in chronological order) and click **OK**.

The *Survey Report* dialog appears:



3. Print the report to a printer or save it to a text file.

Vessel Report

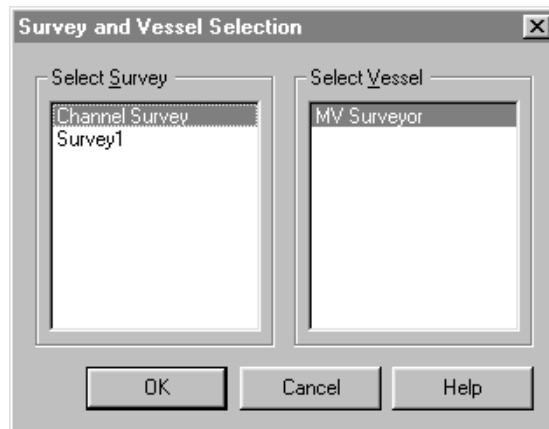
The Vessel report contains configuration and historical information that was logged for a specific vessel during a selected survey. The start and stop times of the selected survey define what information about the selected vessel is displayed in the report. The report extracts the following information from the Navigation project database:

- Project name and directory
- Survey
- Vessel history
- Equipment services configured on the vessel
- Equipment service properties
- List of all guidance objects observed by the vessel (via the steer-by associations)
- Vessel offset history
- Vessel dynamics history

To generate a Vessel report:

1. From the *View* menu choose *Project Reports / Vessel Report*.

The *Survey and Vessel Selection* dialog appears:



2. Select the required survey from the list. The list contains all the surveys that were configured in the project (in chronological order).
3. Select the required vessel from the list. The vessel list updates each time a survey is selected from the survey list and click **OK**.
The *Vessel Report* dialog appears.
4. Print the report to a printer or save it to a text file.

4.2.8 Batch Processing

Use the Batch Processor to analyze depth and heave data recorded in a Navigation project. Using the Batch Processor you can:

- identify depths above or below a depth range threshold
- identify depths below a minimum quality value
- identify depth spikes based on magnitude and time
- apply scale factor and vertical offset adjustments to depths within a defined depth range
- identify heave values above or below a range threshold
- identify heave values that are older than the maximum allowable age value

The Batch Processor ‘flags’ any depth and heave values that are identified as being outside the user-specified ranges. These flagged or identified depth or heave values are stored in the DELTA database. Once a depth or heave value has been flagged, you have the option of viewing and editing the value in the Grid and Graph displays later.



Note – The Batch Processor is only available when a valid Echo Sounder (and Heave) service has been selected in the *Service Selection* dialog. If no Heave service is available or has not been selected, the Batch Processor only allows the *Depth Filter*, *Spike Filter*, and *Depth Adjustments* options.

For information on the Batch Processor procedure, see Appendix C, Batch Processor.

At no time is data in the Navigation Project database altered in any way. Any edit changes are stored in the DELTA database with a time reference back to the original Navigation Project database.

User-defined rejection criteria, and the data they are to be applied to, are entered in the form of a wizard.

To use the Batch Processing wizard:

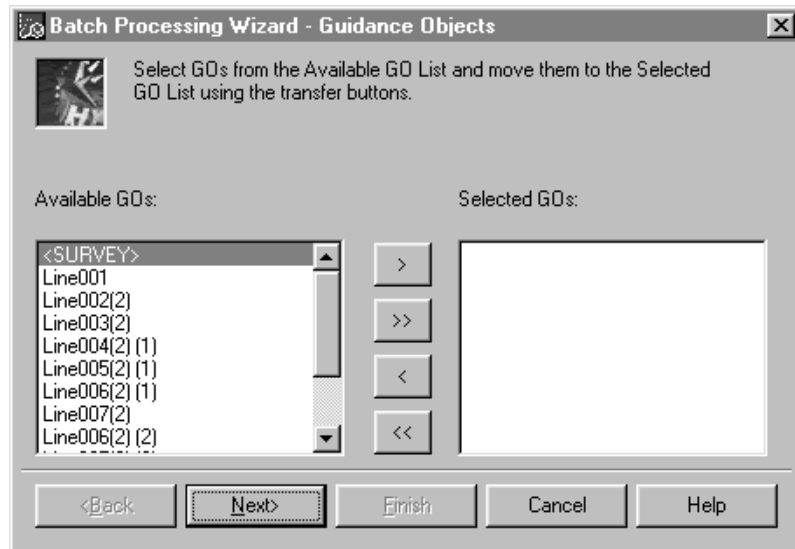
- From the *Edit* menu choose *Batch Process*.

Alternatively, press **Ctrl+B**.

The following is a description of each step in the Batch Processing wizard.

Step 1 – Guidance Object

The *Guidance Objects* dialog is the first dialog in the Batch Processing wizard. Use this dialog to select guidance objects (GOs) to process:




By selecting the required GOs, all the depth and heave values associated with the selected guidance objects are passed through the Batch Processor.

The *Available GOs* list contains all the GOs that the selected vessel observed during the survey. GO names are repeated in the list if there is more than one instance of the GO (as would be the case if you resurveyed the GO).






Note – The <SURVEY> GO selects all the data in the survey. You cannot select the <SURVEY> GO as well as another GO from the *Available* list. The *Selected* GOs list can contain either the <SURVEY> GO **or** all the other GOs in the list, but not both.

The *Selected* GOs list contains all the GOs you have selected. This list is empty when the dialog is first opened.

1. Select one or more guidance objects. To do this, highlight the required GO names in the *Available* GOs list and click .

The highlighted GO or GOs are moved to the *Selected* GOs list.



Tip – To move **all** the GOs from the *Available* GOs list to the *Selected* GOs list, click . To move a GO or GOs from the *Selected* GOs list back to the *Available* GOs list, click  or .

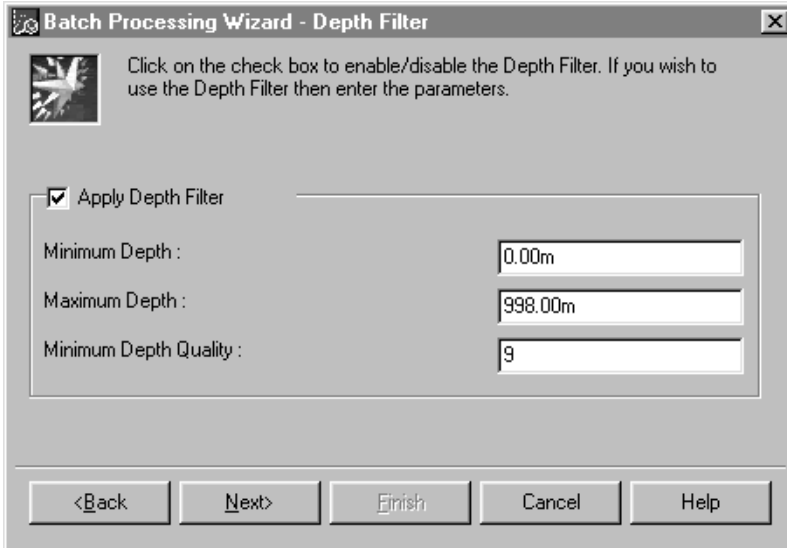


Tip – Press **[Shift]** or **[Ctrl]** to select multiple files.

2. Click **Next>** to move to the next step of the Batch Processing wizard.

Step 2 – Depth Filter

The *Depth Filter* dialog provides you with the ability to identify depths that lie outside a specified depth range or depth quality:



The screenshot shows a dialog box titled "Batch Processing Wizard - Depth Filter". It contains a small icon of a depth gauge and a text instruction: "Click on the check box to enable/disable the Depth Filter. If you wish to use the Depth Filter then enter the parameters." Below this, there is a checked checkbox labeled "Apply Depth Filter". To the right of the checkbox are three input fields: "Minimum Depth :" with the value "0.00m", "Maximum Depth :" with the value "998.00m", and "Minimum Depth Quality :" with the value "9". At the bottom of the dialog are five buttons: "<Back", "Next>", "Finish", "Cancel", and "Help".

1. If you want the Depth filter to be applied to the selected depth data, select the *Apply Depth Filter* check box.
2. In the *Minimum Depth* field, enter a value for the minimum depth.

Any depth value encountered that is shallower than this depth value is flagged in the DELTA database.

3. In the *Maximum Depth* field, enter a value for the maximum depth.

Any depth value encountered that is deeper than this depth value is flagged in the DELTA database.

4. In the *Maximum Depth Quality* field, enter a value for the minimum depth quality value.

Any depth that has an associated quality value less than the entered value is flagged in the DELTA database.



Note – Not all Echo Sounder devices output a depth quality value. If no quality indicator is present in the output data packet from the echo sounder device, leave the default setting as 9.

5. Click **Next>** to move to the next step of the Batch Processing wizard.

Step 3 – Spike Filter

The *Spike Filter* dialog provides you with the ability to identify depth spikes based on a spike magnitude over a defined time period:

The screenshot shows a dialog box titled "Batch Processing Wizard - Spike Filter". It contains a small icon of a starburst and a text box with the instruction: "Click on the check box to enable/disable the Spike Filter. If you wish to use the Spike Filter then enter the parameters." Below this is a checkbox labeled "Apply Spike Filter" which is checked. To the right of the checkbox are two input fields: "Spike Magnitude :" with the value "0.00m" and "Spike Duration :" with the value "0.00s". At the bottom of the dialog are five buttons: "<Back", "Next>" (which is highlighted with a dashed border), "Finish", "Cancel", and "Help".

1. If you want the Spike filter to be applied to the selected depth data, select the *Apply Spike Filter* check box.

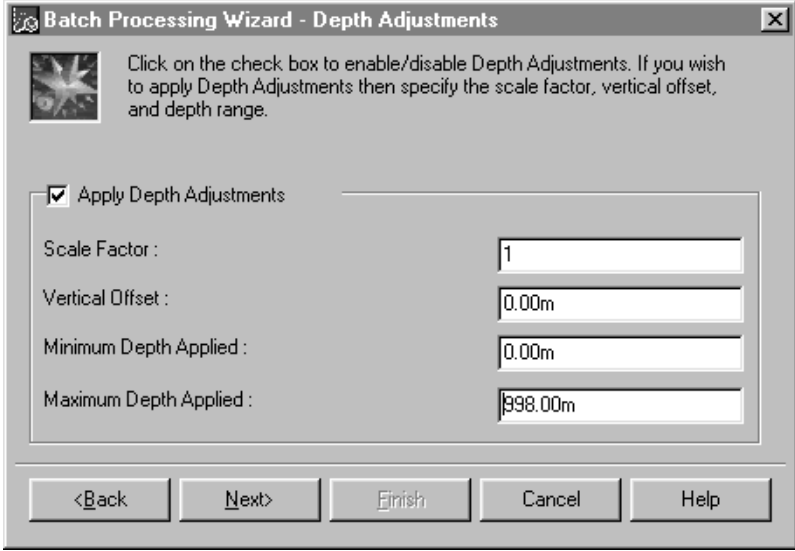
2. In the *Spike Magnitude* field, enter a value for the spike magnitude.

Any depth spike that is encountered that exceeds this spike magnitude value and occurs within the spike duration value is flagged in the DELTA database.
3. In the *Spike Duration* field, enter a value for the spike duration.

Any depth spike that is encountered that exceeds the spike magnitude value and occurs within this duration value is flagged in the DELTA database.
4. Click **Next>** to move to the next step of the Batch Processing Wizard.

Step 4 – Depth Adjustments

The *Depth Adjustments* dialog provides you with the ability to apply adjustments to depth values in the form of a scale factor and a vertical offset. The adjustments can be applied to depth values within a certain depth range:



The screenshot shows a dialog box titled "Batch Processing Wizard - Depth Adjustments". It contains a checkbox labeled "Apply Depth Adjustments" which is checked. Below this are four input fields: "Scale Factor" with a value of "1", "Vertical Offset" with a value of "0.00m", "Minimum Depth Applied" with a value of "0.00m", and "Maximum Depth Applied" with a value of "998.00m". At the bottom are five buttons: "<Back", "Next>", "Finish", "Cancel", and "Help".

Batch Processing Wizard - Depth Adjustments

Click on the check box to enable/disable Depth Adjustments. If you wish to apply Depth Adjustments then specify the scale factor, vertical offset, and depth range.

☒ Apply Depth Adjustments

Scale Factor : 1

Vertical Offset : 0.00m

Minimum Depth Applied : 0.00m

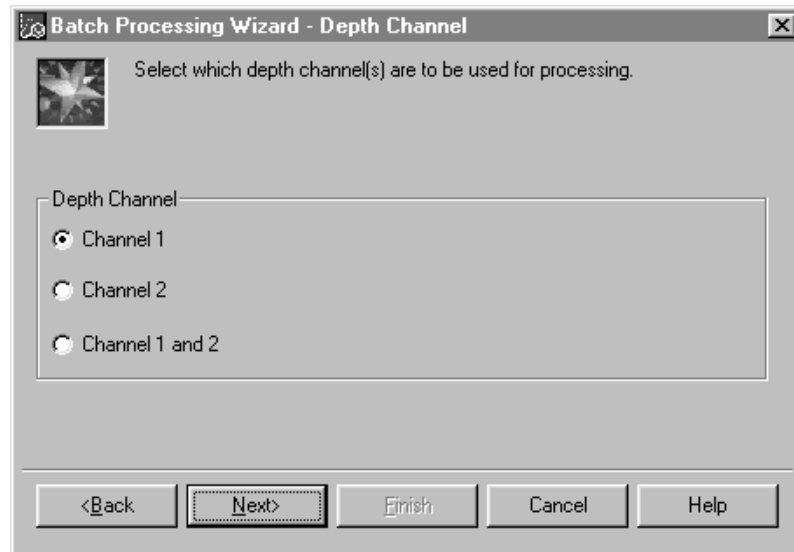
Maximum Depth Applied : 998.00m

<Back Next> Finish Cancel Help

1. If you want the adjustments to be applied to the selected depth data, select the *Apply Depth Adjustments* check box.
2. In the *Scale Factor* field, enter a value for the scale factor.
The scale factor value is applied to all selected depth values. The new depth value is stored in the DELTA database.
3. In the *Vertical Offset* field, enter a value for the vertical offset.
The vertical offset is applied to all selected depth values. The new depth value is stored in the DELTA database.
4. In the *Minimum Depth Applied* field, enter a value for the minimum depth.
The scale factor and vertical offset adjustments are only applied if the depth value is greater than the minimum depth, but less than the maximum depth.
5. In the *Maximum Depth Applied* field, enter a value for the maximum depth.
The scale factor and vertical offset adjustments are only applied if the depth value is greater than the minimum depth but less than the maximum depth.
6. Click **Next>** to move to the next step of the Batch Processing wizard.

Step 5 – Depth Channel

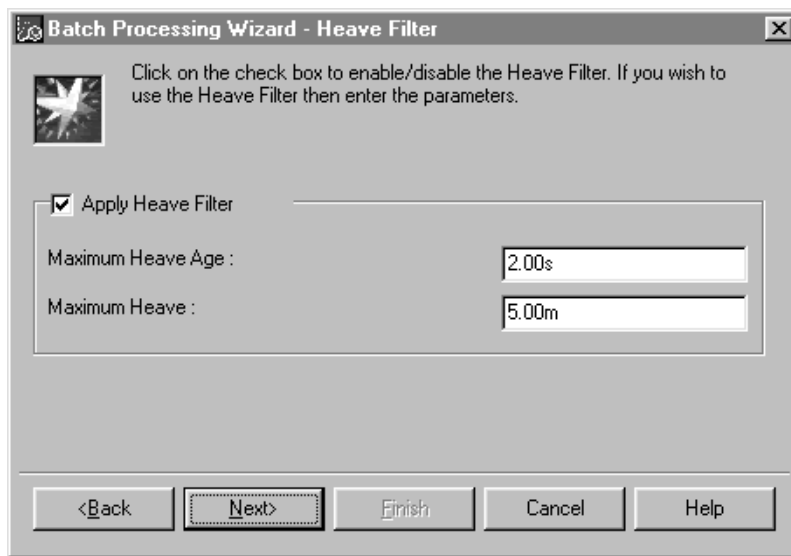
Use the *Depth Channel* dialog to select which depth channel the Batch Processing will be applied to. The options available for selection depend on whether the configured Echo Sounder service is single or dual frequency (that is, 1 or 2 channels):



1. Select the depth channel to which the Batch Processing will be applied.
If the selected Echo Sounder service only has one channel, the *Channel 2* and *Channel 1 and 2* options are not available.
2. Click **Next>** to move to the next step of the Batch Processing wizard.

Step 6 – Heave Filter

The *Heave Filter* dialog provides you with the ability to identify heave values that lie outside a specified tolerance range. It also lets you identify those depth values that do not have an associated heave value within an acceptable age limit:



Note – This dialog is not available if no heave was selected in the *Service Selection* dialog.

1. If you want the Heave filter to be applied to the selected heave data, select the *Apply Heave Filter* check box.
2. In the *Maximum Heave Age* field, enter a value for the maximum heave age.

For every depth value, the Batch Processor identifies the closest associated heave value. If the time difference between the depth value and the closest heave value exceeds the maximum age value, the depth and heave values are flagged in the DELTA database.

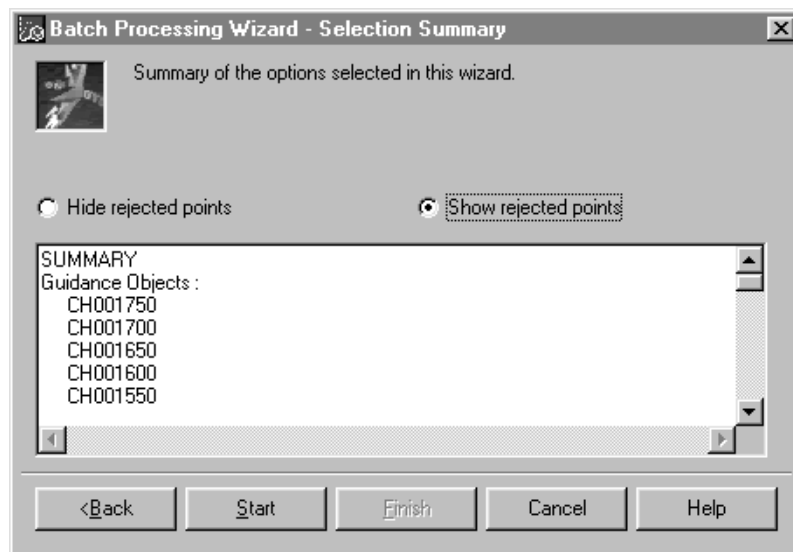
3. In the *Maximum Heave* field, enter a value for the maximum heave.

Any heave value encountered that exceeds the maximum heave value (both positive and negative) is flagged in the DELTA database. Flagged heave values are not used in the *Maximum Heave Age* filter.

4. Click **Next>** to move to the next step of the Batch Processing wizard.

Step 7 – Selection Summary

The *Selection Summary* dialog provides you with a summary of the options you have selected in the Batch Processing wizard:



1. Click **<Back** to go back through the Batch Processing wizard to make any changes.

2. Select the *Hide rejected points* or *Show rejected points* option.

If the *Hide rejected points* option is selected, any depth and heave values that are flagged during the Batch Processing are not displayed on the Grid and Graph displays once the Batch Processing is completed.

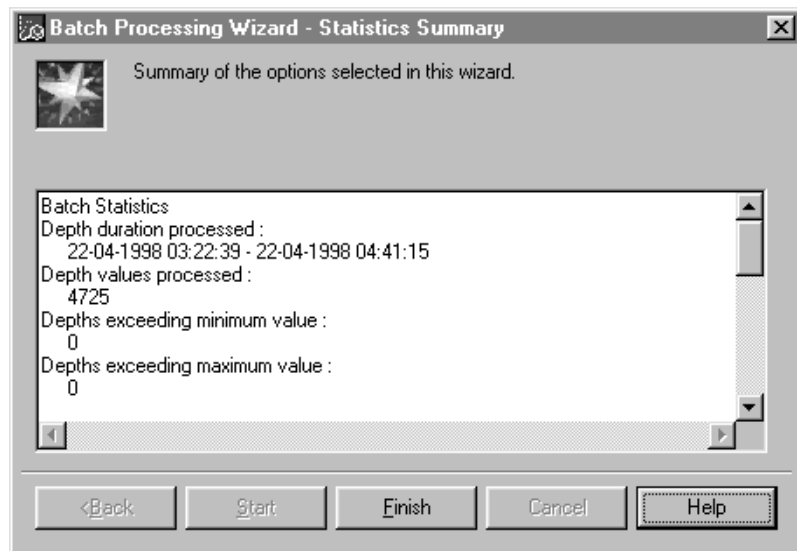
If the *Show rejected points* option is selected, all the flagged depth and heave values are displayed in a different color and symbol style in the Graph display.

3. Click **Next>** to start the Batch Processor.

A status dialog appears while the Batch Processor is running. Once processing is complete, the *Batch Processing Wizard – Statistics Summary* dialog appears.

Step 8 – Statistical Summary

The *Statistics Summary* dialog provides you with a summary of all the depth and heave points that were checked by the Batch Processor:



The summary includes:

- Total number of depths checked (channel 1 and 2)
- Total number of heave values checked
- Number of depths flagged above minimum depth
- Number of depths flagged below maximum depth
- Number of depths flagged below minimum depth quality
- Number of depths flagged as spikes
- Number of heave values flagged as exceeding maximum heave value
- Number of depths flagged due to closest heave exceeds maximum age
- Number of depths flagged outside tide range

Click **Finish** to accept the results from the Batch Processing wizard.

If you are not happy with the results or want to change certain filter values, run the Batch Processing wizard again.

4.2.9 Exporting Data

Use the *Export* menu to create data files that can be imported into the Processing software. The *Export* menu also contains options for creating ASCII files of varying formats and HYDRO Runline files (*.hsr) that can also be imported into the Processing software.

The *Export* menu contains two commands, *Export Parameters* and *Generate*. The *Export Parameters* command is used to select what data you want to export by providing various selection criteria. The options include:

- Data type
- Data interval
- Reduced level calculation method
- Depth type
- Depth channel
- Depth quality range
- Depth range
- Position range
- Custom

The *Generate* command is a wizard that is used to create the export file. It uses the options set in *Export Parameters* to control what data is exported. The options include:

- Vessel offset
- File type
- Data selection method
- Filename and location



Note – The Export routine will not use ‘flagged’ depth or heave values during the creation of an export file.

The Export routine is responsible for:

- Interpolating positions for each selected depth value
- Interpolating depths for each selected event position
- Reducing depth for heave and or tide (if selected)



Note – The *Export* menu is available as soon as a Navigation project has been opened. The commands available in the *Export* menu depend on the survey, vessel, and services selected:

Open Project – export guidance objects via HYDRO Runline File format only.

Select Survey and Vessel – export any vessel offset that has been recorded. Depths exported as zero.

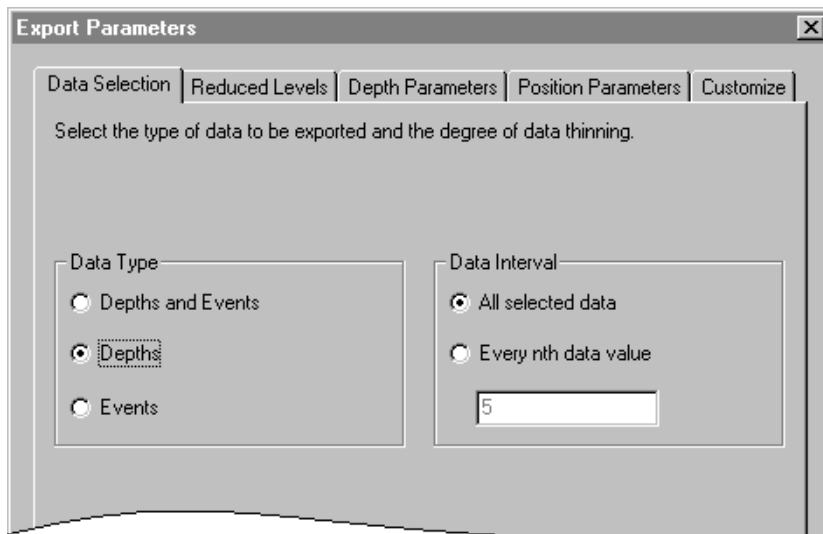
Select Echo Sounder – export raw or cleaned depths. Tide and heave exported as zero.

Export Parameters

To create an export file, you must first set the parameters that control what data will be exported. From the *Export* menu choose *Export Parameters*. The *Export Parameters* dialog appears.

Data Selection Tab

Use the *Data Selection* tab to select the data type and ‘thin’ the data:



1. Select one of the options in the *Data Type* group.

Use this option

To ...

Depths and Events

select depth and event data values

Depths

select depth data values only

Events

select event data values only

2. Select one of the options in the *Data Interval* group.

Use this option

To ...

All selected data

select all values of the data type selected previously

Every nth data value

select every n^{th} value of the data type selected.

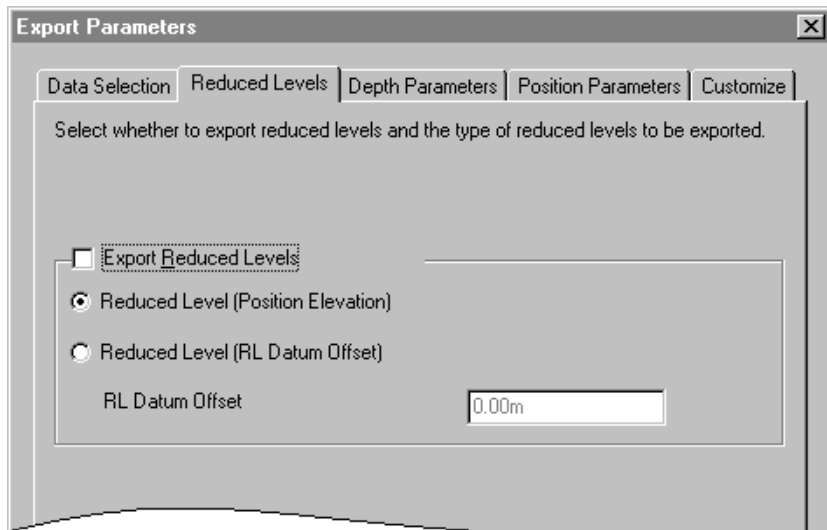
Type a value for ‘n’ in the field provided.

3. Click **OK**.

For example, if you select the *Depths* option in the *Data Type* group and set the *Every nth data value* in the *Data Interval* group to 5, then every fifth depth point is exported.

Reduced Levels Tab

Use the *Reduced Levels* tab to export depths as reduced levels:



There are two reduced level options available:

- *Reduced Level (Position Elevation)*

Select this option to export cleaned depths as reduced levels. Reduced levels are calculated by subtracting the cleaned depth value from the elevation of the echo sounder offset. You should only use this option if the heights of the primary positioning device is of a suitable accuracy. For example, heights from a real-time kinematic (RTK) GPS positioning system are suitable.

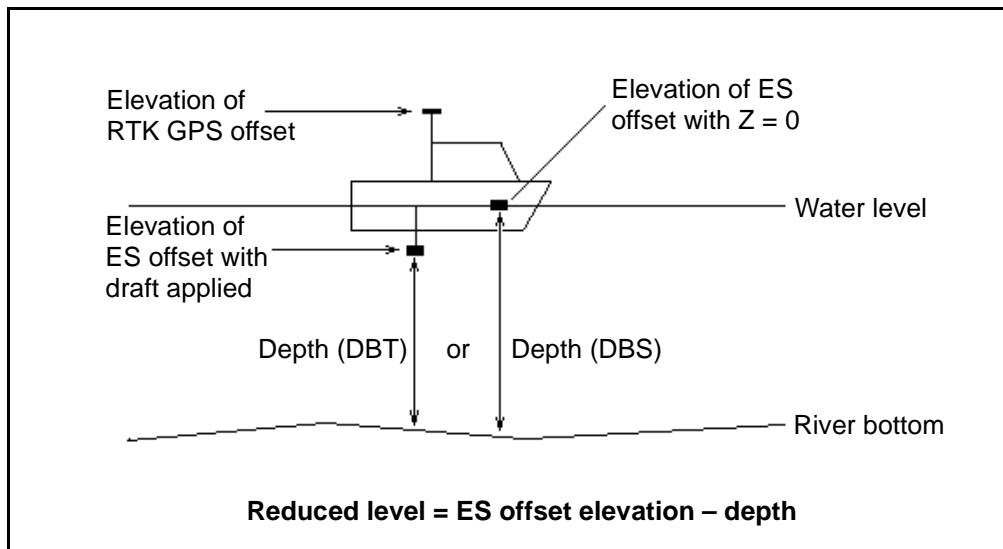


Figure 4-6 Illustration of Reduced Level Derived From Position Elevation

- *Reduced Level (RL Datum Offset)*

Select this option to export raw, cleaned, or reduced depths as reduced levels. Reduced levels are calculated by subtracting the depth from the Reduced Level datum offset value (user-defined). The Reduced Level datum offset could be the height of the water surface above the local datum, or it could be the height of the zero mark on the tide gauge above (or below) the local datum. If reduced depths are selected for exporting then tide and heave corrects will be applied (if available).

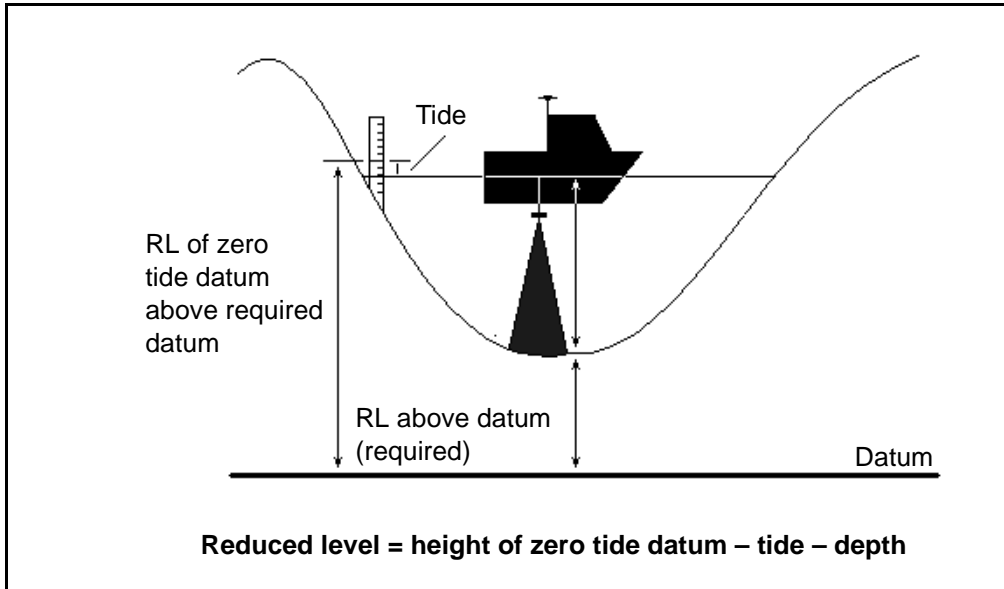


Figure 4-7 Illustration of Reduced Level Derived From Reduced Level Datum Offset

1. Select the *Export Reduced Levels* check box to generate reduced level values.
2. Select the *Reduced Level (Position Elevation)* or *Reduced Level (RL Datum Offset)* option.
3. If the *Reduced Level (RL Datum Offset)* option is selected, enter a value in the *RL Datum Offset* field.



Note – When you select the *Export Reduced Levels* check box, the *Depth Sign* group options in the *Customise* tab are disabled.

When the *Reduced Level (Position Elevation)* option is selected, all the *Depth Type* group options in the *Depth Parameters* tab are disabled except for the *Cleaned Depth* option.

When the *Reduced Level (RL Datum Offset)* option is selected, all the *Depth Type* group options in the *Depth Parameters* tab are available except for *No Depth*.

Depth Parameters Tab

Use the *Depth Parameters* tab to select the type of depth values to be exported and the depth channel that it originates from. Also use this dialog to restrict the depth values that are exported. Restrictions are based on depth range and depth quality:

1. Select one of options in the *Depth Type* group.

Use this option To ...

No Depth

not include depths in the export file. All the remaining options in this tab are dimmed. Selecting this option creates an export file with positions and zero depths.

Use this option	To ...
<i>Raw Depth</i>	extract depths that have been recorded in the Navigation project database. Depths have not been cleaned, edited, or reduced.
<i>Cleaned Depth</i>	extract depths from both the Navigation project database and the DELTA file. Depths have been edited manually or by the Batch Processor. Depths are not reduced for heave or tide.
<i>Reduced Depth</i>	export depths that have cleaned, edited, and reduced. Depths are reduced for heave and or tide, depending on the services selected in the <i>Service Selection</i> dialog.

2. Select one of the options in the *Depth Channel* group.

Use this option	To ...
<i>Channel 1</i>	export Channel 1 depths.
<i>Channel 2</i>	export Channel 2 depths.
<i>Average</i>	export the average depth value between Channel 1 and Channel 2.

3. In the *Quality Range* fields, enter the minimum and maximum values.



Note – Some echo sounders output a quality value with every depth value. If no quality value is available, the Navigation software records the quality as zero (0). If quality is available, you can use these fields to specify the minimum and maximum quality value for acceptable depth values. Depths outside this range are **not** exported.

4. In the *Depth Range* fields, enter the minimum and maximum values.



Note – Use these fields to enter a minimum and maximum depth. Depth values outside this range are **not** exported.

Position Parameters tab

Use the *Position Parameters* tab to restrict values that are exported based on their position:

The screenshot shows the 'Export Parameters' dialog box with the 'Position Parameters' tab selected. The dialog has a title bar with a close button. Below the title bar are five tabs: 'Data Selection', 'Reduced Levels', 'Depth Parameters', 'Position Parameters', and 'Customize'. The 'Position Parameters' tab is active, displaying the text: 'Enter the minimum and maximum range limits for position values to be exported.' Below this text is a table with two columns: 'Minimum' and 'Maximum'. There are two rows: 'Easting Range' and 'Northing Range'. Each row has two text input fields, one for the minimum and one for the maximum value. The minimum values are '-99999998.00m' and the maximum values are '99999998.00m'.

	Minimum	Maximum
Easting Range	-99999998.00m	99999998.00m
Northing Range	-99999998.00m	99999998.00m

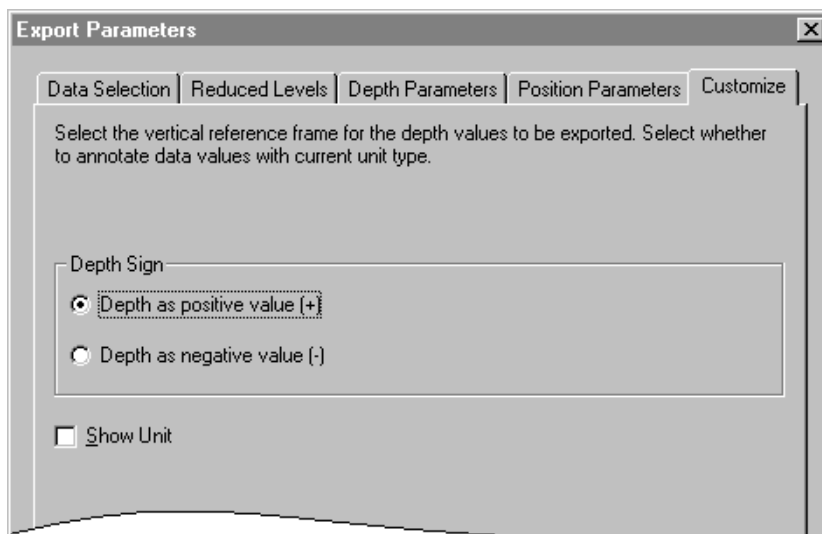
1. In the *Easting Range* fields, enter the minimum and maximum values.
2. In the *Northing Range* fields, enter the minimum and maximum values.



Note – Values with positions that are outside the range limits are **not** exported.

Customize Tab

Use the *Customize* tab to change the vertical reference frame for depth values:



1. Select the *Depth as positive value (+)* or *Depth as negative value (-)* option.

By default, depth values are exported as positive values. Using this option, depths can be exported as elevations or heights (positive up). This means that depths are exported as negative values. This option only applies to the ASCII file formats, *not* the Transfer File format.

2. Select the *Show Unit* check box if you want to append the unit type to values in the export file.

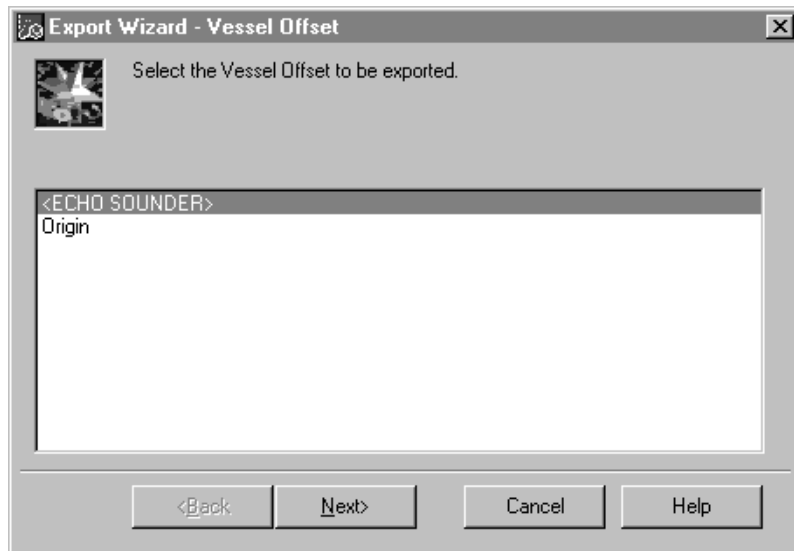
This applies to all file formats except for Transfer File, CARIS file, and HYDRO Runline file formats.

Export Wizard

The next step in generating an export file is to define the file type and the range of data to be exported. From the *Export* menu choose *Generate*. The first dialog of the Export wizard appears.

Step 1 – Vessel Offset

The *Vessel Offset* dialog is the first dialog in the Export wizard:

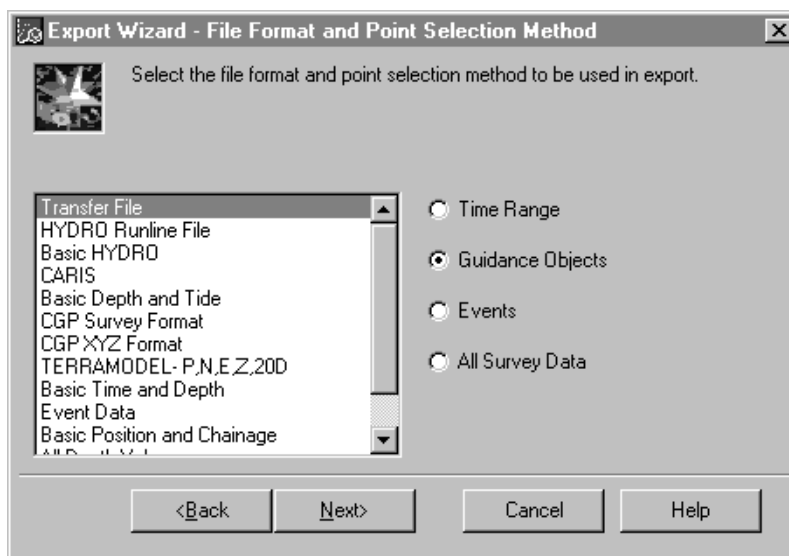


The vessel offset list contains all those offsets that were logged in the event position table. The <ECHO SOUNDER> offset always appears as the first item in the list if an echo sounder service has been selected in the *Service Selection* dialog. To export depth data, you **must** select the <ECHO SOUNDER> offset. Select any other offset if you want to export position (easting, northing) information only.

- Select the <ECHO SOUNDER> offset and click **Next >**.

Step 2 – File Format and Point Selection Method

Select the file format to be generated. The list contains several third party software processing data formats. For the purpose of this Quick Tour, we will select the *Transfer File* format. This format is used to transfer data into HYDROpro Processing:



1. In the file format list, select **Transfer File**.

For a detailed list of the available export formats see Appendix B, Export File Formats.

2. Select one of the point selection methods:

Use this option To select ...

Time Range data by defining a start and stop time.

Guidance Objects data on a GO-by-GO basis.

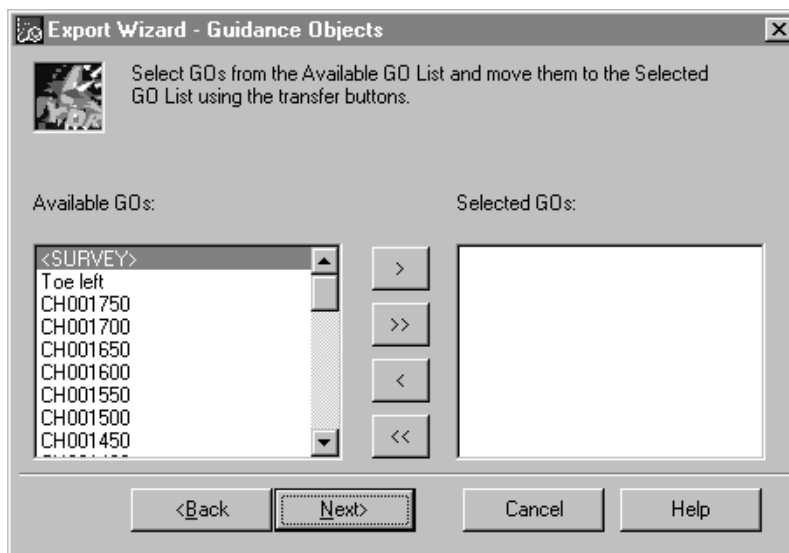
Events data by defining the start and end events.

All Survey Data all data between the first and last events in the survey.

3. Click **Next>**.

Step 3 – Guidance Objects

Use the *Guidance Objects* dialog to select what GOs are used to create the export file:




By selecting the required GOs, all the depth and event values associated with the selected guidance objects are made available when the export file is created.

The *Available GOs* list contains all the GOs that the selected vessel observed during the survey. GO names are repeated in the list if there is more than one instance of the GO (as would be the case if you re-surveyed the GO).

The *Selected GOs* list contains all the GOs you have selected. This list is empty when the dialog is first opened.






Note – The <SURVEY> GO selects all the data in the survey. You cannot select the <SURVEY> GO as well as another GO from the *Available* list. The *Selected GOs* list can contain either the <SURVEY> GO **or** all the other GOs in the list, but not both.

1. Select one or more guidance objects. To do this, highlight the required GO names in the *Available GOs* list and click .

The highlighted GO or GOs are moved to the *Selected GOs* list.



Tip – To move **all** the GOs from the *Available GOs* list to the *Selected GOs* list, click . To move a GO or GOs from the *Selected GOs* list back to the *Available GOs* list, click  or .

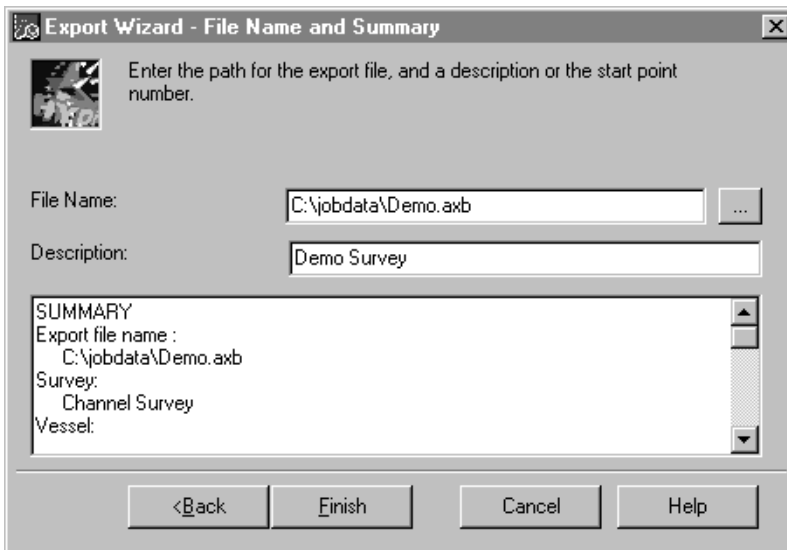


Tip – Press **[Shift]** or **[Ctrl]** to select multiple files.

2. Click **Next>**.


Step 4 – File Name and Summary

Use this dialog to enter the name of the export file to be created and to check the options set in the *Export Parameters* dialog:



The dialog box is titled "Export Wizard - File Name and Summary". It contains a text area for a description, two text input fields for "File Name" and "Description", a "SUMMARY" section with a list of details, and four buttons at the bottom: "<Back", "Finish", "Cancel", and "Help".

Enter the path for the export file, and a description or the start point number.

File Name: 

Description:

SUMMARY

Export file name :
C:\jobdata\Demo.axb

Survey:
Channel Survey

Vessel:

<Back Finish Cancel Help

1. In the *File Name* field, enter the directory and file name for the export file to be created.



Note – Do not enter a file extension if you have selected the Transfer File, HYDRO Runline File, or CARIS file formats. These formats are automatically appended with the correct extension (*.axb, *.hsr, and *.xyz respectively).

By default, all NavEdit export files are created in the c:\Jobdata directory.

2. In the *Description* field, enter a description for the file (a maximum 32 characters).

If the Transfer File format is selected, the description is displayed in the Processing software to help you identify the file.

3. Use the vertical scroll bar in the summary box to check all of your selections and entries.
4. Click **<Back** to go back through the Export wizard to make any changes.
5. Click **Finish** to generate the export file.

Once completed, you can import the file into the Processing software.

4.3 The Tide Editor

The main function of the Tide Editor is to create files containing tidal data for a specific location (for example, a tide gauge). The Depth Editor then uses the tide data to ‘reduce’ the depth data to the local chart datum. Tide data can only be used in the Depth Editor if it has been created as a Tide file first in the Tide Editor.

You can manually enter tide data or import data from ASCII files or from a Navigation project.

Two Tide files can be opened at the same time in the Tide Editor. Each tide profile is displayed in the Graph display while the tide data for each file is displayed in different tabs in the Grid display. Tide editing actions (edit, insert, add, import, and export) are applied to the active Tide file only. The tab in the Grid display that is currently displayed (in front) indicates the active Tide file. The status bar always displays information for the active Tide file.

In this section you will learn about:

- Creating a new Tide file
- Editing tide data
- Importing tide data
- Exporting tide data

4.3.1 Creating a New Tide File

A Tide file contains header information relating to the tide gauge location as well as the tidal observations. This section explains how to create and save a new Tide file and how to open an existing Tide file.

To create a new Tide file:

1. From the *File* menu choose *New Tide File*. Alternatively, click

A screenshot of the 'Tide File Header' dialog box. It has a title bar with a close button. Inside, there are five text input fields: 'Tide Gauge' (containing 'Tide Gauge Name'), 'Datum' (containing 'Mean Sea Level'), 'East' (containing '0.000'), 'North' (containing '0.000'), and 'UTC Offset' (containing '+12:00:00'). At the bottom are three buttons: 'OK', 'Cancel', and 'Help'.

2. In the *Tide Gauge* field, enter the name for the new tide gauge.
3. In the *Datum* field, enter the name of the datum that the tide gauge is referenced to.
This field is not used by NavEdit and is for information only.
4. In the *East* field, enter the Easting position value for the tide gauge.
5. In the *North* field, enter the Northing position value for the tide gauge.



Note – The tide gauge position information is only used when two Tide files are selected in the *Service Selection* dialog in the Depth Editor. The position of the tide gauge is required when determining the tidal correction for a depth when the tidal value is based on observations from two tide gauges.

6. In the *UTC Offset* field enter a UTC offset for the Time Zone which the tide data is relevant to.

A minus sign prefixing the time indicates time zones west of Greenwich.



Note – The values entered in the *North* and *East* fields are utilized by the Depth Editor for tide interpolation. The NavEdit software allows multiple Tide files to be used in the reduction of depth data.

7. Click **OK**.

The *Edit Parameters* dialog appears:

The screenshot shows a standard Windows-style dialog box titled "Edit Parameters". It has a close button (X) in the top right corner. The dialog contains three labeled text input fields: "Insert Date" with the text "13/08/98", "Start Time" with the text "00:00:00", and "Time Increment" with the text "00:15:00". At the bottom of the dialog, there are three buttons: "OK", "Cancel", and "Help".

Use the *Edit Parameters* dialog to specify the start date timing parameters for the tide data to be entered.

8. In the *Insert Date* field, enter the start date.
9. Remember to enter the day, month, and year values consistent with the format in the Regional Settings for your computer. The default date is the current date.

If you are not sure what the Regional Settings are, select *Start/Settings/Control Panel* and double-click *Regional Settings*. Select the *Date* tab to view the date style, and edit if required.

10. In the *Start Time* field, enter the start time for the first tide value.

The default start time is 00:00:00 (midnight).

11. In the *Time Increment* field, enter the tide increment.

The default value is 15 minutes. This value is used to determine the time stamp of each new tide value that is either added or inserted into the file.

12. Click **OK**.

Now that the Tide file has been created, you can add or insert new values or import tide data from an ASCII file or existing Navigation project. For more information see *Editing Tide Data*, page 4-82.

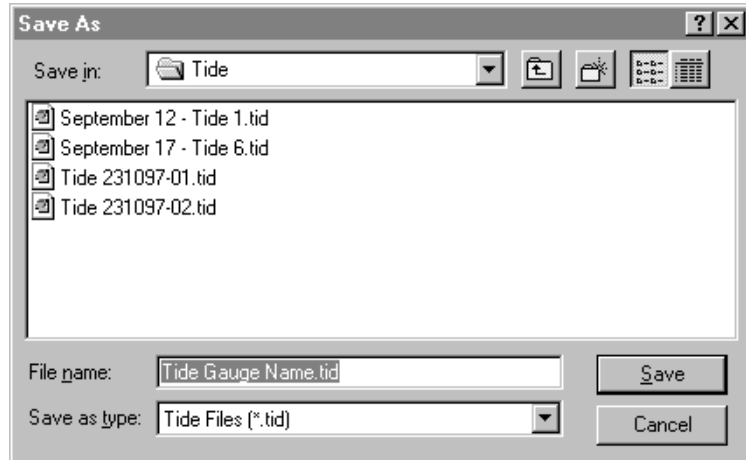


Note – You can change the parameters in the *Tide File Header* and *Edit Parameters* dialogs at any time. Access these dialogs from the *Configure* menu.

Saving the Tide File

To save a Tide file:


1. From the *File* menu choose *Save As*:

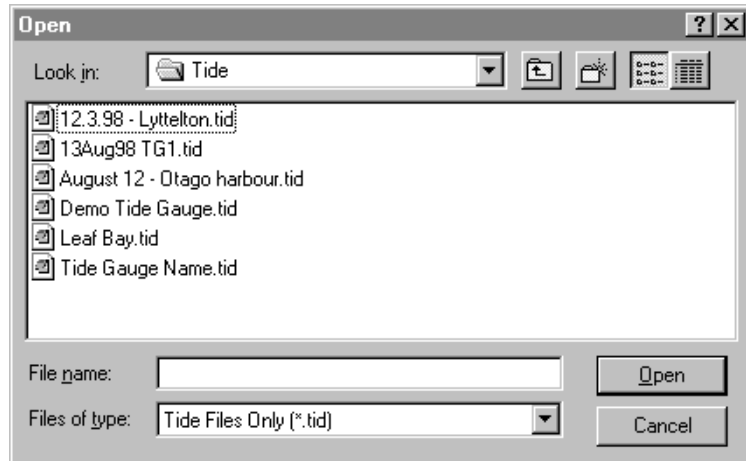


2. In the *Save in* field, select the folder to store the Tide file.
The default path is C:\Program Files\Trimble\HYDROpro\Tide.
3. In the *File name* field, enter the name of the Tide file to be saved.
This name does not have to be the same as the tide gauge name entered in the *Tide File Header* dialog.
4. In the *Save as type* field, make sure that Tide Files (*.tid) is displayed.
All Tide files saved are suffixed with the file extension .tid to indicate that they are Tide files.
5. Click **Save**.

Opening a Tide File

To open a Tide file:

1. From the *File* menu choose *Open*. Alternatively, click  :



2. In the *Look in* field, select the folder where the required Tide file is located.

The default directory is C:\Program Files\Trimble\HYDROpro\Tide.

Alternatively, in the *File name* field, enter the path and file name of the Tide file.

3. Make sure that the *Files of type* field is set to Tide Files Only (*.tid).
4. Click **Open** to load the selected Tide file into the Graph and Grid displays in the Tide Editor.


4.3.2 Editing Tide Data

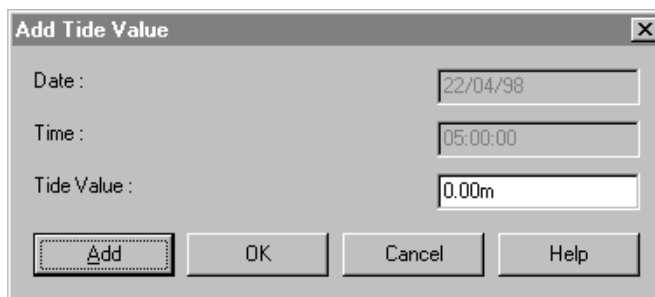
Once a new or existing Tide file has been opened, you can add, insert or delete tide data records. All tide data values are stored in the binary Tide file in UTC time. If the tide value is entered in local time (see the *Global Settings* dialog on page 4-26), the time stamp you entered is converted to UTC time using the UTC Offset value entered in the *Tide File Header* dialog. When entering or editing tide values, remember to check the time frame set in the *Global Settings* dialog and the UTC Offset entered for the Tide file.

Add Tide Value

Use the *Add* command to add new tide values to the end of the file. The *Add* command uses the last time value in the file and the increment value entered in the *Tide File Header* dialog to determine the time stamp for each new tide value.

To add tide data:

1. From the *Edit* menu choose *Add*. Alternatively, click  :



The image shows a dialog box titled "Add Tide Value". It contains three input fields: "Date :" with the value "22/04/98", "Time :" with the value "05:00:00", and "Tide Value :" with the value "0.00m". At the bottom, there are four buttons: "Add", "OK", "Cancel", and "Help". The "Add" button is highlighted with a dashed border.

2. In the *Tide Value* field, enter the tide value.

The units for tide are set in the *Display Units* dialog.


The *Date* and *Time* fields cannot be edited as these were previously entered in the *Edit Parameters* dialog.

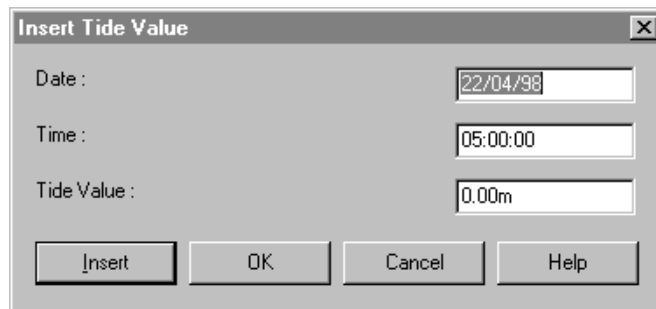
3. Click **Add** to store the current tide value.
The tide value is displayed in the Grid and Graph displays. The *Date* and *Time* fields will increment by the value defined in the *Edit Parameters* dialog.
4. Click **Add** to add multiple tide values.
5. Click **OK** to store the current tide value and return to the main display.

Insert Tide Value

Use the *Insert* command to insert new tide values to the Tide file. The *Insert* command lets you define the date and time of the value to be entered.

To insert new tide values:

1. From the *Edit* menu choose *Insert*. Alternatively, click  :



The dialog box titled "Insert Tide Value" contains three input fields: "Date :" with the value "22/04/98", "Time :" with the value "05:00:00", and "Tide Value :" with the value "0.00m". At the bottom, there are four buttons: "Insert", "OK", "Cancel", and "Help".

2. In the *Date* field, enter the local date.
3. In the *Time* field, enter the local time for the point to be inserted.
4. In the *Tide Value* field, enter the required tide value.
5. Click **Insert** to store the current tide value. The Tide value is displayed in the Graph and Grid displays. The *Date* and *Time* fields increment by the value defined in the *Edit Parameters* dialog. However, you can edit the date and time values as required. Click **Insert** to insert multiple tide values.
6. Click **OK** to store the current tide values and return to the main display.

Edit Tide Value

The date, time, and tide value for each tide record can be edited in the Grid display.

To edit a tide record:

1. Select the required value in the Grid display (date, time, or tide).
2. Double-click the left mouse button on the required cell. An edit dialog appears in the cell.
3. Type in the new value and press **Enter**.



Note – A warning message appears if you try to enter a time that already exists.

Delete Tide Value

Tide values can be deleted from the Tide file. Once deleted they cannot be recovered.

To delete a tide value:

1. Select the required tide value(s) in the Graph or Grid displays.
2. From the *Edit* menu choose *Delete*.

Alternatively, click  or press **Ctrl+D**.

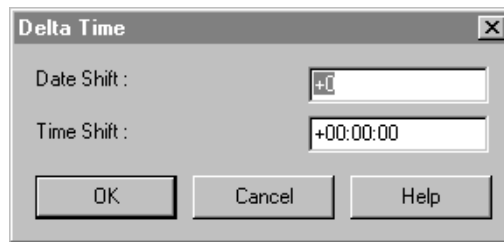
4.3.3 Applying Tide Adjustments

Tide data adjustments can be made to the whole Tide file by using the *Delta Time* and *Delta Tide* commands.

To adjust the time of the entire Tide file:

Follow these steps when you want to apply a constant time shift to ***all*** tide values.

1. From the *Edit* menu choose *Delta Time*. Alternatively, click



2. In the *Date Shift* field, enter a value.

The value should be an integer value representing the number of days you want to shift the date by. Positive values add days, negative values subtract days.

3. In the *Time Shift* field, enter a time adjustment.

The value entered is in HH:MM:SS format and can be positive or negative.




Note – The constant time shift is applied to ***all*** tide values in the Tide file.

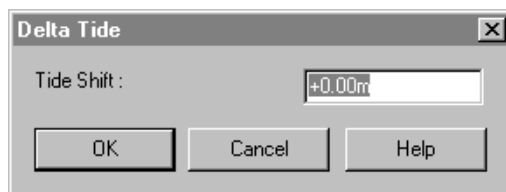
4. Click **OK**.

To adjust the tide values for the entire Tide file:

Follow these steps when you want to apply a constant height adjustment to ***all*** tide values.

1. From the *Edit* menu choose *Delta Tide*.

Alternatively, click  :



2. In the *Tide Shift* field, enter a tide adjustment, to be applied to the entire tide database. Enter a positive or negative value.

Select the units from the *Tide* tab in the *Display Units* dialog.

3. Click **OK** to apply the tide shift to the records in the Tide file.



Note – The constant height adjustment is applied to ***all*** tide values in the Tide file.

4.3.4 Importing Tide Data

There are many tide prediction software packages available, which can produce ASCII data of tide information for a particular area of interest.

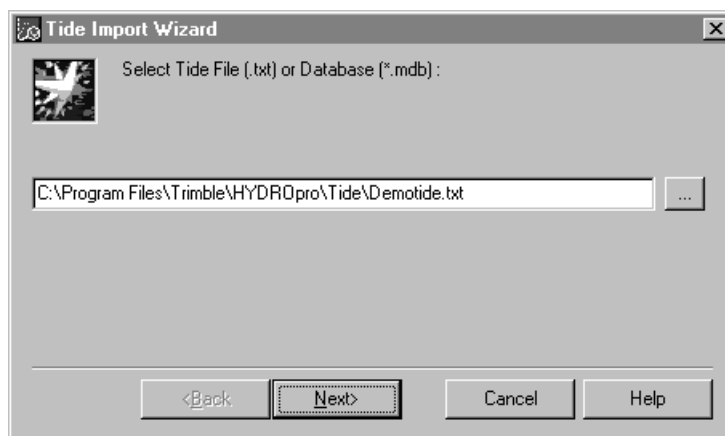
The Tide Editor lets you import tide data into a Tide file from an ASCII or Navigation Project database (.mdb) file, and export tide data to an ASCII file.

Importing Tide Data from Navigation Project File

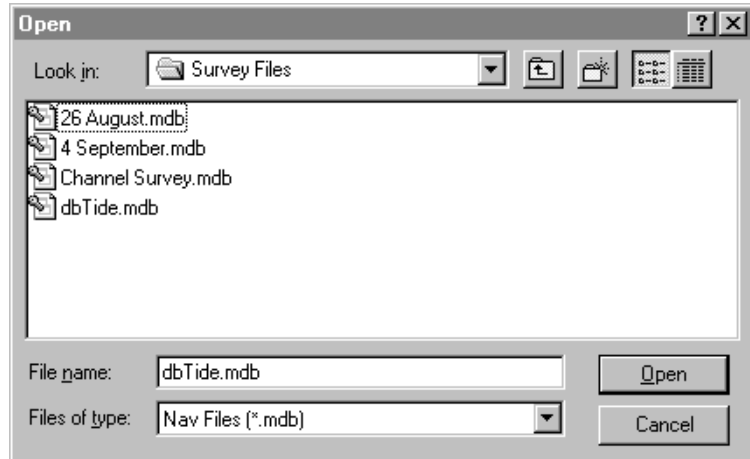
The tide data, collected in real-time, from a Navigation Project file can be imported into the Tide database to view and edit. In addition, the tide data can be used with another Navigation Project file that was collected during the same time.

To import tide data from a Navigation project:

1. From the *File* menu choose *Import*:

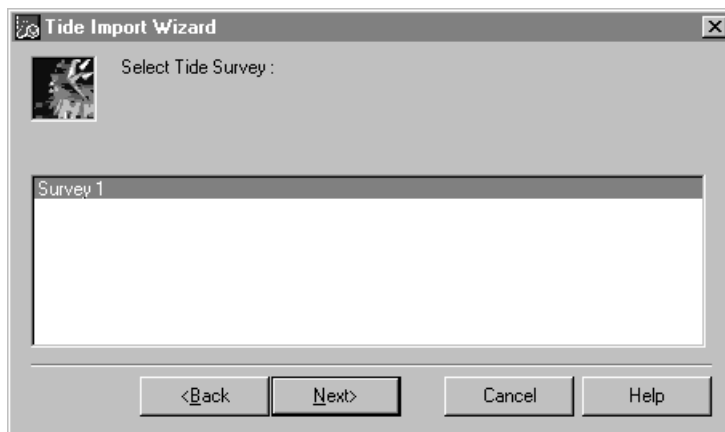


2. Click **Browse** to choose the Navigation Project file that contains the tide data you want to import into the Tide Editor:



3. In the *Look in* field, select the folder where the Navigation Project file is located.
A list of available Navigation project files are displayed in the main area of the dialog.
4. In the *Files of type* field, select Nav Files (*.mdb).
5. Select the Navigation project or in the *File name* field, enter the name of the project.
6. Click **Open** to select the chosen file.
You are returned to the *Tide Import Wizard* dialog.

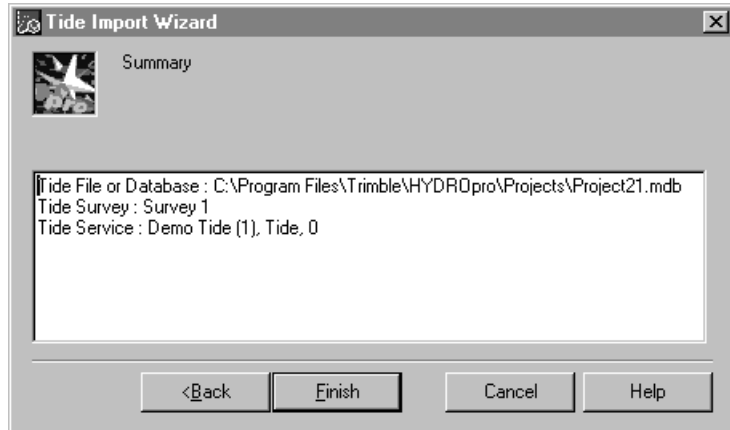
7. Click **Next>** to select the survey that the tide data is stored in:



8. Click **Next>**.
9. Select the Tide Data service that you want to display in the Tide Editor:



10. Click **Next>** to display the *Summary* dialog, which lists the selected tide information from the Navigation Project (.mdb) file:



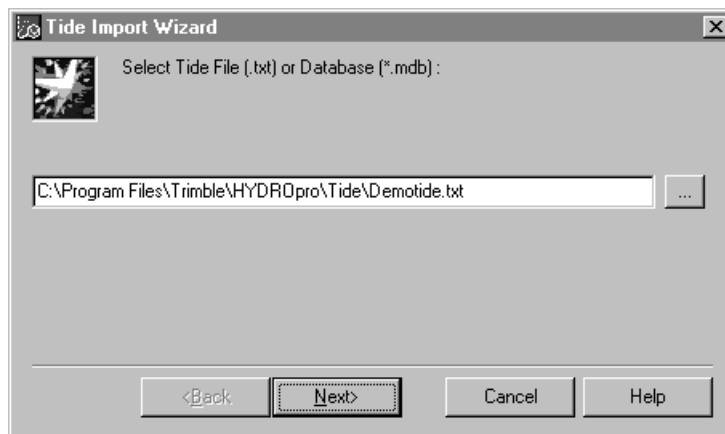
11. Click **<Back** if you want to change any of your selections, or **Cancel** to return to the main menu.
12. Click **Finish** to accept the chosen data in the list.

Importing ASCII Tide Data

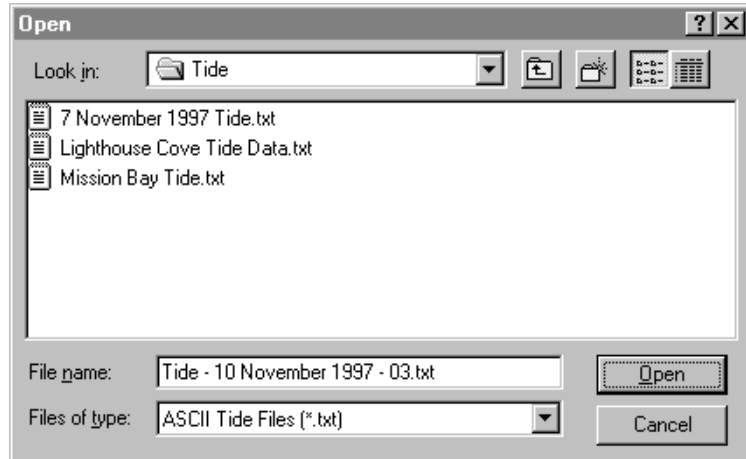
Tide data, from an ASCII file, can be imported into the currently open Tide file.

To import ASCII tide data:

1. From the *File* menu choose *Import*:



2. Click **Browse** to choose the ASCII file that contains the tide data you want to import into the Tide Editor:



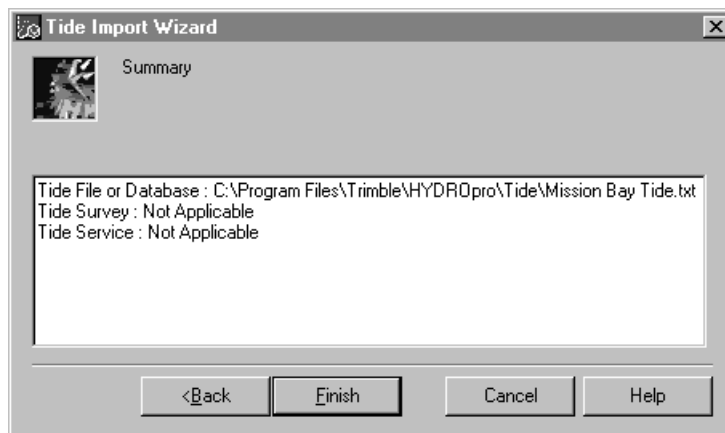
3. In the *Look in* field, select the directory where the ASCII Tide file is located.

A list of available ASCII files are displayed in the main area of the dialog.

4. Select the ASCII Tide file or in the *File name* field, enter the name of the ASCII Tide file.

The file type must be ASCII, suffixed .txt, and it must be in one of the formats listed in Appendix D, Tide ASCII File Format.

5. Click **Next>** to view the *Summary* dialog:



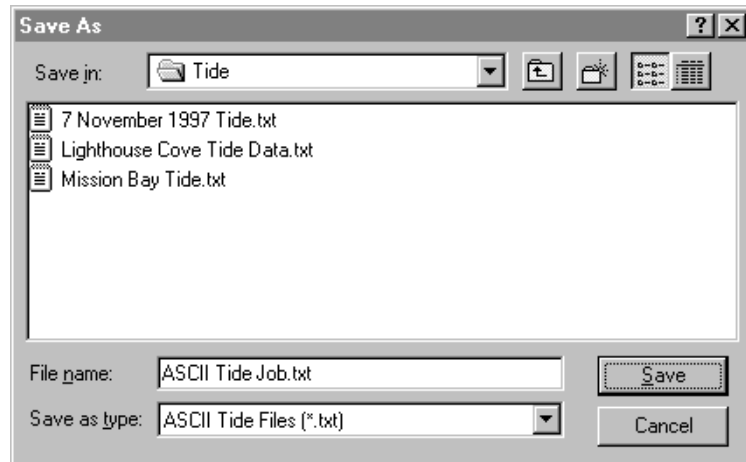
6. Click **Finish** to accept.

4.3.5 Exporting Tide Data to an ASCII File

Tide data can be exported to an ASCII text file from the currently open Tide file.

To create an ASCII file from the Tide file:

1. From the *Export* menu choose *Generate*:



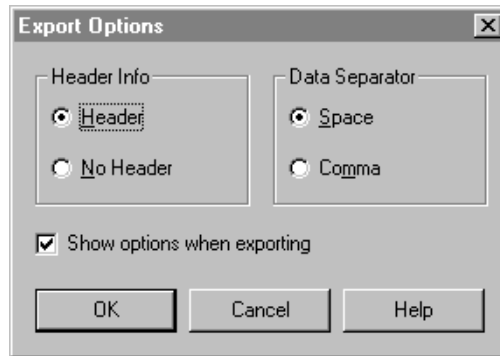
2. In the *Save in* field, select the directory to save the ASCII text file of the tide data in.
3. In the *File name* field, enter the name for the ASCII file to be created.
4. In the *Save as type* field, set the file type to ASCII Tide Files (*.txt) format.
5. Click **Save** to confirm the storing of the tide data to the specified ASCII file.

Setting Export Options

Use the *Export Options* dialog to specify the appearance of tide data in the generated ASCII file.

To specify the appearance of tide data in the generated ASCII file:

1. From the *Configure* menu choose *Export Options*:



2. In the *Header Info* group, select the *Header* option to display header information in the ASCII Tide file or select the *No Header* option to hide the header information.
3. In the *Data Separator* group, select the *Space* option or the *Comma* option as the delimiter between tide data values.
4. Select the *Show options when exporting* check box to open the *Export Options* dialog each time you create and save a tide ASCII file. If this box is left cleared, the *Export Options* dialog does not appear on saving. However, the current selection is used to create the ASCII file.
5. Click **OK**.

4.3.6 Predicted Tides

If you want to work with predicted tides, Trimble strongly recommends that you use the Tides & Currents for Windows software from Nautical Software. This software is relatively inexpensive and is updated on a regular basis.

Tides & Currents for Windows generates tide predictions based on official data provided by NOAA (National Oceanic and Atmospheric Administration), CHS (Canadian Hydrographic Service), and the UKHO (United Kingdom Hydrographic Office). NOAA and CHS provide data for the North Americas while the UKHO provides world wide coverage.

Tide and Current prediction is done by mathematical summation of various harmonic components. For any point in time, the effects of up to 223 harmonic components are added together to determine the tidal height or current velocity. NOAA provides up to 37 components per primary station, except in Anchorage, Alaska, where up to 126 are used. CHS provides up to 154 components, and the UKHO provides a maximum of 223 components. For accurate tide predictions, *all* the available harmonic components should be utilized.

Contact information:

Tides & Currents for Windows 2.5

Nautical Software, Inc.
14657 SW Teal Blvd., Suite 132
Beaverton, OR 97007
USA

Phone: +1 (503) 579-1414
Fax: +1 (503) 579-1304
Email: info@tides.com
Web: <http://www.tides.com>

The Tide Editor within the NavEdit software does not support the entry of harmonic constituents for the determination of predicted tides.

Creating ASCII Tide Files

The *Tides & Currents for Windows* software can be used to generate ASCII files containing predicted tide data that can be imported into NavEdit's Tide Editor.

To export an ASCII Tide file from the Tides & Currents software suitable for NavEdit:

1. Before creating an export file, check that the *General Configuration* options have been set correctly. Select the *Configure* item from the *Options* menu or click the Configure icon.
2. Under the *General* category, make sure that the *Height Units* and *Time* options have been set correctly.
3. Before creating an export file, select the required tide station from the data provided.
4. From the *File* menu choose *Export Data* or press the Export button in the toolbar.
5. Select the *File* option in the *Export data to* field and enter the name and directory location of the ASCII file to be created.
6. Select the start and end date in the *Date range* field.
7. Set the *Tide Value* field to either *Highs / Lows only* or *Tide every*. If the *Tide every* option is selected, enter the required time interval.
8. Using the option buttons between the *Source Fields* list and *Target Fields* list, make sure that the following items are present in the *Target Fields* list.
 - Date
 - Time
 - Value
9. Click **Options** to open the *Export Data Options* dialog.
10. Set the *Field Delimiter* field to (comma).

11. Set the *Record* to (cr/lf).
12. Set the *Date Format* option to the same as that of your Windows operating system.
13. Click **OK**.
You are returned to the *Export Data* dialog.
14. Click **Export**.

The resultant ASCII Tide file can now be imported into NavEdit Tide Editor (see Importing Tide Data, page 4-87).

A DELTA Database Schema

NavEdit saves all changes or notifications that have been made to depth or heave values to a Microsoft Access database called a DELTA (*.dlt) database. This database is used in conjunction with the Navigation Project database to make sure that no element within the Navigation Project database is altered in anyway.

The DELTA database contains several tables for the storing of modifications (deltas) to the Navigation database. As such, the two databases are co-dependent.

A.1 Tables

This section contains a brief description of each table within the DELTA database format.

Version

The version table contains the version of the DELTA database that is used by the application to determine the database format. See Table A-1.

Table A-1 Version Table

Field	Description
Version	Version number

MRUData

This table contains the Most Recently Used (MRU) survey, vessel, Depth service, Heave service, Tide file, guidance object, and user-selected time region. See Table A-2.

Table A-2 MRUData Table

Field	Description
SurveyName	Name of the last survey selected in NavEdit
SteerbySession Number	Instance of the steer-by last selected in NavEdit
SurveyStart	Start time of the last selected survey
SurveyStop	Stop time of the last selected survey
VesselName	Name of the last selected vessel
VesselID	ID of the last vessel used
VesselHasShape	Does the vessel have a shape? 0 = No, 1 = Yes
VesselsCurrent	Is this vessel current? 0 = No, 1 = Yes
DepthCSID	CSID of the last Depth service used
DepthVesselID	ID of the vessel that the Depth service is configured on
DepthEquipConfigID	Equipment configuration ID of the selected depth service
DepthServiceID	Internal ID number of that service type
DepthServiceString	String associated with the Depth service ID
DepthLabelText	Equipment name for the selected depth configuration
DepthDataSource	Data source number for Depth service (if any)
HeaveCSID	CSID of the last Heave service used
HeaveVesselID	ID of the vessel that the Heave service is configured on
HeaveEquipConfigID	Equipment configuration ID of the selected heave service
HeaveServiceID	Internal ID number of that service type
HeaveServiceString	String associated with the Heave service ID
HeaveLabelText	Equipment name for the selected heave configuration
HeaveDataSource	Data source number for Heave service (if any)

Table A-2 MRUData Table (Continued)

TidePath1	Path of the last Tide file 1 used
TidePath2	Path of the last Tide file 2 used
SteerbyName	Name of the last GO used
SteerbyGOID	Guidance object ID of the last GO used
SteerbySessionNumber	Instance of the steer-by last selected in NavEdit
SteerbyStart	Starting time of the last GO used
SteerbyStop	Stopping time of the last GO used
UserSelectStart	Start time of the last user-selected time region
UserSelectStop	Stop time of the last user-selected time region
OffsetName	User-defined offset name
OffsetID	Internally assigned vessel offset ID number
OffsetX	Offset's X coordinate, on vessel design grid (metres)
OffsetY	Offset's Y coordinate, on vessel design grid (metres)
OffsetZ	Offset's Z coordinate, on vessel design grid (metres)

TimeAdjustments

This table stores the user-specified time latency that is applied to the depth data. See Table A-3.

Table A-3 TimeAdjustments Table

Field	Description
DepthLatency	Time added to depth data (in seconds)

EditRegions

This table stores the edited regions of a guidance object (GO). See Table A-4.

Table A-4 EditRegions Table

Field	Description
StartTime	The start time of the edited region (in seconds)
StopTime	The stop time of the edited region (in seconds)
DepthRegion	True/False flag indicating that this region refers to a depth region as opposed to a position region. 1 = True, 0 = False.
SteerbyID	Internal reference ID number assigned to the steer-by.

EventAdjustment

This table is *not* implemented in version 1. Its purpose is to store the display state of an event (For a description of state flags, see State Flag Description, page A-6). See Table A-5.

Table A-5 EventAdjustment Table

Field	Description
TimeIndex	The time of the flagged event (seconds)
EventConfigId	Relates this event data record to an event configuration
EventCode	Event code of the flagged event
VesselId	Vessel identifier of the offset position
OffsetId	Vessel offset identifier of the offset position
Northing	Northing value at the vessel offset. If estimation is enabled, then this is the extrapolated offset position.
Easting	Easting value of the vessel offset. If estimation is enabled, then this is the extrapolated offset position.
Elevation	Elevation value of the vessel offset. If estimation is enabled, then this is the extrapolated offset position.
StateFlag	Flag specifying the state (see State Flag Description, page A-6)

HeaveAdjustments

This table contains the heave modifications. See Table A-6.

Table A-6 HeaveAdjustments Table

Field	Description
TimeIndex	The time of the Heave data that was modified (in seconds)
CSId	The ID of the Heave service modified.
Heave	The modified Heave value (meter).
Quality	Quality value associated with the heave (if any)
StateFlag	The state flag of the Heave value (see State Flag Description, page A-6).
Inserted	Indicates if point has been added in NavEdit. That is, the point is not in the original Navigation database.

DepthAdjustments

This table contains the depth modifications. See Table A-7.

Table A-7 DepthAdjustments Table

Field	Description
TimeIndex	The time of the depth data that was modified (seconds)
CSId	The ID of the Depth service this record refers to.
Channel1	The modified channel 1 value. (metres)
Channel2	The modified channel 2 value. (metres)
Quality	Quality value associated with the depth data (if any)
Ch1StateFlag	The state flag of the channel 1 value (see State Flag Description, page A-6).
Ch2StateFlag	The state flag of the channel 2 value (see State Flag Description, page A-6).
Inserted	Indicates if point has been added in NavEdit, i.e, the point is not in the original Navigation database.

State Flag Description

State flags appear in the EventState, Heave Adjustments, and DepthAdjustments tables. Table A-8 describes each state flag value.

Table A-8 StateFlagDescription Table

State Flag Value	Description
0	This flag indicates that the data is valid and not rejected in any way
1	The value associated with this flag was rejected because it was less than the minimum depth value in the Batch Processor
2	The value associated with this flag was rejected because it exceeded the maximum depth value in the Batch Processor
3	The value associated with this flag was rejected because it was less than the minimum depth quality in the Batch Processor
4	The value associated with this flag was rejected because it exceeded the Spike filter parameters in the Batch Processor
5	The value associated with this flag was rejected because it exceeded the Heave filter parameters in the Batch Processor. (If in heave table then the value exceeded the maximum, if in the depth table then the value exceeded the heave age value).
6	The value associated with this flag was rejected because it failed the Tide filter in the Batch Processor
7	The value was manually rejected by the user

Displays

This table is a new table added in v1.4. Its purpose is to store details about each display open in the NavEdit software.

Table A-9 Displays Table

Field	Description
Type	Display type. 1 = Grid, 2 = Graph, 3 = Map, 4 = Thumbnail.
Placement	Position and size details of the display (binary number)
Settings	Properties of the display (binary number)

B Export File Formats

NavEdit can export a variety of file formats using the Export command. These formats are:

- All Data
- All Depth Values
- Basic Depth and Tide
- Basic HYDRO
- Basic Position and Chainage
- Basic Time and Depth
- CARIS
- CGP Survey Format
- CGP XYZ Format
- Event Data
- HYDRO Runline File
- TERRAMODEL (P, N, E, Z, 20D)
- Transfer File

The Transfer and HYDRO Runline files are in a binary format. The rest are ASCII file formats.



Note – The units, decimal places, coordinate order, and time reference frame used in these ASCII formats (except CARIS) depend on the settings in the *Display units* and *Global Settings* dialogs.

B.1 All Data File Format

The All Data format is an ASCII file, and is suffixed with the file extension '.txt', '.asc', or '.dat', depending on the extension you set. The file contains the data shown in Table B-1 for each position record.

Table B-1 Description of Data for Each Position Record in the All Data Format

Data	Description
<i>Date</i>	Date of position record
<i>Time</i>	Time of position record
<i>Easting</i>	East position coordinate
<i>Northing</i>	North position coordinate
<i>Depth</i>	Echo sounder depth data
<i>Tide</i>	Associated tide correction data from Tide File
<i>Heave</i>	Associated heave correction data
<i>Chainage</i>	Distance along guidance object of the vessel offset
<i>Offset</i>	Perpendicular distance off-line from the guidance object of the vessel offset
<i>Event Code</i>	Event Code associated with position record
<i>GO Name</i>	Guidance Object position record is related to
<CR>	Carriage return
<LF>	Line feed

Example

```
04/22/98,15:22:38.724,2655763.334,542407.456,9.56,0.201,0.112,0.678,-2.331,T.00002,CH001750
04/22/98,15:22:39.234,2655762.334,542408.456,10.300,0.334,0.113,1.098,-2.334,T.00003,CH001750
04/22/98,15:22:39.744,2655761.334,542409.098, 10.445,0.124,0.113,2.998,-2.098,T.00004,CH001750
```

B.2 All Depth Values File Format

The All Depth Values format is an ASCII file, and is suffixed with the file extension '.txt', '.asc', or '.dat', depending on the extension you set. The file contains the data shown in Table B-2 for each position record.

Table B-2 Description of Data for Each Position Record in the All Depth Values Format

Data	Description
<i>Date</i>	Date of position record
<i>Time</i>	Time of position record
<i>Easting</i>	East position coordinate
<i>Northing</i>	North position coordinate
<i>Depth Ch1</i>	Echo sounder depth data (Channel 1)
<i>Depth Ch2</i>	Echo sounder depth data (Channel 2)
<i><CR></i>	Carriage return
<i><LF></i>	Line feed

Example

```
04/22/98,15:22:38.724,2655763.334,542407.223,9.034,11.566  
04/22/98,15:22:39.234,2655762.561,542408.533,10.998,12.546  
04/22/98,15:22:39.744,2655761.094,542409.989,10.109,12.987
```

B.3 Basic Depth and Tide File Format

The Basic Depth and Tide format is an ASCII file, and is suffixed with the file extension '.txt', '.asc', or '.dat', depending on the extension you set. The file contains the data shown in Table B-3 for each position record.

Table B-3 Description of Data for Each Position Record in Basic Depth and Tide File

Data	Description
<i>Easting</i>	East position coordinate
<i>Northing</i>	North position coordinate
<i>Depth</i>	Echo Sounder depth data
<i>Tide</i>	Tide level data
<CR>	Carriage return
<LF>	Line feed

Example

```
500999.179,701001.473,44.554,1.023
501002.355,701004.272,45.058,1.023
501005.067,701006.977,44.542,1.030
```

B.4 Basic HYDRO File Format

The Basic HYDRO file format is an ASCII file, and is suffixed with the file extension '.txt', '.asc', or '.dat', depending on the extension you set. The file contains the data shown in Table B-4 for each position record.

Table B-4 Description of Data for Each Position Record in the Basic HYDRO File

Data	Description
<i>Easting</i>	East position coordinate
<i>Northing</i>	North position coordinate
<i>Depth</i>	Echo Sounder depth data
<CR>	Carriage return
<LF>	Line feed

Example

```
500999.179,701001.473,44.554
501002.355,701004.272,45.058
501005.067,701006.977,44.542
```

B.5 Basic Position and Chainage File Format

The Basic Position and Chainage file format is an ASCII file, and is suffixed with the file extension '.txt', '.asc', or '.dat', depending on the extension you set. The file contains the data shown in Table B-5 for each position record.

Table B-5 Description of Data for Each Position Record in the Basic Position and Chainage Format

Data	Description
<i>Point Number</i>	Point number of position record
<i>Easting</i>	East position coordinate
<i>Northing</i>	North position coordinate
<i>Depth</i>	Echo sounder depth data
<i>Chainage</i>	Distance along guidance object of the vessel offset
<i>Offset</i>	Perpendicular distance to the side of the guidance object of the vessel offset
Event Code	Event Code associated with position record
<i>GO Name</i>	Guidance Object position record is related to
<CR>	Carriage return
<LF>	Line feed

Example

```
1,2655763.034,542407.009,9.45,0.230,-2.456,T.00002,CH001750
2,2655762.998,542408.453,10.27,1.033,-2.345,T.00003,CH001750
3,2655761.567,542409.007,10.56,2.459,-2.889,T.00004,CH001750
```


B.6 Basic Time and Depth File Format

The Basic Time and Depth file format is an ASCII file, and is suffixed with the file extension '.txt', '.asc', or '.dat', depending on the extension you set. The file contains the data shown in Table B-6 for each position record.

Table B-6 Description of Data for Each Position Record in the Basic Time and Depth Format

Data	Description
<i>Date</i>	Date of position record
<i>Time</i>	Time of position record
<i>Easting</i>	East position coordinate
<i>Northing</i>	North position coordinate
<i>Depth</i>	Echo Sounder depth data
<i>Tide</i>	Associated tide correction data from Tide File
<i>Heave</i>	Associated heave correction data
<CR>	Carriage return
<LF>	Line feed

Example

```
04/22/98,15:22:38.724,2655763.345,542407.577,9.097,0.322,0.100
04/22/98,15:22:39.234,2655762.448,542408.991,10.409,0.322,0.105
04/22/98,15:22:39.744,2655761.980,542409.091,10.234,0.323,0.253
```

B.7 CARIS File Format

The CARIS format is a fixed ASCII format file, and is suffixed automatically with the file extension '.xyz'. The file contains the data shown in Table B-7 for each position record.

Table B-7 Description of Data for Each Position Record in CARIS File Format

Data	Description
<i>Easting</i>	East position coordinate
<i>Northing</i>	North position coordinate
<i>Depth</i>	Echo Sounder depth data
<i>DateTime</i>	Date and Time (GMT)
<i>TideFlag</i>	Indicates depth has been reduced for tide (y/n)
<i>HeaveFlag</i>	Indicates depth has been reduced for heave (y/n)
<i>Tide</i>	Associated tide correction data from Tide file
<i>Vessel ID</i>	Vessel ID number
<CR>	Carriage return
<LF>	Line feed

Example

```
542410.861 2655758.925 9.953 22-APR-1998:03:22:41.41 y n 0.205 1
542411.638 2655758.147 9.861 22-APR-1998:03:22:42.42 y n 0.205 1
542412.413 2655757.372 9.893 22-APR-1998:03:22:42.43 y n 0.206 1
```

To import an ASCII CARIS format file created by NavEdit into a CARIS database:

1. Create an empty CARIS file with the makecari program (can be an existing CARIS file). If you are creating a new file, then the extents, scale, etc. which you base the database on should be relevant to the actual coverage of the data.
2. Use the refosoun program to read in the soundings. For example:

```
Refosoun  
-file=file.xyz  
-output=carisfile  
-format=charted_posn,depth,timestamp,tide_applied,  
dh_applied,reduction,launch
```

By default, all soundings will be assigned the feature code SGSL.



Note – You must make sure that you have the environment variable ***dispXsoundings*** pointing to the file \$Caris/system/Disp_soun.dat, which was in V426. If you have a pre-426 release you will need to get this file as well as the refosoun executable. Also, the Disp_soun.dat file describes all the different sounding attributes which can be input into the CARIS file using the -format qualifier.

B.8 CGP Survey File Format

The CGP Survey format is an ASCII file, and is suffixed with the file extension '.txt', '.asc', or '.dat', depending on the extension you set. The file contains the data shown in Table B-8 for each position record.

Table B-8 Description of Data for Each Position Record in the CGP Survey Format

Data	Description
<i>Point name</i>	Number given to point
<i>Northing</i>	North position coordinate
<i>Easting</i>	East position coordinate
<i>Depth</i>	Echo Sounder depth data
<CR>	Carriage return
<LF>	Line feed

Example

```
1000,500999.179,701001.473,44.554
1024,501002.355,701004.272,45.058
1025,501005.067,701006.977,44.542
```

B.9 CGP XYZ File Format

The CGP XYZ format is an ASCII file, and is suffixed with the file extension '.txt', '.asc', or '.dat', depending on the extension you set. The file contains the data shown in Table B-9 for each position record.



Note – This format has a header line of 1,1,1,1,1.

Table B-9 **Description of Data for Each Position Record in CGP XYZ File**

Data	Description
<i>Point name</i>	Number given to point
<i>Northing</i>	North position coordinate
<i>Easting</i>	East position coordinate
<i>Depth</i>	Echo Sounder depth data
<i>Description</i>	RAWHYDRO
<CR>	Carriage return
<LF>	Line feed

Example

```
1,1,1,1,1
1000,500999.179,701001.473,44.554,RAWHYDRO
1001,501002.355,701004.272,45.058,RAWHYDRO
1002,501005.067,701006.977,44.542,RAWHYDRO
```

B.10 Event Data File Format

The Event Data format is an ASCII file, and is suffixed with the extension '.txt', '.asc', or '.dat', depending on the extension you set. The file contains the data shown in Table B-10 for each position record.

Table B-10 Description of Data for Each Position Record in the Event Data Format

Data	Description
<i>Date</i>	Date of position record
<i>Time</i>	Time of position record
<i>Easting</i>	East position coordinate
<i>Northing</i>	North position coordinate
<i>Elevation</i>	Elevation position coordinate
<i>Event Code</i>	Event Code associated with position record
<i>GO Name</i>	Guidance Object position record is related to
<CR>	Carriage return
<LF>	Line feed

Example

```
04/22/98,15:22:38.552,2655763.023,542407.987,0.232,T.00002,CH001750
04/22/98,15:22:42.552,2655757.255,542413.567,0.232,T.00003,CH001750
04/22/98,15:22:46.552,2655752.368,542418.034,0.232,T.00004,CH001750
```

B.11 HYDRO Runline File Format

The HYDRO Runline File is in binary format, and is suffixed automatically with the extension '.hsr'. The file contains the data shown in Table B-11 for each guidance object.

Table B-11 Description of Data for Each Guidance Object Record in the HSR File

Data	Description
<i>Name</i>	The name of the guidance object
<i>SOL (Start of Line) Easting</i>	East position coordinate of the start of line
<i>SOL Northing</i>	North position coordinate of the start of line
<i>EOL (End of Line) Easting</i>	East position coordinate of the end of line
<i>EOL Northing</i>	North position coordinate of the end of line
<i>Reversed</i>	Is the line reversed?
<i>NextRL</i>	The next runline in the route sequence
<i>PrevRL</i>	The previous runline in the route sequence
<i>RIType</i>	Does the StraightCurvedRL field refer to the curve radius or not?
<i>StraightCurvedRL</i>	if RIType = 0 This field contains 0; Else if RIType = 1 This field contains the radius of the curve

The HYDRO Runline File is compatible with the HYDROpro Processing software. Using this file format, you can import all the guidance objects defined in your project into the Processing software.

B.12 TERRAMODEL – P, N, E, Z, 20D File Format

The TERRAMODEL – P, N, E, Z, 20D format is an ASCII file, and is suffixed with the extension ‘.txt’, ‘.asc’, or ‘.dat’, depending on the extension you set. The file contains the data shown in Table B-12 for each position record.



Note – The description field has a limit of 20 characters.

Table B-12 Description of Data for Each Position Record in the TERRAMODEL – P, N, E, Z, 20D File

Data	Description
<i>Point name</i>	Number given to point
<i>Northing</i>	North position coordinate
<i>Easting</i>	East position coordinate
<i>Depth</i>	Echo Sounder depth data
<i>Description</i>	RAWHYDRO
<CR>	Carriage return
<LF>	Line feed

Example

```
1000,70099.179,501001.473,44.554,RAWHYDRO
1001,701002.355,501004.272,45.058,RAWHYDRO
1002,701005.067,501006.977,44.542,RAWHYDRO
```


B.13 Transfer File Format

The Transfer File is in binary format, and is suffixed automatically with the file extension '.axb'. This file contains the data shown in Table B-13 for each position record.

Table B-13 Description of Data for Each Position Record in NavEdit Transfer File

Data	Description
<i>Code</i>	Fix number
<i>North</i>	North position coordinate
<i>East</i>	East position coordinate
<i>Depth</i>	Echo Sounder Depth data
<i>Chainage</i>	Steer-by point distance along guidance object
<i>Offset</i>	Steer-by point perpendicular distance from guidance object
<i>Description</i>	Guidance object name associated with position record
<i>Tide Correction</i>	Associated tide correction data from Tide file
<i>Local time</i>	Local time of position record
<i>Local data</i>	Local date of position record
<i>Point Class</i>	All exported points from NavEdit are classed as RawHydro

This file format is designed to be compatible with HYDROpro Processing.



Note – To get the local time displayed correctly in Processing you need to enter the correct UTC offset. To do this, select *Job/Configure/System*. In the *System* dialog, enter the time offset in the *UTC offset* field.

C Batch Processor

The Batch Processor lets you identify depth or heave data outliers by entering a series of acceptable limit ranges. You can also use the Batch Processor to apply draft and scale factor adjustments to data from an Echo Sounder service that may have been incorrectly set in the field.

Figure C-1 shows the order that NavEdit applies filters in the Batch Processor.

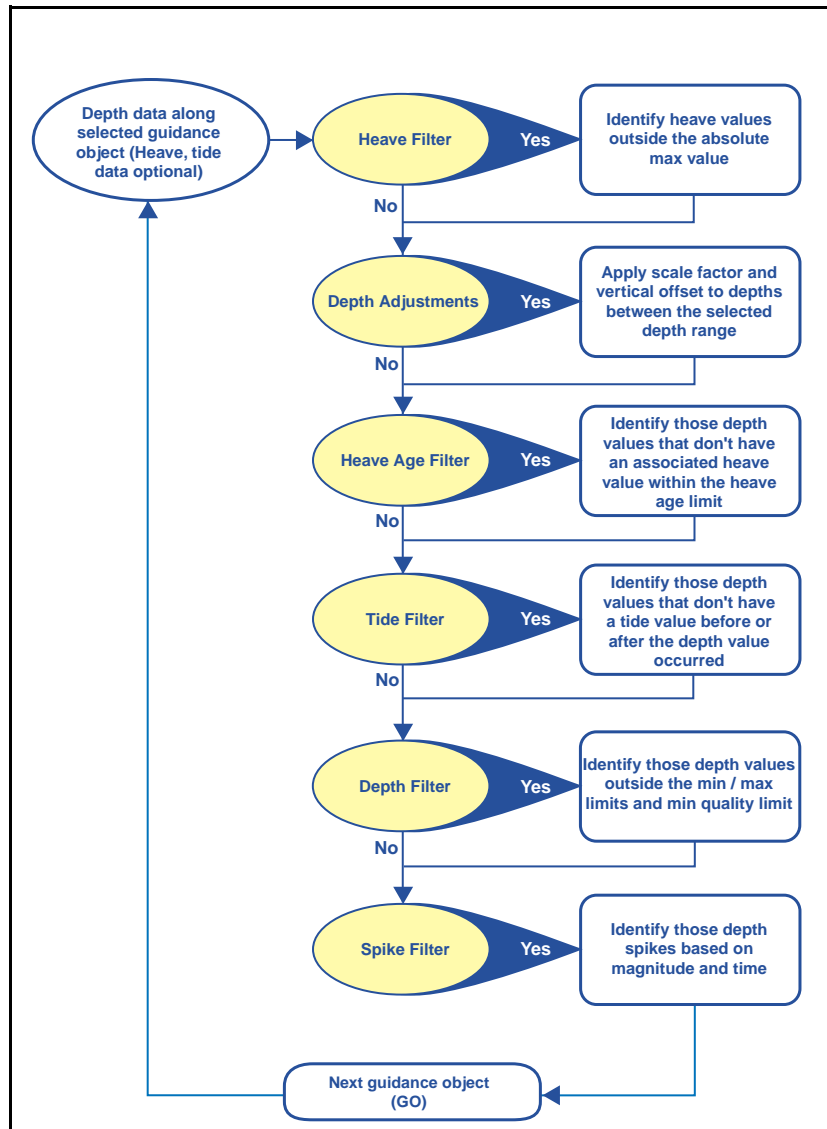


Figure C-1 Batch Processor Flow

C.1 Guidance Object (GO)

The Batch Processor runs through the data on a GO-by-GO basis. The Processor selects the first GO and determines the first and last event that occurred while the GO was used as the current steer-by object. The first and last event record is used to determine the start and stop time (or time range) for all the depth, heave, and tide data associated with that GO.

The depth, heave, and tide data for each GO is determined this way.

C.2 Heave Filter

The first filter in the Batch Processor is the Heave filter. This filter examines all the heave data first and identifies those values that exceed the user-defined limit. If a heave value is flagged in this filter, it is not used in the Heave Age filter. See Figure C-2.



Note – The Heave filter is only available when a valid Heave service is selected in the Service Selection wizard.

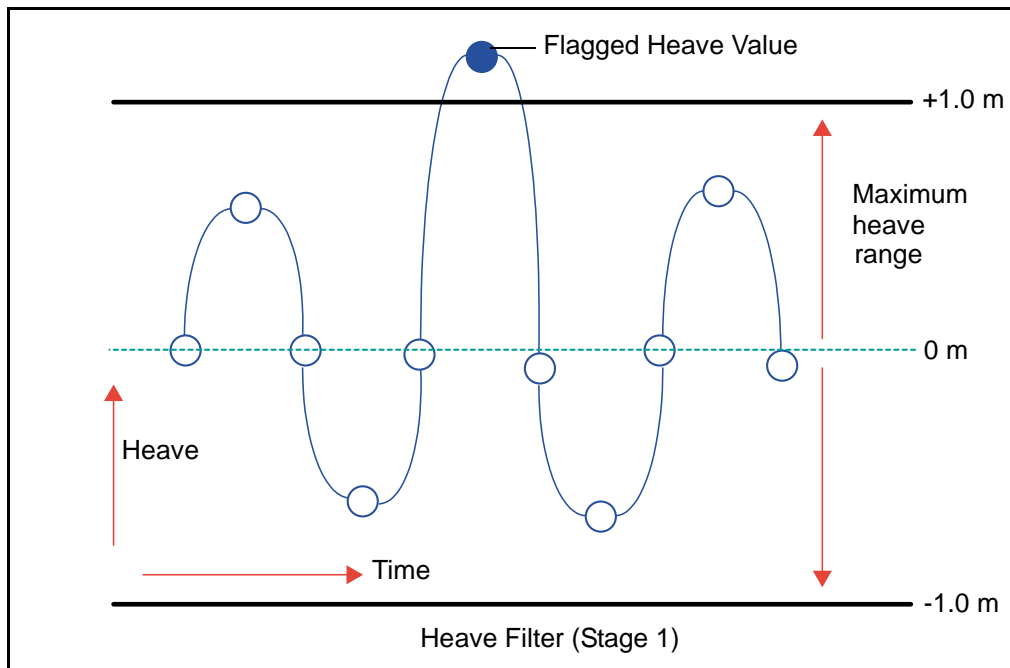


Figure C-2 Example of Heave Filter

C.3 Depth Adjustments

The second stage in the Batch Processor is applying Depth adjustments. When Depth adjustments are applied, the scale factor is always applied first followed by the Vertical Offset adjustment.

The scale factor applies a unit factor to each depth value. It is designed to be used when the incorrect speed of sound was set in the Echo Sounder during the survey. The vertical offset adds a constant value to each depth value. It is designed to be used when the incorrect draft or no draft value was set in the Echo Sounder during the survey. See Figure C-3.

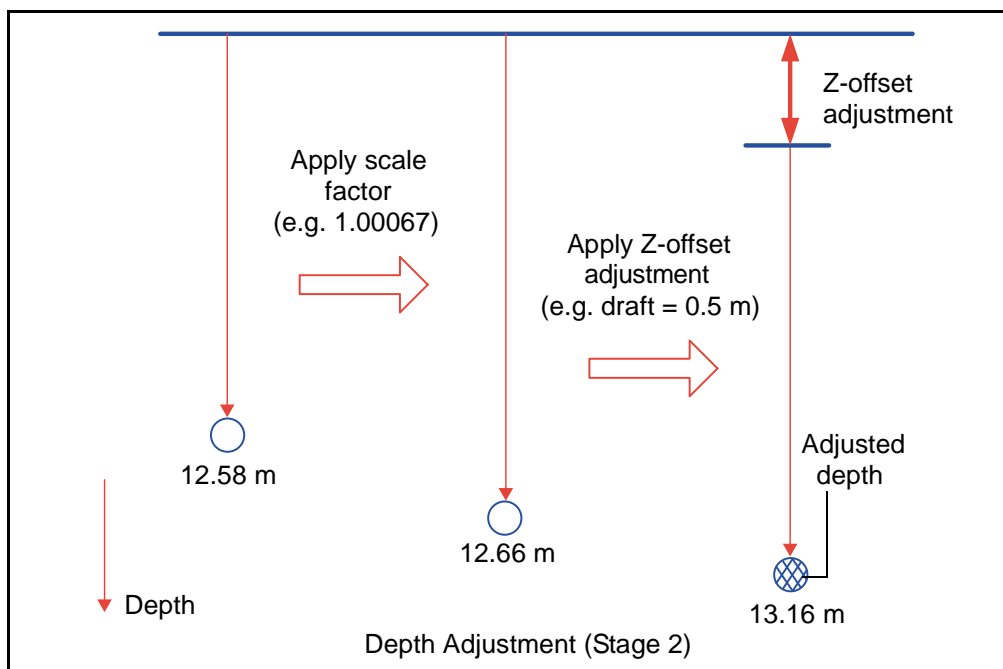


Figure C-3 Example of Depth Adjustment



Note – Trimble recommends that all draft adjustments are taken care of within the Echo Sounder device during the calibration.

C.4 Heave Age Filter

The Heave Age filter identifies the associated heave values for each depth value. The filter identifies those heave values that will be used to interpolate a heave value for the depth value. The filter flags those depth values whose associated heave values exceed the age limit between the depth value time stamp and the heave value time stamp. See Figure C-4.



Note – The Heave Age filter is only available when a valid Heave service is selected in the Service Selection wizard.

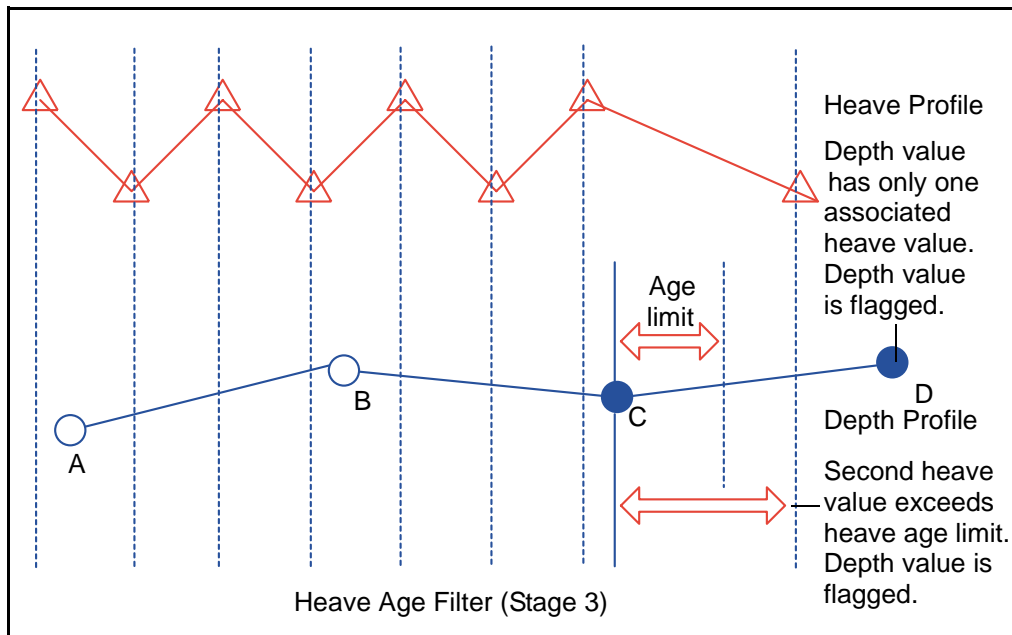


Figure C-4 Example of Heave Age Filter

C.5 Tide Filter

The Tide filter is not a user-definable filter. The filter is automatically activated if a Tide file has been selected in the Service Selection wizard. The Tide filter identifies those depth values that do not have a tide value before or after the depth value occurred. For tide values to be interpolated, two valid values must exist. This situation usually occurs at the beginning and end of the GO. See Figure C-5.

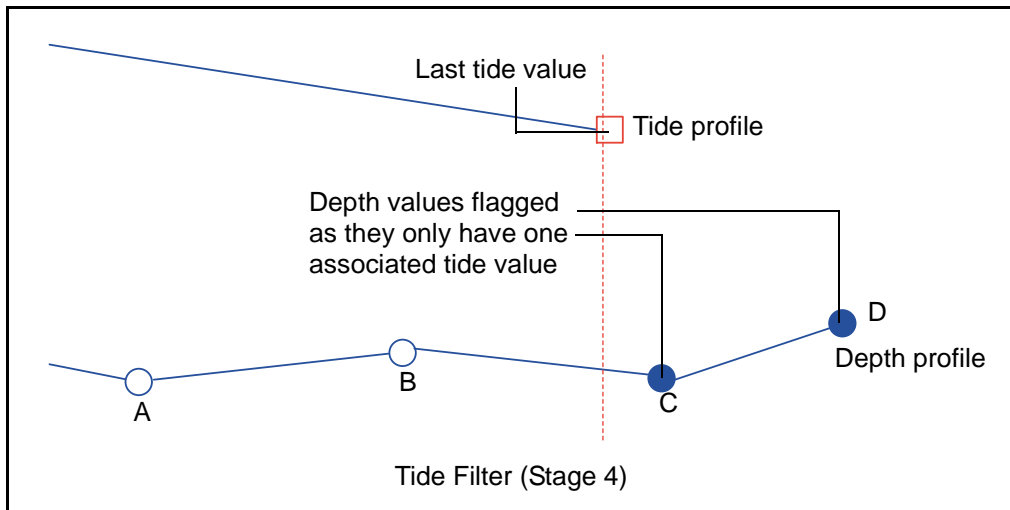


Figure C-5 Example of Tide Filter

C.6 Depth Filter

The Depth filter lets you define a depth range and data quality range for all depths deemed to be acceptable. All depth values that fall outside these parameters are flagged. Depth range and quality checking is carried out prior to the Spike filter. If a value fails the Depth filter it will not pass through the Spike filter. See Figure C-6.



Note – Not all supported Echo Sounder devices output a quality value. In this case use the system default value to make sure that the depth value passes through this test.

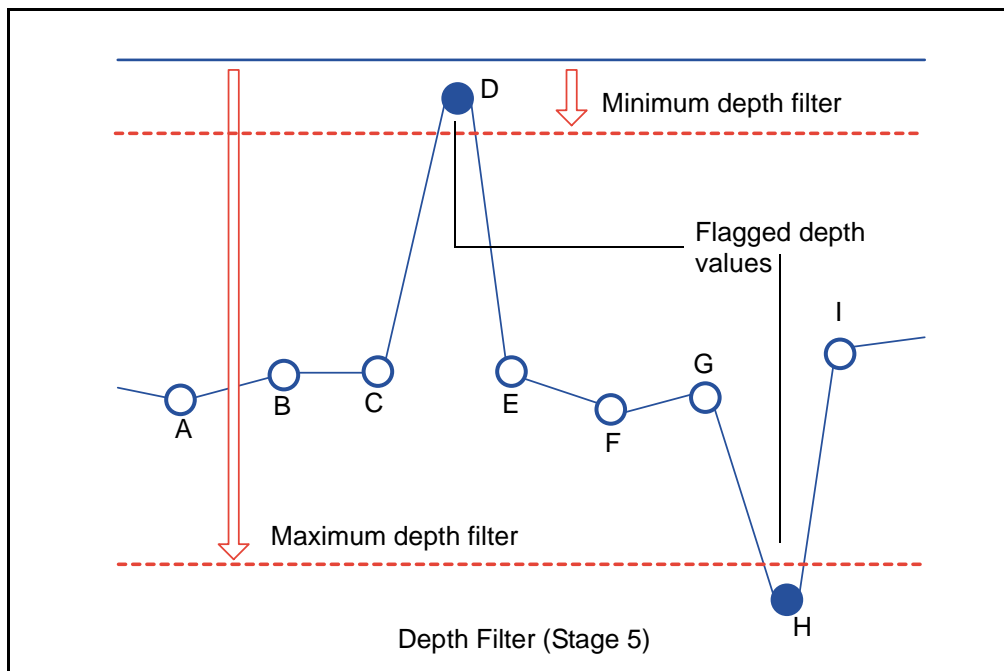


Figure C-6 Example of Depth Filter

C.7 Spike Filter

The Spike filter attempts to detect the majority of spikes in the depth data.

For example, a spike can be caused by aeration under the transducer, or fish echoes. A spike is deemed to be a sudden shallowing of depth data output from the Echo Sounder that is not due to actual seabed variations.

After the spike (which can be a single depth or a number of depths) the depths represent the true seabed again.

Example

In Figure C-7, a spike has occurred at time D. If the logging interval was, for example 0.5 seconds, and you are trying to detect single spikes, then the Spike Duration should be set to 0.5 seconds. The magnitude in this example may be 8 m. If the spike from C to D is 8 m or greater and from D to E is 8 m or greater then a spike is detected and depth D is flagged.

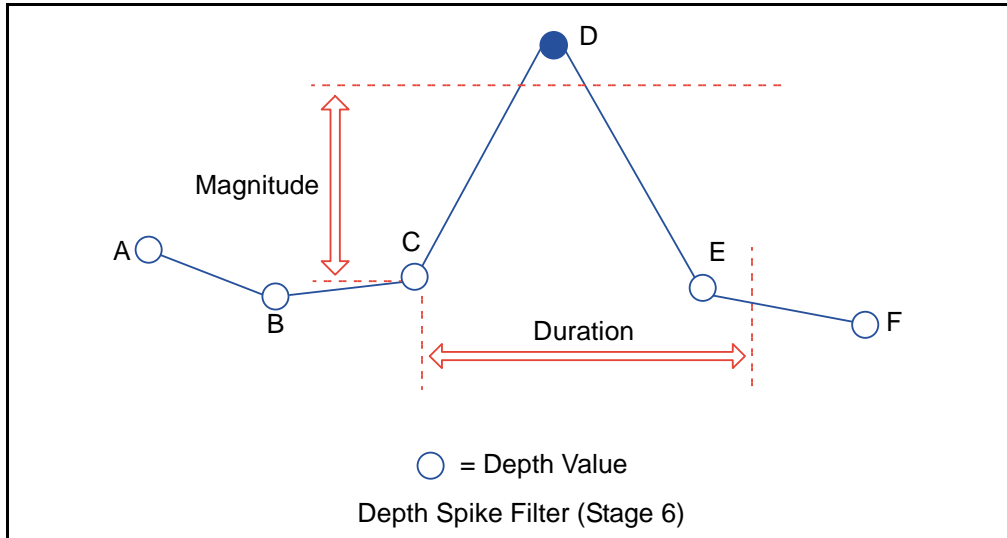


Figure C-7 Example of Depth Spike Filter

In Figure C-8, a spike has occurred at D and at E. If the logging interval was 0.5 seconds and you are trying to detect two (or fewer) consecutive spikes then the Spike Duration should be set to 1 second.

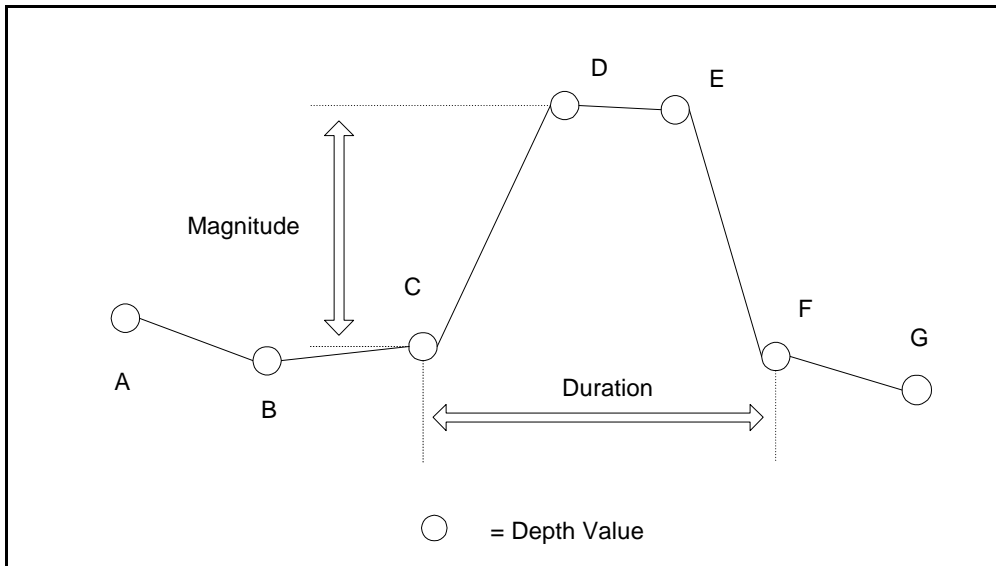


Figure C-8 **Spike Time Settings**



Note – If the seabed is irregular, such as a boulder bank, then it is possible that the Spike filter settings will reject valid depth values because they do not meet the criteria.

D Tide ASCII File Format

Tide data can be imported into the Tide Editor from an ASCII file. As a minimum, the ASCII file must be in the following format:

<Date><Separator><Time><Separator><Tide>

The Date and Time values must be consistent with the formats set in Regional Settings. The tide value must be appended with a units identifier.

For example:

m = meters
ft = international feet
in = inches
cm = centimeters
ft(US) = US survey feet

The separator value can either be a comma, space(s) or tab character.

NavEdit can also accept ASCII tide files with header information. If you define header information in an ASCII tide file, then it must be in the following format, with no free lines at the top of the header or between the header and the actual tide data records. Each header record must be indented by one space character. Any combination of the following header record types can be included in an ASCII tide file.

Header records include:

Tide Gauge:	<Tide Gauge Name>
Datum:	<Mean Sea Level>
Location:	<Easting>, <Northing>
UTC Offset:	<Time Offset>
Time Frame:	<Local or UTC>

The header information will populate the respective fields in the *Tide File Header* dialog.

Following is an example of a space-delimited ASCII Tide file, with header information:

```
Tide Gauge: Mission Bay Tide
Datum: LAT
Location: 301000.00m E, 701000.00m N
UTC Offset: +8:00:00
Time Frame: Local
13/08/98 08:00:00 1.41m
13/08/98 08:15:00 1.50m
13/08/98 08:30:00 1.59m
13/08/98 08:45:00 1.67m
13/08/98 09:00:00 1.72m
13/08/98 09:15:00 1.74m
13/08/98 09:30:00 1.73m
13/08/98 09:45:00 1.68m
```

NavEdit supports UTC and local time in ASCII Tide files. The *Time Frame* field in the header (if present) is used by the Tide Editor to determine the time frame of the tide data. If no Time Frame header record is available, the time is imported according to the time frame set in the *Global Settings* dialog.



Note – If there are no units specified for tide or coordinate values in the ASCII Tide file then these values will be imported according to the current units selected in the *Units Configuration* dialog.

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